The Creative Destruction of Copyright
Innovation in the Record Industry and Digital Copying

De creatieve vernietiging van copyright
Innovatie in de muziekindustrie en digitaal kopieëren

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LIST OF ABBREVIATIONS

BPI	British Phonographic Industry (trade association for the UK)
BV Musik-industrie	Bundesverband der Musikindustrie (Federal Association of the Music Industry)
BV Phono	Bundesverband der Phonographischen Wirtschaft (Federal Association of the Phonographic Industry; the name of the BV Musikindustrie before 2008)
CD	Compact Disc
CD-R	Compact Disc-Recordable
CIS	Community Innovation Survey
DESTATIS	Statistisches Bundesamt (Federal Statistical Office, Germany)
DVD	Digital Versatile Disc
ECom	European Commission
EU	European Union
Fte	Full time equivalents
GEMA	Gesellschaft für musikalische Aufführungs- und mechanische Vervielfältigungsrechte (Collecting society for musical performance and mechanical reproduction rights)
GfK	Gesellschaft für Konsumforschung (a market research firm)
GVL	Gesellschaft zur Verwertung von Leistungsschutzrechten (Collecting society for the commercialisation of rights related to copyrights)
ICT	Information and communication technology
IFPI	International Federation of the Phonographic Industry
Indies	Small, independent record companies
IO	Industrial Organisation
IP	Intellectual property
IPR	Intellectual property rights
LP	Long-playing record albums (33⅓ rpm vinyl gramophone records)

NVPI	Nederlandse Vereniging van Producenten en Importeurs van Beeld- en Geluidsdragers (Dutch Association for Producers and Importers of Image and Sound Carriers)
OECD	Organisation for Economic Co-operation and Development
OLS	Ordinary least squares
RIAA	Recording Industry Association of America
RIAJ	Recording Industry Association of Japan
SACD	Super Audio Compact Disc
SME	Small and medium sized enterprises
SPD	Sozialdemokratische Partei Deutschlands (Social Democratic Party of Germany)
VCD	Video Compact Disc
VHS	Video Home System
VUT	Verband unabhängiger Tonträgerproduzenten (German Association of Independent Labels, Publishers and Producers)
WIPO	World Intellectual Property Organization

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"Actually very little analysis is required to show that an ideal world is better than a state of laissez-faire, unless the definitions of a state of laissez-faire and an ideal world happen to be the same. But the whole discussion is largely irrelevant for questions of economic policy since whatever we may have in mind as our ideal world, it is clear that we have not yet discovered how to get to it from where we are. A better approach would seem to be to start our analysis with a situation approximating that which actually exists, to examine the effects of a proposed policy change, and to attempt to decide whether the new situation would be, in total, better or worse than the original one. In this way, conclusions for policy would have some relevance to the actual situation."
(Coase, 1960:22)

1. INTRODUCTION

Who owns information, who enjoys access, whose ideas receive attention and who gains from commercialising them? Those are some of the issues thrown wide open with the diffusion of increasingly powerful, digital information and communication technology (ICT). Copyright plays an important role in this context, since it fulfils the pivotal function of defining the rough equivalent to property for many information goods. Novel ways of using, disseminating and building upon protected works require the express consent of all rights holders to be 'legal', so that the copyright system is a major influence on the formation of a so-called digital market.

This dissertation deals with innovation, technological change and intellectual property (IP) in a cultural industry. It contributes to a heated debate in the early 21st century on inserting a greater degree of control into the use of digital ICT more generally and in particular on reforms of the copyright system.

The de facto protection of copyrights has been weakened with the diffusion of digital copying technology. The emergence of file-sharing networks – initiated with the explosive growth in the number of Napster users in the summer of 1999 – marks a major shift in this respect. Over the following decade, a series of copyright reforms in all major markets have sought to adapt this type of IP to technological change, so far with limited success. The related public debate on copyright policy seems to have become more intense over this

period. There are even single-issue political parties concerned with so-called 'piracy' that have won a seat in the European Parliament and held a seat in the German Bundestag.[1]

Proponents of statutory intervention in order to reinforce the copyright system argue that without extensive copyright protection, there would be much less production of creative content, a reduction in diversity and hardship for creators, or that unauthorised copying is simply immoral. Those who are totally opposed to such interventions believe that a strong copyright system is associated with too much centralised control over culture, leads to the exploitation of consumers and creators by large corporations, holds back artistic development, cultural diversity and technological change, and inhibits freedom of expression.

Arguably, a problem with the debate on copyright is the abstract level of principled arguments on which it often takes place, detached from concerns for what is going on in reality. Many contributions by economists concerned with digital copying are a case in point. The quote from Coase (1960) preceding this chapter expresses the shortcomings that principled argumentation may have in order to produce results that have any relation to what occurs in real markets. The assumption underlying this dissertation is that the ultimate purpose of economic theory is to provide valid, non-trivial predictions about phenomena not yet observed (cf. Friedman, 1953). What is more, the economics of copyright is regarded to be a field of applied economics that is concerned with existing policy in real markets and in particular with the effects of alterations to the copyright system that have occurred or that are likely to occur in the near future. Of course, it is enlightening to identify the essential issues raised with regards to copyright in their most general terms. It seems to make little sense, however, to derive any lasting satisfaction from studying the economic effects of copyright under assumed market conditions that are improbable so that the behaviour of real markets diverges frequently and substantially from theoretical predictions. The ultimate test for the validity of theory is therefore not just logical consistency but the consistency of theoretical predictions with empirical results.

Two other central ideas shape the way in which copyright is addressed in this dissertation. First, public copyright policy is a means to promote innovation in the regulated markets and it should be analysed as such. Second, the sudden and rapid diffusion of digital copying technology[2] provides a rare opportunity to study the consequences of unauthorised copying – and thus also of its countermeasure that is copyright protection – in a natural experiment (Liebowitz, 2004).

[1] The Swedish 'Piratpartiet' won 7.1% of the vote in the European election on 7 June 2009 and holds two seats in the European Parliament in 2010. The German MP Jörg Tauss, an expert on information policy, was evicted from the 'Sozialdemokratische Partei Deutschlands'(SPD) after allegations that he had downloaded improper content from the Internet himself and joined the German 'Piratenpartei' in June 2009. He lost his seat with the convention of the new Bundestag after the general elections in the fall of 2009.

[2] File-sharing has received a lot more attention in the economic literature than home-copying equipment for physical carriers of digital data. The term 'digital copying' is used to refer to both these techniques at the same time.

Of the limited number of empirical studies that are concerned with digital copying, the majority has addressed the record industry. The primary market for sound recordings has become emblematic as an example for the consequences of unauthorised digital copying on rights holder revenues. It has drawn attention for two roughly simultaneous events: first, early on the swift diffusion of new copying technologies – file-sharing networks and CD-burners – brought a surge in unauthorised copying of sound recordings; second, in most major markets, sales for authorised copies of recordings have fallen substantially in the presence of digital copying (see chapters 3 and 5). Many have inferred from this example that a continued erosion of the copyright system would come to wreak havoc on markets for information goods and services more generally.

This dissertation produces a relatively detailed and unique account of the tempestuous period in the record industry after the emergence of file-sharing networks. It revolves around the question how changes to the copyright system in the course of 'digitisation' affect innovation in the record industry, rather than rights holder revenue.[3] It goes to show that the existing economic literature on copyright has entirely missed some momentous developments that coincide with the diffusion of digital copying technology and that affect the case for copyright.

1.1 THE STRUCTURE OF THIS DISSERTATION

This dissertation comprises of three parts, each of which addresses a different aspect of changes in the record industry with the diffusion of digital copying technology. By itself, each part follows an orthodox structure of theory followed by empirics and they could each be read as self-contained pieces of research. At the same time, these parts build upon each other in the sense that the empirical findings of earlier parts (many of which are inconsistent with predictions from conventional economic theory) motivate the choice of theory and research questions of the later parts. There is thus an element of induction as championed by Blaug (1998).

Part I starts with a review of the economic literature on copyright and unauthorised copying (chapter 2). This literature rationalises copyright as a costly means to promote the supply of protected works where it would otherwise fall below a socially desirable level. It follows that, ceteris paribus, the diffusion of digital copying technology will cause a diminution of supply in the affected cultural industries. In order to make the case for copyright, there is thus a need to gauge the effects of unauthorised copying on the supply of

[3] The term 'digitisation' is often used to refer to the process in which information is captured as binary, digital code. In this dissertation, 'digitisation' refers a broader process, in which increasingly powerful digital information and communication technology (ICT) is applied for a variety of activities throughout the "literary, scientific and artistic domain" (WIPO, 1971) regulated by copyright law. More generally, 'digitisation' is the process of extending the application of digital ICT in the production and dissemination of goods and services.

creative works. In line with this argument, part I continues to conduct the first empirical study of the impact of digital, unauthorised copying on the supply of copyrighted sound recordings (chapter 3). The surprising result is that in the case of the German market, there is no evidence for a diminution of supply with greater unauthorised copying and a severe recession after 1998.

This counter-intuitive finding motivates part II (chapters 4 to 12). Here, an alternative account of developments in the record industry is advanced (chapters 4 to 7), which may be more consistent with observations. The second part draws on the specialised literature on cultural industries and introduces a number of complications in this sector, which might explain why no straightforward positive relationship is observed between excludability, copyrights holder revenues and the supply of copyright works. A particular emphasis is put on theories of innovation and technological change. The central hypothesis is that the record industry is going through a period of radical technological change, which coincides with the diffusion of digital copying technology. In order to validate this hypothesis empirically, a test for Schumpeterian creative destruction is conducted on the basis of extensive data on the German market. Intense creative destruction is often associated with the early stages of radical technological change. Indicators for creative destruction include the number of market entries and the innovation intensity of the industry. The test produces substantial evidence that the industry is going through a process of creative destruction. A central finding is a boom among fringe suppliers and numerous market entries in the presence of digital copying and in spite of a severe recession for the record industry at large.

Part III discusses some hypothetical explanations for the resilience of supply and of fringe suppliers and reviews the relevant empirical evidence (chapters 13 and 14). Among other things, part III presents some evidence on the costs and benefits of the copyright system for smaller record companies and thus whether an erosion of the copyright may even have promoted growth in this segment of the industry. The concluding chapter outlines the implications for the economics of copyright and copyright policy.

Altogether, this dissertation covers substantial ground, and different readers will be most interested in different aspects of it. Each chapter is written with the intent to make it comprehensible by itself, or at least to point out where key preparatory arguments are found in other chapters, while keeping repetitions at a minimum.

1.2 THE BROADER RELEVANCE OF THIS RESEARCH

This dissertation advances methods for studying innovation in cultural industries, and it provides empirical insights concerning the evolution of the record industry in the presence of digital copying. While the focus is on the economics of copyright throughout, aspects of this research will be of interest for a number of other research areas and policy debates, including the following.

First, this dissertation develops on methods to identify radical technological change as an ongoing process rather than with historical hindsight. This should be useful for applied research on technological change. Second, the data on the record industry will be of interest for research on business cycles in the cultural industries and the role of small, independent firms for innovation in this sector. Third, over the last two decades, many countries developed new policies to harness the cultural industries for the creation of high-quality jobs and the regeneration of deindustrialising urban areas (e.g. ECom, 1995; 1997; OECD, 1998). The protection of intellectual property rights (IPR) tends to play an important role in such strategies and this research may help to refine the understanding how copyright can contribute to long-term growth. Today, many worry that some ICT applications would undermine commercial markets if the state does not intervene as a custodian of established, private enterprises. In this context, it is a fundamental question whether IPR need to be managed by public authorities rather than by rights holders themselves. According to the results presented in this dissertation, the case for more extensive statutory intervention of this type is weak.

The following chapter initiates the investigation by summarising the economic literature on copyright and highlighting a number of gaps in this literature that this thesis is concerned with.

PART I.
THE ECONOMICS OF COPYRIGHT AND THE SUPPLY OF PROTECTED WORKS IN THE PRESENCE OF DIGITAL COPYING

Overview. The first part of this dissertation focuses on the economics of copyright and the consequences of widespread, digital copying according to this literature. Chapter 2 surveys the economics of copying and copyright. The basic economic rationalisation of copyright is that it lifts the supply of protected works closer to a socially desirable level. More advanced analyses raises several other points. First, neither the social effects of a copyright system nor the effects on the private welfare of rights holders are entirely straightforward and recent technological changes may have affected the desirable level and type of copyright protection. Second, the diffusion of digital copying technology – in particular the widespread use of file-sharing networks – coincides with a severe recession in most major markets for sound recordings and many empirical studies imply a causal link between these two phenomena. Third, empirical studies concerned with digital copying have focused almost entirely on rights holder revenues, which by itself is not sufficient to make the case for publicly financed countermeasures. Chapter 3 addresses the link between unauthorised copying and the supply of copyright works. It uses quantitative data on the supply of musical sound-recordings to determine whether digital copying coincides with a diminution of supply.

2. THE ECONOMICS OF COPYRIGHT[4]

2.1 INTRODUCTION

Copyright plays a pivotal role in the cultural industries, which supply reproducible cultural products as mass media content.[5] Copyright applies to virtually all cultural creations that have been published over the last five to seven decades.[6] Arguably, it is the most important public intervention aimed at regulating markets within the 'literary and artistic domain' (cf. WIPO, 1971).[7] Copyright defines who is entitled to reproduce a protected cultural product, who may make it available to the public and who may modify it. This has obvious implications for the commercial use of cultural products and ultimately for who gets to consume them. For the cultural industries, it does not get more central than this.

Over the last years, much of the copyright regime has been put into question. Rights holders have found it difficult to enforce their exclusive rights to digitally captured copyrighted works. Many users circumvent copyrights on the Internet or by forwarding copies of protected works on CD-Rs or DVDs to third parties. A surge in unauthorised copying has probably been the most significant development in the market for recorded music over the last decade. The market for other reproducible cultural products such as television broadcasts, feature films and other audiovisual media content have exhibited similar developments more recently. The response in most major markets has been to extend the scope of copyright law and to increase investments into enforcement measures – some of these investments being public and some private.

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[4] This chapter draws extensively on the author's work with Ruth Towse and Paul Stepan, as presented for example in Handke, Stepan and Towse (2008) and funded by the Fundación Autor, Spain. I am grateful to the other two authors for their permission to draw on our common efforts. The bulk of this chapter is lifted from a literature survey authored for the *Strategic Advisory Board for Intellectual Property* (SABIP), UK (Handke, 2010). I appreciate SABIP's consent to use of this material in this dissertation. All mistakes are undoubtedly mine.

[5] For convenience, this study frequently uses the term 'copyright' to refer to copyright law per se and as shorthand for the copyright system that entails both law as well as the measures to administer and enforce legal entitlements. The expression 'copyright works' refers to all products covered by copyright law and 'copyright industries' refers to any industry that produces and sells copyright works. The exact scope of these industries is thus subject to specific legal arrangements that may differ between different territories and that may change over time. The use of these two terms should not, however, be taken to mean that the exact scope of products covered by copyright law is economically justified. The English expression 'copyright' covers both authors' and performers' rights and is used in this broad sense throughout this dissertation.

[6] Copyright applies automatically and without prior test of the quality of an original publication. The duration is harmonised among EU member states to cover 70 years after the death of the author or 50 years after the publication date for performers' 'related rights'.

[7] Article 2 of the Berne convention (WIPO, 1971) gives a complete definition of the kind of creations that are covered by copyright law.

These extensions of the law and increased enforcement measures are of great importance for the way cultural products are handled in new digital information networks. Among security concerns associated with ICT – say online fraud, privacy infringements, espionage, child pornography, cyberterrorism and sabotage via viruses – the un-authorised copying, making available and downloading of copyrighted media content is probably the one illegal use that involves most individuals as perpetrators. The debate on copyrights is an integral part of the process in which contemporary societies come to shape and employ digital ICT.

This chapter surveys the economics of copyright in order to identify the contribution this literature may make to predict the consequences of digital copying and the consequences of copyright protection, and thus to inform the debate on copyright policy. This chapter also identifies two fundamental gaps in our understanding of the case for copyright. First, many of the costs and benefits – and thus the overall welfare effect of copyright in real markets – remain ill specified. Most importantly, it is not well understood, to what extent the supply of creative works depends on copyright protection. Second, while the economics of copyright revolves around advances in copying technology, it largely ignores broader technological change and its consequences for the desirable level of copyright protection. Both of these gaps in the literature are of particular interest for the adaptation of the copyright system to the diffusion of digital copying technology.

The economic perspective of copyright and the scope of this chapter

There are two approaches to making the case for copyright systems (Hurt and Schuchman, 1966). The predominant justification of copyright in the Anglo-Saxon tradition is the utilitarian argument that copyright protection raises the supply of protected works closer to a socially desirable level. This perspective concentrates on total social welfare including user and consumer interests in access to a diverse supply. In many other important markets – including most continental European countries – creators' interests are privileged and copyright is justified in terms of the 'natural right' of creators in the output of their work or society's apparent obligation to reward them.

Natural rights arguments often simmer down to the notion that an author's exclusive right to his or her creation is self-evidently just (Hurt and Schuchman, 1966). A main criticism of this position is that it provides few guidelines on how to resolve conflicts within the copyright system. For example, authorship may be contestable and creators often build on each other's efforts as well as expressions in the public domain. There may also be conflicts between aspects of the copyright system and other values such as the freedom of expression (Hugenholtz, 2001) or competition (Boldrin and Levine, 2002; 2005). It is hardly surprising then that any copyright system entails limitations to the exclusive rights of authors.

Economics deals with the question of how trade-offs between competing ends can be resolved. The economic approach to copyright is based on two notions: first, copyright is not unconditional but may be subject to trade-offs with other objectives and values; second, copyright has a clear purpose and it is worth discussing whether this function is attained efficiently. As such, the application of economics to copyright is not necessarily incompatible with the natural rights argument for copyright. In any case, the focus of this study will be the utilitarian concern for social welfare.

According to the seminal European Directive on Copyright in the Information Society (DIR 2001/29/EC), the official aim of copyright is to promote "innovation and creativity" in the regulated sector.[8] The desire to safeguard copyright entitlements is a driving force behind attempts to insert a greater degree of control into information exchanges online. With this directive, the EU has begun to regulate central issues of copyright (especially relating to the digital environment) on the supranational Union level. It does not mention the protection of the 'natural rights' of creators.[9]

This chapter follows the economic literature on copyright in that it addresses copyright in a rather abstract manner. Economists often study the 'strength' of the copyright system in a generic way, as a representative of a number of dimensions in copyright law. The idea is that the basic trade-off between costs and benefits of copyright protection follows the same principle whether the duration of copyright entitlements, the specific aspects of creative works that fall under copyright provisions, the level of enforcement or the range of 'fair use' exceptions are concerned. For changes in each of these dimensions, the same questions arise: what is the immediate effect on suppliers' income and users' access? What is the effect on supply of copyright works and innovative use over time? The relative weight of these effects may differ substantially over time and between different copyright industries. That the analysis follows the same principle does not mean that it will bring up similar results.

The 'law and economics' literature deals with many of the more detailed questions in the administration of a copyright system that this study only touches on. Nevertheless, some of the theoretical-analytical issues that this chapter discusses apply to many contributions on the 'law and economics' of copyright.

This chapter also follows the economic literature by emphasising efficiency. Efficiency covers a wide range of topics concerning the economic justification of copyright. Equity matters

[8] The Directive does not mention the protection of certain 'natural rights' of authors to the works they created that are an additional justification for copyright in much of continental Europe – an approach that is alien to conventional economic reasoning. The basic argument for copyright is similar in the USA, where copyright is part of the constitution as an optional means to 'promote the progress of science and the useful arts'.

[9] On the application of economic theory to 'moral rights', 'performers' rights' as well as 'resale rights', see Towse (2006). Handke and Towse (2007) survey the economic analysis of collecting societies – one of the important aspects of the administration of copyright that largely remain beyond the scope of this dissertation.

have been largely ignored. The literature says little about the distribution of royalties (say between authors, performers and publishers) or about the costs of running a copyright system (who pays for the administration of copyright, for example). Neither does it pay much attention to distribution effects in favour of some types of economic agents at the expense of others that do not affect the static efficiency of the market.

Later chapters of this dissertation will contrast the conventional economics of copyright with a structuralist-evolutionary perspective. In this perspective, it may matter for the dynamic efficiency associated with endogenous technological change, if unauthorised copying has heterogeneous effects on different types of producers and bears on industry structure and the process of competition.

Other surveys of the quickly expanding literature on the economics of copyright include Raskind (1998), Gordon and Bone (1998), Towse and Holzhauer (2002), Haller (2005), Liebowitz and Watt (2006), and Handke, Stepan and Towse (2008). Copyright has also been included in more general surveys of the economics of IP by Besen and Raskind (1991), and Menell (1998).

The basic economics of copyright

Copyright endows creators with temporary exclusive rights – the rough equivalent of property – to their original creations. Some intermediary firms in the copyright industries are primary rights holders, too, and creators often pass on large parts of their copyright entitlements to firms that specialise in the exploitation of such rights (e.g. publishers and record companies). In practice, intermediary firms hold and commercialise the vast majority of copyright.

The most conventional economic rationale for copyright is that this institution provides an incentive to produce creative works, where this incentive would otherwise be below a socially desirable level. Copyright is seen to rectify market failure due to the partial non-excludability of cultural products and the peculiar cost-structure of cultural industries (see section 2.2).

Like any form of state intervention, copyright also creates costs. On the one hand, a copyright system entails administrative and enforcement costs that create a 'dead-weight loss' (Watt, 2000), meaning that they use up resources without producing a marketable product. This includes the transaction costs in trading copyrights. On the other, copyright is traditionally regarded to establish a monopoly that enables rights holders to charge higher prices than they could under competition (Plant, 1934). If copyrights are associated with higher prices, the copyright system generates access costs: consumers who value the work by more than the cost of making additional copies – the marginal cost – but less than the price being charged are excluded. In this perspective, copyright policy deals with a trade-off between the 'under-utilisation' and the 'underproduction' of cultural products (Novos and Waldmann, 1984). This trade-off is the focus

of many studies and it is sometimes presented as a trade-off between consumer and producer interests. However, copyright can also exclude creators who are deterred from building upon prior works because they are unwilling to pay the price the copyrights holder demands or incur the costs of obtaining the necessary permissions. It follows that "Paradoxically, too much copyright protection can reduce the number of new works created" (Landes, 2002: 13).

Some of the costs associated with the copyright system increase with the strength of the rights defined and the strength of enforcement (Watt, 2000; Landes, 2002). At the same time, economic models assume that copyright protection is subject to decreasing returns. In other words, there are limits to the desirable level of copyright protection, which is consistent with a number of exceptions and limitations to copyright.

Beyond this most conventional conceptualisation, surveying economics of copyright can be challenging. First, different analytical approaches have been taken – say neo-classical price theory, welfare economics or the property rights approach – and many writers on the subject interweave different approaches. Second, the scope of studies varies from the general case for a copyright system to the desirable level of the strength of copyright protection and to discussions of specific aspects of copyright law and regulations. A third important distinction is that between purely theoretical work and formal modelling on the one hand and empirical studies on the other. Finally, substantial changes in copying technology and the copyright industries have taken place over the last decade, which may alter some of the earlier conclusions about copyright.

2.2 THE EVOLUTION OF THE ECONOMICS OF COPYRIGHT

Copyright as (temporary) monopolies

Once only the preserve of a relatively small group of specialist lawyers, work on copyright is now established in a wide range of academic disciplines, as well as in interdisciplinary endeavours (see, for example, Frith and Marshall, 2004; MacMillan, 2005).

Adam Smith, writing in 1762, made brief observations on copyright law, which had been introduced in England in 1710, and on the copyright monopoly (or 'exclusive privilege' as he called it in his *Lectures on Jurisprudence*). Though normally a scourge of such monopolies, Smith regarded copyright (which in his day lasted for 14 years) as doing no harm and maybe even doing some good and so it was not 'altogether to be condemned' (Hadfield, 1992: 23). Later political economists were less charitable. During the great Patent Debates of the 19th century in Britain, copyright came in for some share of attention from Macaulay, who memorably stated: 'copyright is a tax on readers for the purposes of a bounty for writers' thus very succinctly summing up its political economic aspect. He also said in a famous quotation:

> *"Copyright is a monopoly and produces all the effects which the general voice of mankind attributes to monopoly […]. The effect of a monopoly is to make articles scarce, to make them dear, and to make them bad […]. It is good that authors be remunerated; and the least exceptional way of remunerating them is by a monopoly. Yet monopoly is an evil; for the sake of good, we must submit to evil; but the evil ought not to last a day longer than is necessary for the purpose of securing the good."* (Quoted in Hadfield, 1992:29-30).

It was not until 1934 and an article by Arnold Plant that there was a systematic analysis of copyright that could be called 'economics of copyright'. Plant's (1934) pioneering article was essentially based on an understanding of copyright as a monopoly and he introduced several related issues that the economics of copyright now addresses in terms of moral hazard, rent-seeking, or business models (Landes and Posner, 2003).

The earliest analysis of copyright by economists hinged on the statutory monopoly and the opportunity it affords copyright holders (authors and others) to raise prices, so that their revenues and incentives to invest in the creation of copyrightable works would be increased. This analysis implies that copyright relates to a trade-off between the 'remuneration of authors' and the 'evil' of monopoly. Abhorrence of monopoly has permeated economic thinking so that economists' attitudes to copyright have often been sceptical or ambivalent and the institution remains contentious until today (see section 2.6). However, the economic rationalisation of copyright has been refined since Smith, Macauly and Plant.

Refinements of the argument for copyright

In general, there are two ways in which the argument in favour of copyright has been refined over the 20th Century. First, copyrights are not perceived as pure monopolies anymore, which qualifies their disadvantages. Second, theoretical concepts related to the benefits of copyright have evolved so that these benefits are understood in more precise and widely accepted terms.

Monopolistic competition rather than monopoly

Products that fall under copyright legislation are often prime examples of differentiated, monopolistically competitive goods (Chamberlin, 1933; Yoo, 2005). They are heterogeneous and tend to have many close substitutes. Even though an effective copyright system prevents competitors to market virtually identical products, the market power of rights holders is restricted by the possibility of imitation and the presence of close substitutes. Therefore, the social costs of copyright due to monopolistic pricing are curtailed. That is, a rights holder that enjoys exclusive

rights to one of thousands of related copyright works – which satisfy the same need in similar ways – does not have a complete monopoly.

Copyright works as quasi-public goods

Copyright can also be justified as a means to organise the private financing of public goods (Demsetz, 1970; Liebowitz and Watt, 2006). This line of reasoning has developed into the prevailing justification of copyright since the 1970s and draws on contemporary theories of public goods (Samuelson, 1954) and information goods (Arrow, 1962). Information goods differ from most tangible goods because they tend to have some characteristics of public goods. On the one hand, public goods are non-excludable: exclusive (property-) rights to using them cannot be enforced. On the other, public goods are non-rival: use of one individual does not inhibit use by others. Markets for public goods exhibit a particular type of market failure. Since a perfect public good benefits anyone, regardless of whether they invested in the production of the good, there are deficient incentives for rationale individuals to participate in the production costs. Users can act as free riders and hope to benefit when other provide for a public good. In a free market, free riding leads to an insufficient supply of public goods.

Copyright works are rarely perfect public goods but they are regularly hard to exclude and at least important aspects of them are non-rival. They are 'quasi-public goods' (Bone and Gordon, 1998). When copyright works are hard to exclude, they tend to give rise to positive externalities. A part of their benefits arise in the use by those who do not contribute to the production costs and the market value of such copyright works does not reflect their full social value.

An effective copyright system increases the excludability of protected works. Copyright aims at putting rights holders in a position in which they can inhibit use not authorised by them. Rights holders may thus be able to raise revenues that are closer to the overall value of the protected works they supply.[10] In this perspective, copyright fosters pecuniary incentives to supply protected works. In contrast to subsidies, copyright is a means to counter the underproduction of quasi-public information goods that retains much of the coordination mechanisms of markets, albeit a monopolistically competitive one. The copyright monopoly allows the copyright owner to charge a price above the cost of making and marketing copies of the work until such time as the copyright expires. Thereafter the work enters the public domain and becomes a public good in the economic sense that it is non-rival and non-excludable.

[10] Transaction costs in a market for copyright may restrict the benefits of copyright for rights holders.

The peculiar cost-structure of copyright industries

For information goods such as copyrightable works, the fixed costs of producing the original first copy tend to be high, while the variable costs for reproducing and marketing it are often very low (Pethig, 1988; Landes and Posner, 1989). In the following, this cost structure is referred to by the acronym 'hifilova' for 'high fixed and low variable' costs. For example, the costs of shooting a film are often in the millions of Euro, while a copy of a finished film in the conventional end-use format (say a DVD) can be produced for less than a Euro. This cost-structure entails two further rationalisations for copyright.

First, it aggravates the incentive problems due to the characteristics of copyright works as quasi-public goods. The higher the fixed development costs are in comparison to the variable reproduction costs, the greater will be the cost advantage of free-riders. Of particular interest is the disadvantage of those suppliers that invest in the development costs relative to suppliers that do not. Free-riding commercial users do not have to redeem the costs of producing the original first copy and they can offer copies at the pure reproduction costs. What is more, free riders could avoid the need of testing the uncertain market for new copyright works (Towse 2000: xvi). Under the specific cost-structure of information goods, creators and those compensating them will thus find it particularly hard to recoup the development costs. The supply of new copyright works will fall below the socially desirable level. Copyright is a means to protect those investing in the development costs from commercial copycats. In contrast, the positive externalities that directly benefit end-consumers are often tolerated (see section 5).

Increasing returns

The typical, hifilova cost structure in copyright industries underlies a further development in the rationalisation of copyright: the application of the concept of increasing returns (Shapiro and Varian, 1999). Increasing returns is a feature of the underlying production function for a given state of technology, which means that efficiency increases as more units are produced. For many information goods, the marginal costs of producing another copy virtually never rise. Thus, the average costs of a supplier fall with every expansion of the number of copies she supplies. For the economic understanding of markets for information goods, it is an important insight that therefore, in a free market, a profit maximising pricing mechanism cannot be based on marginal costs. Digital information goods are an extreme example of low and non-increasing marginal (re-)production costs.

One of the implications of increasing returns to scale is what economists call 'natural monopoly'. A natural monopoly is a situation in which a monopoly supplier is able to supply the market more efficiently than if there were competition between several smaller suppliers. In theory, government regulation can mitigate the adverse effects of a natural monopoly and even

achieve an optimal result. For example, regulators may require the monopoly producer to introduce a two-part tariff that approximates marginal cost pricing combined with some other charge covering the fixed development costs. That, however, has not happened in many copyright industries (except, perhaps, in the special case of broadcasting). Price discrimination could likely achieve the same result through the market, as will be discussed below (Shapiro and Varian, 1999; Boyle, 2000).

So far, it is not clear whether increasing returns in markets for digital information goods will prove to be strong enough to result in a natural monopoly. Countervailing factors over time include the volatility of demand for many cultural products and great innovation intensity, which imply that suppliers do not only compete on price but also on product characteristics. What is more, fixed costs and variable reproduction costs can be quite low in absolute terms so that the resulting entry barriers may not always be of great importance in practice. In volatile and highly contestable markets, stable monopolies over time that exert a great influence on prices might not be feasible.

Where the conditions of a natural monopoly do prevail, copyright would be less of a restriction to competition. Copyright would rather just ensure that those investing in creativity are the first who enjoy an eventual monopoly. Digital information goods would be under a dual monopoly: on the one hand, the statutorily created copyright, on the other, the spontaneous market development of the natural monopoly. Furthermore, policy-makers may use copyright policy not only to foster incentives for innovation and creativity but also to regulate markets that tend towards natural monopolies.

2.3 SPECIFIC APPROACHES TO RATIONALISING COPYRIGHT IN ECONOMIC TERMS

The ‘big question’ in the economics of copyright is whether public investments in the copyright systems are justified in terms of promoting total social welfare. In much of the economic literature on copyright, the focus is on the rationalisation of copyright on an abstract level. Much of the argument makes no distinction between exclusive rights of reproduction, making available, distribution or modification of a copyright work. The distinction between authors’ and performers’ rights is not of interest, either. What is more, for the sake of clarity even the ‘strength’ or ‘level of protection’ of the copyright system are discussed in a generic way, subsuming under these terms the threshold requirements for its application, its scope, duration and the effectiveness of enforcement (cf. Towse and Holzhauer, 2002). Arguably, many relevant (and some original) insights are still to be had on this abstract level that helps keeping the complexity of the argument on a manageable level.

There are two main approaches in which this big question has been tackled. One is welfare economics and one is the property rights approach. An important difference is that the latter approach tends to take the need for unambiguous property rights for granted.

Welfare economics and cost-benefit analysis

From the early contributions to the field one can see that copyright has always been somewhat ambiguous for economists. Some economists oppose copyright on the grounds that the market could work well without it. Those who accept the case for copyright recognise that it has both costs as well as benefits to society as a whole. Welfare economics deals with questions that involve trade-offs.

Pareto optimality provides no a suitable guiding principle

In standard welfare economics, maximum social welfare is characterised by Pareto optimality – a situation in which there is no possible reorganisation of resources that can improve welfare for one member of the society without making another worse off. Welfare economics of this type is based on the insight in general equilibrium theory that if every market in the economy is free and perfectly competitive, markets will lead to a unique Pareto optimal distribution of resources. Under the additional assumption of decreasing returns, a stable and efficient equilibrium will be achieved by market forces. Pareto optimality cannot be achieved where market failures prevail in the market itself or any related market.[11] Reasons for market failures include the presence of unpriced goods (e.g. public goods or externalities), market power, missing markets (e.g. the lack of insurance covering risk or forward markets) or transaction costs. In applied economics there is thus a tendency to focus on the removal or mitigation of market failure, say by lowering distorting taxation, by competition policy, or by establishing unambiguous property rights. One attraction of this type of approach is that it seems to provide an option to discuss efficiency separately from any normative statement on equity. In addition, Paretian welfare economics might be seen to provide a general guideline for policy – the need to minimise market failure – that requires no detailed statement on the relative value of divergent interests among stakeholders.

However, this shortcut of Paretian welfare economics is hardly useful as a guideline for copyright policy. On a general level, Lipsey and Lancaster (1956) demonstrated that a partial removal of a distortion is not automatically welfare improving and thus no adequate general guideline for policy in the real world of inevitable market distortions. In the case of IP, there is a very specific reason why a 'first best solution' – a unique optimal allocation of resources as

[11] Pigovian welfare economics deals with partial equilibria in individual markets, which ranks slightly lower on a scale of implausibility than a general equilibrium (cf. Blaug, 1997).

envisaged in either Paretian or Pigovian welfare economics – cannot be achieved: IP does not remove market failure. It counteracts a market failure due to the quasi-public good characteristics of protected works and in the process it introduces other market distortions, due to the market power of rights holders or the transaction costs entailed in an IP system.[12] In other words, the statutory creation of copyright may 'privatise' the public good feature but it introduces a monopoly element and transaction costs, which interferes with a state of a perfect, competitive market as a necessary condition for welfare efficiency.

That is, copyright is bound to be a 'second best solution'. This implies that there is no universal rule to establish whether copyright is more welfare enhancing than its alternatives (Lipsey and Lancaster, 1956; Blaug, 1997a; Lipsey, 2007). At any time, the market is likely to diverge so much from a competitive equilibrium that in order to establish the overall welfare effect of copyright, the intricacies of identifying and weighing costs and benefits cannot be avoided.[13] There are two reasons for this: first, it is not clear at the outset whether copyright are a step towards an ideal market, since it counteracts one market failure while fostering others; second, it is not clear whether a copyright policy that would move the market closer to a perfect equilibrium would be welfare enhancing in the presence of other distortions.

Cost-benefit analysis

That said, many writers on the economics of copyright have adopted a welfare approach that seeks to identify the relative costs and benefits of this institution to society at large (e.g. Novos and Waldman, 1984; Hollander, 1984; Johnson, 1985; Besen, 1986; Besen and Kirkby, 1989; Koboldt, 1995; Bensaid and Lesne, 1996; Watt, 2000). Sometimes this takes the shape of specifying the divergent interests of different types of stakeholders. This literature has contributed greatly to the recognition of the various countervailing factors that need to be accounted for in order to assess the overall effect of copyright on social welfare. There is considerable overlap with the literature on the economics of copying, which will be reviewed below.

For many analytical purposes, it may be sufficient to treat unauthorised copying and copyright protection as two phenomena that are directly and inversely related. However, one

[12] Coase (1960:21) addressed this problem in general when he observed that conventional welfare economics focuses on removing deficiencies, while ignoring changes "inevitably associated with the corrective measure […] which may well produce more harm than the original deficiency."

[13] Nevertheless, Posner (2005) states that in general the optimal term of copyright is that the period of time over which the discounted future revenues from the copyright is equal to the discounted future costs due to the copyright. This principle, however, means that every copyright work should have its own duration, something that was recognised by Landes and Posner (1989) but rejected on the grounds that there must be a uniform term to minimise costs of disputes, etc. In other words, the principle is one thing and practicality another.

complication is that copyright protection entails some unintended consequences such as administration and transaction costs (like any for of statutory intervention).

Table 2.1 provides an overview of the various welfare effects of a copyright system. In the short run, the benefits of copyright protection accrue to rights holders who can raise some monopoly rents. The short-run costs of copyright are the administration costs and transaction costs that may fall on any of the stakeholders as well as access costs to users/consumers.

In the long run, the benefits of copyright protection are greater pecuniary incentives to supply copyright works and perhaps greater incentives due to the protection of 'moral rights'. Whether copyright does foster the supply of protected works in practice is an empirical question. Thus not even the direction of the effect of copyright on supply is a trivial question. That is because the short-run costs of a copyright system may inhibit user innovation, including follow-up creations but also novel ways of disseminating existing works.

Table 2.1: Costs and benefits of a copyright system

	Benefits	**Costs**
Short run	Monopoly rents for rights holders and control of types of use	1. Administration costs 2. Transaction costs in trading rights 3. Access costs to users
Long run	Greater incentives to supply copyright works for rights holders	User innovation is obstructed by costs associated with compliance

Important additions are the unintended consequences that statutory intervention will almost inevitably entail. These can be subsumed under the two concepts of administration costs and transaction costs.

Administration costs

The administration costs of a copyright system will typically fall on rights holders and public agencies. These administration costs create a dead-weight loss to society. It follows that the accumulated private benefits from copyright protection would have to exceed these administration costs for public investments in copyright protection to be justified (cf. Thorpe, 2004; Watt, 2004). A problem may arise where public authorities take on the bulk of the administration costs, while rights holders enjoy most of the direct benefits from protection. It might then be in the interest of rights holders to call for greater protection – and thus greater public expenditure on enforcement and other aspects of the administration of rights – than they would rationally pay for themselves.

Next to the efficiency of policy measures, the appropriate level of public investment in running a copyright system is a central issue in copyright policy. It needs to be addressed on the basis of a balanced view of the various costs and benefits of copyright – including all stakeholders.

Transaction costs

In line with the main focus of the property rights approach, transaction costs may be of particular concern, see also section 2.5. Markets for copyright works tend to be complex. As a result, the transaction costs that accrue just for the purpose of finding potential trading partners and negotiating the terms of trade can be very high. For rights holders, the fixed costs of administering any bundle of copyright thoroughly among all users can be very substantial. Rights holders need to set up procedures to monitor use, to prosecute copyright infringements and to establish the willingness-to-pay of various users. Users need to identify rights holders and avoid conflict. Both rights holders and users need to negotiate the terms of use including the price. Transaction costs are particularly problematic where copyright works have a relatively small value to many users (Besen and Kirby, 1992). Such a constellation requires many transactions and sometimes transaction costs might even exceed the market price for a licence to use a copyright work. In this case, no market will develop and both rights holders and potential users will lose out (Hollander, 1984; Besen and Kirby, 1992).

In the context of digitisation and technological change, transaction costs may be especially problematic. In a relatively stable market environment, routines develop in the market for copyright that may drive down transaction costs to some extent.[14] Where a market is characterised by great innovation intensity and some organisational inertia, new products and types of use may be developed that are not anticipated and catered for efficiently during an initial period.[15]

<u>The appropriate point of reference for a cost-benefit analysis</u>

A problem arises where the welfare gains and losses associated with copyright are discussed in comparison to the Pareto optimal outcome of a perfectly competitive market in which there would be constant returns to scale, marginal cost pricing, no public goods or externalities and no transaction costs. As argued above, a perfect market as envisaged in Pareto optimality cannot be

[14] An extreme case in point is the collective administration of rights. Collecting societies administer certain types of copyright for virtually all copyright works under blanket licences that stipulate standard prices and terms of use, reducing transaction costs substantially in comparison to individual administration of rights.

[15] Many economists writing on copyright oppose public intervention on the grounds that voluntary transactions in markets are the best way to approximate an efficient solution. It would be a slight paradox to call for hefty public investments in copyright protection at the same time. Others have called for public intervention to overcome market failure due to lock-in and missing markets.

attained fully and copyright is ambiguous regarding its approximation. Thus, it is misleading to address copyright as a solution to market failure. Despite claims or the implication that it can do so, copyright law cannot restore the economy to a first best Pareto efficient condition (see Towse and Holzhauer, 2002; also Landes and Posner, 2003).[16]

The ideal-type Paretian welfare approach serves to highlight some of the theoretical stumbling blocks for the economic analysis of copyright. Markets for information goods provide a good example of the multitude of distortions that render it virtually impossible to derive general, unchanging conclusions on the justification of public regulation, such as copyright. Copyright itself entails statutory monopolies and transaction costs as causes of market failure. The literature on markets for information goods recognises increasing returns, network effects or even natural monopolies and public goods characteristics as attributes of the 'information economy'. All of these features constitute market failures in the sense that they lead to deviations from a perfect market as envisaged in neo-classical economic theory.

Finally, each of these market conditions associated with market failure may change over time, for example due to technological developments. Technological change is itself a market 'failure' in the sense that it makes a static equilibrium unattainable. In the contemporary copyright industries, technological changes may shift the ground further. For example, the diffusion of digital copying technology among users aggravates any problems with the quasi-public good characteristics of reproducible cultural products. The same copying technology and other ICT-applications may help suppliers to reduce costs and establish new markets or to make the administration of copyright more efficient. In an online market with few geographical boundaries, increasing returns and network effects may become stronger at the same time as the market becomes more contestable. The conclusions of economists writing before digitisation – when the only means for unauthorised copying was resetting type or photocopying for printed matter or VHS and audio tapes for television and music reproduction respectively – are therefore at a considerable disadvantage when viewed in retrospect, however valid the analysis was at the time.

The property rights approach

Another approach to the economic analysis of copyright is the property rights approach. This perspective often has its origin in the so-called Coase theorem, which states that, subject to the cost of transacting, property rights will be traded in a free market so as to be allocated to the most valuable use (Merges, 1995). The conjecture is that as long as there are property rights, there is no need for state intervention because any disputes can be settled by negotiation and compensatory payments or, if that fails, through the courts. This approach obviates the need for

[16] The proper point of reference would be a world without copyright.

social welfare analysis and it plays a significant role in law and economics. Copyright is seen as a means to 'propertise' literary, dramatic, musical and other creative works, so that they can be used optimally (Posner, 2005). In this scheme, efficiency improvements would be had mainly from minimising transaction costs in the market for copyright, e.g. by lowering administration costs.

Besides taking recourse to the Coase theorem, property rights approaches to copyright may express the problem of rewarding creators simply in terms of the economic case for property (Depoorter and Parisi, 2003). The 'tragedy of the commons' has come to exemplify the need for unambiguous property rights. Where property, for example land, is commonly owned by rational, self-interested individuals, no one has an incentive to invest in its improvement.[17] Everyone attempts to 'free ride' on the investment of others, resulting in a stalemate where no improvement can be achieved. Economic efficiency therefore requires the establishment of property rights that enable the exclusion of users who do not contribute to the creation of value. Although copyright is a form of state intervention, in a property rights approach the emphasis tends to be more unequivocally on minimising the need for any other type of state intervention. Copyright's merit is presented in terms of establishing property rights where they otherwise would not exist so that a market can operate.

However, neither the Coase theorem nor the tragedy of the commons makes a comprehensive case for copyright. Regarding the former, it needs to be clear that the institution of copyright does not only define the rough equivalent to property; it also gives rise to transaction costs, which challenge any efficiency as envisaged in the Coase theorem. Potential users need to identify rights holders, acquire rights and ensure compliance with copyright, which may be a serious problem for innovative types of use not anticipated in standard agreements. Rights holders need to monitor use and fight infringements. Both parties need to negotiate prices and the terms of use. The costs of doing so often relate to a low value of any specific work for many individual users. Under these circumstances, large parts of the market may not be catered for because transaction costs exceed willingness-to-pay (Gordon, 1982; Besen, Kirby and Salop, 1992).[18]

Second, much of the 'tragedy of the commons'-argument does not apply in relation to copyright, since the protected works tend to be non-rival. The insight that information goods differ from tangible goods in this respect was introduced by Arrow (1962), who demonstrated that for non-rival information goods, free access is economically efficient. He consequently made

[17] The 'tragedy of the commons' assumes implicitly that agents play a non-cooperative game, that is there is no third party or social control mechanism that enforces individuals to act according to the common good.

[18] The emergence of collecting societies is to a large extent a response to the prohibitively high transaction costs in many markets for copyright.

the case for rewarding R&D through public finance. Thus, non-rivalry of information goods in general and copyrightable content in particular implies that the frequently argued 'tragedy of the commons' case for copyright law as a means of privatising (or 'commodifying') IP does not apply because there is no need to ration use in order to avoid depletion (cf. Lessig, 2002; Landes and Posner, 2003).

In spite of these shortcomings, the property rights approach raises several widely debated questions for the economics of copyright. For example, how rival are copyright works? Should copyright come to emulate conventional property rights by dropping its temporal limitations (Romer, 2002)? A most relevant contribution of this literature is that it draws attention to transaction costs in trading copyright and prepares a discussion on how these costs can be reduced.

Summary: short-cuts, dead-ends and the need for empirical research

In summary, the economics of copyright does not construct a cogent and comprehensive case for copyright. Neither welfare economics nor any property rights approach provides a conclusive, general justification for copyright in principle. That is because any effective copyright system entails transaction costs and market power.

Copyright entails both costs and benefits that need to be traded off against each other. The theoretical economic literature on copyright can help to develop a classification of the costs and benefits of copyright and unauthorised copying.

As long as there are countervailing effects on social welfare, a classification of costs and benefits does not remove the need for a detailed assessment of costs and benefits under specific market conditions. In order to determine whether copyright is welfare enhancing, its costs and benefits need to be weighed against each other, which requires an assessment of proportions.

In the current context, the cost-benefit approach of balancing welfare gains and losses has little credibility unless it is based on relevant empirical measures. Changes to relevant market conditions with technological change will affect the relative significance of the costs and benefits of copyright and thus the argument for copyright. The diffusion of digital ICT and its application for a great number of purposes in the copyright industries is widely expected to have far-reaching effects but it is far from clear how exactly the case for copyright is altered in the process.

Furthermore, most of the issues in copyright policy are not about adopting or abandoning an entire copyright system but about piecemeal changes to the various aspects of its strength and the level of investments in enforcing rights. So far the focus was on the justification of copyright in general. For questions about the desirable strength of the copyright system, even smaller changes in the market conditions matter.

2.4 THE ECONOMICS OF COPYING

Landes and Posner (1989) distinguish between the economics of copyright and the economics of copying. Whereas the economics of copyright focuses on the effects of copyright law, the economics of copying deals with the economic effects of unauthorised copying. These two issues are obviously related, since the possibility of unauthorised use including copying is the raison d'être of copyright. The difference is that the economics of copying revolves around the underlying problem in markets for information goods, and not around the specific solution that copyright policy may provide. That is, the economics of copying are useful to take a broader view and to reflect on alternatives to copyright policy.

A fundamental point in the economics of copying is that the development of copying technologies over time has made copying easier and cheaper. In the course of this development and through broader technological changes, the relative costs of producing originals, reproducing copyright works and consuming them are altering, too.

One issue in the economics of copying is the relation between rights holders' costs of generating copies and the costs of unauthorised copying. Where the costs of unauthorised copying exceed the costs of authorised copies – say because there are economies of scale in copying – unauthorised copying may lead to a welfare loss (Besen, 1986; Landes and Posner, 2003). Arguably, this effect will be less acute where the cost of (digital) copying is extremely low. Some even claim that the marginal costs of copying are approaching zero with the diffusion of digital copying technology but this point should not be exaggerated. The variable costs in terms of time and knowledge for the user are not negligible and the fixed costs of ICT hardware and Internet access will continue to restrict copying. This basic analysis raises a point that is still often overlooked in the public debate: ICT firms are likely to benefit where unrestricted copying boosts the demand for their products. The extent to which ICT firms appropriate the value of copyright works is hard to assess because ICT products and services are usually used for a variety of purposes.

Another central issue in the economics of copying is the relation between the fixed costs of creating the original, first expression of a work and the marginal cost of making unauthorised copies (O'Hare, 1985; Pethig, 1988; Pollock, 2007). The issue has been introduced in the previous section on the peculiar cost structure of copyright industries.

This section presents five further central issues developed in the economic literature on copying over the last twenty-five years. The related discussion of the shortcomings of copyright systems and alternatives to copyright is presented in a separate chapter below.

The underproduction and under-utilisation trade-off

Novos and Waldman (1984) considered the welfare effect of copying as a cause for underproduction and of copyright as cause for the underutilisation of protected works. In their model, consumers are indifferent between a legitimate and an illegitimate copy and hence are only interested in the costs of obtaining a reproduction. Under this assumption, the authors find analytical support for the underproduction hypothesis but very little support for the under-utilisation argument. As will be discussed below, empirical studies on digital copying have found consistently that most consumers do have a higher willingness to pay for authorised copies, which puts the applicability of Novos and Waldman's model into question.

Short-run and long-run considerations and product variety

Johnson (1985) noted that technological changes were making unauthorised copying by consumers cheaper and he discussed whether or not copying should be restricted. In contrast to most of the preceding literature, he addresses diverse tastes and incorporates product differentiation (imperfect substitutability) and consumer's preference for product variety into his formal model. That is in his model, the number of publications can relate to consumer welfare (with diminishing marginal utility), and not just the price of copies.

One of Johnson's (1985) results is of particular interest. He finds an important difference in the welfare effects of unauthorised copying regarding the short run in contrast to the long run.

In the short-run, unauthorised copying makes copies available at lower costs. Total consumption increases and consumers are better off, since their average surplus per work increases. Unauthorised copying harms suppliers of authorised copies, however, since it displaces demand for authorised copies and reduces suppliers' revenues. Therefore, in the short run, an indicator for the costs of unauthorised copying is any adverse effect on the revenues of suppliers of authorised copies. To make the case for public investments in counter-measures such as strengthened copyright protection, these costs of unauthorised copying need to be seen in relation to the consumers' benefits from extended access to existing works. In this short-run analysis, copyright policy trades-off supplier (rights holder) and consumer interests.

In the long run, the situation may be quite different. Over time, consumers who favour product variety may be worse off due to unauthorised copying. That is because suppliers will respond to falling revenues with a reduction in the number of new publications so that supply will dry up. In the long run, additional indicators for the costs of unauthorised copying are thus the adverse effects on supply. The scale of these long-run costs depends on the responsiveness of supply to any falls in rights holder revenues and consumer valuation of product variety.

To make the case for copyright in the long run, supplier surplus and the social value of any additional works supplied because of copyright protection need to be weighed against the

access costs of copyright. This additional consideration for the long run has two important implications. First, the net social costs of unauthorised copying in the long run may be much higher than in the short run. Second, in the long run, rights holder and consumer interests in some copyright protection may even converge.

Indirect appropriability

As an alternative to public interventions into the market for information goods such as copyright, Liebowitz (1985) introduced the idea of indirect appropriability. He demonstrated that the supplier might sometimes overcome adverse effects of copying on her revenue through market means, in particular by using price discrimination.

Price discrimination occurs when suppliers ask different prices for the same product. It can work where monopolistic suppliers know how different types of consumers differ in their willingness-to-pay and where they can segment the market. Liebowitz analysed the case of academic journals. In this case, publishers supply two distinct markets – that of individual subscribers and that of libraries. Libraries tend to be willing to pay a much higher price than individual subscribers would. Liebowitz examined the impact of photocopying and concluded that copying did not harm journal publishing because publishers were able to increase their revenues by using price discrimination. Though copying takes place in libraries, the higher price of library subscriptions compensated for the lost sales to individuals who would presumable otherwise have purchased the journal issue. Publishers were therefore compensated indirectly for unauthorised copying. Liebowitz provided empirical evidence that, in the case of journal publishing, these effects were strong enough to sustain publishers' revenues.

Besen (1986) utilised the idea of indirect appropriability to elaborate on different effects that private copying may have in different markets. In his model, consumers choose to copy if the costs of private copying are lower than the retail price of an authorised copy. As a rule, rights holders enjoy some market power, i.e. they have some control over the prices they can charge for authorised copies. One precondition for this is that unauthorised copying does not provide perfect substitutes for authorised copies. In Besen's analysis, the effect of private copying on producers' pricing decisions is ambivalent. Under some conditions they might raise the price of the original in order to profit from indirect appropriability. Consumers who plan to copy will be willing to pay the higher price when they purchase, while consumers who do not partake in copying will be excluded. If the price of authorised copies is only a little higher than the private costs of copying, publishers might bring it down to the level of the private cost of copying and hence compete with the copier. Where the price is reduced, consumers are generally better off and producers worse off.

File-sharing, indirect appropriability and rights holders' profits

Fourteen years on, Varian (2000) revived the discussion on indirect appropriability with a view to (file-)sharing and renting of information goods. He identifies scenarios in which sharing would lead to an increase in the producer's profit. Varian gives the example from the eighteenth century when libraries were first established. Beforehand, only richer people had the chance to read books, since only they could afford to buy them. Sharing enables the producer to cater for a segment of the market that otherwise would be neglected. In his analysis, people can share or buy, depending on the individual taste and budget.

In Varian's (2000) analysis, there are three constellations in which profits will increase due to sharing. First, when the transaction costs of sharing are lower than the marginal costs of production, suppliers could incur additional revenues from selling to a group of sharing consumers in which each individual has a willingness-to-pay below production costs. Second, when consumers do not value repeat consumption, renting at a fee below the purchase price may include low-value consumers. (In both these cases, it seems that problems for the supplier may arise when consumers with a higher willingness-to-pay share or rent, too.) A third scenario in which sharing will benefit the consumer refers to the possibility of price discrimination as discussed above.

Of course, the implications of 'sharing' (where several consumers make use of the same physical copy) may be different from those of copying (where new copies are generated). In a later paper, Varian (2005) models the effects of copying on pricing decisions by a (temporary) monopolist supplier. He treats unauthorised copying like a competitor entering the market. The monopolist reacts by changing his price-setting strategy. Using this model, Varian formally analyses the different cases described by Besen (1986), discussed above. Varian (2005) also developed an overview of business models that could allow suppliers of copyright works to operate profitably in spite of intensive unauthorised copying. The optimal price-setting strategy by rights holders depends on the specific market conditions. Some of these business models are based on the principle of indirect appropriability through price discrimination; others go beyond price discrimination. A short summary of business models in the presence of unauthorised copying will be presented in section 2.6.

In 2005, the Review of Economic Research in Copyright Issues (RERCI) published the results of a symposium on indirect appropriability, inviting Liebowitz and his contemporary writers to comment on the progress of this concept and to restate their ideas, particularly since in the interim, the advent of digitalisation had changed the nature of copying. Liebowitz (2005b) argued that the concept seemed in retrospect to have been important in its time for showing that all copying was not necessarily damaging to producers but that the concept had limited application and had been taken too far by some economists. Johnson and Waldman (2005) concur

that the idea is limited and show that where the market is flooded by copies – as appears to have been with the explosive growth in file-sharing and the diffusion of CD-burners – the price will be driven down to the cost of making copies; thus the market would fail to compensate creators and cover other fixed costs of production. On the other hand, Johnson (2005) shows that novel pricing strategies have developed and suggests that these could help to overcome some of the problems of copying.

Network effects

Network effects – also referred to as network externalities – occur where the benefit of a good increases with the number of consumers using the same kind of good. Illustrative examples are communication technologies such as telephones. The more individuals use a compatible device, the greater will be the benefit of the telephone for each user.[19] Like increasing returns that operate on the supply-side, demand-side network effects are associated with economies of scale and, if strong enough, they may establish a natural monopoly.

Takeyama (1994) addressed the network externalities that arise from unauthorised reproduction of IP and their impact on social welfare. Her argument is related to the concept of indirect appropriability, discussed above. Consumers who benefit from network externalities will have a greater willingness-to-pay. If producers manage to appropriate some of this additional willingness-to-pay, they may be compensated for the displacement of demand due to unauthorised use. Therefore, so the argument goes, producers may well be willing to tolerate unauthorised use that increases the network of users. Takeyama found that in the presence of network externalities, unauthorised copying could not only raise rights holder profits but also might cause an unambiguous Pareto improvement to social welfare (see also Bensaid and Lesne, 1996; Economides, 1996). She went even further, suggesting that due to network effects, there might be an increase in social welfare even in the absence of indirect appropriability as described in Liebowitz (1985) and Besen (1986).

Liebowitz and Margolis (1995) found these types of arguments highly exaggerated. One central objection is that network effects might not bolster overall demand if they are more important in determining which copyright works are consumed but less important in determining how many works are consumed.

[19] Where cultural products are concerned, network effects (or other bandwagon effects) are invoked to explain hits and superstar-effects.

2.5 LAW AND ECONOMICS – THE ECONOMIC ANALYSIS OF SPECIFIC LEGAL DOCTRINES

Economists have a tendency to ignore the legal detail of copyright law and differences between jurisdictions. In much of the economics of copyright, the interest is not copyright law per se but simply that it is a means to control copying. By contrast, the discipline of law and economics pays considerable attention to the intricate details of copyright doctrines. The field of law and economics is essentially inhabited by academics trained in law, who use the tools of economics to explain specific legal doctrines. This section surveys basic issues in the law and economics literature on copyright. Examples of topics addressed in this literature are: the principle that expressions rather than ideas are protected, which makes it easier to establish the validity of claims; the author's rights in derivative works (such as translations, musical arrangements, film scripts based on a book); the work for hire doctrine, which allows investors to become the original rights holders where they instigate a creative project; the duration of the copyright term; and the exceptions and limitations to copyright for private study and academic research, parody, criticism, etc., known as 'fair use' in US law and 'fair dealing' in the UK.[20]

The law and economics literature draws on several means of economic analysis, including price theory, welfare economics and public choice theory. However, Coasean economics has had a fundamental influence and the property rights approach as well as transaction cost economics are both widely used. The work by Landes and Posner (1989; 2003; also Landes, 2002) provides an illustrative example. They do not base their analysis on the concept of market failure, which plays a central role in mainstream welfare economics. They emphasise that copyright works are imperfect public goods and, when specifying the costs of copyright, they do not refer to market power. Instead, in their model, users' surplus decreases with increasing copyright protection because it becomes more costly to copy and because follow-up creators have greater costs. Overall, Landes and Posner (2003) place the focus on the optimal balance between the positive and negative incentives to creativity entailed by copyright, at which the creative output is maximised. To achieve that, the law must strike a balance between the protection of an author and the costs that copyright imposes on other authors, such as the costs of developing novel, non-infringing means of expression or of obtaining permission to use the copyright works of others (rights clearance costs). In their application of the deductive method of marginalist price theory, this equilibrium is to be found when the marginal cost of extra protection by copyright equals the marginal incentive increase it provides to authors.

[20] On the application of economic theory to 'moral rights', 'performers' rights' and 'resale rights', see Towse (2006).

The desirable strength of copyright protection

Landes and Posner's (1989) seminal model yields specific policy considerations concerning the scope and duration of copyright law and the fair use exception, which are different aspects of what they refer to as the 'strength' of protection. One of their conclusions is that economic efficiency indicates that there should be greater copyright protection for works that have greater social value. More generally, their analysis implies that copyright should be 'tailor-made' to each work rather than 'one-size-fits-all'. However, they argue that a 'tailor-made' regime has overly high transaction costs and therefore that copyright term has to be uniform. The transaction costs entailed by a copyright system have further implications for Landes and Posner's analysis. The costs of tracing copyright owners increase with the duration of copyright, providing a brake on the desirable length of the copyright term. Finally, the optimal strength of protection is greater, the more protection increases authors' supply and the lower the costs of administering copyright.

The duration of copyright

Recently Landes and Posner (2002; 2003) have changed their view on the duration of copyright, coming to favour indefinitely renewable copyright. They observe that the vast majority of copyrights are not worth renewing and that the costs of tracing works and other transaction costs therefore would not be excessive. Copyright could thus play an analogous role to trademarks, which can last indefinitely when renewed. Landes and Posner (2003) argue that indefinite renewability could reduce rent-seeking behaviour as witnessed in the so-called Sonny Bono extension to the US copyright term for corporations (for example, by the Disney Corporation). Lobbying to acquire economic benefits from the state, such as stronger copyright laws that favour copyright-holders, is analysed by public choice theorists as rational economic behaviour relating to political matters; potential gainers will expend an amount of money on lobbying up to the value they expect to gain from it. If copyright were indefinitely renewable, no further extensions of the copyright term would be possible and there would be no incentive for rent seeking concerning the duration of protection.

Recent extensions in the duration of some copyrights in the EU, EFTA and the USA were debated extensively among economists (see e.g. Akerlof et al., 2002; Liebowitz and Margolis, 2005; Png and Wang, 2009). In principle, the economic analysis of the desirable duration of copyright takes the same structure as the economic analysis of the strength of copyright in a broader sense (with a greater need for dealing with the discount rate for uncertain future income). There have been a few attempts to evaluate copyright term extensions empirically and these studies are reviewed in section 2.8.

Fair use exemptions to copyright law

An important topic in law and economics is the 'fair use' doctrine, which provides certain exemptions and limitations to copyright – e.g. use for academic purposes, review or parody. The term 'fair use' is a feature of US law. Similar exceptions and limitations to copyright are in place in the UK and in other legal systems but these have received less attention from leading authors in the law and economics literature.

In the US and the UK, exceptions and limitations are evaluated on a case-by-case basis. By contrast, in European countries exceptions and limitations to the author's exclusive rights are specified in the statutes, which stipulate situations in which the exclusive right of authors or subsequent rights holders to authorise use is limited and lists exceptions where copyright material can be used without the author's explicit consent and often without payment.

Gordon (1982) pioneered the application of transaction cost economics to the US fair use doctrine. According to Gordon, the underlying economic rationale is that a market can fail to develop – what economists call a missing market – when transaction costs of obtaining copies exceed the value of copies to individual users. This problem is virulent in markets for copyright, where transaction costs tend to be high in comparison to many users' willingness-to-pay (Besen, Kirby and Salop, 1992). On the one hand, transaction costs for copyright works tend to be high for several reasons: the enforcement costs of exclusive rights for intangible, non-excludable information goods are regularly higher than for tangible property that can literally be fenced in. Many markets for copyright works are also very complex: a great number of creators and other rights holders supply an even greater number of differentiated products that include an array of rights; the pricing of copyright works is notoriously difficult; there are also often many users with different characteristics. On the other hand, many users have a low willingness-to-pay. Under such circumstances, transaction costs are particularly likely to lead to missing markets. Collecting societies have been explained as organisations that reduce the average transaction costs in the market for copyright (Handke and Towse, 2007).

According to Landes and Posner (1989), an excessively strong copyright regime that tolerated little fair use would raise transaction costs and copyright-based earnings. Excessive protection would transfer rents from users to artists and raise the costs of creation to artists that seek to build on previous works. This could, in the long run, lead to a reduction in the supply of creative works. An excessively weak regime, on the other hand, would not provide sufficient incentive to look for means of charging and therefore would reduce both transaction costs and earnings. It would also ease what Landes and Posner called 'productive' (as compared to 'reproductive') fair use of copyright material for creating new and derivative works and benefit consumers. Fair use regulations within copyright law must balance these opposing tendencies. This analysis has been particularly important in the recent discussion on whether or not

downloading of copyrighted material from the Internet by private individuals should qualify as 'fair use' (Klein, Lerner and Murphy, 2002).

Furthermore, there has been some concern that the balance struck by fair use / fair dealing exceptions will be offset where self-help system such as digital rights management (DRM) and in particular technical protection measures (TPM) come to play a greater role in the administration of copyright (e.g. Foroughi et al., 2002; Erickson, 2003; Marsnik, 2004).[21]

Limitations to the economic analysis of copyright systems

As argued above, a perfect market as envisaged in Paretian welfare economics does not provide an adequate point of reference to evaluate copyright. This relates to inherent limitations in the economic analysis of the details of copyright law. To disentangle the economic effects of highly complex legal arrangements in real markets and isolate the import of increasingly minute details is challenging to say the least. This includes empirical studies. Multivariate analysis requires very good data on all relevant intervening factors, which is rarely approximated reasonably well in studies of the copyright industries. That said, sudden and substantial changes in important aspects of the copyright system – including changes in the market environment affecting de facto levels of copyright protection – provide opportunities to study the economic import of the altered arrangements under some circumstances, at least across the range of the alteration.

2.6 ALTERNATIVES TO COPYRIGHT AND CRITICISMS OF COPYRIGHT LAW

This chapter began by presenting a range of arguments that are used to make the economic case for copyright law. Whatever the economic rationale supporting copyright, there have always been some authors who have challenged the case for copyright. Several critical points can be distinguished. On the one hand, it has been argued that unregulated markets would eventually approximate a reasonably efficient solution without statutory intervention. On the other, it has been argued that there are alternative types of statutory intervention that may be more efficient. Furthermore, even when taking a copyright system as a given, specific aspects of this institution have been criticised because they may diminish the contestability of regulated markets and restrict technological change.

[21] DRM can refer to the application of advanced 'digital' ICT to administer all types of copyright. DRM can also refer to the more narrow task of the administration of copyright for works that are distributed as binary (i.e. digital) code.

Market solutions to unauthorised copying - the adaptation of business models

The most fundamental objection to copyright is that the regulated markets would function without any statutory intervention. The suggested market solutions to the threat of unauthorised copying include first mover advantages (Boldrin and Levine, 2002; 2005), joint sale of complements, versioning (Varian, 2005), indirect appropriability and price discrimination (Liebowitz, 1985) or even network effects (Takeyama, 1994). Liebowitz (1985) and Johnson (2005) document examples of firms that develop new business models and manage to operate profitably in spite of unauthorised copying.[22]

Boldrin and Levine (2002; 2005) argue that freedom of contract and first mover advantages are a sufficient basis for a competitive market of ideas. Though describing themselves as conservative economists, they find that well-defined property rights are less important than unhindered competition. They argue that IP has come to mean not only the right to own and sell ideas but also the right to regulate their use. This contrasts with the situation in many other markets. For example, no one selling potatoes could limit their use and consequently sue the inventor or producer of chips for using potatoes without a licence. To Boldrin and Levine, existing copyright arrangements create a socially inefficient monopoly and they claim that what is commonly called IP should rather be called 'intellectual monopoly'. This view appears to be diametrically opposed to the natural rights or droit d'auteur approach taken in continental Europe.

Alternative statutory intervention

Other authors concede that there is a general case for public innovation-enhancement measures in markets for 'literary, scientific and artistic' works but they investigate alternatives to copyright. Where there are alternatives, the point of reference in determining the desirability of a copyright system is not only an unregulated market. The effects of a copyright system also have to be compared to the effect of alternative statutory intervention.

For information goods, Arrow (1962) assumes that exclusive property rights cannot provide an efficient solution because these types of goods have characteristics of public goods. Copyright works that can be reproduced as digital code without loss of value approximate the state of a perfect public good, for which Arrow suggests public provision or the public compensation of producers. Plant (1934) came to a similar conclusion before the contemporary theory of public goods had taken shape.

Economists have also studied a range of transfer mechanisms at the disposal of public policy-makers that could provide an alternative to copyright. These alternatives include: (1) levies on copying technology such as CD-Rs or computers (Farchy and Rochelandet, 2002); (2)

[22] These market solutions need not erode the case for copyright altogether, when they only allow producers to mitigate parts of any problem associated with unauthorised copying.

direct subsidies to producers (Plant, 1934; Hurt and Schuchman, 1966); or (3) stipends and awards (Shavell and van Ypersele, 2001). Shavell and van Ypersele (2001) argue that an optional system of stipends and awards (which they assume could also be organised privately) could replace part of the IP system and that a combination of both options could be more efficient than a copyright system as the only public innovation-enhancement policy.

An obvious problem with levies, public subsidies and even awards is that they are bound to replace the market mechanism with central control at least in part (e.g. Snow and Watt, 2005; Handke and Towse, 2007). Concerns with digital copying have been a central issue in the record industry for over a decade and the digital market has failed to fulfil many expectations so far. More extensive statutory intervention should have become more appealing over this period and there are several alternatives to public investment in copyright enforcement.

Specific issues with the copyright system

Several economists have also discussed specific shortcomings in the existing copyright system, without necessarily challenging the case for copyright in general.

The relationship between creators and intermediaries

There are objections that copyright does not act as an incentive to creators anyway but just protects business interests that exploit copyright. Towse (2001) holds a less strong version of this, arguing two points. First, the greater economic power of corporations in comparison to that of individual artists (creators and performers) means that the artists are not likely to get a good deal. Her evidence suggests that copyright does not yield much in the way of earnings for any other than superstar artists and that the bulk of revenues end up with intermediaries (see also Kretschmer, 2002; Gayer and Shy, 2006).

Second, artists are motivated not only by monetary reward. Peer recognition, which is usually involved in prizes as well as moral rights that protect the artist's reputation and the integrity of their work may also be a significant factor in the support artists gain from copyright and in particular authors' rights (cf. Towse, 2006).

Where digitisation lowers the fixed costs of recording, reproduction, distribution and effective promotion, creators may find it easier to go it alone. There is limited evidence that disintermediation does take place but the mere possibility may strengthen the negotiation position of creators against intermediaries. What is more, falling fixed costs may also increase the rivalry between intermediaries in the copyright industries. By contrast, even greater integration of markets seems feasible with the emergence of digital markets. If copyright hinders the adoption of new business models and technological innovation (see below), it may sustain the status quo.

The contestability of the markets for copyright works

Another point related to divergent interests between different types of suppliers is that some unauthorised copying may actually favour fringe suppliers and newcomers over larger, incumbent rights holders and make the market more contestable. An interest in the contestability of the market in the presence of unauthorised copying has sprung from empirical results, which will be discussed in section 2.8 (see also chapter 4).

In any case, there seems to be a tendency in the economic literature on copyright to ignore concerns for market power of major intermediary rights holders and the contestability of markets. This contrasts with a number of anti-trust cases broad against the suppliers of copyrighted works such as sound-recordings or newspapers over recent years.

Inflexibility

A further criticism of the copyright system concerns its inflexibility (Shavell and Ypersele, 2001). The copyright system leaves rights holders with little choice to vary copyright protection, say if they prefer free access of parts of their repertoire for a time in order to develop markets.

It seems hard to imagine that a 'one-size-fits-all' copyright system would provide an efficient solution across the entire range of copyright works from recordings of popular music to newspaper articles and academic research papers. What is more, fringe suppliers and newcomers may favour a lower level of protection and lower prices for use than well-established incumbents (see section 2.8). Landes and Posner's (1989; 2003) formal analysis implies that it would be optimal to devise a tailor-made level of copyright protection for every copyright work. However, incomplete information and transaction costs have rendered this solution impractical.

There is not necessarily a binary choice between a single, 'one-size-fits-all' copyright system and a tailor-made system. For example, 'some rights reserved' (rather than 'all rights reserved') is the buzz phrase of the Creative Commons initiative. Creative Commons seek to establish a more flexible solution to the definition and management of rights, giving rights holders scope to claim only parts of the rights entailed in copyright law, so that a multitude of different licences becomes feasible. Creative Commons licenses aim to provide suppliers with greater flexibility and users with greater freedom. Paradoxically, even though such a fragmented system of copyright would imply that many uses would no longer require an explicit license agreement, it could come to increase some transaction costs. After all, the complexity of a more flexible system would probably increase considerably and users would have to establish what type of arrangement applied for each specific work.[23] A similar objection was raised by Landes and Posner (2003) regarding the custom-made duration of copyright for works. Technical protection measures could help to reduce transaction costs and reduce the costs of flexibility.

[23] Under a Creative Commons licence, different logos are used to signal various types of copyright arrangements.

This situation is reminiscent of the so-called 'anti-commons', the antithesis of the 'tragedy of the commons'. Anti-commons refers to a situation in which property rights are so de-bundled, and ownership or control so scattered, that the transaction costs to co-ordinate the various rights holders become too high to allow for profitable use of the property (Depoorter and Parisi, 2003). Recent extensions in the coverage of copyright and specifically in the types of producers who are entitled to copyright may have aggravated this problem

Copyright and technological innovation

Last but not least, a number of authors have argued that the statutory monopoly that copyright entails could hold back new types of use (e.g. David, 1993; 2004; Boldrin and Levine, 2002; 2005). The criticism that the copyright system would restrict technological innovation is of particular interest during the context of digitisation in many copyright industries. This issue will be extended upon below.

2.7 TECHNOLOGICAL CHANGE AND DYNAMIC ANALYSIS OF COPYRIGHT

In economics, the distinction between static and dynamic effects is important and this difference is of particular significance in this dissertation. Static analysis focuses on allocative and productive efficiency in the short run. It may describe the equilibrium state of an industry in a given, constant environment and state of technology. It may also elaborate on the effects of an isolated, clearly defined change on this equilibrium, holding all other things equal. By contrast, dynamic analysis allows for induced changes such as endogenous innovation and technological change over time, often as the result of conscious efforts to adapt to changing market conditions (e.g. Nelson and Winter, 1983). Many of the formal models that economists use are static, often for no better reason than that dynamic models are very difficult to formulate (Liebowitz, 2005b; 2006).

Are the economics of copyright static or dynamic?

The distinction between static and dynamic analysis of copyright was made clearly in Johnson (1985), discussed above. However, static and dynamic effects are easily confused (Towse and Holzhauer, 2002) and many writers seem to slip all too readily from static to dynamic reasoning, as noted by Landes and Posner (2003). The main research stream in the economics of copyright blends static and dynamic arguments in a noteworthy manner.

In the short run, the benefits of copyright accrue to the rights holders who can raise prices. The short-run interest of consumers is the cheap and easy access to existing copyright works, which copyright restricts. In a consistent application of static, short-run analysis of the welfare

effect of copyright, this institution is thus addressed as trading-off the interests of producers and consumers (Johnson, 1985; for an empirical study based on this reasoning, see e.g. Rob and Waldfogel, 2005). Taking into consideration Landes and Posner's (1989) concern for the cost of copyright protection on follow-up creations, it might be more adequate to speak of a trade-off between the interests of rights holders and users. There are three types of users who may be adversely affected by copyright: first, end-consumers; second, creators seeking to incorporate aspects of copyright works into their own creations; third, organisations that wish to incorporate copyright works into other types of product. Overall, in the short run, copyright seems to benefit rights holders over users.

The conventional justification of copyright goes beyond this static analysis at one point. It is argued convincingly that over time, copyright may benefit users, because the expectation of copyright protection motivates investments in creativity and innovation at present and increases future supply. Acknowledging these dynamic incentives deflates the case against copyright due to the welfare loss of users in the short-run. It is even possible that rights holders' and users' interests do converge in the long run – or more precisely, that the short-run benefits to users from unrestricted copying are unsustainable. Rights holders' interest in copyright protection may thus coincide with users' long-term interest. Over time, an adequate level of copyright protection could thus increase the welfare of producers and consumers simultaneously, if consumers gain more from increased future supply than they loose from current access restrictions due to copyright and the transaction costs entailed by the copyright system. In this understanding, the case for copyright tends to be much less ambiguous than in a consistently static analysis. Analysts seeking to justify copyright as a whole might be spared the task to trade-off user and rights holder welfare.

The benefits of copyright's innovation-incentivising effect for users play a central role in the economics of copyright. As will be discussed in section 2.8, empirical studies on the impact of digital copying rarely even address any trade-off between the interests of rights holders and users. At the same time, other time-dependent consequences like endogenous technological change are excluded in most contributions to the economics of copyright.

Arguably, this constitutes a noteworthy blend of static and dynamic components in models of copyright/unauthorised copying. The benefits of copyright are discussed in a dynamic context, including concern for the long run. The costs of copyright are only discussed in static terms. This reflects a strong judgement on what matters (rights holders' interests and the benefits of copyright induced innovation) and what does not (the immediate benefits of unrestricted copying and use as well as the benefits of unrestricted user innovation).

Blending static and dynamic analysis and its problems

As argued above, the blending of static and dynamic reasoning in the conventional rationalisation of copyright is problematic (cf. Towse and Holzhauer, 2002; Landes and Posner, 2003). On a general level, once the assumption of a static, competitive equilibrium is dropped (where suppliers manipulate only the quantity they supply of a given good and where innovation and technological change is absent), we may lose much of the precision with which maximisation problems can be solved in neo-classical economic theory. The central challenge that arises in the dynamic analysis of copyright is to determine what the future innovative output motivated by copyright policy is worth. This is a very difficult question. Much of the economic literature has sidelined the issue and little is known about the extent to which copyright fosters innovation in real markets.

Copyright and the supply of copyright works

It is probably the most fundamental gap in the entire literature that the effect of copyright on supply in practice is not known. The issue has been contentious in the past. The upheaval associated with a process of digitisation has only complicated the matter.

In the current context, including the widespread use of digital copying technology, the relationship between copyright protection/unauthorised copying and the supply of copyright works has not been specified. Empirical studies by economists have focused almost entirely on the correlation between supplier revenues and unauthorised copying. Such studies do not cover the full transmission mechanism from unauthorised copying to supply of copyright works because they leave the elasticity of supply to revenues unattended (in other words, they do not consider how sensitive the supply of creators is to a drop in copyright-related earnings). As Landes and Posner (1989; 2003) have pointed out, it is not a trivial question whether copyright protection fosters the supply of protected works due to the stifling effect copyright may have on follow-up creation. Empirical studies will be reviewed in section 2.8.

Other dynamic effects of copyright

The effect of copyright on the supply in regulated markets has another dimension. There are two ways in which the supply of copyright works may improve over time. On the one hand, new copyright works (or content) with beneficial attributes may be introduced to the market. New products will be advantageous if they are superior substitutes for previously available products (if only because they are better adapted to current preferences or because consumers value novelty) or if they fill a niche that was previously not catered for. Second, new ways of delivering and presenting copyright works may be introduced, which have one of the aforementioned beneficial

attributes or that facilitate access, say by making existing works available more conveniently and at lower costs.

A number of authors have argued that the statutory monopoly that copyright entails could hold back new types of use (e.g. David, 1993; 2004; Boldrin and Levine, 2002; 2005). On the one hand, a copyright system may require protracted negotiations between a number of rights holders before authorised new services that make use of copyrighted works can be introduced to the market (Merges, 1996; Einhorn, 2001; Depoorter and Parisi, 2003). On the other, intellectual property rights may be used strategically by incumbents to sustain barriers to entry (Kim, 2007; Bhattacharjee et al., 2007) or to extend their market power concerning copyrighted works into related markets. Where this occurs, copyright entails dynamic costs over and beyond what is acknowledged in much of the literature.

Much of the formal-theoretical literature on copyright does not incorporate the dynamic costs of copyright. The decision to include copyright's dynamic benefits into the welfare analysis while holding other things equal makes a strong assumption about its relative importance. The implicit assumption is that the dynamic benefits of copyright are so much larger than the other dynamic aspects of the market that little explanatory power is lost by including the former and excluding the latter.[24]

Nevertheless, user innovation may be restricted because of copyright. Just like rights holders may restrict their innovation investment where unauthorised copying makes them worse off, users are likely to restrict their innovation investment under the restrictions of copyright. For example, a follow-up creator who generates a new arrangement of an existing recording cannot legally make this work available to others without the permission of the copyright holders. Due to the transaction costs involved in arranging for permissions, it is possible that no agreement takes shape, even in cases where both the follow-up creator and the original rights holder would have profited from such an arrangement. The equivalent point may be made for technical inventors, for example a firm introducing a new distribution channel for musical recordings.

Due to the potential for dynamic innovation costs of copyright for follow-up creators and users, it is not satisfactory to model the costs of copyright as an instant dead-weight loss that has no dynamic effects (cf. Towse and Holzhauer, 2002). This holds in particular, when for the countervailing benefits, dynamic effects are addressed. Otherwise, the likely result is a bias in favour of copyright protection.

[24] We assume here that the objective of the welfare analysis is realism as required in order to provide adequate guidelines for policy.

The structuralist-evolutionary perspective

A consistent dynamic approach is that taken in economic theories of technological change, or 'structuralist-evolutionary economic theory' as Lipsey et al. (2005) call it. Schumpeter (1942), who never wrote on copyright himself (Blaug, 2005), provides the important general insight that perfectly competitive firms in the static sense have neither the means nor the incentive to innovate, and therefore that a growing economy must be propelled by firms that enjoy market power and those that strive to attain it.

At first sight, the temporary market power that copyright may foster appears less objectionable in this perspective than in mainstream economic theory. However, in order to sustain incentives to innovate, it is essential that the market stays contestable. If dominant firms are guaranteed a permanent monopoly or if they can obstruct market entries by innovators, neither incumbents nor newcomers may have sufficient incentives to invest in the uncertain process of innovation.

In this way, structuralist-evolutionary perspectives unite a number of critical issues concerning the welfare effects of copyright in a relatively coherent way. This concerns the possible adoption of new business models, the effects of copyright on technological innovation not just content creation, and gradual change in inter-firm rivalry in the course of technological change. The wider social science literature on the record industry has made ample use of economic theories of technological change in order to explain cycles in record industry concentration (see chapter 5). Many authors draw on such theories in order to explain developments in the course of digitisation (see chapter 6).

There are a number of fundamental differences in axiomatic assumptions about market conditions between mainstream economics and structuralist-evolutionary approaches. Chapter 7 contrasts mainstream economics with structuralist-evolutionary theories. A fundamental point of divergence is that basic evolutionary economic theories pay greater attention to differences between suppliers[25] as well as developments over time than mainstream economic theories of monopolistic competition do. Notions of a static equilibrium, perfect information and thus perfect rationality are rejected.[26] Innovation and technological change is regarded to be the main driver of economic growth rather than the optimal allocation of given resources at a constant state of technology (Schumpeter, 1942; Solow, 1956). The capacity to innovate – to change and adapt – is an essential aspect of firms' or economies' competitiveness. Technological change is regularly regarded to be desirable even if the long-run productivity increases come at considerable costs of change. What is more, in structuralist-evolutionary theory, economic agents are seen to be in

[25] Some diversity of economic agents is a logical underpinning of any discussion of product differentiation.

[26] Instead, since actors are clearly unable to know about – and make strategic choices – on all possible options, they operate under "bounded rationality", which is co-determined by firms past experiences (e.g. McKelvey, 1994).

constant interaction with a mutable environment. Economies are subject to frequent and not perfectly predictable changes that require adaptation. Economic development comes about through a continuous and open-ended process of variety creation and its reduction through market selection.

Structuralist-evolutionary theories' ambiguous perspective on market power, its emphasis on industry structure, changing market conditions and the desirability of technological change play an important part in this dissertation and they will be developed upon in the chapters 6 and 7. A dynamic perspective on copyright raises several further points. On the one hand, technological change and changes to market conditions necessitate the adaptation of copyright law. Unless the costs and benefits of copyright are affected proportionally, changing circumstances will mean that simply reconstructing the same level of copyright protection as existed before a particular technological change will not be adequate (even under the assumption that the previous level of protection was efficient). On the other, current research on innovation emphasises that fringe suppliers and users are often important innovators (e.g. von Hippel, 1988; Utterback, 1994; Bijker, 1995; Edquist, 1998; von Hippel and von Krogh, 2003) and innovation is not seen to follow a precisely predefined trajectory. From a structuralist-evolutionary perspective, the quantitative point on the value of innovation may thus be complemented with qualitative considerations. Innovation reflects the needs and preferences of those involved in innovation processes. If copyright excludes follow-up creations and user-innovation, it is not only the pace of innovation but also its direction that may be altered.[27]

Summary

In summary, a more comprehensively dynamic analysis highlights a number of economic drawbacks of copyright. This contrasts with the more conventional 'blended' welfare approaches or property rights approaches, that usually suggest that copyright is basically sound as a means to overcome inefficiencies in the market for cultural products and it is just a matter of getting the details right. It is not always acknowledged that copyright entails dynamic benefits and costs, Copyright may foster incentives for current and prospective rights holders to invest in creativity. It may also inhibit follow-up creations and innovative uses. Studies that incorporate only the dynamic benefits of copyright can thus create a bias in favour of (stronger) copyright.

[27] Furthermore, the intergenerational effect of copyright has hardly been addressed: the later social benefit comes at a private cost borne by earlier generations of consumers, the time lag depending upon the duration of the copyright term. As the copyright term increases in duration, this gets increasingly more inequitable as the present generation is increasingly worse-off than future ones that will enjoy the fruits of today's innovation as part of their public domain. If the average value of cultural products depreciates, current investments in fostering innovation may turn out to have a negative return if the duration of copyright is too long.

2.8 EMPIRICAL STUDIES ON THE ECONOMIC EFFECTS OF COPYRIGHT

Pure theory supports neither universal nor very specific recommendations for copyright policy. Furthermore, the upheaval associated with digitisation challenges established positions. Under these circumstances there seems to be an urgent need for empirical research.

Empirical studies have not featured much in the economics of copyright. One reason for this is probably that they do not form part of the intellectual tradition of studying the law. Another may be a lack of relevant data. In economics more generally, however, empirical studies have always occupied an important position as a means of testing theories. Recently, empirical studies of copyright have become more prominent. Three distinct areas have received particular attention: first, macroeconomic studies of the size and importance of copyright-based industries; second, microeconomic studies of the economic effects of file-sharing aided by networks such as Napster, Kazaa, Gnutella or the Pirate Bay; third, a few studies have been conducted into the relationship between the strength of the copyright system and the supply of copyright works.

As will become apparent below, none of these issues have been dealt with exhaustively. Results on very similar questions diverge widely. There are methodological complications and – perhaps more importantly – data limitations that further research needs to tackle. What is more, the empirical literature has focused on specific aspects of the effects of unauthorised copying/copyright protection, leaving others unspecified. The literature covers rights holder/supplier revenues more thoroughly than consumer welfare. It has begun to address the relationship between copyright protection and the supply of copyright works in real markets (with unclear results), and this issue should play a much more central role in the debate on copyright. Furthermore, most empirically minded economists working in the field have abstracted any effect of the copyright system on technological change – for example the adoption of authorised digital distribution – and the way in which specific aspects of the copyright system may affect the contestability of the regulated markets.

The size and importance of copyright-based industries

Macroeconomic studies of copyright-based industries are straightforward in their intention: they seek to measure the 'economic significance' of copyright. In practice these studies often measure the contribution to the national income of those industries producing goods and services that have a strong copyright element.[28]

[28] Studies on the 'economic significance' of copyright are promoted by the World Intellectual Property Organisation (Gantchev, 2004). The Review of Economic Research on Copyright Issues (RERCI) devoted its first issue to these matters (RERCI, 2004).

There are controversies about which industries to include in such studies. It is, however, clear that calculations should use value-added rather than turnover (WIPO, 2003). Towse (2004) notes that there is a tendency to exaggerate figures and that results are often used for advocacy purposes. Nevertheless, it is a reasonably consistent finding that the industries regulated by copyright represent around 5 per cent of gross domestic product in the most developed economies and that over recent years they have regularly grown more rapidly than the economy as a whole. That said, only the US has a general export surplus from international trade in copyright works.

However, no straightforward inference on the economic benefits of copyright can be drawn from these studies. The role copyright plays in stimulating production cannot be inferred because there is no causality implied by such measures. Many of what are now called the creative industries developed with copyright protection from their inception. What we do not know is what historians call the counterfactual: what would these industries look like without copyright?

The relatively sudden erosion of copyright protection due to the diffusion of digital copying technology may provide a rare opportunity to infer on causality – a 'natural experiment' as Liebowitz (2004) has called it. The basic aim is to isolate the impact of sudden and substantial changes in unauthorised copying. So far, this opportunity has been seized in a number of studies on the effects of file-sharing on the revenues of copyright industries, almost all of which have studied the record industry. Furthermore, a number of surveys have been conducted to study consumer behaviour and attitudes regarding copyright and digital copying. Finally, a limited number of studies have addressed the relationship between the strength of copyright protection (mainly the duration of rights) and the supply of copyright works.

The impact of file-sharing on industry revenues and consumption

With the rapid diffusion of powerful new copying technologies such as file-sharing networks as well as CD- and DVD-burners from the late 1990s, there has been a dramatic shift in the possibilities of private copying. The marginal costs of making high-quality private copies and disseminating them have fallen substantially for users of widely available digital ICTs.

The public debate on so-called 'piracy' via digital copying technology (mainly file-sharing networks) coincides with a boom in the economic literature on copyright. The case of the record industry has received most of the attention because in several major markets for sound recordings – in particular the USA and Germany – the explosive growth of file-sharing since 1999 has coincided with substantial reductions in sales of authorised copies. Economists seem to have taken the lead regarding quantitative empirical studies of the impact of file-sharing on the record industry. In order to gauge the economic effects of digital copying, micro econometric studies are needed. The following section provides a rough overview of published studies to date.

For other surveys see Michel (2004), Peitz and Waelbroeck (2004), Liebowitz (2005a), Watt and Liebowitz (2006), and a very recent working paper by Oberholzer-Gee and Strumpf (2009).

The impact of file-sharing on sales of authorised copies and industry revenues

So far, empirical studies have mainly focused on the question whether file-sharing harms the record industry by decreasing sales.[29] These studies address one aspect of what Johnson (1985) would call the short-run harm of copying: the adverse impact of unauthorised copying on the revenues of rights holders. Results have been considered in court cases against Napster and its successors in the US (see, e.g. Fine, 2000) and this issue continues to be of practical importance for ongoing reforms of copyright legislation and for the businesses concerned. Nevertheless, these studies do not address the full range of impacts that digital copying may have and their limitations are discussed below.

Empirical studies of the harm of unauthorised copying have taken different angles. One standard empirical approach has been to correlate measures of file-sharing with sales of authorised physical copies while controlling for simultaneous changes to a range of other factors that might have influenced sales. Some authors investigate differences between geographic entities such as countries or cities. Others compare the impact of file-sharing on the sales of different genres or on individual records. Some researchers use survey data on consumers' purchasing behaviour in the context of file-sharing (for a categorisation of studies see Liebowitz, 2005a). Several studies combine investigations of two or more of these units of analysis. This section will first introduce studies based on accumulated sales figures in chronological order according to their publication date.[30] Second, some studies that are based on consumer surveys are introduced. Unless otherwise stated, the studies refer to U.S. data.

Liebowitz (2004) investigated alternative explanations for falling full-length CD sales, including income and demographics, album prices and prices of related goods and services. He concluded that alternative factors could not explain all of the reported falls in sales so that file-sharing appears to explain some sales reductions. Peitz and Waelbroeck (2004) analysed the International Federation of the Phonographic Industry (IFPI) data on CD sales and data on mp3-downloads from IPSOS-Reid. In their cross-section study of 16 major markets they found a significant correlation between downloading and falling CD sales. They also attempted to gauge the substitution effect of mp3-downloads for CD purchases on the basis of U.S. survey data, concluding that mp3-downloads appear to explain falling record sales in 2001. Based on their

[29] See Hui and Png (2002) for a recent study of offline 'piracy' and Cameron (1988) on the impact of VCRs on cinema attendance in particular.

[30] Many of these studies were widely read prior to publication as authors on digital markets for information goods seem to keen to make their work available online.

elasticity calculations, however, downloads seemed to explain only a fraction of sales decreases in 2002. Zentner (2005) correlated IFPI data on music sales with various data-sets on the number of Internet users and peer-to-peer usage in 65 countries between 1997-2002. He found that sales fell more in countries with wide Internet usage.

Liebowitz (2008) worked with U.S. census data on Internet use, record sales and other demographic variables to compare the impact of file-sharing in 99 American cities. In a draft version of his article available online, he concluded that "file-sharing has caused the entire decline in record sales that has occurred and also appears to have vitiated what otherwise would have been fairly robust growth in the industry." Boorstin (2004), who had used similar data, had come to the different conclusion that file-sharing was not the cause of declining sales. He observed that Internet access correlates with higher purchases of CDs for consumers aged 25 and over and with lower CD purchases for consumers aged between 15 and 24.[31]

Oberholzer-Gee and Strumpf (2007) investigated the effect of downloading on sales of individual recordings. They used data on the weekly number of downloads via one server that hosted parts of a file-sharing network and correlated these with weekly album sales from Nielsen Soundscan. They compared various recordings and studied the effects of changes in downloading on sales of authorised copies. Oberholzer-Gee and Strumpf (2007:1) famously concluded that "downloads have an effect which is statistically indistinguishable from zero". This study has been criticised at length by Liebowitz (2007a; 2007b).

Moving on to studies based on consumer surveys, Hong (2004) made use of the U.S. Consumer Expenditure Survey. Using Internet access as a proxy for downloading, he attributed around a third of the total reduction of sales in 2000 (ca. 7.6%) to "Napster" and concludes that other factors played a significant role. Michel (2004) also used computer ownership as measured in the same survey as a proxy for downloading. He concluded that file-sharing might explain a reduction in sales by up to 13% between 1999 and 2003.

Rob and Waldfogel (2006) conducted their own survey on the downloading and purchasing behaviour of 500 U.S. college students. They found that downloads substituted for purchases of authorised copies at a rate of 0.2 or more. Their survey produced a number of insights regarding consumer welfare and willingness-to-pay that will be discussed below. Zentner (2006) used music sales data by IFPI and data from a European consumer mail survey by Forrester to establish the impact of downloading on purchasing behaviour. He suggested that, for individual users, "peer-to-peer usage reduces the probability of buying music by an average of 30%". Conversely, Gopal et al. (2006) surveyed 200 students and found a positive relationship between online sampling and the reported propensity to purchase authorised copies. Finally, in a

[31] For early attempts to study the impact of file-sharing by comparing changes in sales of different musical genres that are more or less popular on file-sharing websites, see Liebowitz (2008) and Zentner (2005).

recent report for Industry Canada (based on data from Decima Research), Andersen and Frenz (2007) found no significant correlation between file-sharing and purchases of either CDs or authorised downloads in Canada.

That is, results diverge considerably, even for the relatively narrow question of whether file-sharing harms rights holders of musical works by displacing sales. The two extreme results for the U.S. market are virtually no effect on the one hand (Oberholzer-Gee and Strumpf, 2007), and the reversal of what could have been "robust growth" into a severe recession on the other (Liebowitz, forthcoming). Many studies suggest that file-sharing displaced some demand but that other, incompletely specified, factors must play a role in explaining falling sales.

More recently, a couple of studies have appeared on the impact of digital copying on the market for feature films. Here the results are similarly diverse. A student survey by Rob and Waldfogel (2007) found a negative impact of "unpaid consumption of movies" on paid consumption. By contrast, Smith and Telang (2009) reported that increased broadband Internet penetration has actually boosted DVD sales considerably according to their analysis of secondary data from Nielsen Videoscan.[32] It remains to be seen whether studies of other copyright industries – for example newspapers, academic journals, literature, or video games – produce a more consistent pattern and whether the situation varies between different copyright industries.

Technical problems in gauging the effect of file-sharing

Why would results on the impact of file-sharing on sales scatter widely? One explanation lies in the numerous technical difficulties encountered in doing detailed quantitative analysis of unauthorised digital copying, which may lead to distorted results.

Data limitations

To begin with, many empirical studies use secondary data on sales and so-called piracy. Often, this data is supplied by industry lead-bodies such as the RIAA (Recording Industries of America Association) or the IFPI (International Federation of the Phonographic Industry) in the case of the record industry. These sources are interested parties and heavy campaigners for more intensive copyright protection. Some researchers have voiced objections as to the validity of their data (Liebowitz, 2004). Where data from interested parties are used, it is important that a comprehensive documentation of the underlying methods is available. It seems highly desirable to base policy-making also on the analysis of official data – which is not always available due to inconvenient classification systems for the purpose of studying many copyright industries.

Furthermore, valid data on file-sharing appears to be particularly hard to come by. Liebowitz (2006) demonstrates how various measures of downloading diverge considerably. The

[32] See also Bounie, Bourreau and Waelbroeck (2006).

use of proxies for file-sharing, such as Internet access or computer ownership may also create problems. Oberholzer-Gee and Strumpf (2007) used data on actual file-sharing activity but had to contend themselves with a miniscule fraction of total interactions that went through a particular server. Measuring so-called piracy in consumer surveys could introduce a downward bias because respondents might be reluctant to report illegal activities or give strategic answers (Oberholzer-Gee and Strumpf, 2007). The specialised academic surveys of file-sharing, valuation of authorised copies and purchasing behaviour are of relatively modest size and even some of the most reputable surveys on the matter are based on convenience samples (e.g. Rob and Waldfogel, 2006). These studies may not allow for generalisations on consumers at large. In short, there are difficulties in the use of the available measures of file-sharing for the purpose of detailed quantitative analysis.

Market 'distortions' besides unauthorised copying

A further fundamental challenge to any of these studies is that the record industry might not have been in a state that resembles a static, competitive equilibrium when file-sharing struck.

On the one hand, the record industry is highly concentrated into a few major multinational firms. A relatively recent out-of-court settlement concerning allegations of price fixing by the distribution divisions of the major record companies in the U.S. (Federal Trade Commission, 2000) and several objections to further merger activity between majors by competition authorities in the European Union illustrate concerns with market power.

On the other hand, the record industry seems to be undergoing structural changes with continued merger activity among the major companies, increasing importance of media tie-ins as a source of income and authorised online services growing rapidly to name but a few volatile aspects (see Alexander, 2002; Tschmuck, 2002; Bockstedt et al., 2005). Under such circumstances it seems particularly difficult to isolate the effect of file-sharing. It can be extremely hard to identify and account for all simultaneous changes to other factors that might have influenced sales and individual judgments on which factors matter and which do not inevitably affect the specification of explanatory models and their interpretation.

What is more, the industry may react to changes in the market environment with deliberate adaptation. Such measures may take shape over several years, which put them beyond the time horizon of most studies. Ultimately, controlling for intervening variables is simply an attempt to develop a counter-factual idea of what sales would have been without file-sharing. Considering the unpredictable volatility of record sales in the past (e.g. Chapple and Garofalo, 1977; Burnett, 1996) this appears to be a challenging endeavour at best.

Empirical studies of the impact of file-sharing thus often conclude by pointing out factors that have not been covered fully in the quantitative analysis. These often include the growth of

new information and entertainment services such as mobile telephony and video games. Many authors have also discussed the possibility that sales of authorised downloads may reinvigorate the record industry. It has further been argued that part of the sales decline could mark the end of replacement purchases of CDs for vinyl records. If that were the case, it would be misleading to use historical peak levels of sales preceding the emergence of file-sharing as a point of reference. What is more, file-sharing is not the only new copying technology. CD-burners, for example, are either excluded or addressed as complementary to file-sharing networks. In the German market – for which IFPI reported the most severe falls in sales in any of the major markets – mass-diffusion of CD-burners and falling sales preceded file-sharing (Tschmuck, 2003). CD-burners and other copying technology besides file-sharing might merit attention in their own right.

Last but not least, many suppliers of recorded music do not solely operate in the primary market, where authorised copies are sold to end-consumers. They often incur revenues from the secondary market where copyrights are licensed to professional users – say advertisers or video-game producers who wish to make use of a song – and often also from live performances. Where exposure in one market boosts demand in others, rights holders who are not specialised in the primary market might be compensated in secondary markets for falling sales of authorised copies (cf. Takeyama, 1994; Tschmuck, 2003). Changes in additional sources of income to rights holders thus need to be included in the analysis.

In any case, the effect of file-sharing on authorised sales remains contentious. Results and their interpretations vary considerably and none of the existing studies seems sufficiently conclusive as to settle the issue single-handedly.

Studies of unauthorised copying and suppliers' revenues are insufficient to support policy implications

Beyond the technical difficulties in gauging the effect of file-sharing on the record industry's revenues it is important to recognise the limitations of such studies as a guideline for copyright policy. Even if an exact measure of an adverse effect of unauthorised copying for rights holders were known, this would not be sufficient as a guideline for policy. Public policy strives to maximise total social welfare, which implies that it needs to account for users' interests as well when shaping the copyright system. Short-run welfare analysis thus requires a trade-off between rights holders' and users' interests (Johnson, 1985). Obviously, end-consumers might benefit considerably from the availability of vast, existing catalogues of works online at very low cost (Silva and Ramello, 2000) and so might commercial users including the IT and telecommunication firms who sell the technical infrastructure.

In a rare example of an empirical study that adopts a consistent short run approach, Rob and Waldfogel (2005) estimate that consumers' short run welfare gains from file-sharing are

considerably higher than the related losses for producers – emphasising, however that they do not account for the long-run costs due to any diminution of creativity. A recent study on behalf of several Dutch ministries also finds that file-sharing has raised consumer welfare more than it diminishes rights holder welfare (TNO, 2009).

The conventional understanding of copyright extends on this short-run analysis by incorporating the long-run benefits of copyright protection for users. It is argued that in the case of file-sharing, any short-run benefits to users from unrestricted copying may be unsustainable as the supply of new works dries up. While it is possible that users' interests converge with rights holders' interests over time, it cannot be taken for granted that they always do. This would only be a universal result under two assumptions: first, if the short-run benefits to users from digital copying were always nugatory; second, if copyright would not restrict users (including other creators/rights holders) in conducting innovation. Arguably, neither of these two assumptions holds in real markets. What is more, there is no hard evidence on the sensitivity of supply to unauthorised copying that could be related to users' immediate welfare gains from unrestricted copying.

Therefore, in order to inform copyright policy, it is not sufficient to establish that so-called 'piracy' harms existing rights holders. Studies of plain destruction only gauge one aspect of the costs of copyright, while leaving several further costs and benefits unspecified. Inferring from such studies on the desirable level of copyright protection might lead to false estimations. Reasonably accurate estimates of any costs of unauthorised copying for rights holders need to be related to potential welfare gains to users as well as the administration and enforcement costs of copyright protection. It is hardly surprising than that even the authors of empirical studies that identify substantial harm of file-sharing for the record industry are divided over the issue whether their results justify increased efforts to foster the copyright system.

What is more, the effects of file-sharing might not be homogenous as between rights holders (see below), and digital copying may be associated with more extensive product searches and greater contestability. Finally, any adaptation of the copyright industries – say the development of new business models – might diminish the long-run costs of unauthorised copying.

Studies of consumer behaviour related to file-sharing

The impact of file-sharing on demand for authorised copies depends on the substitutability between authorised and unauthorised copies and relative costs (including search costs and the risk of penalties). On the basis of a survey of college students, Rob and Waldfogel (2006) observe that within their sample downloads were valued less than purchased copies. On consumer valuation of downloads, see also studies by Holm (2001), Gosh et al. (2005), as well as

Rochelandet and Guel (2005) in Sweden, Italy and France respectively. These studies concur with Rob and Waldfogel (2006) that downloads are not valued as highly as authorised copies. This implies two things: first, there is some scope for rights holders to attain sales at prices above the costs of making copies. Second, the harm to the industry cannot be calculated by multiplying the number of unauthorised downloads with retail prices of authorised copies.

There has been some research suggesting a strong impact of prosecution on file-sharing behaviour. Blackburn (2004) finds that some types of prosecution of infringers affects unauthorised copying strongly, at least in the short run. The efficiency of policy measures against copyright infringement requires further attention (Mafioletti and Ramello, 2004; Watt, 2004; Zentner, 2006).

An additional pattern identified in some surveys is that different types of consumers differ in the effect that access to digital copying technology has on their purchases of authorised copies, depending for example on their money and time constraints. Student surveys may thus not allow for generalizations about the impact of file-sharing on the market for authorised copies, since this part of the population tends to have more spare time and less spending power than average.

As mentioned above, a problem for any assessment of consumer behaviour through surveys will be that the issue of copyright has become highly politicised and divisive over the last decade. Many respondents to related surveys may be strategic about the information they reveal.

The supply of copyright works and changes of the copyright system

Past empirical investigations of the effects of copyright on "authors' supply" rarely support the view that copyright as they are would significantly promote supply (Towse and Holzhauer, 2002). Only very few empirical studies have been published on the impact of (changes in) the copyright system on the supply of copyright works – or in other words the elasticity of supply to copyright protection. Khan (2004) finds no substantial impact on the number of full-time authors with the U.S. International Copyright Act of 1891. For a study that compares various states before the general adoption of copyright in Europe, see Scherer (2009). With the diffusion of digital ICT, very substantial changes in the market can be expected so that studies covering recent years are required.

<u>Copyright term extensions and the supply of copyright works</u>

Two relatively recent studies address the impact of copyright term extensions on the supply of copyright works. Landes and Posner (2003) investigated the number of optional U.S. copyright registrations to test for an effect of the term extensions in 1962 and 1998. They found no significant effect after either of these two events. A working paper by Png and Wang (2009) used data from 26 major economies to test for an effect of copyright extensions during the 1990s on

the quantity of movies supplied. Reverting on their results in previous versions of the paper, in the current version they found that term extensions from author's life plus 50 to author's life plus 70 years had no significant effect on the supply of movies. The latter paper provides a good primer on the complexities involved in isolating the effects of what is probably a relatively minor change in the copyright system and thus the regulated market. It also illustrates the difficulty of acquiring valid data.

Pollock (2009) developed a dynamic model of the welfare effects of copyright that he uses to calculate the 'optimal' level of copyright protection. He includes estimates of the discount factor for suppliers and the rate of cultural decay among other things. Pollock finds that the adequate level of copyright duration is probably in the area of 15 years. While the purpose of Pollock's (2009) study and methods employed differ substantially from Png and Wang (2009), it also illustrates the complexity of tracing the dynamic effects of copyright as well as data limitations.

Digital copying and the supply of copyright works

In stark contrast to the copious attention given to the impact of file-sharing on some copyright industries' revenues, the effects on the supply of copyright works have not received much systematic attention. Even though copyright is justified as means to foster the supply of copyrightable works, the effects of file-sharing on supply have not been studied systematically so far (cf. Png, 2006; Oberholzer-Gee and Strumpf, 2009). Chapter 3 of this dissertation will tackle this gap.

Other empirical studies on the impact of copyright

Unauthorised copying and contestability

Some empirical studies have produced evidence that digital, unauthorised copying has asymmetric effects on creators, contrasting well-established incumbents on the one hand and fringe suppliers or newcomers on the other. Blackburn (2004) found that sales of publications by previously well-known artists are diminished as file-sharers substitute purchased copies for downloads. On the other hand, file-sharing appears to boost record sales for previously unknown artists. They seem to gain more from the additional exposure of their works than they lose due to a substitution effect. Bhattacharjee et al. (2007) further found that releases by smaller record companies exhibited longer survival times in the charts after the emergence of file-sharing networks. Chapter 8 documents a great number of market entries by small, independent record companies in the presence of digital copying (see also Handke, 2006).

Copyright and technological innovation

Most of the literature on copyright focuses the creation of new copyright works. A couple of authors have also voiced concern that excessive copyright systems hold back technological innovation associated with the dissemination and commercial use of 'artistic and literary' works, similar to the debate on other forms of intellectual property. David (1993; 2000; 2004), for example, uses historical analysis to evaluate the economic impact of copyright in various industries and in changing technological conditions, arguing that the copyright (and patent) regime has created obstacles to technological innovation and change. Related questions have mainly been addressed on the basis of descriptive, historical studies. Boldrin and Levine (2005b) address the issue in their comprehensive criticism of what they refer to as 'intellectual monopolies'. Chapters 12 and 14 discuss evidence on innovation in the record industry in the presence of digital copying.

2.9 SUMMARY

The economics of copyright is rooted in a utilitarian understanding of this institution. Copyright is not seen as an expression of a natural right of an author to her creations but as a means to foster incentives to supply copyright works. It is contentious whether copyright achieves this aim and compensates for the inevitable costs of public intervention by steering cultural supply closer to a socially desirable level than either an unregulated market or alternative public measures would.

A first essential insight in the economics of copyright is that it relates to a trade-off of countervailing objectives. Economic theory implies that in a free market, less cultural products would be supplied than would be socially desirable. A copyright system mitigates this problem but at the cost of restricting the use of copyrighted works. This leads to an underproduction-underutilisation trade-off (also referred to as an access-incentive trade-off).

Various strands of economic theory specify this problem differently. Standard welfare economics discusses market failures due to the characteristics of cultural products as quasi-public goods and the market power of copyrights holders. A property rights approach takes the desirability of unambiguous property for granted and focuses on the reduction of transaction costs in order to approximate an efficient market outcome.

The theoretical case for copyright has advanced with detailed applications of theories of public goods and information economies with their peculiar cost-structure and a potential for increasing returns. The economics of copying has advanced the understanding of various constellations in which unauthorised copying may or may not benefit rights holders or society at large – sometimes with counter-intuitive results.

In any case, there is no universal justification for copyright on the basis of economic theory, since any conceivable copyright system entails substantial costs in addition to its benefits. The predominant understanding is that copyright involves various trade-offs. Whether copyright leads to greater social efficiency can only be determined on the basis of a careful assessment of market conditions (which is the purpose of the economics of copying) and an assessment of specific legal doctrines (which is the purpose of law and economics) and the administration of rights in practice. By itself, formal-deductive reasoning is not suited for resolving such trade-offs because it is often mute as to the proportion of the costs and benefits it identifies. The justification of copyright and the specification of the desirable level of copyright protection relate to a complex empirical question: what is the relation between the social benefit from bolstered supply due to copyright protection on the one hand and the access costs, administration and transaction costs that a copyright system entails on the other. Thus, whether a specific level of copyright protection offers a net welfare gain is an empirical question. The answer requires a sense of proportion regarding the various costs and benefits that pure theory cannot deliver.

A careful distinction between static and dynamic aspects of the analysis entails two further important insights. First, the relative weight of costs and benefits will change with changing market conditions so that the desirable level of copyright protection is likely to change over time. Second, there is a tendency in the conventional understanding of copyright to focus on the dynamic benefits of copyright. However, where copyright restricts innovative use, its costs are dynamic, too. Usually, this argument is limited to the case of follow-up creators, whose costs of expression increase with increasing copyright protection. Nevertheless, this problem encompasses other types of user innovation, say by technical innovators or end-consumers.

The justification of copyright and the specification of desirable levels of protection are empirical questions. The existing empirical literature does not yet provide a solid grounding for determining whether, and to what extent, it is worth fighting private, unauthorised copying in its newest guise of digital copying in its various forms. So far, empirical studies on the most immediate challenge to the contemporary copyright system – the diffusion of digital copying technology – have only gauged the weight of one variable in the cost-benefit trade-off that underlies copyright: the extent to which file-sharing diminishes revenues to rights holders. The market for sound recordings has received particular attention. The issue remains controversial.

Most of all, future efforts need to go beyond the question whether unauthorised copying harms copyright industries at large. The inclination may be to go with the majority of studies and to accept that file-sharing has harmed the record industry, which does not bode well for other industries. The few studies that incorporate the benefits to consumers tend to find that social welfare has improved nevertheless. The significance of digital copying for users and the consequences of current developments for the legitimate supply of copyright works seem to merit

more attention. So do heterogeneous effects of copyright on various types of producers and the contestability of markets, as well as on innovation. In short, there is a range of unexplored empirical questions that are most relevant with a view to current copyright reforms.

In summary, the economics of copyright provides a detailed theoretical understanding of the types of costs and benefits entailed by this institution. In order to achieve a reasonably comprehensive understanding of how these countervailing factors play out in real markets, it is essential to go beyond the question whether unauthorised copying harms the industry at large. One way forward is to study empirical evidence on the consequences of current developments for the legitimate supply of copyright works; another is to study any heterogeneous effects on various types of producers; a third is to incorporate the possibility of user-innovation and broader technological change. Many of these issues will be addressed in the empirical parts of this dissertation.

There are two salient gaps in our knowledge. First, the elasticity of supply to falling revenues has not been specified. Without a measure of this elasticity of supply, the welfare effect of copyright on users cannot be specified. The following chapter 3 of this dissertation addresses this gap. It applies a simplified time-series intervention analysis to study the impact of digital copying on the supply of sound-recordings in Germany.

Second, the way in which other aspects of technological change – beyond the diffusion of digital copying technology among users – relate to changes of the market conditions and thus the desirable level of copyright protection has often been ignored. Arguably, this may result in another fundamental problem in determining the desirable strength of the copyright system. The second and third parts of this dissertation tackle this issue.

3. THE SUPPLY OF SOUND RECORDINGS IN THE PRESENCE OF DIGITAL COPYING

3.1 INTRODUCTION

The preceding survey of the economics of copyright has raised a number of points that motivate the empirical investigation presented in this chapter. First, the fundamental rationalisation of copyright is that this institution lifts the supply of protected works closer to a socially desirable level. The conventional notion is that the supply of copyright works will diminish where a reasonably efficient level of copyright protection is weakened, say by an intensification of unauthorised copying. The effect of unauthorised copying on supply is not trivial, however. For example, the economics of copying suggest a number of ways in which suppliers may adapt and sustain profitability in the presence of unauthorised copying. Therefore, it is a serious gap in the literature on digital copying and copyright that it has not specified the elasticity of supply to the diffusion of digital, unauthorised copying technology. There is no systematic empirical evidence on the extent to which digital copying erodes incentives to supply works covered by copyright. Without this information, it is not possible to gauge the socially efficient level of copyright protection. This chapter goes some way to fill this gap on the basis of data from the German market. It addresses the issue by studying developments in the supply of copyrighted sound recordings in the presence of digital copying.

The German market for sound recordings

The primary market for sound recordings in Germany (in which copies are sold to end consumers for private use) provides an important example for unauthorised digital copying. On the one hand, it is currently the fourth largest worldwide after the USA, Japan and the United Kingdom. On the other, it is the most severely affected major market in the ongoing global recession of the record industry with an approximate 43% decline in real revenues between 1997 and 2005 alone (BV Phono, 2006).

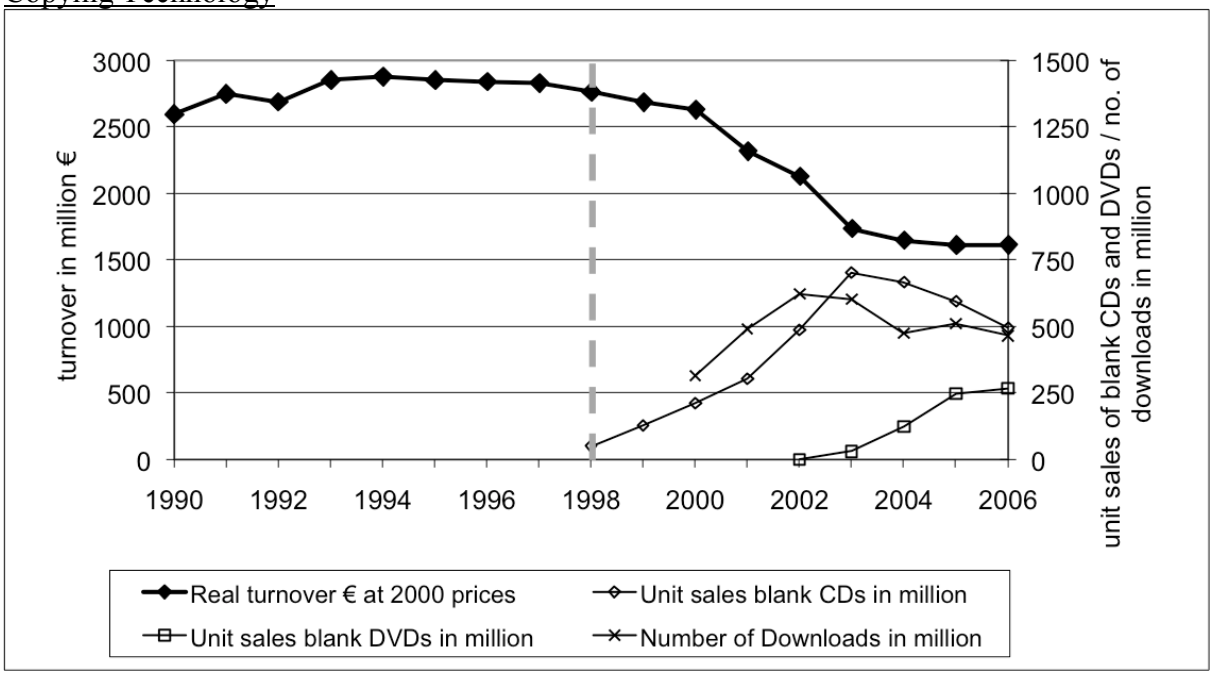
There are no comprehensive official statistics on turnover in the primary market for sound recordings (referred to as the market for recordings henceforth) in Germany. Instead, the main source of such data is the 'Bundesverband der Phonographischen Wirtschaft' (BV Phono)[33] that – together with associated organisations – assembles and publishes an annual report on the German record industry. This data also serves as the foundation for the German contribution to the widely used statistics published by the International Federation of the Phonographic Industry (IFPI).

According to BV Phono (1995) data, real turnover in the German market for

[33] The BV Phono was renamed to 'Bundesverband der Musikindustrie' in 2008.

phonograms (including VAT and at retail value)[34] grew rapidly during the mid-1980s and early 1990s. At 2000 prices, it almost doubled from DM2.85 billion (€1.46 billion) in 1984 to DM5.63 billion (€2.88 billion) in 1994. Casual explanations include the emergence of the CD as the dominant and highly valued sound carrier (IFPI, 2004). A specific factor to the German market was German unification adding roughly 18 million individuals to the domestic market now encompassing about 82 million. Real turnover in the German market for phonograms has been roughly stable at this high level between 1993 and 1997 (see table 3.1 and figure 3.1).

Figure 3.1: Real Turnover in the German Phonogram Market and the Diffusion of Digital Copying Technology



Sources: BV Phono, 1995; 2005; 2006; 2007; GfK, 2002; 2004; 2006; 2007; DESTATIS.

In 1998 this picture began to change. Since that year, real turnover has fallen by more than 2% annually.[35] The years 2001, 2002 and 2003 exhibit dramatic falls of up to 20.9% in 2003 alone (BV Phono, 2006). In total, real revenue from sales of pre-recorded sound carriers – the majority of which contain popular music – fell by 43.0% between 1997 and 2005. The bulk of

[34] BV Phono turnover data combines data collected by the association, extrapolations from representative consumer studies and data assembled from retailers. According to BV Phono management, turnover figures collected by the association itself are based on voluntary reports of about thirty of the largest distributors (wholesalers) of phonograms. Until recently, the BV Phono published reports according to which their data covered between 80 and 95% of the market in terms of turnover for any given year. As distributors tend to co-operate with a number of record companies, BV Phono figures probably incorporate a number of titles published by record companies that are not BV Phono / IFPI Germany members. To assess the size of the market not covered by distributors' reports, the BV Phono falls back on extrapolations from representative consumer studies by the market research firms GfK and Media Control. In this paper, the aggregate figure that estimates the overall size of the market is used.

[35] There is a slight reservation regarding this 2% threshold. In the yearbook 2006, real falls in 2000 are given at 1.8%. In previous yearbooks (BV Phono 2004; 2005), the figure was 2.2%. Such discrepancies are likely to be the result of revaluations according to changes in the member firms.

this decline in real turnover is due to falling unit sales. The BV Phono estimates that unit sales decreased by more than a third (36.9%) during the same period. Prices per unit, on the other hand, have remained relatively stable in nominal terms.

The more vociferous parts of the record industry identified the explosive growth of what they called "piracy" – CD-burning and p2p-file-sharing ignoring intellectual property – as the reason for a downward shift in demand for authorised copies. As figure 1 illustrates, in Germany a period of rapid growth in the unit sales of blank CDs since 1997, of Napster and p2p-file-sharing networks since June 1999, and of blank DVDs since 2003 coincides with falling turnover in the market for authorised phonograms (see also chapter 5). Due to similar observations in other major markets, most importantly in the US, recessions in markets for phonograms came to be perceived as *the* copyright story of late (Liebowitz, 2005b). The economics of copying provide the insight that unauthorised copying does not automatically harm suppliers because a displacement of demand could be offset by the benefits of sampling, by network effects or indirect appropriability (see section 2.8). The extent to which unauthorised copying does harm suppliers under the specific circumstances of the contemporary record industry is a contentious empirical question (see section 2.7).

In this dissertation, the question of the net effect of file-sharing on suppliers' revenues is intentionally bypassed to investigate another issue. Ceteris paribus, during a recession of the reported magnitude the supply of sound-recordings will diminish – regardless of whether the contraction in turnover is the result of unauthorised copying or not. The supply of recordings would be reduced, as producers would adapt to lower demand for authorised copies.

In order to identify the impact of the current recession on the supply of sound recordings and industry structure, this section investigates two time-series: one on the number of newly released titles in the German market for sound recordings; another on the overall supply of different titles.

Table 3.1: Real Turnover in the German Phonogram Market and the Diffusion of Digital Copying Technology

Year	Real turnover (million € at 2000 prices)	Unit sales blank CDs in million [(a)]	Unit sales blank DVDs in million [(a)]	Number of Downloads in million [(a)]
1990	2,596	--	--	--
1991	2,748	--	--	--
1992	2,689	--	--	--
1993	2,852	--	--	--
1994	2,879	--	--	--
1995	2,853	--	--	--
1996	2,841	--	--	--
1997	2,830	--	--	--
1998	2,764	49	--	--
1999	2,686	128	--	--
2000	2,630	210	--	316
2001	2,319	304	--	492
2002	2,129	486	1	622
2003	1,738	702	30	602
2004	1,651	666	124	475
2005	1,612	594	247	512
2006	1,614	494	267	465

Sources: BV Phono, 1995; 2005; 2006; 2007; GfK, 2002; 2004; 2006; 2007; DESTATIS.
[(a)] Scores for 2000 capture the period between April 2000 and March 2001.

Analysis of the time series

The approach is a basic version of an intervention analysis. The process entails the following steps. First, a pre-period and post-period is defined by investigating data on turnover in the primary market for sound recordings and on unauthorised copying. Second, the nature of the intervention and its likely effects on the time series' behaviour is specified and hypotheses formulated. Third, any trend in the sub-series for the pre-period needs to be removed by adequate data transformation. The fourth and final step is the comparison of the time-series' behaviour before and after the intervention. Without previous de-trending of the pre-period data, any slope that persists throughout the time series could overlap changes in the series' behaviour and complicate the analysis.

Defining the pre- and post-period

To allow for a comparison, the last three decades are partitioned into two periods according to developments in (1) the size of the market for phonograms and (2) the intensity of unauthorised copying as follows:

- The ongoing period of 'recession' from 1999 to at least 2005, during which first CD-burning and then file-sharing emerged as mass phenomena and real turnover consistently fell by more than 2% annually. For convenience, this paper refers to

this period as the 'recession period' only.[36]

- The preceding 'boom period' from the early 1980s to 1998 during which the industry first expanded rapidly and, since the mid-1990s, continued to hum along at historically high, if stagnating, levels of turnover; throughout this period, unauthorised copying was well contained in Germany.[37]

The nature of the intervention

Falling sales in the German market for phonograms as well as the diffusion of digital copying technology conveniently coincide, which makes it possible to treat them as a single change in the business environment. This intervention is permanent in the sense that there are no years covered in which sales would not have fallen or digital copying would have subsided.

The intervention is gradual and that renders the analysis somewhat more challenging: turnover did not fall in a single, sudden step; digital copying diffused over a longer time period and changed nature with a number of alterations to copying technology and regulations during the recession period. For example, file-sharing platforms were closed and replaced by newer versions – the demise of Napster being a well-known case in point. In the recession period covered, CD-burners were complemented by DVD burners, USB-sticks and mp3-players and several new types of files used to store music were introduced. A number of legal initiatives extended and adapted copyright law to cover new types of use of protected works. There were also several measures aimed at enforcing copyright more effectively, often initiated by private parties. These include a number of technical measures to inhibit unauthorised use or to identify it in order to instigate court cases against copyright infringers. Many of these enforcement efforts were adapted repeatedly or abandoned altogether, as few of them proved to be effective without serious unintended consequences.[38]

What is more, it is very likely that much of the effect that the recession might have on the supply side will be delayed. Suppliers' decision on the level of investments and on whether to enter or exit the market will react to the recession with a lag. This lag will depend on suppliers' expectations, their financial reserves, and their short term costs of changing to a

[36] This recession period can be subdivided into a period of initially relatively modest falls in nominal turnover (<3%) and only emergent unauthorised copying in 1998 and 2000. Then, between the years 2001 and 2005, both CD-burners and file-sharing networks were widely used while the phonogram industry reported quite drastic falls in turnover (>3%) each year. There is a slight complication, since the year 2006 did not exhibit falls in turnover as reported by the BV Phono but stagnating turnover in real terms. The year 2006 is still accounted for as a recession year.

[37] Whether to include the year 1998 into the boom period or into the recession period requires a degree of judgment. According to industry turnover, 1998 could already appear to be a recession year. According to data on digital, unauthorised copying, 1998 is not clearly a recession year. Because this study is mainly interested in the impact of unauthorised copying, the classification was made following the indicators of digital copying and 1998 was classified as a boom year, i.e. preceding the intervention of interest. The first year considered a recession year is thus 1999, during which Napster Inc. started to operate.

All following hypotheses tests were also run with 1998 re-classified as a recession year. This reclassification did not alter the general result for any test. These calculations can also be regarded as a (limited) robustness test.

[38] This study makes no attempt to model this multifarious environment in detail.

different type of product, as well as their opportunity costs. Suppliers can be assumed to be heterogeneous in these respects and therefore differ in their willingness to participate in the market.

Both the gradual nature of the intervention as well as the potential lag complicates the assessment of the recession's impact. Assuming heterogeneity of suppliers, a process of plain destruction in the context of a recession can be expected to show up almost immediately. The expectation would be that time-plots of supply indicators would exhibit a gradual downward shift in slope (cf. Cook and Campbell, 1979). Some existing suppliers should reduce output; some should not be able to cope with falling sales for longer periods of time and exit the market; some potential market entrants should be deterred by the recession right after it transpires. When the full impact of the recession has transpired and how severe the accumulated effect will be is more difficult to predict. However, over time a recession of the reported magnitude would appear likely to result in a decreasing number of works supplied and a decreasing number of suppliers in absolute terms (unless there are very substantial countervailing factors). This would be the prediction of many studies of digital copying that emphasise the extreme characteristics of digital copying technology (i.e. virtually no marginal costs of copying and disseminating copies, perfect quality of copies and global reach) and regard it to pose an existential threat to the copyright industries.

The hypotheses

This leaves us with two hypotheses regarding the supply of copyrighted cultural products and the number of suppliers:

1. Over time, the quantity of supply will decrease in absolute terms during the recession period.
2. Time-plots of supply indicators will exhibit a gradual downward shift that sets in almost immediately with the beginning of the recession.

The time-series discussed cover 8 consecutive recession years. At the outset, this seems long enough to expect an observable fall in the rate of growth. What is more, falls in turnover (as a good proxy for suppliers' revenues) have accumulated to more than 41% in real terms during the last years covered, so that absolute falls in indicators of supply should be observable at least for later years.

Measures of the supply of sound recordings

In the following, data on two types of indicators for the supply of sound recordings are discussed:

- 'new titles', i.e. the number of new, long-play titles released on the physical sound-carrier format that accounted for most releases (for later years CDs);
- 'overall supply', i.e. the overall number of different long-play titles made available on the physical sound-carrier format that accounted for most titles.

The source of the data is the BV Phono (various issues). The figures do not cover imports and the second hand market. According to the BV Phono management, the figures cover all releases that are handled by one of the major distributors. They also cover retail outlets that use a bar-code scanning system. That is, the figures focus on titles that are marketed through the more professional/commercial end of the market for sound-recordings. Releases by smaller suppliers are not fully captured.

Several measures are taken to avoid double-counting of the same content – say of an identical recording marketed on a single and on an album. First, only long-play releases are counted. Substantial fluctuations in the number of compilations that rebundle works previously released on another title would create a distortion.[39] Second, only titles on the predominant sound-carrier format are counted rather than the sum of releases on all sound-carrier formats. The underlying assumption is that most titles were marketed on the predominant sound-carrier format (i.e. the CD after 1988) and that relatively few titles were released exclusively on other formats. Counting titles on the predominant sound format might create a downward bias for earlier years up to the beginning 1990s, during which the market was more evenly split between vinyl LPs, music-cassettes and CDs.[40] The BV Phono figures do not cover sound-recordings that are only made available online (as streams or downloads). This should create a downward bias for later recession years if there are many releases that are only available as downloads.

3.2 NEW TITLES

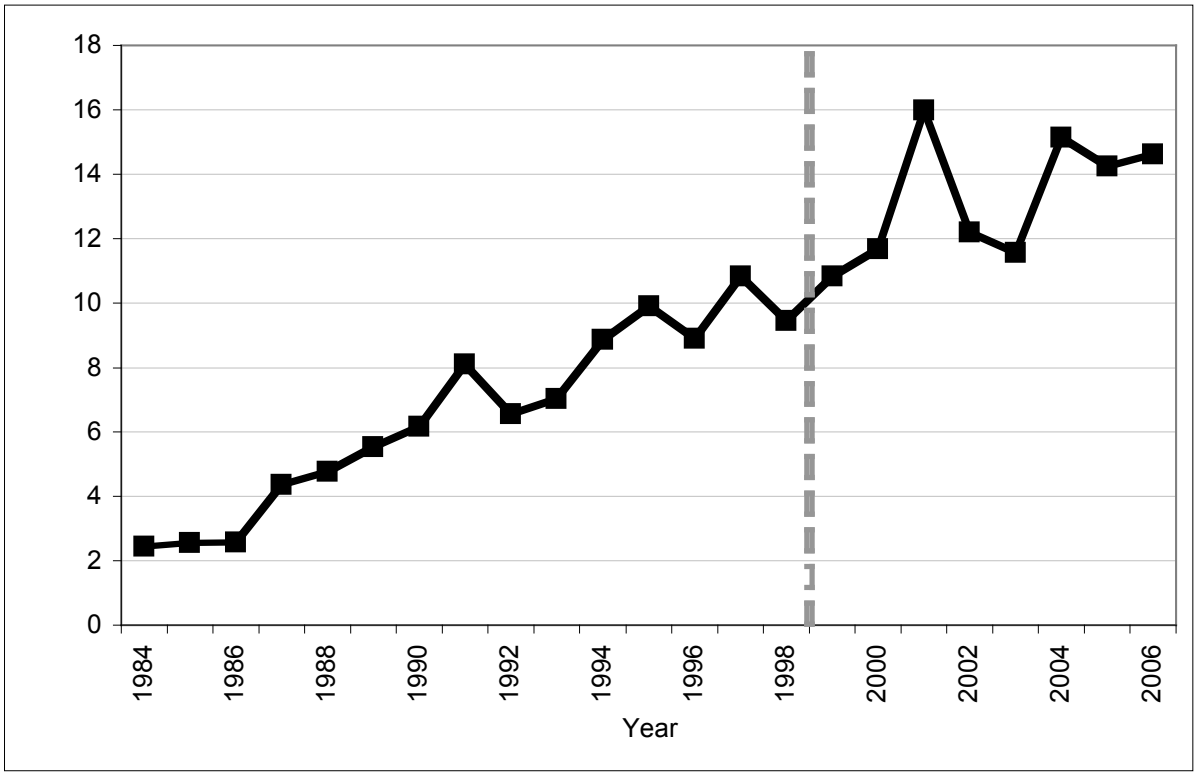
Figure 3.2 presents a time series for the number of new, long-play titles released on the predominant physical sound-carrier format. The time-series contains 23 observations for as many years. The 15 observations between 1984 and 1998 are from the boom period as defined above. The 8 observations between 1999 and 2006 are from the recession period; that is a period characterised by a rapid decline in the primary market for sound recordings and alleviated levels of unauthorised copying. The two periods are separated by a dashed grey

[39] The share of compilations fell from 29.4% in the year 2000 to 19.3% in 2007. If this illustrates a consistent trend, this would bias the number of releases in earlier years upward and the growth in the measure of titles during the recession downward.

[40] Since the BV Phono adapts its figures to changes in its membership with each issue, there are (mild) inconsistencies between figures for the same year in various issues. In counting titles, this study uses the figure for long-play titles on the dominant sound carrier format for the years 1984-1992 as reported in BV Phono (1994) and for the years 1993 to 1999 as reported in BV Phono (2000). For later years, the figure for 'albums' as reported in BV Phono (2007/08) is used. Concerning new titles in the genre of classical music, the greatest number of titles appeared on vinyl LPs until 1986. In 1987, the CD became predominant in the sense that most new releases were marketed on this format. For popular music, the music cassette (MC) preceded the CD as the predominant format. The number of new releases on CDs eclipsed that for MCs in 1988 for 'pop national' and in 1987 for 'pop international'.

line. In the following test for an intervention, the boom period data serves as a pre-period before massive, unauthorised copying in Germany.

Figure 3.2: Time-plot of the number of 'new titles' released annually



Source: BV Phono (various issues).

Has the supply of 'new titles' declined during the recession period?

A visual inspection of the entire time series shows that it follows a relatively consistent upward trend that is not obviously interrupted during the recession period. In 2006 – the last year of the recession period covered – the number of 'new titles' released to the market has been 54.7% greater than in 1998. The mean score for 'new titles' during the recession period is 22.6% greater than the peak level during the boom period. The pattern of a consistent upward trend is complicated by considerable variability and an early peak value of the time series in 2001.

Two statistical tests are employed to complement the descriptive analysis. One is based on a linear, ordinary least squares (OLS) regression to establish whether there is a significant slope. Due to the difficulties associated with OLS regression of short and non-stationary time-series, this approach provides preliminary results only. An additional test is based on the C statistic as developed by Young (1941), which will be discussed in greater detail below.

Tables 3.2 and figure 3.3 document the results of a linear OLS regression of the recession period data for 'new titles'. The model is not significant (R^2=.298) so that it

provides no evidence for a fall in the score of new titles.[41] To the contrary, the estimated slope is positive, which implies that the hypothesis of a negative slope for the recession period as a whole can be rejected with even greater confidence than the positive slope.

Tables 3.2: OLS regression for 'new titles' during the recession period [(a)]

a) Model summary and parameter estimates

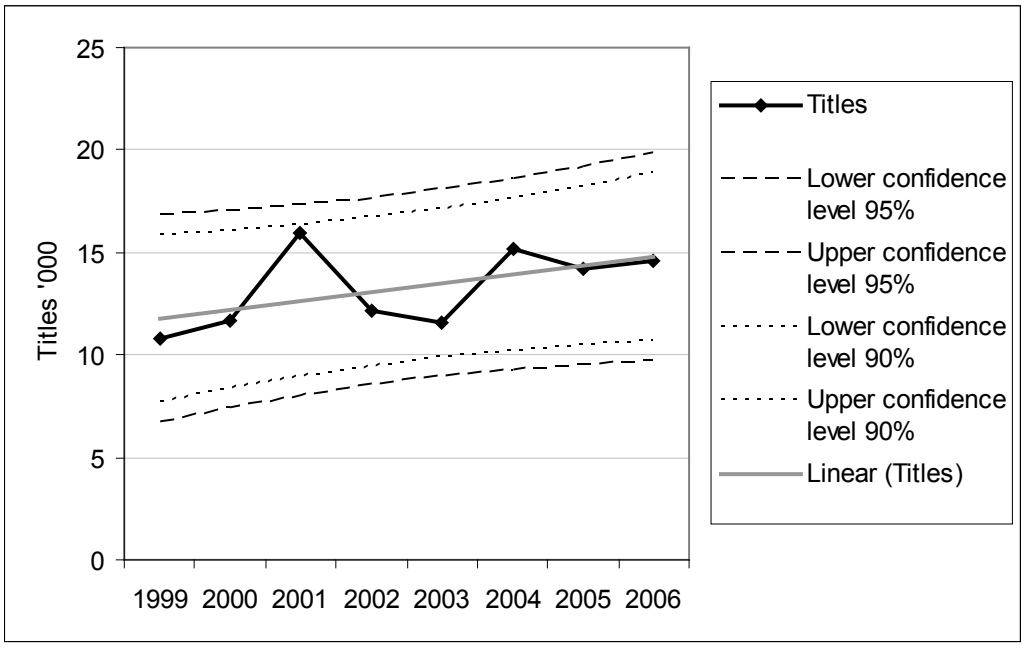
Equation	Model Summary					Parameter Estimates	
	R^2	F	df1	df2	Sig.	Constant	b1
Linear	.298	2.549	1	6	.161	11,344.21	431.12

b) Coefficients

	Unstandardised Coefficients		Standardised Coefficients		
	B	Std. Error	(Beta)	t	Sig.
Case Sequence	431.12	270.01	.546	1.597	.161
(Constant)	11,344.21	1363.50		8.320	.000

[(a)] t=1 in 1998.

Figure 3.3: The number of 'new titles' during the recession period, its linear trend and the confidence intervals of the linear regression model



Due to a number of limitations, the linear regression for this short sequence of the time series serves only for an initial exploration of the data. On the one hand, it has little statistical power as figure 3.3 illustrates. What is more, a fundamental problem in any application of OLS regression on time series is that such data often exhibits autocorrelation, which may bias t scores and thus lead to inflated probability of adopting the wrong hypothesis than suggested

[41] A visual inspection of the residuals indicated no apparent pattern, in as far as this can be determined for eight observations.

by the significance calculated. Due to the limited number of data points, autocorrelation cannot be excluded with conventional tests such as that based on the Durbin-Watson statistic.

For the task of establishing the significance of a trend in short time series, the C statistic as developed by Young (1941) provides an alternative to regression analysis – see Equation 1. The general notation in Young (1941) is adapted to refer to time series in particular. In the formula, y stands for the expression of the time series at a point in time t.

$$C = 1 - \frac{\sum_{t=1}^{n-1}(y_t - y_{t+1})^2}{2\sum_{t=1}^{n}(y_t - \bar{y})^2} \qquad (1)$$

The idea is to compare two measures of the variance of a time series – one that depends on the mean like the denominator in Equation 1 and one that does not like the numerator in the same equation. The C statistic provides a measure of the variability of a time series relative to its slope (Tryon, 1982). It offers a method to determine the probability whether an ordered set of data such as the expressions of a time series vary randomly around their mean (the null hypothesis) or whether the series contains a significant change over time (Tryon, 1984; Young, 1941; Sheskin, 2003).[42] In comparison to the OLS regression, a test based on the C statistic has the advantages that it often has greater statistical power and that it is less susceptible to bias due to autocorrelation and to non-normality in small data sets (Young, 1941; Tryon, 1982).[43] On the other hand, the C statistic does not establish the nature of a change – say whether non-randomness is due to a gradual change in slope or a sudden shift – or effect size.

The test for non-randomness based on the C statistic is exhibited in detail below to illustrate the procedure.[44] The numerator of the C statistic D^2 is the sum of the squared first difference values of the time series; see Equation 2.

$$D^2 = \sum_{t=1}^{n-1}(y_t - y_{t+1})^2 \qquad (2)$$

[42] The denominator of the C statistic contains the total sum of squares (SS_y) of the data. The numerator is the sum of squares of the first difference, so that the statistical power of the C statistic will not be affected by first order autocorrelation.

[43] For the analysis of short time series it is advantageous that the ratio of the C statistic to the standard error (the Z statistic) exhibits no pronounced deviation from normality even for as little as 8 observations (Tryon, 1982; Young, 1941).

[44] A detailed illustration seems necessary since this type of intervention analysis may be unfamiliar. The C statistic is widely used for intervention analysis in quasi-experimental medical studies but has rarely been applied by economists.

The denominator of the C statistic $2SS_y$ is twice the sum of the squared differences between the score for each year and the mean for the entire time series, as shown in Equation 3.

$$2SS_y = 2\sum_{t=1}^{n}(y_t - \bar{y})^2 \qquad (3)$$

The C statistic is one minus the ratio between D^2 and $2SS_y$ as given in Equation 1. The standard error for the C statistic depends entirely on the number of observations in the times series and is calculated according to Equation 4.

$$Sc = \sqrt{\frac{n-2}{(n-1)(n+1)}} \qquad (4)$$

Finally, the Z statistic is the ratio between the C statistic and its standard error *Sc*; see Equation 5.[45]

$$Z = \frac{C}{Sc} \qquad (5)$$

Table 3.3 provides an overview of the procedure and the results for 'new titles' during the recession period. The Z value is 0.2846, which is not significant. That is, this test detects no significant deviation from randomness in this short time series. This result is consistent with the result of the regression analysis presented above. The hypothesis that 'new titles' would have declined during the recession period can be rejected on the basis of this analysis. The positive slope that the visual inspection picks up is not significant either.

[45] Young (1941) provides a table with the significance levels for the Z statistic.

Table 3.3: 'New titles' during the recession period - overview of the test for non-randomness based on the C statistic

Year (*t*) (1999=1)	**Number of Titles (*y*)**	
1999	10,840	
2000	11,678	$D^2 = \sum_{t=1}^{n-1}(y_t - y_{t+1})^2 = 47,759,328$
2001	15,980	
2002	12,194	
2003	11,561	$2SS_y = 2\sum_{t=1}^{n}(y_t - \bar{y})^2 = 52,357,875$
2004	15,148	
2005	14,249	$(\bar{y} = 13,284)$
2006	14,624	$C = 1 - \frac{D^2}{2SS_y} = 0.0878$
		$Sc = \sqrt{\frac{n-2}{(n-1)(n+1)}} = 0.3086$
		$Z = \frac{C}{Sc} = 0.2846$, not significant[(a)]

[(a)] The critical value at 8 observations for the .05 level of significance is 1.6486 (Young, 1941).

Has growth in the number of new titles declined during the recession?

Testing the second hypothesis is more demanding. Any intervention analysis compares the series' level and trend during the boom period with that of the subsequent recession. The question is whether the time-series' behaviour during the recession period is different from its behaviour during the boom period or, more precisely, whether the mean or the rate of growth during the recession period is lower than during the boom period. There are two main advantages of this approach over just testing for an absolute decline in the number of 'new titles'. On the one hand, the intervention analysis takes account of the pre-period trend so that it incorporates an assessment of the likely behaviour of the time series without the intervention. On the other, the intervention analysis can pick up more gradual changes during the recession that might be apparent well before the full impact has transpired.

The most conventional time series intervention analysis consists in the identification and verification of a suitable autoregressive integrated moving average (ARIMA) model with or without a seasonal component as discussed in Box and Jenkins (1976). This model is augmented by an intervention variable that best describes the expected intervention effect and a dummy variable that 'turns on' the intervention variable at the suitable point (Box and Tiao, 1975). An intervention may be modelled as transpiring either abruptly or gradually. The effect of an intervention may be modelled as either temporary or permanent. Any effect of an intervention will either be a change in the mean level of the observed time series, a change in slope, or both. The question in an ARIMA-based intervention analysis is whether the intervention variable is significant. For this procedure, between 50 and 100 data points are usually recommended per period under study. This requirement renders the ARIMA-based

intervention analysis impractical for many annual time-series, including the series investigated in the following.

Tryon (1982) proposed a simplified intervention analysis based on the C statistic to test for a significant deviation between consecutive periods of shorter time series, where there are not enough data points to estimate an ARIMA model. This simplified intervention analysis can identify a deviation due to a change in slope or a shift of the mean, which show up as non-random variability. In contrast to the ARIMA-based intervention analysis, the test based on the C statistic cannot distinguish between a change in slope and a shift in the mean, nor does it provide information whether the intervention effect is abrupt, gradual, permanent or temporary.

The intervention analysis addresses the question whether the series for the recession period deviates in slope or mean from the boom period. The null-hypothesis is that there is no significant difference between the two periods. Rejecting this null hypothesis supports the conclusion that the time series contains a significant trend of some type, which in this case could be due to an impact of the recession on the number of 'new titles' released.

An intervention analysis based on the C statistic is only feasible if the time series contains no significant trend during the pre-period. In their initial shape, this applies to none of the time series analysed in the following. All contain a pronounced upward trend so that it could not be concluded from a significant result for the complete time series that there is a change in the behaviour of the time series after the intervention. It is necessary to create a suitable, stationary comparison series on the basis of the observations from the boom period to prepare the intervention analysis.[46] The procedure thus entails two steps. First, a suitable comparison series without trend needs to be generated by transforming the boom period data. The second step is to establish whether the full time series – including the pre-period and the post-period – exhibits a significant deviation from this comparison series.

Data transformation

Due to a pronounced upward trend during the boom period, the time series on the number of 'new titles' is not suitable as a comparison series for an intervention analysis based on the C statistic. This section is concerned with an appropriate transformation of the data. Two strategies are employed. The first approach is the identification of a suitable OLS regression model for the boom period and to study the residuals, as suggested by Tryon (1982). The second type of data transformation to be employed is simple differencing of the time series.

Regression model identification

In preparation of the intervention analysis proper, the aim is to find a model for which the residuals of the boom period are randomly distributed around their mean. To do so, first a

[46] Note that in the following, 'stationarity' refers to a state in which there is no significant deviation from random variance according to the C statistic.

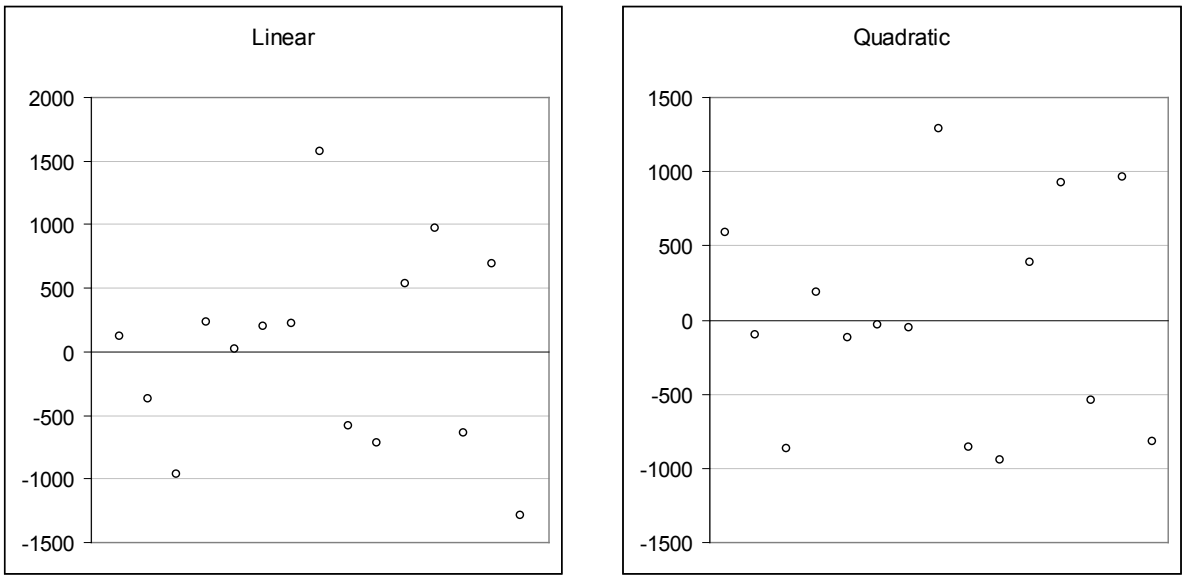
number of standard regression models are estimated for the 15 observations from the boom period. See table 3.4 for an overview. In this table, the three models with the highest R^2 are highlighted. Figures 3.4 plot the residuals for these models during the boom period.

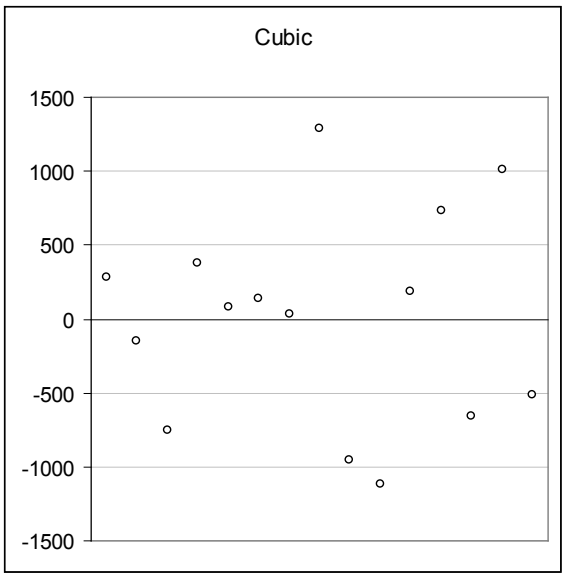
Table 3.4: OLS regression of 'new titles' during the boom period – model summary and parameter estimates [(a)]

	Model Summary					Parameter Estimates			
Equation	**R^2**	**F**	**df1**	**df2**	**Sig.**	**Constant**	**b1**	**b2**	**b3**
Linear	.924	157.450	1	13	.000	1,722.371	601.279	--	--
Logarithmic	.848	72.704	1	13	.000	403.361	3,295.376	--	--
Inverse	.543	15.456	1	13	.002	8,387.707	-8,385.981	--	--
Quadratic	.933	83.261	2	12	.000	1,019.470	849.361	-15.505	--
Cubic	.937	54.410	3	11	.000	1,703.706	406.061	51.577	-2.795
Compound	.883	98.059	1	13	.000	2,485.512	1.113	--	--
Power	.913	136.293	1	13	.000	1,836.978	.624	--	--
S	.659	25.133	1	13	.000	9.050	-1.687	--	--
Growth	.883	98.059	1	13	.000	7.818	.107	--	--
Exponential	.883	98.059	1	13	.000	2,485.512	.107	--	--
Logistic	.883	98.059	1	13	.000	.000	.898	--	--

[(a)] t=1 in 1984.

Figures 3.4: Residual plots for selected regression models for 'new titles' during boom period





In the times series on 'new titles', the decision on the suitable model is relatively straightforward: the linear model seems favourable. Despite of its relative simplicity, it results in one of the highest R^2 and the highest F ratio of all models estimated and visual inspection of the residuals reveals no obvious pattern (see figures 3.4). Table 3.5 displays a statistical comparison of the linear model to the two models that result in the 'best fit' in terms of the highest R^2, i.e. the quadratic model (R^2=.933) and the cubic model (R^2=.937). The p values that result from these comparisons are not significant. Since the two more complex models are not significantly superior to the linear model, the linear model has priority in the subsequent analysis.

Table 3.5: F test to compare the fit of the models of 'new titles'

Equation	Df	SS(X)	F ratio	p
Linear	13	8,358,147.9	*Linear-quadratic*	
			1.62	.21
Quadratic	12	7,366,375.1	*Quadratic-cubic*	
			.71	.72
Cubic	11	6,918,851.3	*Linear-cubic*	
			1.14	.42

On a theoretical level, the linear model is problematic for two reasons. On the one hand, the linear model predicts negative values for the recent past, whereas negative values are invalid for the time series under investigation. On the other hand, the linear model suggests perpetual growth. This seems unlikely for the number of new releases over long periods of time and in a confined market, which makes the linear model appear unsuitable for predictions over more than a few years. Arguably, these two problems are not of immediate concern in the period under investigation. Nevertheless, these issues illustrate that the linear model provides reasonable values only for a relatively short time-frame. The problem of perpetual growth does not apply to the quadratic model. The specific cubic model has a less immediate problem with negative values in the past but it predicts negative values in the relatively near future.

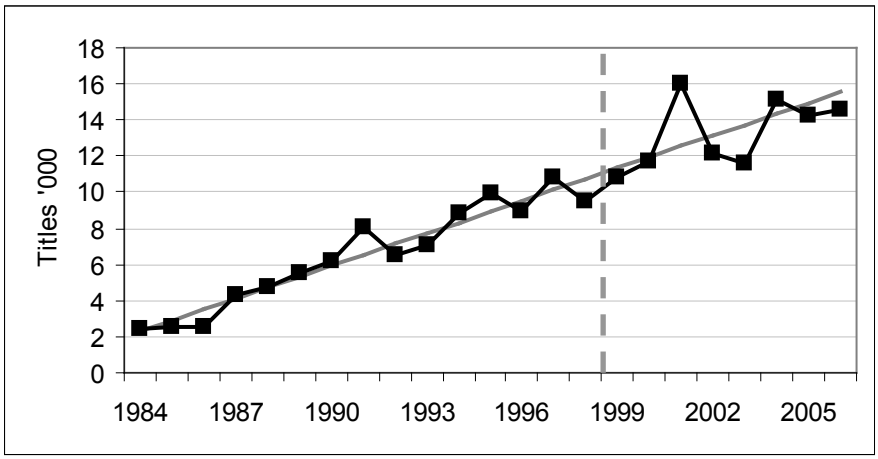
For the purpose of control and demonstration, the residuals of the quadratic and cubic models are analysed in the following section, too.

Intervention analysis of the residuals of regression models

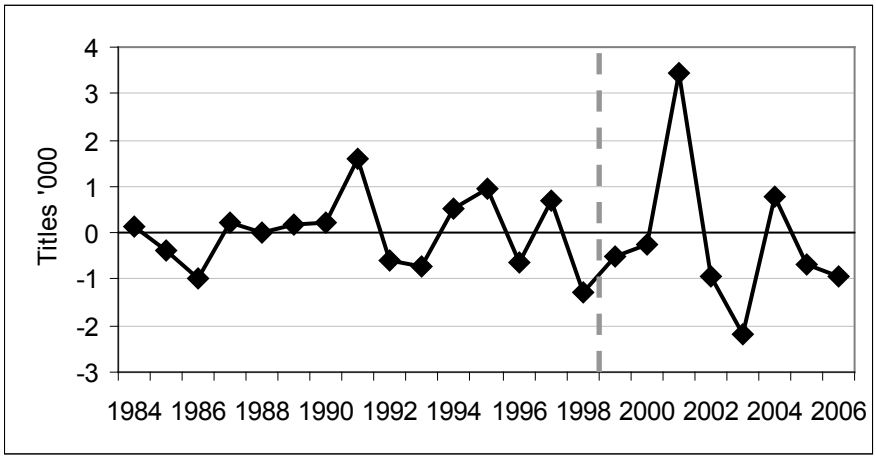
Figures 3.5 exhibits the time series 'new titles' and the predicted values from the OLS linear regression model as well as the model's residuals. (Note that the model is calculated from the boom period observations only.) The intervention analysis based on the C statistic and this model is exhibited in detail below to illustrate the procedure.

Figures 3.5: Documentation of the linear model for 'new titles'

a) Observations and linear model predictions



b) Residuals for the linear model



For each year of the time series – including both the boom and recession period – the expected value e_t from the regression model is subtracted from the observed value y_t to generate the value in relation to the linear trend during the boom period $\hat{\varepsilon}_t$; see Equation 6. In other words, the analysis discusses the residuals of the linear model for the time series of 'new releases'.

$$y_t - e_t = \hat{\varepsilon}_t \qquad (6)$$

The numerator of the C statistic D^2 becomes the sum of squared first difference values for the residuals; see Equation 7.

$$D^2 = \sum_{t=1}^{n-1} (\hat{\varepsilon}_t - \hat{\varepsilon}_{t+1})^2 \qquad (7)$$

The denominator of the C statistic $2SS_y$ becomes the sum of the squared differences between the residual for each year and the mean of all residuals in the period multiplied by two, as shown in Equation 8. In other words, it is twice the sum of squared errors.

$$2SS_{\hat{\varepsilon}} = 2\sum_{t=1}^{n} (\hat{\varepsilon}_t - \bar{\varepsilon})^2 \qquad (8)$$

The C statistic, standard error and Z statistic are calculated in the same way as illustrated in Equations 1, 4 and 5.

Table 3.6 documents two tests. The test for the boom period is run to confirm that the residuals of the linear model contain no significant trend. The resulting Z statistic of -0.496 is not significant. Thus, the null hypothesis of no significant deviation from randomness is accepted. This result implies that the newly created comparison series contains no significant trend so that it appears suitable as a reference for the intervention analysis proper.

After this preparation, the test of the entire time series establishes whether the observed values deviate significantly from the values extrapolated from the linear regression model of the boom period observations. The C and Z statistics are calculated to test whether there is evidence that: a) the resulting appended series contains a trend in addition to the trend observed in the pre-period, and/or b) the mean of appended series has shifted significantly in comparison to the pre-period. The mean of the residuals during the recession period is lower than that for the boom period (-163). The resulting Z statistic for the appended time series is -0.795 and not significant. That is, there is no significant evidence for less growth in the number of new full-length titles published each year during the recession period.

Table 3.6: Intervention analysis for 'new titles' – basis: linear OLS regression for the boom period

	Year	Score *y*	*Model prediction e* [(a)]	$\hat{\varepsilon} = y_t - e_t$		
Boom (pre-period)	1984	2,444	2,324	120	**Boom period:**	
	1985	2,555	2,925	-370	D^2 = 18,714,396	
	1986	2,561	3,526	-965		
	1987	4,356	4,127	229		
	1988	4,755	4,729	26	$2SS_{\hat{\varepsilon}}$ = 16,716,296	**Boom period and recession period:**
	1989	5,528	5,330	198	($\bar{\varepsilon}$ for the boom period is 0)	
	1990	6,151	5,931	220		D^2 = 65,074,504
	1991	8,108	6,533	1,575	C = -0.1195	
	1992	6,548	7,134	-586		$2SS_{\hat{\varepsilon}}$ = 56,171,208
	1993	7,015	7,735	-720	Sc = 0.2409	($\bar{\varepsilon}$ for the recession period is -163.1)
	1994	8,876	8,336	540		
	1995	9,907	8,938	969	Z = -0.4962	C = -0.1585
	1996	8,898	9,539	-641	not significant [(b)]	
	1997	10,836	10,140	696		Sc = 0.1994
	1998	9,451	10,742	-1,291		
Recession (post-period)	1999	10,840	11,343	-503		Z = -0.7947
	2000	11,678	11,944	-266		not significant [(c)]
	2001	15,980	12,545	3,435		
	2002	12,194	13,147	-953		
	2003	11,561	13,748	-2,187		
	2004	15,148	14,349	799		
	2005	14,249	14,951	-702		
	2006	14,624	15,552	-928		

[(a)] Values predicted in the linear OLS regression model for the pre-period (t=1 in 1984): *y=601.28t+1722.4*
[(b)] The critical value at 15 observations for the .05 level of significance is 1.6493, and for the .01 level of significance it is 2.2369 (Young, 1941).
[(c)] The critical value at 23 observations for the .05 level of significance is 1.6485, and for the .01 level of significance it is 2.2676 (Young, 1941).

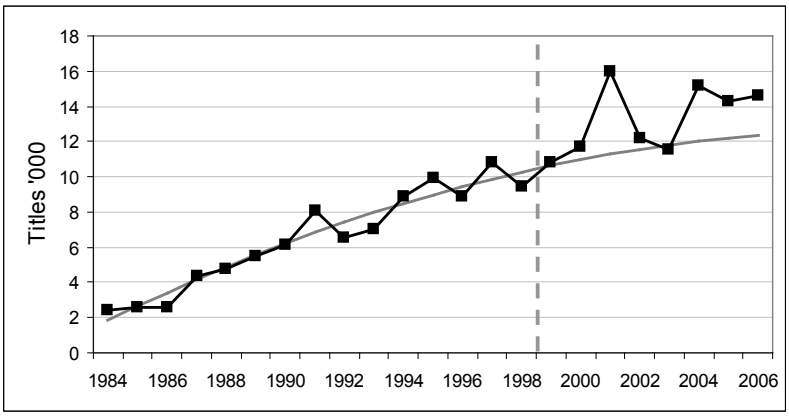
It has been argued above that applying the principle of parsimony, the linear regression model is preferable over any other model estimated in as far as its fit in the boom period is concerned. It has also been shown that the quadratic and cubic regressions lead to higher R^2 and that theoretical considerations imply that these two non-linear equations may perform better for some extrapolations. To confirm the results based on the linear equation, each of these two non-linear equations are used to generate additional comparison series for observations from the post-period. It is one advantage of the simplified intervention analysis for short time-series that a test on the basis of non-linear models can be run relatively easily – once a suitable model has been generated. The procedure is equivalent to that illustrated in the intervention analysis with the linear model.

Figures 3.6 and 3.7 plot the model predictions and the residuals for the quadratic and cubic regression model of the 'new titles' time series. The results of the intervention analysis are exhibited in tables 3.7 and 3.8. For both non-linear models, a test for the boom period

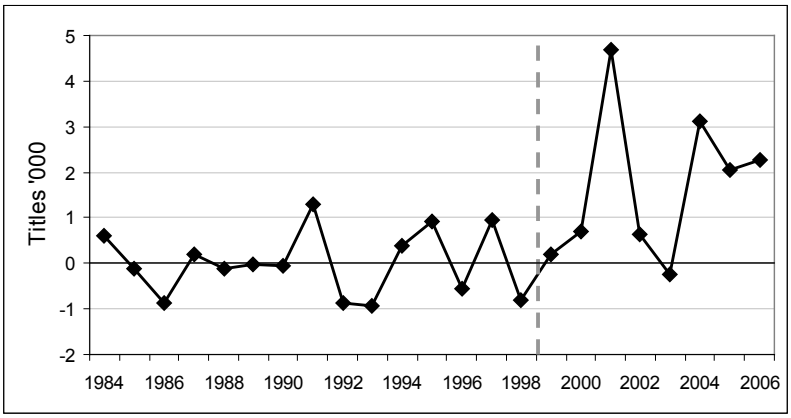
results in non-significant Z values (Z=-1.030 for the quadratic equation; Z=-1.114 for the cubic equation). That is the residuals do not deviate from a random distribution and the models are suitable for an intervention analysis. For the entire time-series – including the eight recession period observations – the post-period mean of the residuals for both non-linear models is positive (584 for the quadratic model; 1,865 for the cubic model). The analysis of the quadratic model's residuals results in a Z value of 1.076, which implies no significant change. For the cubic model, the Z value is 4.202, which is significant at the .001 level. That is, the intervention analysis using the cubic model indicates a significant increase in the number of 'new titles' for the recession period relative to the boom period.

Figures 3.6: Documentation of the quadratic model for 'new titles'

a) Observations and quadratic model predictions

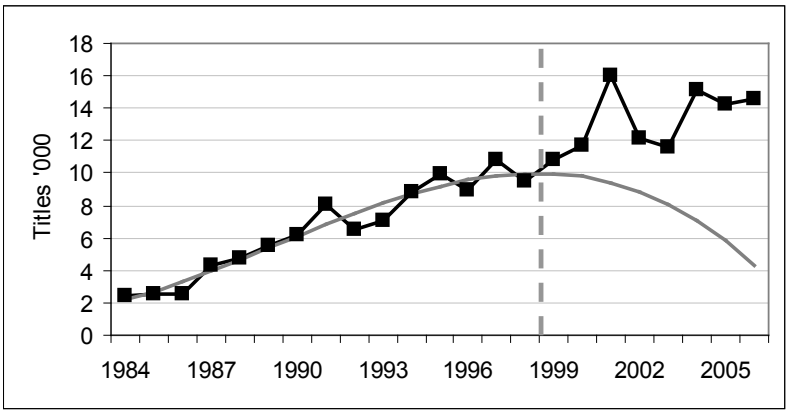


b) Residuals for the quadratic model



Figures 3.7: Documentation of the cubic model for ‘new titles’

a) Observations and cubic model predictions



b) Residuals for the cubic model

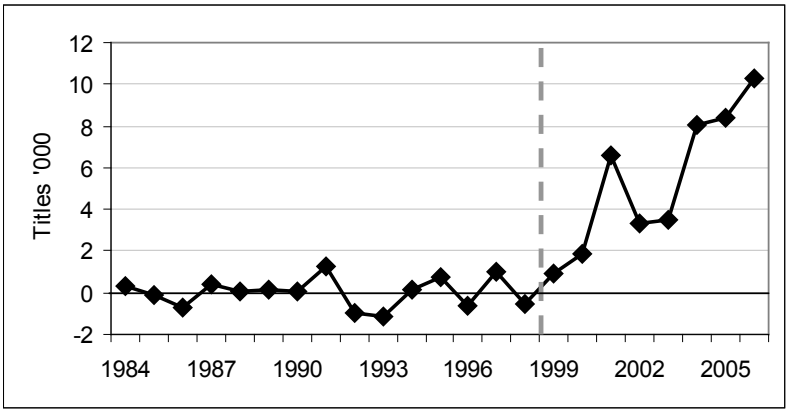


Table 3.7: Intervention analysis for 'new titles' – basis: quadratic OLS regression for the boom period [a]

	Year	Score *y*	*Model prediction e* [a]	$\hat{\varepsilon} = y_t - e_t$		
Boom (pre-period)	1984	2,444	1,853	591		
	1985	2,555	2,656	-101	**Boom period:**	
	1986	2,561	3,428	-867	D^2 = 18,288,845	
	1987	4,356	4,169	187		
	1988	4,755	4,879	-124	$2SS_{\hat{\varepsilon}}$ = 14,732,750	**Boom period and recession period:**
	1989	5,528	5,557	-29	($\bar{\varepsilon}$ for the boom period is 0)	
	1990	6,151	6,205	-54		D^2 = 65,509,526
	1991	8,108	6,822	1.286	C = -0.2482	
	1992	6,548	7,408	-860		$2SS_{\hat{\varepsilon}}$ = 83,416,940
	1993	7,015	7,963	-948	Sc = 0.2409	($\bar{\varepsilon}$ for the recession period is 584)
	1994	8,876	8,486	390		
	1995	9,907	8,979	928	Z = -1.0301	C = 0.2147
	1996	8,898	9,441	-543	not significant [b]	
	1997	10,836	9,872	964		Sc = 0.1994
	1998	9,451	10,271	-820		
Recession (post-period)	1999	10,840	10,640	200		Z = 1.0764
	2000	11,678	10,978	700		not significant [c]
	2001	15,980	11,284	4.696		
	2002	12,194	11,560	634		
	2003	11,561	11,805	-244		
	2004	15,148	12,018	3.130		
	2005	14,249	12,201	2.048		
	2006	14,624	12,353	2.271		

[a] Values predicted in the quadratic OLS regression model for the pre-period (t=1 in 1984): $y=1019.470+849.361t-15.505t^2$

[b] The critical value at 15 observations for the .05 level of significance is 1.6493, and for the .01 level of significance it is 2.2369 (Young, 1941).

[c] The critical value at 23 observations for the .05 level of significance is 1.6485, and for the .01 level of significance it is 2.2676 (Young, 1941).

Table 3.8: Intervention analysis for the number of 'new titles' – basis: cubic OLS regression for the boom period [a]

	Year	Score *y*	*Model predic-tion* *e* [a]	$\hat{\varepsilon} = y_t - e_t$		
Boom (pre-period)	1984	2,444	2,159	285	**Boom period:**	**Boom period and recession period:**
	1985	2,555	2,700	-145	D^2 = 17,550,713	D^2 = 77,485,067
	1986	2,561	3,311	-750	$2SS_{\hat{\varepsilon}}$ = 13,837,703 ($\overline{\varepsilon}$ for the boom period is 0)	$2SS_{\hat{\varepsilon}}$ = 478,372,735 ($\overline{\varepsilon}$ for the recession period is 1865.4)
	1987	4,356	3,974	382		
	1988	4,755	4,674	81		
	1989	5,528	5,393	135		
	1990	6,151	6,115	36	C = -0.2683	C = 0.8380
	1991	8,108	6,822	1,286		
	1992	6,548	7,498	-950	Sc = 0.2409	Sc = 0.1994
	1993	7,015	8,127	-1,112		
	1994	8,876	8,691	185	Z = -1.1138 not significant [b]	Z = 4.2021 significant at the 0.001 level [c]
	1995	9,907	9,174	733		
	1996	8,898	9,558	-660		
	1997	10,836	9,828	1,008		
	1998	9,451	9,966	-515		
Recession (post-period)	1999	10,840	9,956	884		
	2000	11,678	9,780	1,898		
	2001	15,980	9,423	6,557		
	2002	12,194	8,867	3,327		
	2003	11,561	8,095	3,466		
	2004	15,148	7,091	8,057		
	2005	14,249	5,838	8,411		
	2006	14,624	4,319	10,305		

[a] Values predicted in the cubic OLS regression model for the pre-period (t=1 in 1984): $y=1703.706+406.061t+51.577t^2-2.795t^3$

[b] The critical value at 15 observations for the .05 level of significance is 1.6493, and for the .01 level of significance it is 2.2369 (Young, 1941).

[c] The critical value at 23 observations for the .05 level of significance is 1.6485, and for the .01 level of significance it is 2.2676 (Young, 1941).

For the purpose of this study, the divergent results for the linear and quadratic models on the one hand and the cubic model on the other are of little concern. In the period under investigation, the linear model is preferable. More importantly, all three analyses coincide regarding the main hypothesis: they reject the notion that the recession period would exhibit a significant decrease in the number of 'new titles' in comparison to the pattern apparent during the preceding boom period. Considering the severity and duration of the recession, this is an astounding result.

Intervention analysis of differenced time series

Transforming the data by calculating the appropriate x^{th} order difference provides an alternative to the discussion of regression models and their residuals. The main advantage of differencing is that it avoids much of the judgment involved in the identification and selection of regression models. One disadvantage is that data is lost in the process of differencing,

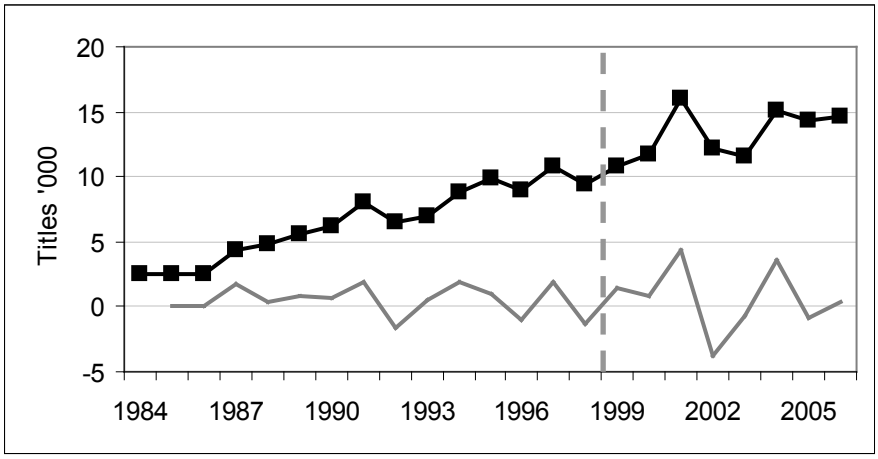
which matters for short time series in particular. The main drawback of differencing is that it generates transformed time series with a relatively great variance, which may reduce the statistical power of the intervention analysis. In the following, at least the first and second difference is studied and differencing will be continued until a non-significant Z value for the boom period is achieved.

Figures 3.8 and 3.9 plot the observations for the 'new titles' time series and its first and second difference, $\Delta^1 y$ and $\Delta^2 y$. Tables 3.9 and 3.10 exhibit the results of the intervention analysis for the differenced time series. For the first difference, the result implies no significant change. The boom period mean is 501. The Z value is -1.406 and not significant, so that the first difference of the time series is suitable for the analysis. The mean for the recession period is 647. The Z value for the entire time series is not significant (Z=-2.077). For the second difference, the result also implies no significant change. As was the case for the first differences, the mean of second difference scores is smaller for the boom period than for the recession period (220 and -115). The Z values from the analyses of the second difference are not significant (-1.751 for the boom period and -2.716 for the entire period).

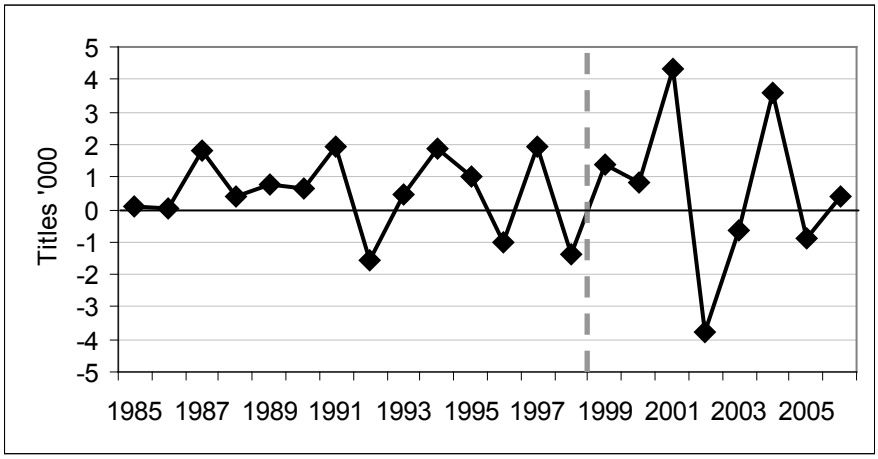
These results are consistent with those of the residual analysis in the preceding section. There is no significant evidence for a decline in the number of new titles published during the recession period in comparison to the preceding boom period.

Figures 3.8: Documentation of first difference scores for 'new titles'

a) Observations and their first difference scores ($\Delta^1 y$)

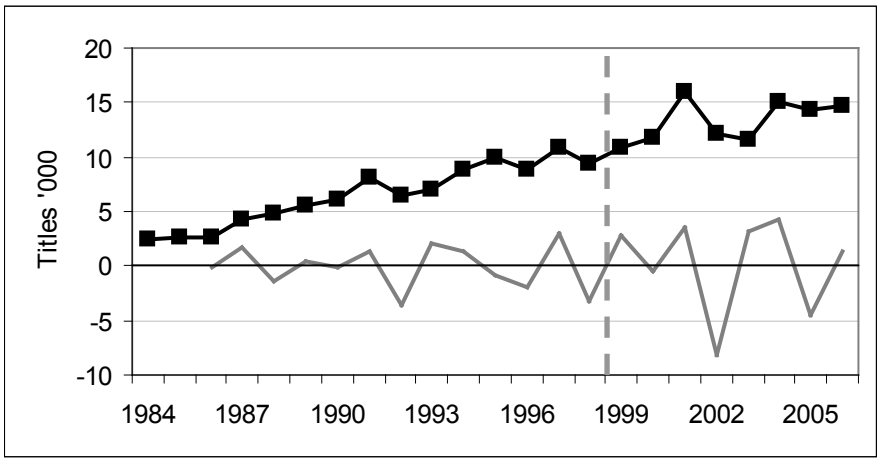


b) First difference scores enlarged



Figures 3.9: Documentation of second difference scores for 'new titles'

a) Observations and their second difference scores ($\Delta^2 y$)



b) Second difference scores enlarged

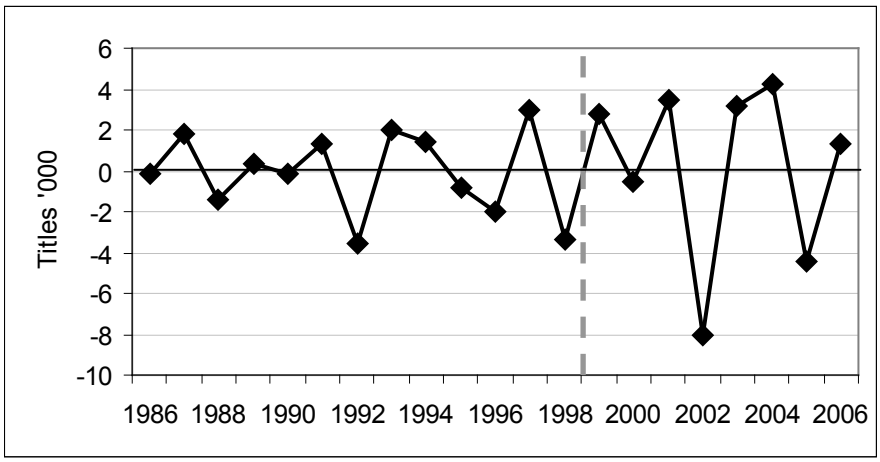


Table 3.9: Intervention analysis for 'new titles' – basis: first difference

	Year	Score y	*1st difference* $\Delta^1 y$		
Boom (pre-period)	1984	2,444	--	**Boom period:**	
	1985	2,555	111	D^2 = 50,101,186	
	1986	2,561	6		
	1987	4,356	1,795	$2SS(\Delta^1 y)$ = 37,144,415 (mean for $\Delta^1 y$ during the boom period is 500)	**Boom period and recession period:**
	1988	4,755	399		
	1989	5,528	773		D^2 = 185,011,984
	1990	6,151	623		
	1991	8,108	1,957		$2SS(\Delta^1 y)$ = 130,049,138 (mean for $\Delta^1 y$ during the recession period is 584)
	1992	6,548	-1,560	C = -0.3488	
	1993	7,015	467		C = -0.4226
	1994	8,876	1,861	Sc = 0.2481	
	1995	9,907	1,031		Sc = 0.2035
	1996	8,898	-1,009		
	1997	10,836	1,938	Z = -1.4061 not significant [(a)]	Z = -2.0769 not significant [(b)]
	1998	9,451	-1,385		
Recession (post-period)	1999	10,84	1,389		
	2000	11,678	838		
	2001	15,98	4,302		
	2002	12,194	-3,786		
	2003	11,561	-633		
	2004	15,148	3587		
	2005	14,249	-899		
	2006	14,624	375		

[(a)] The critical value at 14 observations for the .05 level of significance is 1.6494, and for the .01 level of significance is 2.2310 (Young, 1941).
[(b)] The critical value at 22 observations for the .05 level of significance is 1.6486, and for the .01 level of significance is 2.2647 (Young, 1941).

Table 3.10: Intervention analysis for 'new titles' – basis: second difference

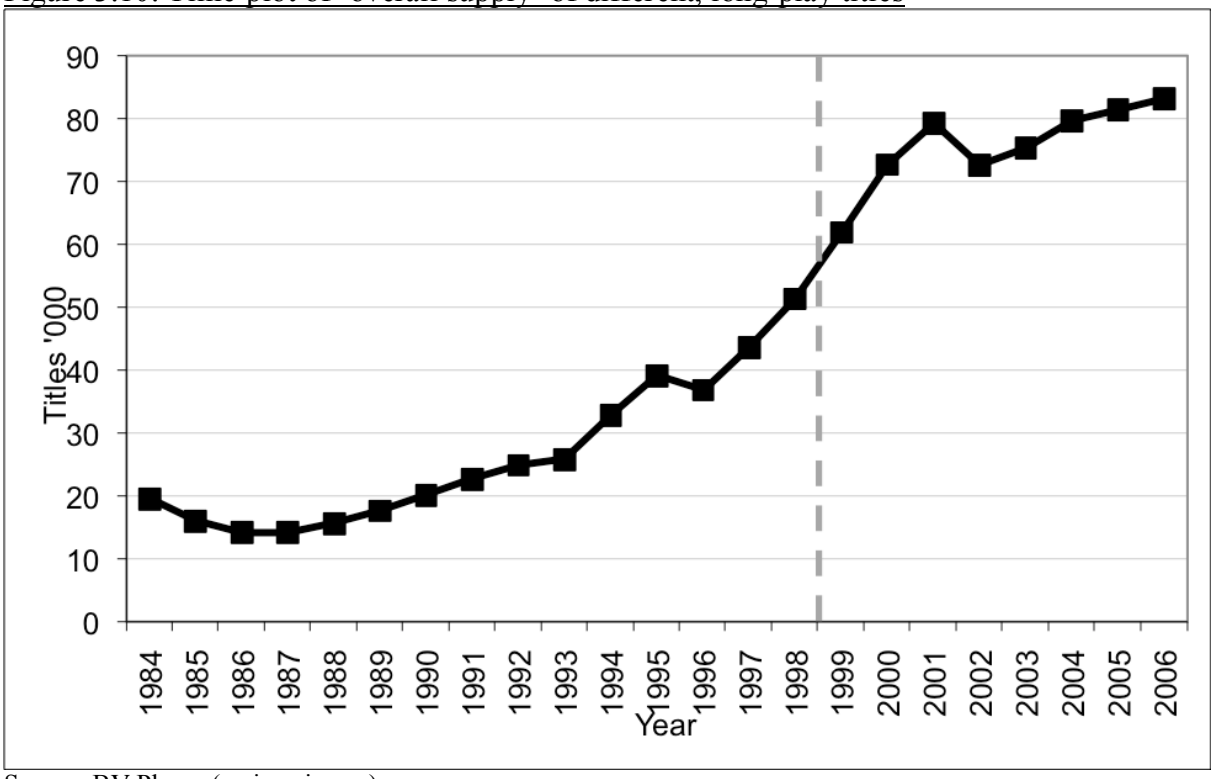
	Year	Score y	*2nd difference* $\Delta^2 y$		
Boom (pre-period)	1984	2,444	--	**Boom period:**	
	1985	2,555	--	D^2 = 144,603,364	
	1986	2,561	-105		
	1987	4,356	1789	$2SS(\Delta^2 y)$ = 99,858,062 (mean for $\Delta^2 y$ during the boom period is -115.1)	**Boom period and recession period:**
	1988	4,755	-1396		D^2 = 578,871,933
	1989	5,528	374		
	1990	6,151	-150	C = -0.4481	$2SS(\Delta^2 y)$ = 370,017,330 (mean for $\Delta^2 y$ during the recession period is 220.0)
	1991	8,108	1334		
	1992	6,548	-3517	Sc = 0.2559	C = -0.5644
	1993	7,015	2027		
	1994	8,876	1394	Z = -1.7512 not significant [(a)]	Sc = 0.2078
	1995	9,907	-830		
	1996	8,898	-2040		Z = -2.7163 not significant [(b)]
	1997	10,836	2947		
	1998	9,451	-3323		
Recession (post-period)	1999	10,84	2774		
	2000	11,678	-551		
	2001	15,98	3464		
	2002	12,194	-8088		
	2003	11,561	3153		
	2004	15,148	4220		
	2005	14,249	-4486		
	2006	14,624	1274		

[(a)] The critical value at 13 observations for the .05 level of significance is 1.6495, and for the .01 level of significance is 2.2241 (Young, 1941).
[(b)] The critical value at 21 observations for the .05 level of significance is 1.6488, and for the .01 level of significance is 2.2616 (Young, 1941).

3.3 OVERALL SUPPLY

Next to the number of new titles released each year, policy makers and stakeholders may be concerned about the effect that the recession could have on the overall supply of sound recordings. Figure 3.10 exhibits a time series on the overall number of different, long-play titles supplied on the predominant sound-carrier format – referred to as 'overall supply' in the following. The time series contains 23 observations for as many years. The fifteen earlier years (1984-1998) are from the boom period and the following eight (1999-2006) are from the recession period. A dashed grey line marks the transition from the boom period to the recession period.

Figure 3.10: Time-plot of 'overall supply' of different, long-play titles



Source: BV Phono (various issues).

Has 'overall supply' declined during the recession period?

A visual inspection of the entire time series finds that it contains a pronounced upward trend, perhaps with the exception of the first four years. An upward trend is also apparent for the recession period, including the more recent years. The 'overall supply' in 2006 exceeds the 1998 level by 62.4%. The 2006 score is also greater than an early peak in the year 2001. The mean for 'overall supply' for the recession period is 47.7% greater than the preceding boom period's peak level.

This section follows the same procedure as that used in the analysis of the 'new titles' series. The results of an initial, linear OLS regression of the recession period data is presented in tables 3.11 and figure 3.11. (For a discussion of the limitations of linear regression for the

purpose at hand, see section 3.2). The model is significant at the .01 level and brings up a positive slope.[47] That is, the hypothesis that the 'overall supply' would have fallen in absolute terms during the recession period can be rejected. Figure 3.11 illustrates that the regression analysis of this short segment of the 'overall supply' time series has more statistical power than in the case of the 'new titles' series. However, results may be biased by autocorrelation.

Tables 3.11: OLS regression for 'overall supply' during the recession period [(a)]

a) Model summary and parameter estimates

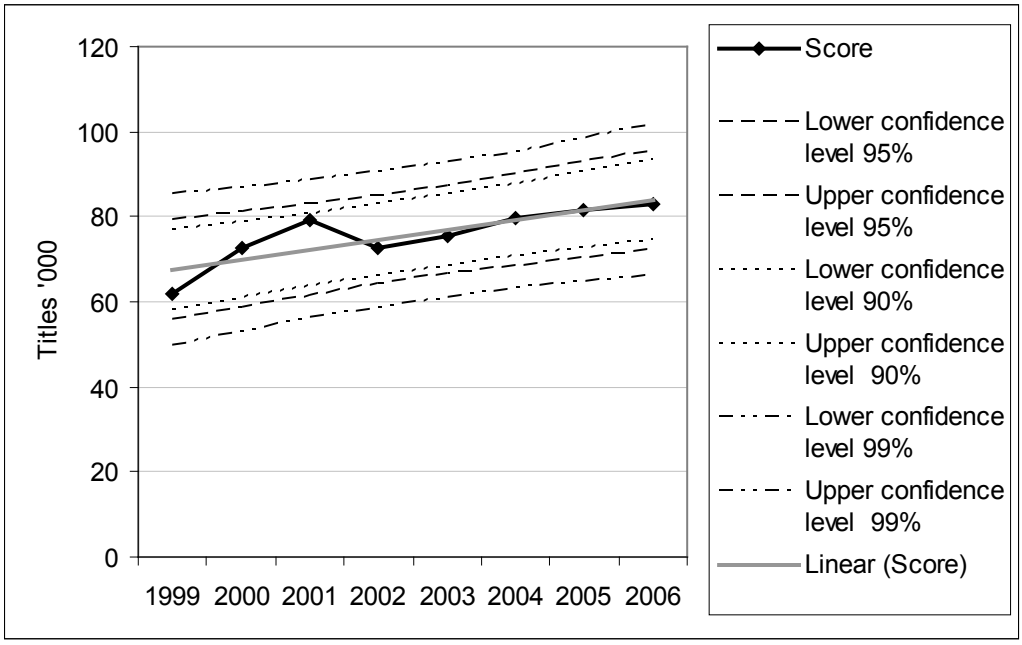
Equation	Model Summary					Parameter Estimates	
	R^2	F	df1	df2	Sig.	Constant	b1
Linear	.704	14.282	1	6	.009	65,200.57	2,339.18

b) Coefficients

	Unstandardised Coefficients		Standardised Coefficients		
	B	Std. Error	(Beta)	T	Sig.
Case Sequence	2,339.18	618.97	.839	3.779	.009
(Constant)	65,200.57	3,125.64		20.860	.000

[(a)] t=1 in 1999

Figure 3.11: 'Overall supply' during the recession, its linear trend and confidence intervals



The results of a test for 'non-random variation' for the recession period are reported in table 3.12. The Z statistic is 2.061, which is significant at the .05 level. This confirms the result of the regression: 'overall supply' increased during the recession period.

[47] A visual inspection of the residuals indicated no apparent pattern, in as far as this can be determined for eight observations.

Table 3.12: Results of a test for non-randomness based on the C statistic for 'overall supply' during the recession period

Year	Number of Titles *y*	
1999	61,904	$D^2 = 237{,}625{,}269$
2000	72,657	
2001	79,262	$2SS_y = 652{,}721{,}150$
2002	72,507	($\bar{y}$ for the boom period is 51,272)
2003	75,299	$C = 0.6359$
2004	79,603	
2005	81,396	Sc = 0.3086
2006	83,187	$Z = 2.0607$
		significant at the .05 level [(a)]

[(a)] The critical value at 8 observations for the .05 level of significance is 1.6486 and for the .01 level it is 2.1664 (Young, 1941).

Has growth of 'overall supply' slowed during the recession?

An intervention analysis can help to establish whether the rate of growth has declined during the recession period. This analysis requires the de-trending of the pre-period data by the adequate transformation. In order to do so, two types of transformations are applied: differencing on the one hand and discussing the residuals of suitable regression models on the other. For a more detailed description of the method employed, see section 3.2.

Regression model identification

Table 3.13 exhibits the model summaries for 11 standard regression models calculated for 'overall supply' during the boom period. For the time series on 'overall supply', the linear model is not favourable. Several non-linear equations result in a considerably better fit, with the quadratic and cubic equations being particularly well suited since they achieve the highest R^2 and F ratio.

An inspection of the residual plots presented in figures 3.12 confirms the preference for the quadratic and cubic model. The residuals of the linear regression model contain a U-shaped pattern, which suggests that the model does not fully capture the regularities in the time series. Both the residuals for the quadratic and cubic models exhibit S-shaped patterns for the first eight to ten data points, which are less pronounced then the pattern in the linear model's residuals and which give way to a more random and variable distribution for later years in the boom period. On the one hand, this confirms that the two non-linear models are preferable. On the other, there may be a break in the time series during the first half of the 1990s. The documentation of the data does not contain a change in data collection and presentation that could explain this break in the time series.

Table 3.14 documents a formal comparison between the fit for the linear, quadratic and cubic equations. The quadratic model fits the data significantly better than the linear model ($p<.001$). The p value for the comparison of the fit between the quadratic model and the cubic model is .0986 (>.05 but significant at the .1 level), which would often be associated

with a preference for the less complex, quadratic model. The residuals for both models are used for intervention analyses below.

Table 3.13: OLS regression for 'overall supply' during the boom period – model summary and parameter estimates [(a)]

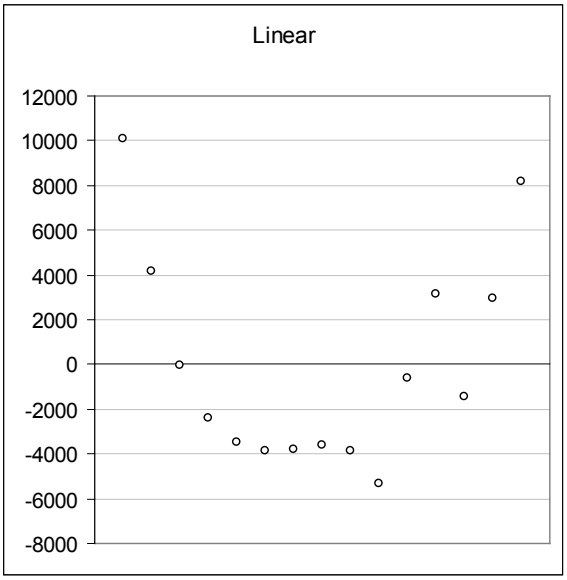
	Model Summary					Parameter Estimates			
Equation	**R^2**	**F**	**df1**	**df2**	**Sig.**	**Constant**	**b1**	**b2**	**b3**
Linear	.839	67.895	1	13	.000	6,988.162	2,406.521	--	--
Logarithmic	.539	15.210	1	13	.002	5,723.179	11,031.016	--	--
Inverse	.214	3.533	1	13	.083	31,125.865	-22,084.968	--	--
Quadratic	.976	241.551	2	12	.000	18,448.829	-1,638.420	252.809	--
Cubic	.980	178.112	3	11	.000	21,315.736	-3,495.820	533.878	-11.711
Compound	.868	85.119	1	13	.000	11,826.281	1.093	--	--
Power	.576	17.686	1	13	.001	11,143.511	.414	--	--
S	.223	3.737	1	13	.075	10.269	-.819	--	--
Growth	.868	85.119	1	13	.000	9.378	.089	--	--
Exponential	.868	85.119	1	13	.000	11,826.281	.089	--	--
Logistic	.868	85.119	1	13	.000	8.46E-005	.915	--	--

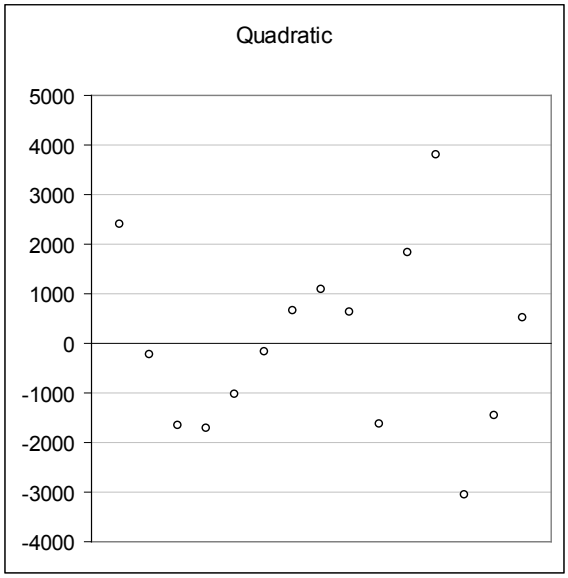
[(a)] t=1 in 1984.

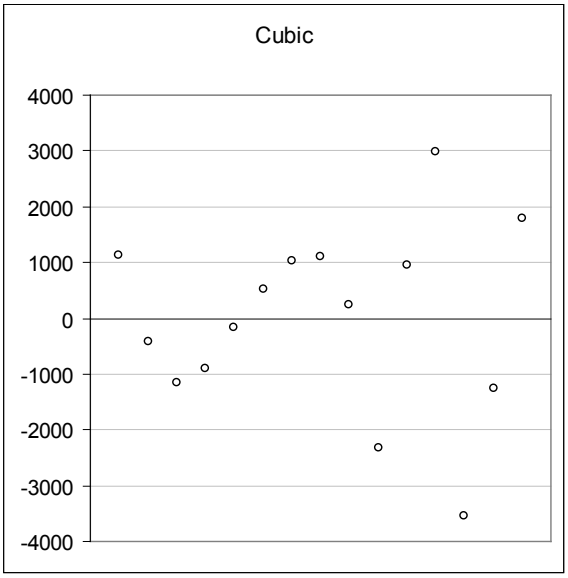
Table 3.14: F test comparing the fit of selected models of 'overall supply'

Equation	**df**	**SS(X)**	**F ratio**	**p**
Linear	13	310,487,799.2	*Linear-quadratic*	
			67.59	.000
Quadratic	12	46,828,252.5	*Quadratic-cubic*	
			2.22	.0986
Cubic	11	38,971,702.7		

Figures 3.12: Residual plots for selected regression models for 'overall supply' during boom period





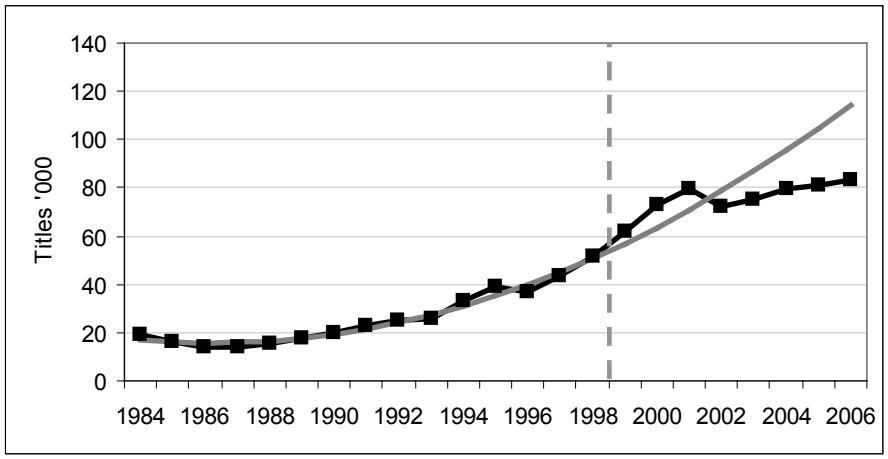


Intervention analysis of the regression models' residuals

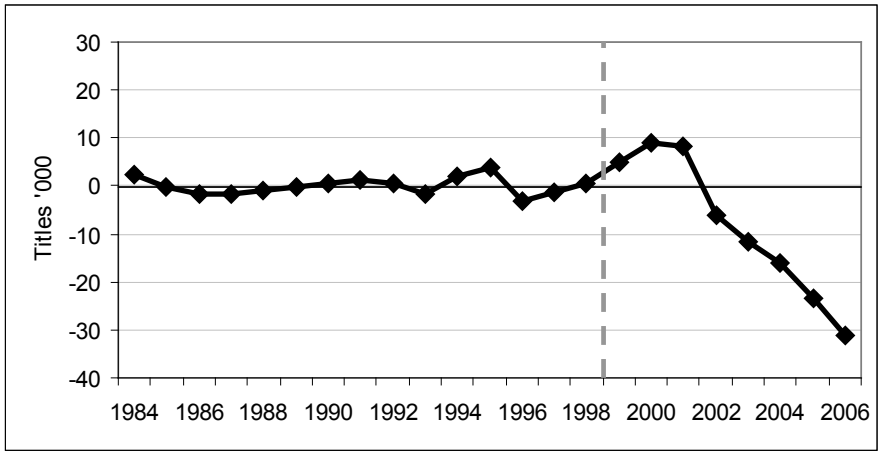
Figures 3.13 and 3.14 exhibit the trend line made up of the values predicted by the quadratic regression models for the boom period data of 'overall supply'. The figures include extrapolations for the recession period and separate figures present the model residuals. After the first three years, the observed values for the recession period lay below the values predicted by the quadratic regression model apparently following a shallower upward trend.

Figures 3.13: Documentation of the quadratic model for 'overall supply'

a) Observations and quadratic model predictions

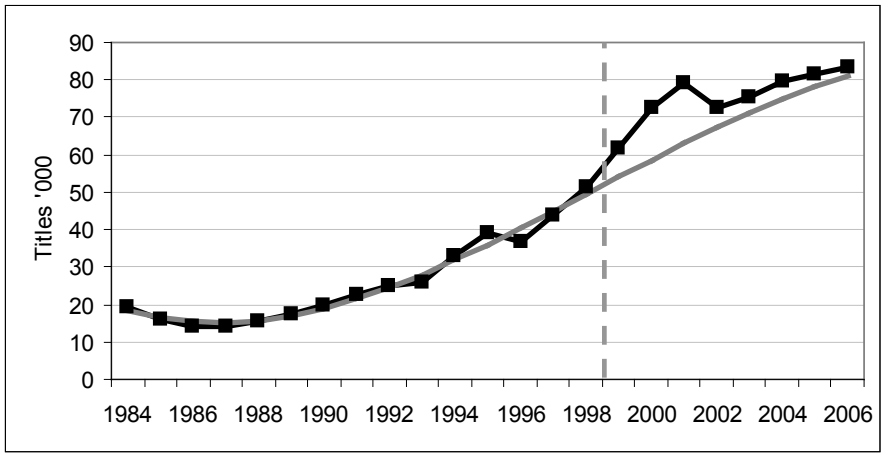


b) Residuals for the quadratic model

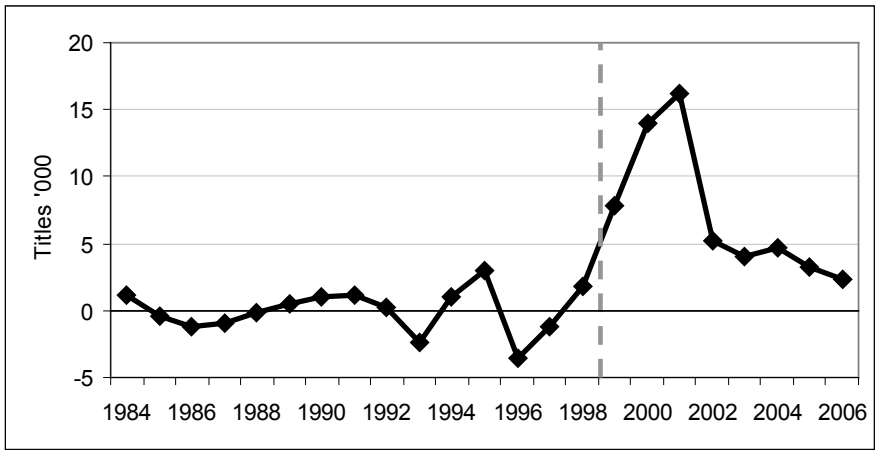


Figures 3.14: Documentation of the cubic model for 'overall supply'

a) Observations and cubic model predictions



b) Residuals for the cubic model



Tables 3.15 and 3.16 display the results of the intervention analysis of the cubic and quadratic regression models' residuals. For the quadratic model, the boom period contains no significant trend (Z=.342), which makes the model suitable as a basis of the intervention analysis. The mean of the residuals for the recession period is -8,231 and the Z value for the entire period is 4.383, which is significant at the .001 level. This supports the conclusion that the 'overall supply' of sound recordings on CDs has expanded significantly less rapidly during the recession period than if it had followed the trend during the boom period.

There are two objections to this conclusion, however – one that concerns theoretical considerations and one that regards the critical issue of model identification. First, the quadratic model not only predicts perpetual growth in the 'overall supply' from 1986 onwards but also perpetually increasing rate of growth, which does not seem feasible in a confined market over longer periods of time. Second, the cubic model fits the data considerably better than the quadratic model ($p<.1$) and an intervention analysis based on this cubic model supports the opposite conclusion.

The cubic model is suitable for an intervention analysis (Z=-0.3214). The mean for the residuals during the recession period is positive (2,506) and the Z value for the entire period is significant at the .001 level (Z=3.556). That is, an analysis of the residuals of the cubic model implies that the 'overall supply' has expanded more rapidly during the recession than during the boom period, contrary to the analysis based on a quadratic model. A visual inspection of the residuals suggests that the supply 'shot up' with the beginning of the recession period and then converged with the trend suggested by the cubic model for the boom period thereafter; see figures 3.14.

Table 3.15: Intervention analysis for 'overall supply' – basis: quadratic OLS regression for the boom period

	Year	Score *y*	*Model prediction e* [a]	$\hat{\varepsilon} = y_t - e_t$		
Boom (pre-period)	1984	19,477	17,063	2,414	**Boom period:** $D^2 = 85{,}939{,}395$ $2SS_{\hat{\varepsilon}} = 93{,}656{,}505$ ($\bar{\varepsilon}$ for the boom period is 0) $C = 0.0824$ $Sc = 0.2409$ $Z = 0.3420$ not significant [b]	**Boom period and recession period:** $D^2 = 499{,}282{,}171$ $2SS_{\hat{\varepsilon}} = 3{,}967{,}723{,}784$ ($\bar{\varepsilon}$ for the recession period is -8,230.57) $C = 0.8742$ $Sc = 0.1994$ $Z = 4.3833$ Significant the .001 level [c]
	1985	15,946	16,183	-237		
	1986	14,164	15,809	-1,645		
	1987	14,222	15,940	-1,718		
	1988	15,560	16,577	-1,017		
	1989	17,558	17,719	-161		
	1990	20,017	19,368	649		
	1991	22,621	21,521	1,100		
	1992	24,804	24,181	623		
	1993	25,703	27,346	-1,643		
	1994	32,834	31,016	1,818		
	1995	38,999	35,192	3,807		
	1996	36,818	39,874	-3,056		
	1997	43,610	45,061	-1,451		
	1998	51,272	50,755	517		
Recession (post-period)	1999	61,904	56,953	4,951		
	2000	72,657	63,657	9,000		
	2001	79,262	70,867	8,395		
	2002	72,507	78,583	-6,076		
	2003	75,299	86,804	-11,505		
	2004	79,603	95,531	-15,928		
	2005	81,396	104,763	-23,367		
	2006	83,187	114,501	-31,314		

[a] Values predicted in the quadratic OLS regression model for the pre-period (t=1 in 1984): $y=18{,}448.83-1{,}638.42t+252.81t^2$

[b] The critical value at 15 observations for the .05 level of significance is 1.6493, and for the .01 level of significance is 2.2369 (Young, 1941).

[c] The critical value at 23 observations for the .05 level of significance is 1.6485, and for the .01 level of significance is 2.2676 (Young, 1941).

Table 3.16: Intervention analysis for 'overall supply' – basis: cubic OLS regression for the boom period

	Year (1984 =1)	Score *y*	*Model predic-tion* *e* [(a)]	$\hat{\varepsilon} = y_t - e_t$		
Boom (pre-period)	1984	19,477	17,063	2,414	**Boom period:**	**Boom period and recession period:**
	1985	15,946	16,183	-237	$D^2 = 83{,}978{,}372$	
	1986	14,164	15,809	-1,645		
	1987	14,222	15,940	-1,718		
	1988	15,560	16,577	-1,017	$2SS_{\hat{\varepsilon}} = 77{,}943{,}405$	
	1989	17,558	17,719	-161	($\bar{\varepsilon}$ for the boom	
	1990	20,017	19,368	649	period is 0)	$D^2 = 288{,}840{,}117$
	1991	22,621	21,521	1,100		
	1992	24,804	24,181	623	$C = 0.0774$	$2SS_{\hat{\varepsilon}} = 992{,}878{,}415$
	1993	25,703	27,346	-1,643		($\bar{\varepsilon}$ for the recession
	1994	32,834	31,016	1,818	$Sc = 0.2409$	period is 7203.7)
	1995	38,999	35,192	3,807		
	1996	36,818	39,874	-3,056	$Z = 0.3214$	$C = 0.7091$
	1997	43,610	45,061	-1,451	not significant [(b)]	
	1998	51,272	50,755	517		$Sc = 0.1994$
Recession (post-period)	1999	61,904	56,953	4,951		
	2000	72,657	63,657	9,000		$Z = 3.5556$
	2001	79,262	70,867	8,395		significant the .001
	2002	72,507	78,583	-6,076		level [(c)]
	2003	75,299	86,804	-11,505		
	2004	79,603	95,531	-15,928		
	2005	81,396	104,763	-23,367		
	2006	83,187	114,501	-31,314		

[(a)] Values predicted in the cubic OLS regression model for the pre-period (t=1 in 1984): $y=21{,}315.74-3{,}495.82t+533.88t^2-11.71t^3$

[(b)] The critical value at 15 observations for the .05 level of significance is 1.6493, and for the .01 level of significance is 2.2369 (Young, 1941).

[(c)] The critical value at 23 observations for the .05 level of significance is 1.6485, and for the .01 level of significance is 2.2676 (Young, 1941).

The analysis brings up opposite results depending on the choice between two regression models for which no certain hierarchy can be determined. This illustrates a problem that the analysis of many short, non-stationary times series may run into if they do not follow a linear trend: on the basis of a few observations it will often be tricky to identify a single model that provides 'best fit' and the choice between different non-linear models may result in radically different predictions. This is the reason why the analysis of each time series in this section tends to include a variety of models and data transformations for the purpose of control and verification between them. The need for heuristic procedures in model selection model and verification by comparison is not unique to the intervention analysis in this paper. Such complications are a feature of other types of time series analyses as well, say the ARIMA approach.

For the time series on 'overall supply', the intervention analysis based on studying the residuals of regression models remains inconclusive. In contrast to the preceding analysis of

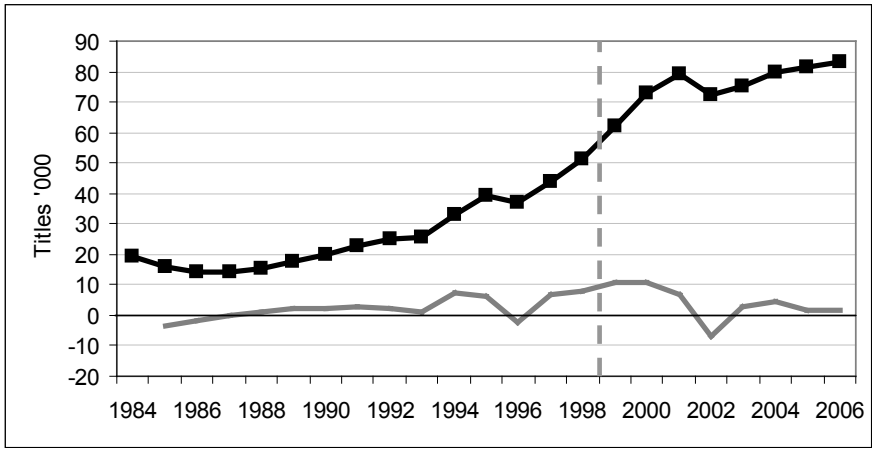
the ‘new titles’ time series, there may be slower growth in the ‘overall supply’ of sound recordings during the recession period.

Intervention analysis of differenced time series

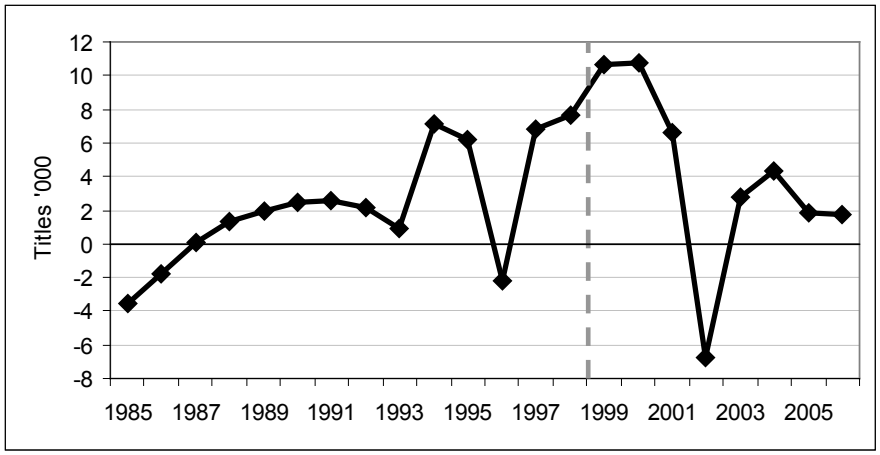
The analysis of the differenced time series may help to generate clearer results than the investigation of regression models’ residuals by itself. Figures 3.15 and 3.16 plot the first and second difference scores of the ‘overall supply’ time series. Similar to the regression residuals discussed above, these difference scores contain a pattern for earlier years and then become more random and variable. Again, this suggests a break in the time series during the early 1990s.

Figures 3.15: Documentation of first difference scores for ‘overall supply’

a) Observations and their first difference scores

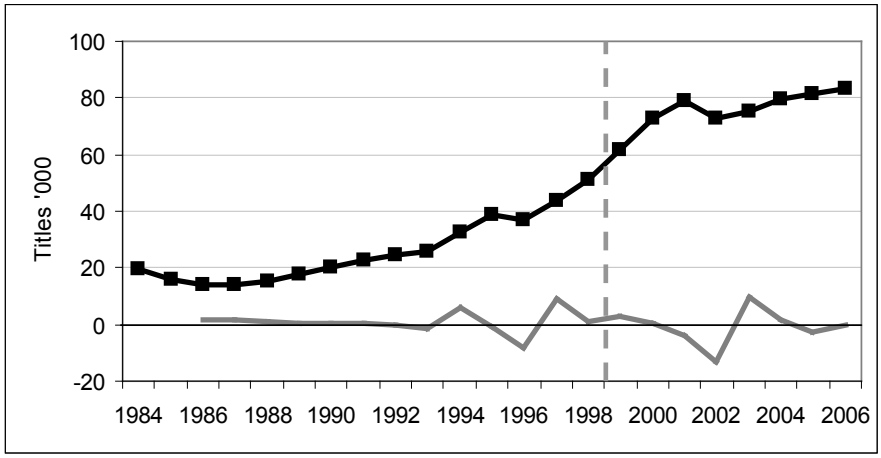


b) First difference scores enlarged

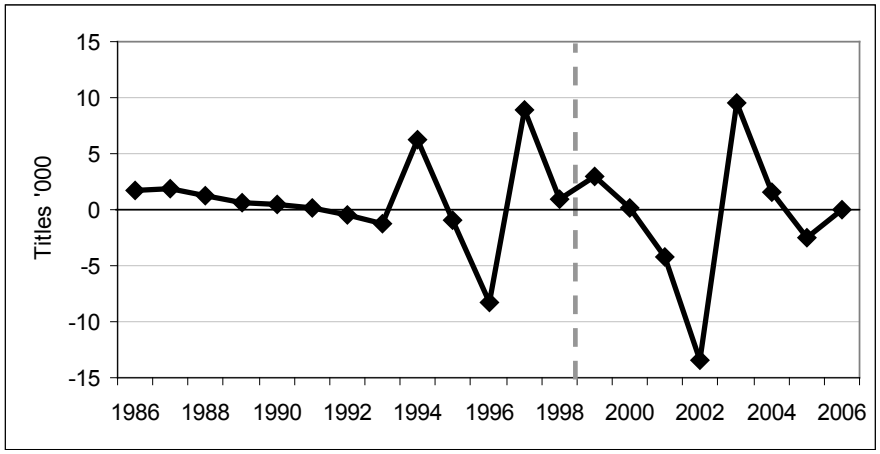


Figures 3.16: Documentation of second difference scores for 'overall supply'

a) Observations and their second difference scores



b) Second difference scores enlarged



See tables 3.17 and 3.18 for the results of an intervention analysis using the first and second difference of 'overall supply'. The mean of the series' first difference scores during the boom period is 2,271 and the Z value is 1.588, which is not significant at the .05 level. That is, any trend in this series is (just about) weak enough to accommodate for an intervention analysis. The mean for the recession period is 3,989; the Z value is 1.842 and significant at the .05 level. To interpret this result, a complication needs to be acknowledged. The intervention analysis based on the C statistic as developed by Tryon (1982) has been criticised for a possible source of inflated type I error (mistakenly rejecting the null hypothesis of 'no change' between different periods of the time series), see Blumberg (1982). Since the standard error *Sc* declines with the number of observations, it is possible that a test of a shorter part of the time series brings up an insignificant result, and a test for the entire series (or a longer part of it) brings up a significant result without a corresponding difference in the C statistic, solely because the standard error is smaller for the series that contains more data points. This is the case here: the C statistic for the boom period is actually smaller than that for the entire period, i.e. the slope of the time series during the boom period relative to its

variability is greater than during the entire period. To avoid invalid inferences, Tryon (1984) suggests dividing the longer time series under investigation with the standard error of the shorter time series to reduce this bias. The resulting corrected Z value is 1.512 and not significant. That is, the analysis of first differences supports the conclusion that there is no change.[48]

Table 3.17: Intervention analysis for 'overall supply' – basis: first difference

	Year	Score *y*	*1st difference* $\Delta^1 y$		
Boom (pre-period)	1984	2,444	--		
	1985	2,555	-3,531	**Boom period:**	
	1986	2,561	-1,782	$D^2 = 201{,}276{,}369$	
	1987	4,356	58		**Boom period and recession period:**
	1988	4,755	1,338	$2SS(\Delta^1 y) = 332{,}148{,}445$	
	1989	5,528	1,998	(mean for $\Delta^1 y$ during the	
	1990	6,151	2,459	boom period is 2271.0)	$D^2 = 505{,}543{,}892$
	1991	8,108	2,604		
	1992	6,548	2,183	$C = 0.3940$	$2SS(\Delta^1 y) = 808{,}898{,}527$
	1993	7,015	899		(mean for $\Delta^1 y$ during the
	1994	8,876	7,131	$Sc = 0.2481$	recession period is 3,989.4)
	1995	9,907	6,165		
	1996	8,898	-2,181	$Z = 1.5883$	$C = 0.3750$
	1997	10,836	6,792	not significant [(a)]	
	1998	9,451	7,662		$Sc = 0.2035$
Recession (post-period)	1999	10,84	10,632		
	2000	11,678	10,753		$Z = 1.8430$
	2001	15,98	6,605		
	2002	12,194	-6,755		corrected $Z = 1.5118$
	2003	11,561	2,792		not significant [(b)]
	2004	15,148	4,304		
	2005	14,249	1,793		
	2006	14,624	1,791		

[(a)] The critical value at 14 observations for the .05 level of significance is 1.6494, and for the .01 level of significance is 2.2310 (Young, 1941).
[(b)] The critical value at 22 observations for the .05 level of significance is 1.6486, and for the .01 level of significance is 2.2647 (Young, 1941).

[48] There is another difficulty where Z values for different periods with a time series lay closely together, which is not acknowledged by either Tryon (1982, 1984) or Blumberg (1984). It is not sufficient to establish whether the Z statistic for one period is significant at the .05 level and the Z period for the appended time series is not (regardless of whether the corrected Z value is used). It needs to be determined whether the difference between the Z values for the different periods is significant. This issue will be of practical importance where Z values are similar but lay on different sides of the threshold of significance. This author is not aware of a test for significant differences in the C statistic and/or the Z statistic developed in the literature. Such a test could help to extend the range of applications for which this type of intervention analysis could provide valid results. It might even do away with the need for data transformation for non-stationary time series in some instances.

Table 3.18: Intervention analysis for 'overall supply' – basis: second difference

	Year	Score *y*	*2nd difference* $\Delta^2 y$		
Boom (pre-period)	1984	2,444	--	**Boom period:**	
	1985	2,555	--		
	1986	2,561	1,749	D^2 = 530,283,093	
	1987	4,356	1,840		
	1988	4,755	1,280	$2SS(\Delta^2 y)$ = 383,278,392 (mean for $\Delta^2 y$ during the boom period is 861.0)	**Boom period and recession period:**
	1989	5,528	660		
	1990	6,151	461		D^2 = 1,257,666,683
	1991	8,108	145		
	1992	6,548	-421	C = -0,3836	$2SS(\Delta^2 y)$ = 1,008,390,290 (mean for $\Delta^2 y$ during for the recession period is 733.9)
	1993	7,015	-1,284		
	1994	8,876	6,232	Sc = 0,2559	
	1995	9,907	-966		
	1996	8,898	-8,346	Z = -1,4989 not significant [a]	C = -0.2472
	1997	10,836	8,973		
	1998	9,451	870		Sc = 0.2078
Recession (post-period)	1999	10,84	2,970		
	2000	11,678	121		Z = -1,1896 [b] not significant
	2001	15,98	-4,148		
	2002	12,194	-13,360		
	2003	11,561	9,547		
	2004	15,148	1,512		
	2005	14,249	-2,511		
	2006	14,624	-2		

[a] The critical value at 13 observations for the .05 level of significance is 1.6495, and for the .01 level of significance is 2.2241 (Young, 1941).
[b] The critical value at 21 observations for the .05 level of significance is 1.6488, and for the .01 level of significance is 2.2616 (Young, 1941).

The series of second differences also implies no significant change. The mean score of the second differences during the boom period is 861 and the Z value (-1.499) is not significant. For the recession period, the mean is 734 and the Z value for the entire period (-1.190) is not significant, either.

These results are inconsistent with the results of either the residual analysis for the quadratic or for the cubic regression model in the preceding section. Altogether, the intervention analysis provides no conclusive evidence for a decline in the overall number of different titles supplied during the recession period in comparison to the preceding boom period. Results for the different models tested diverge, however. Findings are less conclusive than in the case of 'new titles'.

3.4 SUMMARY OF EMPIRICAL FINDINGS

The record industry is currently undergoing a severe recession, which coincides with the diffusion of digital copying technology among end-consumers. This chapter addresses the impact of this recession on the supply of sound recordings. In the face of falling turnover in the primary market for sound recordings – by 41% between 1998 and 2006 in the German market studied here – the expectation is that supply will diminish significantly.

In order to verify this claim, two time series are discussed that are indicative of the supply of sound recordings. One is the number of new, full-length titles released on the predominant physical sound-carrier format. The other is the overall supply of different full-length titles on the predominant sound-carrier format. For both time series, two hypotheses are tested for. First, over time the quantity of supply would decrease in absolute terms during the recession period. Second, during the recession period, the time-series would exhibit a gradual downward shift in relation to the trend prevalent during the preceding boom period. The assumption is that this slowing of growth sets in almost immediately with the beginning of the recession.

The first hypothesis is more easily tested for. Neither the number of 'new titles' nor the 'overall supply' of different titles have decreased during the recession period (1999-2006). Instead, they have risen substantially in a shrinking market. The upward trend is significant in the case of 'overall supply'. For the more variable series on 'new titles', the upward trend is not significant.

Testing the second hypothesis requires a comparison of the time-series behaviour during the recession period and the preceding boom period. A simple intervention analysis for 'new titles' and 'overall supply' picks up no clear slow-down in growth for either of the two time series (the evidence or 'overall supply' being somewhat ambiguous).

In summary, there is no evidence for an adverse impact of the recession on the supply of sound recordings. Considering that turnover in the primary market for sound recordings – in which CDs account for the lion's share – has declined substantially during the eight recession years covered, this is an astounding result.

3.5 INTERPRETATION OF FINDINGS

The analysis above finds no significant impact of the recession in the record industry between 1999 and 2006 on the variety of supply in the market for sound recordings. Eight years into the recession, the number of new titles published each year continues to expand. What is more, there is no evidence that the rate of growth of either the number of new titles released to the market or the overall supply of sound-recordings on physical sound carriers would have declined during the recession.

These observations are clearly counter-intuitive in the face of the severity and duration of the recession. It is one of the most well established economic 'laws' that revenues to suppliers are positively related to an industries' output. In basic economic models of product differentiation and monopolistic competition, product variety is a function of market size and the fixed costs per product variant. In the case of the record industry between 1999 and 2006, market size as measured by industry revenues decreased substantially, which should result in a significant diminution in the number of product variants. This was not the case.

If there is no clear-cut inverse relationship between unauthorised copying and the supply of cultural products under copyright protection, much of the literature on the impact of file-sharing supports no direct conclusions on the desirable level of copyright protection. One straightforward inference would be that there are intervening factors that need to be taken into consideration. Something else is going on during the recession period that offsets any adverse effects on product variety from the contraction of the market. A substantial and rapid diminution of fixed costs per product variant could provide an explanation.

The following chapters of this dissertation address potential sources of cost reductions, as well as alternative explanations for counter-intuitive results. Beforehand, some issues concerning validity of the findings presented in this chapter and their implications will be discussed.

Considerations related to research methods

Many challenges to this investigation relate to method and data limitations.[49] First of all, the analysis is based on a modest number of annual data points for the dependent variables. A limited number of data points restricts the choice of applicable statistical methods and the statistical power of the tests employed. At the same time, the annual nature of the data means that a long time period is covered. Any interpretation of the data has to remain sensitive to multiple 'effects of history' that cannot be controlled for perfectly. What is more, it is unfortunate that equivalent data on the previous period of contraction in the record industry in the late 1970s and early 1980s is not available for comparison (see section 5.1). It is also likely that the full impact of the current recession has not yet transpired. It was not possible to include data after 2006, since the BV Phono ceased to report figures for 'new titles' and 'overall supply' with that year.

Second, as a natural experiment, the investigation is compromised by the absence of a control group or second baseline. Digital copying is a pervasive and ongoing phenomenon and the way in which individual consumer behaviour has changed with the diffusion of copying technology remains contentious in the literature. What is more, data on the supply of sound recordings is hard to come by and for this study it was not available from several of the larger markets such as the USA or the UK. The replication of this type of investigation in

[49] The gradual nature of the intervention and a potential lag in its effect on the dependent variable has been discussed above.

other countries or a panel study combining data from several markets would be a way to verify the generalisability of results.

These limitations need to be seen in relation to the severity and duration of the recession period. A recession that lasts for at least eight consecutive years and that reduces industry revenues in the primary market by 41% constitutes a strong impulse. For all the limitations of the investigation, a contraction on this scale should be associated with a significant diminution of supply. That said, the findings challenge the common-sensical notion that there would be a strong, positive link between copyright protection and the variety of supply.

What is more, there are reasons to believe that the data underestimates the variety of works supplied during later recession years. On the one hand, the data analysed above only addresses titles supplied on physical sound carriers – CDs for recent years – so that any publications marketed only as downloads via the Internet or mobile telephony networks are not captured. This seems likely to create a downward bias for recent years that would have made it more likely for the analysis to indicate less supply during the recession period. On the other hand, the investigation is based on data published by an industry lead-body, in which the major record companies play a dominant role. The BV Phono communicates what it regards to be a destructive impact of unauthorised copying on its members and the market for recorded music more generally, and it lobbies heavily for counter-measures. As the commentary to the data clearly states (BV Phono, 2005), it does not fully capture the lower-end of the market and alternative retailing methods, which may not be affected to the same extent.

Last but not least, the time series analyses include no systematic attempt to control for intervening variables or to create a more comprehensive, multivariate model to support causal inferences.[50] The findings presented above do not necessarily challenge the notion that there is a positive link between suppliers' revenues and the variety of supply. The findings are also consistent with the presence of strong intervening factors that promote the supply of sound recordings during the recession, overlapping with any adverse effects of falling revenues to suppliers in the primary market. Arguably, the latter interpretation is more convincing, and much of the following sections in this dissertation address such intervening factors that may boost supply during the recession period.

Welfare and policy implications of product variety

This dissertation is motivated by an ongoing debate on the socially desirable level of copyright protection in the presence of digital copying. A few words are in order concerning the welfare and policy implications that the empirical findings may or may not have.

[50] In this way, this study is more in line with the stochastic methods favoured in contemporary time series analyses, which do not strive for a comprehensive explanation of time series through a number of independent variables.

In order to infer on desirable copyright policy, two caveats are particularly important. First, standard economic analysis implies that greater product variety is not always desirable and under monopolistic competition, markets cannot be relied upon to always approximate efficient levels of product differentiation. Second, a diverse supply of cultural products is usually considered to be highly desirable but variety as the sheer number of product variants may be a crude measure of diversity.

Product variety and welfare economics

The discussion of socially desirable levels of product differentiation in the industrial organisation (IO) literature provides a discussion of variety that is rooted in mainstream economics. As such, this literature is steeped in the notion that unregulated markets will usually tend towards an efficient extent of differentiation.

Product differentiation may be socially desirable where consumers' preferences are differentiated or where consumers appreciate variety. In addition, basic economic models of product differentiation and monopolistic competition suggest that product variety is a function of market size and the fixed costs per product variant. That said, an important contribution of the economic theory on product differentiation to the debate on the diversity of cultural supply is the insight that 'more is not always better'. To the contrary, many economic models of monopolistic competition and product differentiation imply that unregulated markets tend to result in too many different product variants. If this theoretical result held in some markets for cultural products, economic efficiency considerations would contrast starkly with the rather general endorsement of cultural diversity that seems to prevail in other academic disciplines and among many policy makers in the field.

Differentiated products are close enough substitutes for one another to speak of a single market for them (sometimes referred to as products that fulfil the same need) but they still have different attributes that matter to consumers in their purchasing decisions. By definition, product differentiation means that suppliers enjoy some market power. Their demand curve is downward sloping and they may sell at prices above marginal costs because competitors do not supply perfect substitutes.

The basic assumptions in many economic models of product differentiation and monopolistic competition are that on the supply side there are constant or falling marginal costs and substantial fixed costs associated with the production of any new variant. These are reasonable assumptions in the cultural industries that supply reproducible cultural products. The implication is that there are scale economies. In other words, the average costs rise with an expansion in the number of product variants. Most models also assume that there are no barriers to entry (besides those 'natural' barriers entailed by fixed costs) and that costs are virtually identical for different suppliers. On the demand side, consumers are assumed to have differentiated preferences that are never fully satisfied with a finite number of different product variants. The marginal utility of product variants is assumed to diminish as the supply of differentiated products expands. Finally, most economic models assume a relatively

abstract type of variety, the most simplified version being that products are equidistantly distributed across 'product space' as all suppliers seek to minimise competition.[51]

Based on such assumptions, consumers benefit from product variety because it increases consumer choice and the probability to have access to a product that matches personal preferences closely. Greater variety comes at the expense of repeated fixed costs for each product variant. There is a social trade-off between the benefits of variety and the costs of supplying a greater number of variants. If the fixed costs of producing a new product variety do not fall as quickly with an expansion of supply as the marginal utility of the additional product, there is a limit to the socially desirable number of different works supplied.

What is more, product variety in equilibrium may have a tendency to diverge from the social optimum (for a brief survey, see Lancaster, 1990). On the one hand, any consumer surplus may not be fully captured by suppliers. In the primary market for recordings, for example, consumer preferences differ widely but there tends to be relatively little price discrimination. The resulting positive externalities for consumers with a high willingness to pay will be ignored by rational suppliers, which implies an insufficient investment in production and too few product variants.

On the other hand, many models imply that firms supply too many product variants in monopolistic competition. In some advanced location models of product differentiation (see e.g. Lancaster, 1966; Salop, 1979), excessive product differentiation is even a general result. For example, market entry and the subsequent introduction of new variants erodes suppliers' surplus under monopolistic competition. Firms entering the market will not take account of the consequences for other suppliers. In particular, new suppliers will be more prone to introduce new variants than incumbents because the former may not have to worry about displacing demand for older products. This is often referred to as the 'business stealing effect' (Mankiw and Whinston, 1986). Market entry and product differentiation may thus continue beyond a point at which the marginal welfare gain of entry to consumers is smaller than the marginal welfare loss of other suppliers from market entry.[52] On the other hand, incumbent suppliers may at times seek to thwart entry by filling product space with a greater number of different products than they would supply rationally without the threat of entry. Product variety from incumbent firms may be excessive where the aim is not only to satisfy demand but also to prevent entry by filling product space. Caves (2000) makes another point on product variety that may be very important in the cultural industries: due to the characteristic uncertainty about the future market success of any specific cultural product, it may be rational

[51] Concerning differences in consumer preferences, most models are based on one of following assumptions: (1) either consumer preferences are also equidistant, or (2) the distribution of product variants across product space reflects clusters in consumer preferences proportionally.

[52] Such a point does not have to exist. This discussion of the optimal level of product variety is similar to the concern of mainstream economics with non-optimal duplication in R&D where several enterprises compete for being the first to introduce a new product.

for each supplier to hedge her bets and to supply a greater number of product variants than a perfectly informed supplier would. A lower level of average revenues that is less variable may be preferred because it reduces the risk of short-term liquidity problems.

Concerning the welfare effect of an increasing variety of sound recordings, the implications of this largely theoretical literature are the following. First, suppliers of differentiated products will enjoy some market power even where equilibrium conditions are approximated. Where there is little threat of competitive entry, rational incumbent firms will charge higher prices and supply less product variants than socially desirable. Where this market power is eroded, prices may fall and/or the variety of supply will increase.

Second, assuming a constant regulatory framework and no changes in demand, product variety will increase with falling fixed costs per product variant supplied. A decline in fixed costs is welfare increasing. This holds in particular for consumers because this process will be associated with greater rivalry between suppliers. Where fixed costs fall and markets become more contestable, the additional product variety might have several sources. On the one hand, new firms may enter the market, each supplying new product variants. On the other, incumbent firms may increase their productivity as their hold of the market is challenged – in other words, any x-inefficiencies may be reduced as the market becomes more contestable or new firms entering the market demonstrate the viability of innovation.

Third, there may be another factor behind increasing product variety where suppliers struggle with the 'nobody knows' characteristic of cultural industries (Caves, 2000). Where revenues fluctuate more widely and uncertainty increases (say, due to technological change as one important source of cost reductions over time, or in the context of a recession), firms may seek to diversify their product range in order to avoid liquidity problems. If the additional fixed costs associated with greater product variety are not covered by melting off super-normal profits, the inputs available for producing each product variant will be decreased in the process. This should decrease the average quality of titles but due to complications in the market for cultural products – e.g. the uncertainty associated in the creative process, intrinsic motivation of creators or fads and fashions – the link between monetary investment and the value of the final product may be weak.

Fourth, all three of these possible sources of additional product variety may overshoot. Incentives to supply new variants may be excessive for incumbents, for firms entering the market, and for firms concerned with managing uncertainty. That is, not all expansions of product variety may be socially efficient.[53] This point should not be exaggerated, however. On the one hand, the drawbacks of excessive product differentiation in economic models is usually narrowly confined to the potential problem that suppliers erode their competitors surplus even in cases where this is not compensated for by increased consumer surplus. On the other, if incentives for introducing product variants for some suppliers in unregulated markets may be excessive, this does not imply that there is a superior mechanism to

[53] Excessive product differentiation would be a problem that copyright protection is not going to solve.

approximate efficient levels of product differentiation. In most cases, it seems reasonable to assume that an expansion of product variants reflects a desirable adaptation to changing market conditions even though product differentiation does not precisely approximate an optimal level.

The dynamic rationale for diversity in structuralist-evolutionary economics

Some diversity of suppliers and consumers is a logical underpinning of any discussion of product differentiation. Evolutionary economic theories pay greater attention to differences between suppliers as well as developments over time than mainstream economic theories of monopolistic competition do. In the former perspective, there are additional benefits of diversity that static welfare economics does not incorporate into the analysis.

In structuralist-evolutionary theory, innovation and technological change is the main driver of economic growth rather than the optimal allocation of given resources at a constant state of technology. What is more, economic agents are seen to be in constant interaction with a mutable environment. Economies are subject to frequent and not perfectly predictable changes that require adaptation. Economic development comes about through a continuous process of variety creation and its reduction through market selection. In this perspective, technological change is a continuous and uncertain process that is path-dependent and open-ended (see chapter 7). No optimum is ever achieved, nor would a perfect equilibrium be desirable, since it precludes investments in innovation (Schumpeter, 1942).

The introduction of new product variants, of cost-saving new production technologies and market entry – as discussed in the preceding section – are all aspects of innovation. If the outcome of these processes is uncertain and not maximised in equilibrium, the desirable level of diversity seems considerably greater than on the basis of conventional welfare economics (cf. Stirling, 1998).

In structuralist-evolutionary theory, product diversity is not only beneficial because it offers greater consumer choice at present. Product diversity also provides a hotbed for innovation, adaptation and growth, since it offers greater scope for combinatory innovation. The point is that many cultural products provide templates for derivative works or inspire further creativity (e.g. Landes and Posner, 1989; Tschmuck, 2003b). Their availability improves the productivity of follow-up creators. It is often unpredictable, which products will prove to be 'inspirational' and thus have this type of positive external effects.[54]

In short, from an analysis of economic systems that emphasises long-term developments and differences between economic agents, diversity is positively related to adaptation and long-term growth. Often, a greater extent of diversity will be desirable in this perspective than what is suggested in static models.

[54] There is no need to assume that follow-up creators will only process information on 'successful' prior creations. In an uncertain market, negative examples may also help economic agents to improve their decision-making.

Due to uncertainty, it is impossible to gauge the benefits of diversity or to establish any precise, 'optimal' level of diversity a priori from evolutionary theory. Predictions from this type of economic theory tend to be probabilistic. This implies also that there may be no precise solution to the trade-off between the dynamic benefits of diversity on the one hand, and any short-term ineffciencies associated with diversity as discussed in the IO literature on the other.

Variety and diversity of supply

A last consideration concerns the complexity of the concept 'diversity'. Drawing on the literature on biodiversity and evolutionary theory amongst other things, Stirling (1998) distinguishes between three aspects of supply diversity in the economic sphere. The first is the variety of supply as the simple count of different units of analysis, such as the number of titles, brands or genres supplied in a market. The second is the balance of supply as indicated by the distribution of market shares across different units of analysis. The Herfindahl index and the Gini coefficient are well-known measures that relate to this concept of balance. The third aspect of diversity is the disparity of supply, which refers to the extent to which the different units of analysis differ between each other. All three aspects of diversity usually entail a qualitative component, which concerns the classification of what is to count as different units of analysis and what is sufficiently similar to be subsumed within one category.

With the sheer number of titles supplied, this chapter discusses the variety of supply. The variety of cultural products is positively related to cultural diversity, which is an important maximand in copyright policy and cultural policy more generally (e.g. UNESCO 2004; Acheson and Maule, 2004). If the variety of supply increases in spite of widespread copyright infringement, this challenges the notion that copyright protection needs to be strengthened in order to sustain incentives to supply protected works.

However, the variety of supply is not a precise indicator of diversity (e.g. Weitzman, 1992; Stirling, 1998; van der Wurf and van Cuilenberg, 2001; Benhamou and Peltier, 2007) unless some strong assumptions are adopted about the distribution of product variants across product space.[55] In a functioning market where the costs of positioning product variants adequately in product space are low, suppliers' decisions will approximate an efficient level of product differentiation concerning product variety, disparity and balance. Due to the complications discussed above or high costs of repositioning, for example, the market equilibrium may be socially efficient. For empirical research on cultural diversity that aims to inform policy, it would thus be desirable to control for changes in all three aspects of diversity.

[55] Cultural diversity – or concepts related to it such as creativity and innovation – often feature in legal provisions and governmental positions concerning cultural policy. What this concept is supposed to mean exactly and how the different aspects of its meaning are to relate to one another is usually not covered in any detail.

Another complication is that greater product diversity within a market does not automatically imply greater consumer choice throughout society. On the one hand, appropriate distribution networks and retail outlets need to be widely available. On the other, means to spread pre-purchase information need to be in place in order to allow for effective product searches.[56]

In the contemporary record industry, the question whether greater diversity would translate into greater consumer choice seems to have a straightforward answer. The emergence of digital distribution channels – distributing authorised or unauthorised copies – has pushed the technical boundaries to access for users of reasonably advanced ICT. This should expand consumer choice beyond anything conceivable on the basis of the traditional, bricks-and-mortar infrastructure. For the vast majority of ICT users, there are many more titles available at any given point in time and access is less costly. This is the case without any expansion in the variety and diversity of works supplied; but digital distribution makes it more likely that a greater variety translates into greater choice, even though there will be limitations to the time consumers will spend on product searches and it remains to be seen how consumed diversity will be affected by technological change.

3.6 CONCLUSIONS

The economic literature on digital copying and copyright suggests that increased, unauthorised access comes at the cost of diminished supply at least where new publications are concerned. This expectation provides reasoning for court rulings against copyright infringers and for substantial copyright reforms over recent years. Even where sound recordings on physical carriers are concerned, this study demonstrates that this expectation may not hold in the record industry.

The analysis presented in this chapter pokes holes into the notion that unauthorised copying would significantly suppress the variety of supply in the market for sound recordings. Eight years into a severe recession and a surge in unauthorised copying, the number of new titles published each year continues to expand at roughly the same rate of growth during the recession period as it did during the preceding boom period.

This result is counter-intuitive regarding the severity and duration of the recession. It challenges a fundamental assumption in much of the economic literature on the impact of unauthorised, digital copying, which has focused on the impact of unauthorised copying on industry revenues. According to the observations presented above, this literature will not support strong conclusions concerning copyright policy. That is because the manipulated variable in copyright policy is not suppliers' revenues but 'innovation and creativity' as

[56] Stirling (1998) distinguishes between 'diversity of supply' and 'diversity of consumption' to express this point.

means to secure a diverse supply of cultural products that is responsive to societal change. The empirical findings also deflate the case for public investments in greater copyright protection, for penal procedures against so-called copyright 'pirates', and for setting high compensatory payments in civil cases brought by rights holders against infringers.

To be sure, the interpretation of observed changes in product variety on the desirable level of copyright protection has its complications. Two issues stand out in particular. First, where product variety increases in spite of unauthorised copying, it might be argued that an even greater expansion in product variety and/or diversity would have occurred if copyright protection would have remained stronger and that this additional expansion in product variety would have been welfare increasing. It is tricky to determine what things would have been without increased unauthorised copying and falling industry revenues from the primary market. Clearly, there is scope for further research on this matter. This requires more holistic approaches to studying recent developments in the record industry. On the basis of abstract economic approaches that model the industry in terms of a static equilibrium, it is hard to reconcile the observation that product diversity expands in a shrinking market.

Second, with product variety only one aspect of supply diversity has been investigated. It is imaginable that in spite of greater product variety, product disparity or balance (or the quality of supply) could have decreased due to unauthorised copying. If such losses in product disparity or balance were not fully compensated for by greater variety and accessibility, stronger copyright protection could provide a socially desirable intervention. This author is not aware of any systematic evidence that would support any aspect of this argument. Again, further research on topics that the academic literature has sidelined seems desirable to inform copyright policy. An obvious obstacle is that adequate data may be very hard to come by.[57] It is questionable whether a quantitative discussion of the diversity or quality of supply will settle the issue – if only because these concepts have proved challenging to investigate in the past. In any case, much of this issue is beyond the scope of this dissertation (even though the diversity of suppliers will be addressed in chapter 8).

The purpose of the remaining chapters is somewhat more modest. Rather than attempting to determine to what extent greater product variety relates to diversity and quality of supply, the aim is to explain how an increase in variety came about. An inference from the counter-intuitive observations that would be reasonably consistent with basic economic theory is the following: something else is going on during the recession period that offsets any adverse effects on product variety from the contraction of the market.

On the one hand, a substantial and rapid diminution of fixed costs per product variant could provide an explanation why the variety of supply would not fall in a shrinking market. On the other, rising income from related markets might provide an explanation, which would be roughly consistent with advanced contributions to the economics of copyright that deal

[57] See Dowd (1992) and Alexander (1996) on studies that attempt to measure the diversity of supply that go beyond measures of variety.

with indirect appropriability, various business models and network effects. There is also the possibility that aspects of the copyright system prior to the diffusion of digital copying technology restricted the variety of supply, say because it was associated with barriers to entry or because it inhibited user innovation. Many of these issues relate to aspects of technological change.

In the following, this dissertation addresses the evidence for a number of such hypothetical explanations for the counter-intuitive result that digital copying has had no apparent adverse effect on the supply of sound recordings. Motivated by the failure of conventional theory to make realistic predictions concerning the variety of sound-recordings supplied, an alternative account is developed that incorporates and elaborates on evidence for swift, radical technological change in the contemporary record industry.

PART II.
CREATIVE DESTRUCTION IN THE IDIOSYNCRATIC CASE OF THE RECORD INDUSTRY

Overview. The first part of this dissertation dealt with the economics of copyright and attempted to gauge the adverse effect that unauthorised, digital copying would have on the variety of supply according to the conventional understanding. Where sound recordings are concerned, there is no evidence that the variety of supply would have been adversely affected. The second part of this thesis deals with theoretical explanations of this counter-intuitive observation. It develops an alternative account based on the notion that the record industry is going through a process of Schumpeterian creative destruction with the diffusion of digital ICT that renders the heedless application of standard economic reasoning problematic. First, it introduces a number of idiosyncratic characteristics of the record industry that relate to a process of 'digitisation' (chapters 4 and 5). Then it develops a more comprehensive test for creative destruction (chapter 6), which roots in the structuralist-evolutionary literature on economic development (chapter 7). Finally, this test for creative destruction is conducted on the basis of two types of data: on the one hand, secondary data on the number of record companies operating in the German market for sound recordings (chapter 8); on the other, primary data produced in a survey of small, independent record companies (chapters 9 to 12).

4. SOME ECONOMIC CHARACTERISTICS OF CULTURAL INDUSTRIES

In order to elaborate on the case for innovation-enhancement measures such as copyright, a reasonably comprehensive understanding of the specific market conditions of industries is needed. Key issues concern the identification of stakeholders, an understanding of the industry structure, of the most pertinent aspects of the institutional infrastructure and of the boundaries of the innovation system (cf. Carlsson and Stankiewicz, 1991).

This chapter deals with some of the economic characteristics of cultural industries and the record industry in particular. The focus is on insights relating to the impacts of digitisation. Such insights include the attributes of cultural products as experience goods, superstar effects, intrinsic motivation of creators, the peculiar industry structure of many cultural industries and a potential rift between market value and total social value of cultural products. This chapter mainly draws on cultural economics. Further sources include aspects of the literature on industrial organisation (IO), the economics of information technology and information goods[58], and media economics. Economic studies of the cultural industries are often inspired by the work done in other disciplines (e.g. business and management, sociology, history, geography or law and their various hybrids with economics) on these industries, cultural products and their wider social significance. This study is no exception and makes liberal – and eventually sporadic – use of the literature on the cultural industries and the record industry that cuts across a range of academic disciplines.

Cultural economics applies (and sometimes extends on) economic theory to the analysis of the arts, the cultural heritage and much of the media industries (Towse, 1997; 2003b). In the literature on cultural economics, several issues that are beyond the scope of textbook economics play a central role, such as taste and taste formation, the lag of productivity growth in labour intensive creative activities (Baumol's cost disease), non-pecuniary motivation to work, or the role of non-profit organisations.[59]

Leaving aside the special case of cultural heritage, there are two initial divisions in this field of interest. One is the distinction between high culture (or 'the arts') and popular culture.[60] High culture refers to those types of cultural expressions that enjoy particular

[58] On the link between the economics of information goods and the cultural/creative industries see for example Hutter (2003) and Caves (2005:4), who analyses the tv broadcasting industry in terms of the "bedrock properties of the creative industries" as well as in terms of an "information industry".

[59] Blaug (2001) identifies nine sub-topics in cultural economics: (1) Taste and taste formation, (2) demand and supply studies, (3) the media industries, (4) the art market, (5) the economic history of the arts, (6) the labour market for artists, (7) Baumol's cost disease, (8) nonprofit arts organisations, and (9) public subsidies to the arts.

[60] For short overviews by economists see Caves (2000:186-8) or Throsby (2001:116). For a more extensive treatise, see Greenberg (1961) or on music in particular Adorno (1962). The distinction between popular culture and high culture might root in various characteristics: (1) high culture might require more extensive learning before it is fully appreciated than popular art; (2) information on high culture might be harder to come, for example because it is relatively expensive or because it is crowded out by media companies' efforts to promote the exponents of popular culture to which they hold the rights; (3) high culture might be consumed to signal superior social rank to the majority and to fraternise with an educational or economic.

esteem among an educational elite. Typical examples are classical music, many theatrical performances and the fine arts. Cultural expressions that are not accepted into the canon of high culture can be referred to as popular culture. The default category of popular culture ranges from the creations of amateurs and hobbyists to the purely commercial, from the downright trashy to avant-gardes creations that have not yet been acknowledged by opinion-makers among the elite. Just like there is no generally accepted answer to the related question 'what is art' (see McCain, 2006), there is no clear-cut and generally accepted way to distinguish high culture from other, 'popular' types of cultural expressions. Some refute the notion that this dichotomy would adequately reflect the value of cultural products (Gans, 1974; Bourdieu, 1984). Nevertheless, this classification of cultural products roughly relates to an issue of great practical importance: in many countries, suppliers of high culture often receive extensive public support in the shape of direct subsidies while suppliers of popular culture usually do not.

A second division within the realm of cultural economics is that between non-reproducible and reproducible cultural products (Bille and Schulze, 2006). As a rule, the output of the traditional arts does not lend itself to mass-(re)production via the mass media without losing much of its value. This is certainly true for live performances but also holds for most works in the visual arts such as paintings and sculptures. On the other hand, reproducible cultural products, such as literature, sound recordings, movies and video games, are created for the very purpose of mass-(re)production.

The markets for non-reproducible and reproducible cultural products – or the traditional arts and (mass) media content – differ substantially. Markets for reproducible cultural products are by definition much more directly dependent on advanced media technique than the traditional, non-reproducible arts. One important effect of the confluence of cultural production and electronic media technology is that the markets for reproducible cultural products overcome much of the spatial and temporal limitations that apply to the dissemination and consumption of traditional, non-reproducible cultural products. This is arguably the main reason why today the time devoted to the consumption of reproducible cultural products far exceeds the time spent consuming the output of the traditional arts.

In this study, the focus is on suppliers of reproducible and non-subsidised cultural products. Sound recordings are by definition reproducible, that is the costs of generating a virtually identical copy are low in comparison to the costs of creating the original first fixation. Popular music makes up the bulk of all sound recordings sold and direct subsidies are the exception in the primary market for sound recordings.[61] In line with this topic, the following survey omits much of the discussion in cultural economics on direct public subsidies, on the productivity lag in cultural production or on the preservation of cultural

[61] In some markets, sound recordings are subject to a lower value added tax.

heritage. Some important links between the primary market for sound recordings and other markets for (non-reproducible) cultural products will be addressed later.[62]

There is some agreement in the literature that the cultural industries exhibit a number of peculiar economic characteristics that differ from assumptions in mainstream economic models. That said, many economists writing on the subject suggest that it is possible to make sense of much of the arts and the cultural industries from a limited number of insights about the basic economic characteristics of cultural products and the markets for such goods. There are various versions of these suggested starting points. Table 4.1 gives an overview of important contributions on the basic characteristics of the cultural industries as well as the breadth of the underlying definition.

Table 4.1: Some recent specifications of fundamental economic characteristics of the cultural or creative industries

	Definition of the field covered	**Main economic characteristics**
Towse (1997)	The arts, heritage and 'cultural industries'/'media industries'	(1) Products are: (a) public goods (b) experience goods (applies less to media industries and entertainment industries) (2) Baumol's cost disease
Kretschmer, Klimis and Choi (1999)	Mainly entertainment, but also information technology, "lifestyle industries" and the "industry of ideas"	(1) Oversupply (2) Quality uncertainty (3) Network effects (4) Demand reversal / cyclical demand
Caves (2000)	Creative industries, including "books and magazine publishing, the visual arts (painting sculpture), the performing arts (theatre, opera, concerts, dance), sound recordings, cinema and TV films, even fashion and toys and games."	(1) Demand is uncertain (2) Creative workers care about their product (3) Some creative products require diverse skills (4) Differentiated products (5) Vertically differentiated skills (6) Time is of the essence (7) Durable products and durable rents
Ginsburgh and Throsby (2006)	Artistic and cultural goods, with an emphasis on the traditional arts rather than reproducible cultural products	(1) Experience goods (2) Some public good property (3) Human creativity is important (4) Cultural products are vehicles for symbolic messages (5) Potential for intellectual property (6) Market value is not the whole picture

[62] For example, some contributors to the record industry derive income from other, related activities. Creators, for instance often make some of their income from live performances and their success in this field will usually be positively related to the success of the sound recordings to which they have contributed.

Towse (1997) suggests that the field of cultural economics covers the arts, cultural heritage and the media industries. She sees this field of investigation united by concern for goods that have characteristics of a public good and of an experience good in the sense that learning plays a continuous and central role in taste formation. She also refers to a productivity lag in the labour-intensive cultural industries also known as Baumol's cost disease (Baumol and Bowen, 1966).

Caves (2000:2-10) introduced a more extensive list for what he calls the "basic economic properties of creative activities" that apply in what he calls the creative industries (see table 4.1). Ginsburgh and Throsby (2006:7) also develop a list of the fundamental properties of "artistic and cultural" goods with a particular view to the traditional arts. Much of the issues covered in these two definitions will be covered below.

Kretschmer et al.'s (1999) approach differs substantially from the other three sources summarised in table 4.1. It starts with a definition of the cultural industries as exhibiting oversupply, quality uncertainty, network effects and demand reversal/cyclical demand. Kretschmer et al. (1999) subsequently argue that entertainment industries, suppliers of information technology, lifestyle industries and the industry of ideas (such as research) can all be analysed as cultural industries in this sense. Their study is of particular interest for its treatment of the volatility of markets for cultural products.

Drawing on these and other precedents, this chapter lays out some economic characteristics of the cultural industries. The focus is on suppliers of reproducible cultural products and the markets they supply and on issues that seem of immediate relevance concerning the assessment of technological change in the record industry. No comprehensiveness is intended. Where examples are used, they are mainly from the record industry.

4.1 THE DUALITY OF THE CULTURAL INDUSTRIES

Much of the literature on the cultural industries distinguishes between creative activities that directly contribute to the creation of an original cultural product on the one hand and administrative, organisational or manufacturing activities that also take place in cultural industries on the other (e.g. Lash and Urry, 1994; Throsby, 2001; Towse, 2003c). A memorable expression of this has been introduced by Caves (2000:1), who distinguishes between "creative inputs", i.e. "artists"/creators and their contributions, and "humdrum inputs" by lawyers, business managers, accountants, etc. He suggests that the cultural industries are different from other sectors of the economy for two reasons: first, because of the peculiar characteristics of creative inputs (cf. Throsby 2001); second, because of the need to co-ordinate a number of creators and ordinary contributors to create and market cultural

products. For Caves (2000) this need to co-ordinate a diverse group of contributors explains the specification of contractual arrangements in the cultural industries and bears on industry structure.

The creative process consists in the production of a new and unique unit of informational content, analogous to the first fixation of a work referred to in copyright legislation.[63] Drawing an analogy from the manufacturing sector, those involved in the creative process produce prototypes and invent new products similar to the functions fulfilled by an R&D department (Lash and Urry, 1994:122-3; Cunningham et al., 2004). The humdrum aspect can be understood to encompass the entire range of administrative, organisational and material tasks entailed in the reproduction and dissemination of existing media content. The dividing line between creative and humdrum aspects of the media industries is the first fixation of the original informational content in its final form. In the record or film industry, that would be the master copy.[64]

4.2 BASIC CHARACTERISTICS OF CULTURAL PRODUCTS

Reproducible cultural products are durable and quasi-public information goods

Reproducible cultural products can be addressed as a type of information goods. The cultural industries partake directly in some of the major shifts that occur with the diffusion of digital ICT over the last decades. The literature on (digital) information technology and information goods is particularly useful concerning analysis of recent changes in the record industry. According to Varian (1998:3), who defines information goods as "anything that can be captured in bits" (cf. Hill, 1999; Varian and Shapiro, 1999), these goods are fundamentally different from tangible assets and most services in three important respects.

First of all, the costs of reproducing information goods can be extremely low for users of the adequate ICT. Low costs of reproduction have several implications for markets for information goods. On the one hand, suppliers are relatively free to choose any quantity of supply of a specific, existing information good, such as a sound recording. For most practical purposes, it can be assumed that the marginal costs of (re)production never rise. On the other, because it is so easy to reproduce information goods, it is difficult to establish exclusive

[63] For the sake of simplicity, no further distinctions between the various aspects of media products – e.g. "core content", "inner form" and "outer form" (Schweizer, 2003) is made here. In the case of a recording marketed on a tangible sound carrier, the design components of the cover or booklet are regarded to be (secondary) aspects of the media content.

[64] Of course, this definition simplifies reality, not least because creative and humdrum operations will be co-ordinated in many organisational set-ups. Some authors propagate a more narrow definition of the creative process as the conception of an immaterial idea (Throsby, 2001) or 'intangible' (Hill, 1999). From this perspective, the process of expressing this idea in a 'physical work' is already part of the more profane aspects of production that take place in the cultural industries, too (Throsby, 2001). For the purpose of empirical research, the latter definition has a decisive drawback: it largely removes the creative process from investigation.

property rights to them. Second, contemporary ICT networks make it cheap and easy to distribute information quickly and with little loss of quality over vast geographic distances. Third, where it is possible to create virtually identical copies of informational content at low costs, physical deterioration is less of a problem than with most physical goods.

As information goods, all cultural products tend to have public goods characteristics (see chapter 2). On the one hand, some aspects of the informational content tend to be obvious after consumption. Attentive consumers can make use of what they absorbed and transmit it to others. On the other, the sunk, up-front costs of producing the first 'original' fixation of a cultural product can be very high in comparison to the costs of producing copies of existing works. The application of digital ICT compounds the public goods characteristics of cultural products. By contrast, due to the labour intensity of the creative process, the sunk up-front costs of producing the first 'original' copy should be less affected by the application of ICT.[65] Therefore the problem with retaining adequate incentives to supply cultural products may be aggravated by the diffusion of digital copying technology. The public goods characteristics of cultural products have important ramifications in markets for cultural products, see chapter 2 on the economics of copyright. A related point is that cultural productions give rise to positive externalities so that their market value does not fully reflect their total social value (e.g. Klamer, 1996; 2004; Throsby, 2001; Throsby and Hutter, 2007).

What is more, information goods are durables, i.e. they do not decompose quickly or lose their entire value with the first instance of consumption. It is characteristic of mature markets for durable goods that the stock of the good held by consumers is large relative to annual production. A related aspect of markets for durables is that a small change in price can have dramatic consequences on the number of purchases in the short run. Cultural products can also provide durable rents – that is a more or less steady stream of income over an extended time period (Caves, 2000). In practice, however, few cultural products 'survive' on the market for longer periods of time. That is not because they would deteriorate physically but because demand fails to arise or quickly subsides to a level that is too low to make it worthwhile to continue to supply them. It has been argued lately that online distribution lowers consumers' search costs and suppliers' costs of making a specific cultural product available so that niche products should increase their market share and more cultural products turn out to generate sustained streams of income to suppliers (Anderson, 2004; Brynjolfson, Hu and Simester, 2007).

[65] This argument is analogous to Baumol and Bowen (1966), who discussed the asymmetric impact of technological change on the costs of the performing arts in comparison to more capital-intensive industries.

Product differentiation

Cultural products are by definition different from one another. One point of the copyright system is to prevent extreme similarity.[66] There is no perfect substitute for any specific cultural product (say the new album by a well-known musician) but there tend to be many close substitutes (say other albums by the same musician, other albums in the same genre or dealing with a similar subject matter or maybe even a live performance that appeals to this particular audience). Product differentiation in markets for cultural products can be vertical, i.e. there will be general agreement that some creative products are superior in comparison to others after consumption. It can also be horizontal, i.e. preferences between some creative products cannot be generalised (Caves, 2000:6).

That cultural products are heterogeneous complicates the definition of markets and industries. Analyses of the cultural industries need to be careful about balancing the need for abstraction against the risk of missing important links with other markets. There is also a risk of making spurious assumptions about the scale of markets and links between markets because the products sold take similar outer forms.

Product differentiation also implies that suppliers are in a situation of monopolistic competition (Salop, 1977) as long as market entry and exit is not restricted. Suppliers hold some market power because the cultural products they supply are unique. As long as that is the case – again copyright plays an important role in sustaining this position over time – suppliers can charge prices that exceed the marginal costs of (re-)production without attracting competitors that provide copies of the exact same work. The presence of similar works (or at least the possibility that imitators enter the market with close substitutes of what has proven to be a winning formula) set limits to the market power of suppliers in monopolistic competition, however.

Experience goods characteristics

Cultural products are often addressed as 'experience goods' (e.g. Towse, 1997; Caves, 2000; Ginsburgh and Throsby, 2006). There are two related but distinguishable aspects of what is meant with experience goods in the literature on cultural economics. One refers to the significance of individual learning for the development of personal preferences. Past experience with cultural products tends to affect preferences at present, say for products from a familiar genre or by a well-known author. This 'taste formation' has received particular interest with regards to public measures that seek to ignite an interest in the high arts. The issue is not of immediate concern in this study. The other meaning of 'experience goods' concerns the idea that the personal experience of consuming a specific cultural product in its

[66] Even where the temporary monopoly rights defined by copyright have expired and suppliers compete in marketing the same informational content, they tend to opt for different forms of presentation. Caves (2000:6-7) observes that there is a virtually "infinite variety" of cultural products (cf. Throsby 2001:51-52). This variety relates to a high degree of complexity that is typical for cultural products, the occasional 'minimalist' work notwithstanding.

entirety is by far the most reliable way to assess its utility for oneself. This latter issue roots in the imperfect information on product quality and will be discussed in this section.

Standard information economics assumes that imperfectly informed consumers search for information on products as long as they expect the search costs to be lower than the additional value they can expect form a more informed purchase decision (Stigler, 1961). Where searching does take place, search costs (the opportunity costs of time spent searching and the costs of information) and the retail price of the product are both factors in consumers' total product costs.

The economic concept 'experience goods' was introduced by Nelson (1970) as a contribution to the debate on the interrelationship of information on product characteristics, consumer behaviour and industry structure. Nelson distinguishes between:

(1) search goods for which full information on central product characteristics is available before purchase, and

(2) experience goods whose central characteristics are not known before purchase and consumption.

He suggests that suppliers are more likely to enjoy market power the less efficient product searches are. That is because buying from an incumbent whose products are known to have been of acceptable quality in the past helps consumers to reduce quality uncertainty. In more contemporary terms of the IO literature, the supplier demonstrates his long-term commitment by investing in the formation of a valuable brand.

This link between a lack of pre-purchase information on quality and incumbent suppliers' market power is particularly pronounced for durable and expensive goods, for which experimental purchases are not an efficient option (Nelson, 1970). The consumer will much prefer getting it right the first time around and suppliers with a good reputation for quality will have a more pronounced competitive advantage.

As much of the literature following Nelson (1970) points out, there rarely are clear-cut distinctions between pure types of experience and search goods. Instead, most goods and services have some attributes that fall into both of these categories (Darby and Karni, 1973; Nelson, 1974; Klein, 1998). In contrast to much of the literature it is argued in the following that cultural products are probably no exception to this rule and often display attributes of both types.[67] This perspective has two advantages for the purpose of studying technological change in cultural industries. First, cultural products seem to differ substantially as to the

[67] For example, Bhattacharjee et al. (2007) regard recorded music to be experience goods while Kretschmer et al. (1999) address cultural products as clear cases of the 'credence good' sub-type (Darby and Karny, 1973). Cultural products seem to have some credence attributes, whose central attributes cannot be evaluated with great certainty even after consumption. Learning from experience is limited because consumers do not buy the same product time and again but keep moving towards new, usually similar products. Inferring from the quality of one cultural product to that of another is hardly ever reliable, even if products are from the same genre and/or the same suppliers are involved in its production and dissemination. What is more, preferences are heterogeneous and there are few reliable, interpersonally valid criteria for establishing the quality of a cultural product even after consumption.

information on their quality that is available to consumers, which might explain differences in market success of specific cultural products as well as differences between markets for different types of cultural products. Second, one aspect of technological change in the cultural industries is that potential consumers find it easier to access information on products prior to purchasing. The theory of experience goods provides a valuable approach to studying the significance of such changes for the cultural industries.

Cultural products usually have important experience good characteristics. There is a large difference between how certain an individual consumer can be about his personal utility from a specific cultural product before and after the first instance of consumption. Due to the complexity of creative goods and the significance of minute detail, there is really no replacement for the experience of consumption to evaluate a cultural product.

There are several ways in which pre-purchase information reaches would-be consumers, which mitigate problems with asymmetric information and adverse selection (Akerlof, 1970). For example, suppliers can establish brands and foster reputation as signals of quality. These brands are a means to emphasise the continuity among a series of different cultural products by signalling that the same contributors have had a hand in producing or selecting these different products. In the cultural industries, the most visible aspects of such brands are often 'star' performers.

Another way in which pre-purchase information on product quality becomes available concerns exchanges of information between users.[68] Here, signals of quality include word-of-mouth but also charts, awards, programming decisions of broadcasters or DJs in public locations and reviews.[69]

A more direct and thus particularly effective way to inform would-be users about cultural products is to make aspects of a cultural product itself available before purchase. This so-called sampling is a central part of suppliers' promotion campaigns in which they try to draw positive attention to specific products.[70] Examples are film trailers screened in cinemas, radio broadcasts of musical recordings, and the exhibition of paintings in galleries. The greater the role of sampling is in markets for cultural products, the less they will be pure experience goods as defined above and the more they will have the attributes of search goods.

From a suppliers' perspective, there usually need to be restrictions to sampling. Otherwise, rationale users would substitute free samples for purchases.[71] Suppliers need to

[68] … in particular if consumers who are familiar with a product exchange information on its qualities with others who have not yet purchased.

[69] To this list one might add user-producer interaction, when suppliers include consumers into the creative process or seek inspiration from novel types of use (see von Hippel, 1986; 2005).

[70] Sampling of (inexcludable) cultural products occurs also without the control of rights holders/suppliers, e.g. when consumers make products they own available to others.

[71] Recent experiments by suppliers of recorded music illustrate that not all consumers free-ride in the absence of exclusion measures. Some make voluntary contributions if given the opportunity but usually below the retail price of conventional recordings. A famous example was the album released by Radiohead in 2007 that was made available as a free download for a few weeks, while providing consumers with the opportunity to 'donate'.

strike a balance between disseminating information about products among potential buyers and minimising this substitution effect.

This balance looks different for different types of cultural products and different types of suppliers. Regarding product types, reproducible cultural products differ in the effect that repeat consumption has on their utility (cf. Caves, 2000:184). Some cultural products lose much of their value after the first instance of consumption (say thrillers or most motion pictures) because surprising the consumer is a central aspect of their utility. Where repeat consumption of the same cultural product is the exception, a complete sample would not be in the interest of suppliers that seek to sell copies of the specific product in question. Under the control of suppliers, sampling will be restricted to strategically selected snippets. For other cultural products, in particular musical recordings, the perceived value often increases after several instances of consumption (Schramm et al., 2002). Where repeat consumption of the same content is the rule and sampling can foster demand, e.g. for musical recordings or paintings, it can be in the interest of suppliers to make complete samples available. The limits to samples that the supplier will want to uphold will concern the frequency or time in which the product is made available without direct payment.[72] Gallery exhibitions for paintings or radio airplay for musical recordings exemplify samples of a cultural product in its entirety but with temporal restrictions.

The desirable extent of sampling will also look different depending on suppliers' position in the industry, if Nelson's (1970) suggestion holds that incumbents enjoy more market power the less pre-purchase information is available. In this case, incumbents that market their products under well-established brands will probably prefer a situation of less sampling than do newcomers and fringe-suppliers.

In any case, in practice searching will not overcome consumers' quality uncertainty entirely due to extensive product differentiation and oversupply (see section 4.4). There is usually a multitude of non-identical close substitutes available. Some product searching may be efficient, but usually the costs of inspecting all possible options are prohibitively high. Consumers are bound to inform themselves only about a fraction of all possible purchases. A would-be consumer will try to pre-assess the quality of a few cultural products and will buy those that come out on top or not buy at all. Much depends on where consumers start their search. Here market signals such as promotion, sales charts, commentary from certifiers such as critiques or programmers of broadcasting stations, as well as recommendations from peers or promotion campaigns can be an important influence on which cultural products consumers

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The band reportedly made a profit that exceeded the income they could have expected from a conventional release with a major record company. There are several online distributors of music whose business model is based on encouraging voluntary contributions.

[72] In the market for musical sound recordings, the tradition of promoting entire albums with singles (which would ideally receive a lot of airplay) is one way of extensive, but limited sampling. It also entailed adverse selection problems.

ultimately. Once an interest is aroused, retail outlets operate as a bottleneck that offers convenient access to some products rather than others.

That is, in practice cultural products usually have both experience attributes that are only known after purchase and consumption as well as search good attributes that are available for inspection before purchase. The technical feasibility of – and suppliers' policy on – sampling can play an important role in determining the balance between experience and search attributes in the market for cultural products.[73] In some markets for cultural products, product searches play an important role. The market for recorded music is a prime example: often consumers' will not buy unless they have sampled.

In summary, cultural products do not lend themselves easily to a clear classification as either search or experience goods.[74] Next to their experience attributes that are widely acknowledged in the specialised literature, cultural products often do have search good attributes. Allowing for this complexity has two advantages for the purpose of studying technological change in cultural industries, however: first, the specific mixture of search good and experience good attributes reveals much about differences between different types of cultural products and the markets in which they are traded; second, following a cue from Klein (1998) and Peitz and Waelbroeck (2006), the search/experience taxonomy provides a theoretical framework in which to start appreciating some consequences of technological change. Where more powerful ICT networks make pre-purchase information on cultural products more abundant and cheaper, two consequences would be expected. First, the contestability of the market would increase since demand would be less concentrated on well-established 'brands'. Second, market selection would more reliably approximate an 'optimum'. In addition to lowered fixed costs in reproduction and distribution, more effective product searches are another aspect of the hypothesis that the Internet will host a much more efficient market for information goods. For an early discussion of the (limited) empirical evidence for the 'frictionless market' for cultural products online see Brynjolfsson and Smith (2000).[75]

4.3 DEMAND: UNCERTAINTY AND FASHIONS

Demand for reproducible cultural products comes from two main sources. First, private end-consumers wish to acquire copies of cultural products, such as a book, a pre-recorded CD or a

[73] This is a reversal of Nelson's (1970) original argument that the extent of pre-purchase information co-determines industry structure.

[74] What is more, the search/experience/credence taxonomy has proven to be challenging to operationalise in empirical research (Andersen and Philipsen, 1998).

[75] Perhaps, over a longer time period greater exposure to cultural products could also boost consumers' consumption capital and foster the experience attributes versus the credence attributes of cultural products.

DVD for private consumption.[76] The market where copies are acquired by private end-consumers is called the primary market. Second, commercial users whish to bundle cultural products with their goods and services in order to maximise the value of the combined product. Typical examples of commercial users are producers of motion pictures that acquire the right to use musical works in the soundtrack of a movie or bar owners that pay a royalty for the right to play musical recordings in their establishment. The market catering for commercial users is often referred to as the secondary market.

The primary market will be the focus of this dissertation but it is important to acknowledge the links between primary and secondary markets for reproducible cultural products. Many suppliers of cultural products receive revenues from both the primary and the secondary market. As a rule success in either of these two markets begets success in the other.[77] Live performances and personal appearances are an important source of income in particular for performing artists. Public subsidies play a significant role for some cultural industries in some countries, but they are rarely of central significance in the record industry. Merchandising, say the sale of T-Shirts or other paraphernalia associated with a famous creator or creation, can be a significant source of income for some suppliers of cultural products that already enjoy some attention.

It is difficult to generalise on the basic economic characteristics of demand for cultural products, such as the price elasticities, income elasticities or cross elasticities of demand. Price elasticities seem to vary substantially between different firms and types of products (Felton, 1992).[78] Some suggest that the price elasticity of demand might be greater for popular culture than for high culture, because quality might be relatively more important than price in determining demand for the latter type of products (Throsby, 2000:116). What is more, for durable cultural products, the short-run price elasticity may be considerably higher than its long-run elasticity (Robinson, 1933; Doyle, 2002). Income elasticities for the high arts tend to be high; in other words, the arts tend to be luxury goods. Nevertheless, some studies have found that certain types of cultural products can be inferior goods for which demand increases with falling incomes, perhaps because with falling incomes cheaper forms of cultural goods – say watching television programmes – replace more expensive goods such as a cinema screenings or theatre performances (Caves, 2000). The latter point relates to substitution effects between different cultural goods and services as incomes change. Studies of the cross-elasticity of demand per se struggle with the problem of product differentiation and the noisiness of markets for cultural products with their fads and fashions (see section 4.2). The substitution effect between cinema screenings and television has received particular attention (e.g. Cameron, 1986; 1990; Blanco and Banos Pino, 2006). Product differentiation

[76] In the case of feature films, the primary market is not for copies but for cinema tickets.

[77] For a broad overview of demand for cultural products, see Caves (2000:173-220).

[78] For surveys see Lévy-Garboua and Montmarquette (2003) and for the performing arts in particular the meta-study by Seaman (2006).

means that inferences from one cultural product to another are prone to errors. Characteristic fluctuations of demand in fads and fashions can also render calculations of demand elasticities obsolete rather quickly.

One of the pivotal features of the cultural industries is that it is usually impossible to predict demand for a specific cultural product with any certainty (Caves, 2000). The main pattern that is apparent is that demand waxes and wanes in fads and fashions, which entail periods of self-perpetuating exponential growth in the demand for some, specific cultural products as well as the potential for rapid collapses of demand. Economists have started to develop models that seem to represent both outstanding features of demand for cultural products: uncertainty as well as fads and fashions. These explanatory models build on the experience goods characteristics of cultural products and the way consumer interaction is a factor in demand formation. Such models provide a useful framework in which to grasp the impact of digital ICT.

Uncertainty

Several characteristic features of cultural products and the way they are perceived relate to demand uncertainty. The function of cultural products does not lend itself to a clear-cut, technical description (Hirsch, 1972:641; Throsby, 2001:4).[79] In addition, individuals' preferences differ and intricate details can make for strong differences in the perception of cultural products. Therefore, there are few reliable, intersubjective criteria by which to determine and rank the utility of cultural products. What is more, due to product differentiation, the exact boundaries of markets are difficult to establish and it is hard to track changes in the supply and price of all related goods. Finally, accumulated demand for cultural works appears to be elastic with regards to overall economic developments and in particular changes in the purchasing power of main target groups (cf. Vogel, 2004).

One mutable aspect of the demand for cultural products that has received much attention in cultural economics is the effect that individuals' past consumption of cultural products has on their utility derived from consuming the same or similar cultural products at present (Kurabayashi and Ito, 1992; Towse, 1997; Throsby, 2001:115; 2006:7; Towse, 2003b; Schulze, 2003). Individual preferences for cultural products change significantly over time due to individual learning processes that are the result of repeated consumption of similar cultural products. In this way, whether consumers have experience with consuming similar products matters for the demand for a cultural product. Individual learning and long-term changes in tastes are beyond the scope of this study.

Demand uncertainty is also aggravated by oversupply (see section 4.4). The number of different, reproducible cultural products supplied usually far exceeds what any individual consumer can purchase or even just inform herself about. Eventually, overcrowding means

[79] Caves (2000:3) makes the additional point that it is usually impossible to identify a "pre-existing need" that a specific cultural product satisfies.

that many specific cultural products will hardly receive any attention at all. Cultural products that are not included into product searches will not sell. Therefore, there is fierce competition among suppliers to get their unique output noticed in a huge selection of close substitutes and the intrinsic quality of a specific cultural product does not determine market success alone.

Finally, cultural products have experience good attributes, i.e. pre-purchase information is incomplete. In order to mitigate this problem, consumers follow signals of quality from sales charts, recommendations by peers, awards, programming decisions of broadcasters or DJs in public locations, positive reviews as well as advertising. The first two of these signals depend directly on the consumption decisions of other end-consumers. That is, individual consumption decisions are interdependent and this may give rise to "self-enforcing feedback loops" (Kretschmer et al., 1999).

Fads and fashions

Sociologists have long suggested that information on cultural products travels through a population in a process of 'social contagion' (see Kretschmer et al., 1999) similar to the spread of an infectious disease. Each recipient of some information on a cultural product ignores or reacts, say by reading a review carefully and contemplating whether to find out more or to purchase. After a reaction has taken place, an individual may turn out to be infectious and spread further information, say by telling others about the product (with radio DJs being extreme examples of infectiousness). The process of social contagion is subject to positive feedback. The more individuals have become aware of a specific cultural product, the more likely it is that further individuals will be exposed to information on it as well.

Economic contributions root in the microeconomic literature on consumer interaction following Leibenstein (1950) – including Stigler and Becker's (1977) discussion of fads and fashions – and provide a general discussion of social interaction and their effects on markets. More recent additions draw on developments in the economics of information and information technology and include applications of network economics and informational cascades/herd behaviour.

<u>Basic theory of consumer interaction and fashions</u>

A standard assumption in neo-classical microeconomic theory is that consumers decide what to buy independently of the consumption decisions of others and on the basis of their individual information on product qualities and price alone. Any discussion of fads and fashions extends on this abstraction. Leibenstein (1950:184) describes possible "interpersonal aspects of utility and demand" under three headers: first, "bandwagon" effects where demand for a consumers' good increases with the number of individuals that consume the same product, say because purchases are used as signals of quality or because many enjoy a shared experience; second, "snob effects" where demand for a consumers' good decreases with the number of individuals that consume the same product, say because many wish to distinguish

themselves from the crowd; third, "Veblen effects" where a higher price increases demand, say because it allows consumers to demonstrate social status.

According to Leibenstein (1950:205), "Any real market for semidurable or durable goods will most likely contain consumers that are subject to one or a combination of the [bandwagon, snob and Veblen] effects (…)", but these effects have been specified empirically in few markets. It seems likely that bandwagon, snob and Veblen effects are of some importance in the market for cultural products.

There is some empirical evidence for bandwagon effects in markets for cultural products (for a quantitative studies of the record industry see Strobl and Tucker, 2000; for feature films see DeVany and Walls, 1996; DeVany, 2004). Bandwagon effects for cultural products have probably much to do with the way information on the mere existence and on the quality of a specific cultural product reaches consumers (cf. MacDonald, 1994; Adler, 1985). It is a precondition for any market success that potential consumers become aware of a product. In congested markets for cultural products, this usually already excludes the majority of cultural products, which will be ignored independent of their quality and even if they are within a preferred genre. Promotion campaigns can kick-start some interest in a specific cultural product and in the record industry, the expenditure on promotion frequently exceed what is spent on the creation of the sound recording that is the underlying product (Vogel, 2004; Peitz and Waelbroeck, 2005). Multipliers such as professional critiques, who publish commentary in the mass media, raise some attention for any publication they address. In the case of popular music, those responsible for radio programming are considered to be very important in making a product generally known. Satisfycing consumers might not always direct their product searches beyond the tiny minority of products on which information is easily available via the mass media.

Since markets for cultural products do not converge to a single standard, there must be some countervailing factors to bandwagon effects. Snob effects occur when individuals' preference for a product is inversely related to its prior market success. An obvious, economic explanation is that reproducible cultural products are nearly perfect durables so that repeat purchase of the same product is the exception. This sets a natural limit to the sales of even the most overwhelming hit. In addition, an exhaustion effect (cf. Caves, 2000:184) may set in after a number of repetitions of an identical (or very similar) cultural product.[80] Cultural products may also depreciate due to changes to media technology or audiences' lifestyles that render older works less compatible, or due to the introduction of new types of cultural works that might be better (having learned from past experience and example) or at least better adapted to evolving preferences. On the other hand, sociologists have emphasised that cultural products are often consumed publicly or the subject of social interaction. This provides

[80] This exhaustion effect appears to set in very quickly for some types of reproducible cultural products such as movies, where repeat consumption is an exception. It sets in later for recordings of music where as a rule the valuation of a specific recording tends to improve with the first instances of consumption (Schramm et al., 2002:237).

individuals with ample scope to assert their individuality or their belonging to a sub-culture by consuming offbeat cultural products. Bandwagon and snob effects can coincide when consumers are picky about where signals of quality come from.

Veblen effects for cultural products also relate to the public consumption of cultural products and the role of cultural consumption in social interaction. Veblen effects might be of particular significance for the high arts (Velthuis, 2003). Being seen attending the opera or decorating one's office with expensive works of art can certainly boost social status. As a rule, Veblen effects should be less significant in the case of mass-reproduced cultural products.[81]

The interplay of bandwagon effects, snob effects and Veblen effects provides a reasonable starting point to address the phenomenon of fads and fashions. Harking back to the sociologist Simmel (1957), Stigler and Becker (1977) argue that fads and fashions reflect a perpetual race for social esteem associated with the visible consumption of approved novelties. Fashion betrays the rivalry between individuals' need to assert their individuality (related to snob or Veblen effects) while at the same time conforming to what is widely acceptable (related to bandwagon effects).

Explanations of fads and fashions allow for heterogeneity of preferences and/or differences in the information and consumption capital between consumers (cf. Caves, 2000).[82] Snobs that set new trends and early adopters that foster them can play an important part in generating abundant signals (or the 'buzz') around some new cultural products, which can prepare the ground for mass success with the general public for some cultural products (see Kretschmer et al., 1999). By the time mass success has set in, snobs will move on in their quest to stay ahead of the game and to distinguish themselves in this way; for early adopters, an exhaustion effect is also likely to set in earlier. In this way, the element of change implied in fashion perpetuates itself.

Network effects and informational cascades

Some recent extensions in the theory of consumer interaction concern the application of network theory and formal models of informational cascades or herd behaviour, which elaborate on bandwagons, their consequences and the extent to which they are stable. These extensions are useful in order to appreciate the effects of technological change in markets characterised by fads and fashions.

[81] Many reproducible cultural products are sold as identical copies and at relatively homogeneous prices, which limits the scope for demonstrating extraordinary purchasing power. Of course there are intermediate cases, for example when limited issues of reproducible cultural products are marketed at a higher price. An extensive record collection or owning a rare copy of a book will certainly sometimes be appreciated for the status in bestows on the owner but by and large, the status associated with having access to reproducible cultural products is inferior to the non-reproducible high arts.

[82] See Cowan (2006) for an early model of fluctuating prices for art with multiple optima and stable preferences.

Network effects

Network effects can be defined as a "change in the benefit […] that an agent derives from a good when the number of other agents consuming the same kind of good changes" (Liebowitz and Margolis, 1998; cf. Rohlfs, 1974; Katz and Shapiro, 1985). In systems with positive network effects, self-enforcing feedback can set in so that market success breeds further success. The decisive point about network effects can be summarised as follows: the most widely used product may provide the greatest utility for no other reason than that it is most widely used.

Economists first addressed network effects to explain competition between different technologies (Rohlfs, 1974). The particular outcomes that positive network effects entail according to a critical survey of the literature by Liebowitz and Margolis (1998) are: first, the "survival of only one network or standard" in what Frank and Cook (1995) dubbed "winner-take-all" markets; second, "unreliability of market selection"; and (3) "the entrenchment of incumbents" (cf. Arthur, 1994).

Network effects are broadly consistent with the way markets for the media infrastructure operate, which is the means for storing, reproducing and delivering reproducible cultural products. Carrier formats of reproducible cultural products such as the competition between Betamax and the VHS format for home videos of the emergence of the CD as the predominant carrier format for sound recordings in most major markets have often been used to illustrate bandwagon effects and network effects (Rohlfs, 2003). Much of the time, one carrier format – such as the vinyl record and later the CD for sound recordings and the VHS cassette for home videos in the 1990s – predominates in any particular national market at a given point in time. There are two basic explanations for this predominance of a single carrier most of the time. First, the costs for developing and introducing a competitive carrier system to the market are relatively high and there seem to be strong economies of scale in the production of many such formats. A second explanation refers to network effects: for consumers, it is a lot more convenient if many recordings come on the same carrier format so that they can be played on a single device, exchanged between consumers, and related products and services are widely available. In practice, it seems likely that both economies of scale and network effects play a role in determining the rise of standards in media formats.

Occasionally, new superior carrier formats emerge, however, in a process referred to as "tipping" markets (Katz and Shapiro, 1994; Shapiro and Varian, 1999). In the market for sound recordings, shellac records were replaced by vinyl records in the 1950s. After a period in which vinyl records and pre-recorded compact cassettes both accounted for a large market share, these analogue formats were replaced by CDs in the 1980s and 1990s. In addition to any economies of scale on the supply side, demand-side network effects initially favour the old technology for which there are more users. Ignoring the theoretical possibility of an erroneous information cascade for the moment, it is not sufficient for a new technology to be as good or slightly better. The additional benefits of the new technology have to be so much

greater that they offset any switching costs as well as the additional value due to the positive network effects favouring the established technology. If that is the case at least for some consumers, a new technology will begin to gradually take up market share from the old technology. In this process, network effects in favour of the old technology become weaker and network effects in the market for the new technology develop. This can lead to a rapid replacement of an old standard once the market for the new technology encompasses a critical number of users. After a gradual period of expansion for the new technology, the market 'tips' in its favour quite suddenly.

In the cultural industries, competition does not usually revolve around different carrier formats for extended periods of time. Carrier formats are a good example of the predominance of one standard. Since producers of cultural products are usually not the owners of carrier technologies but buy licenses from electronics manufacturers, network effects regarding carrier technologies tend to receive little attention in the market for cultural products for extended periods of time. They come to the fore during periods of technological change when two or several carrier formats vie for predominance. The emergence of a new carrier format can be a driving force for pervasive changes in the market for cultural products and it is widely expected that the emergence of new, 'digital' distribution for sound recordings will be a case in point (Tschmuck, 2003).

Kretschmer et al. (1999) were among the first to apply the concept of network effects to cultural content rather than to information technologies. In the case of cultural content, the markets exhibit quite different outcomes from what would be expected in the case of strong and undisturbed network effects, since no stable standards emerge. As long as there are countervailing factors, some network effects do seem feasible (Kretschmer et al., 1999). Where consumers value interacting with others about the shared experience provided by a specific cultural product (Simmel, 1957; Hirsch, 1972; Frith, 1996:4; Caves, 2000:180), a network effect arises if only among the group of people that actually interact with one another. In a more indirect way, a network effect might arise from the quality signals that previous consumers of a cultural product give off. These signals will be more refined if consumers interact directly, but sales charts as a signal of quality illustrate that signals can arise without direct interaction. In many instances, quality signals are more easily available for widely used products. Where this is the case, search costs are lower. A widely used product will thus be less costly and a network effect as defined above arises. In addition, if signals increase the validity of pre-purchase information, the risk of getting it wrong can be lower when a product is purchased for which signals abound. In short, the value of specific cultural content might increase with the number of users.

The notion of unreliable market selection due to network effects has a rough equivalent in the way cultural economics addresses demand for cultural content. In the theory of superstars (see section 4.3), it has long been argued that the market success of cultural products does not depend on any intrinsic quality of products alone, but also on the

experience of the audience with similar cultural products and the reputation of the contributors. Network effects are one way to explain the market power of 'entrenched' incumbents.

Where cultural content is concerned, there is not the same degree of convergence towards a single, predominant standard as with carrier formats. Markets for cultural content are a lot more fragmented and supply is more diverse. The market sustains a huge diversity of different products at any point in time. When a specific cultural product does acquire a large market share, its position tends to be short-lived. It seems to make little difference for these observations whether the market is defined broadly (say all sound recordings) or more narrowly (say only sound recordings marketed via a specific type of media technology and/or from a specific musical genre). While there are bandwagons and network effects favouring cultural content that already enjoys some attention (DeVany and Walls, 1996; Kretschmer et al., 1999; Strobl and Tucker, 2000; DeVany, 2004), there must be some factors that limit any tendency towards a single standard.

Several such countervailing factors have been discussed so far. First, reproducible cultural products are durables and repeat purchases of the same product are the exception. This sets an inevitable limit to the predominance a single product can achieve. Once most of the potential audience has bought a copy, a saturation point is approached and sales figures are bound to slump. Instead, consumers will often purchase a sequence of similar but not identical cultural content over time. This movement from product to product leaves scope for some network effects for releases from the same supplier or from the same genre. Inferring from the value of one cultural product on the value of another remains an imprecise art and consumers know this. Accordingly, bandwagons will be weaker than they would be where repeat consumption of identical products is the norm, as in the market for carrier formats. Second, network effects may also be limited where consumers do not interact with many others on the quality of cultural products (Liebowitz and Margolis, 1995). Third, preferences may be heterogeneous, so that universal appeal of a single cultural product or a genre of cultural content will be extremely rare (Liebowitz and Margolis, 1998). Audiences may be fragmented into several sub-markets – say an audience for Folk and an audience for Techno – or Snob or Veblen effects apply where consumers seek to assert their individuality or their wealth by consuming rare or expensive cultural products. Finally, relatively much of the production in the cultural industries is focused on supplying a steady flow of new cultural content. The more frequently new, competing products are introduced to the market, and the more rapidly these new products are improved (or better adapted to evolving consumers' preferences), the harder it will be for older products to retain a large market share over time.[83]

[83] In the case of cultural content, increasing marginal costs of production for a specific cultural product tend not to be limiting factors to network effects. It tends not to matter much to the amount of scarce resources (energy, information processing capacity and bandwidth for online delivery and various additional physical inputs if traditional sound-carriers are involved) needed to (re)produce and deliver a stream of bits that captures one cultural products rather than another. What is more, cultural content of a particular type and genre often becomes

In short, network theory provides explanations for bandwagon effects in markets for cultural products where a small minority of publications receive most of the attention and account for the bulk of sales even though they are not always obviously far outstanding in terms of their quality. Network effects may help to appreciate the difference between the media technology aspect of cultural products (where network effects give rise to relatively stable standards) and their cultural content component (where network effects exist but are more continuously dislodged by market fragmentation and other countervailing forces). Network effects could further provide a more general structure to address a number if issues in cultural economics such as taste formation, superstar phenomena and the role of talent in determining market success.

However, by itself the concept of network effects is not suitable to explain continuous demand uncertainty for cultural products and the waxing and waning of demand in fads and fashions. The instability of demand for cultural products implies that there must be a range of limiting and countervailing factors to network effects for cultural content (cf. Swann, 2006). Two similar theories of "informational cascades" (Bikhchandani et al., 1992) and "herd behaviour" (Banerjee, 1992) can help to specify conditions under which bandwagons can be prone to the sudden shifts associated with fads and fashions.

Informational cascades

According to Bikhchandani et al. (1992:1000) "an informational cascade occurs if an individual's action [say whether he purchases a good or not] does not depend on his private information signal" but on signals on the behaviour of others. Bikhchandani et al. (1992) as well as Banerjee (1992) show that in extreme instances of incomplete information it can be rational for consumers to ignore their own pre-purchase hunch on whether a product will be a good buy but to observe the actions of others and to emulate their decision. Informational cascades where consumers ignore their own private information and just follow others when deciding whether to buy a product, can "prevent the aggregation of information of numerous individuals" (Bikhchandani et al., 1992:998) and the market signal need not approach an optimum with a growing number of consumers. If by chance some early consumers have gotten it wrong, many might follow suit (until a misfit, a mistake or some additional information breaks the cascade).

Informational cascades and herd behaviour have several implications. On the one hand, cascades will start somewhere and the sources of the early signals can be of decisive significance in determining demand for products under informational cascades. This is consistent with a situation in which promotion plays such an important role in addition to product quality for determining market success of cultural products. Individuals who are prone to break with existing cascades and start another (such as snobs and early adopters)

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cheaper to produce as their basic characteristics are internalised by more and more individuals, who can then proceed to imitate and generate variations.

play a decisive role. This is why promotion campaigns that manage to target these types of consumers will usually be a lot more efficient. Once trendsetters have committed themselves to a product, demand may grow without further promotion efforts by the supplier – after a threshold level of positive attention for a cultural product has accumulated, attention can 'snowball' in a self-perpetuating process of social contagion that may require little further effort by the supplier (Kretschmer et al., 1999). On the other, informational cascades can be 'wrong' in the sense of generating massive sales for a product that has a superior substitute. That would be the case where early evaluators that started the cascade were mistaken or not representative of the preferences of later-comers.

Both of these insights are consistent with the implications of network effects as discussed above. The difference is that network effects do affect consumers' benefit of a good when others use the same product. If positive network effects associated with one widely used product or service are strong enough, the resulting bandwagon can turn the popular product into the best product available even if its initial, intrinsic value was somewhat inferior to alternative but less widely used products. That is, network effects can lead to a relatively stable situation in which the position of popular products and the market leaders that supply them is 'entrenched'. In the concept of informational cascades and herd behaviour, no such stabilisation occurs, because only the pre-purchase perception of quality is affected by consumer interaction whereas the benefit that an individual ultimately derives from consumption remains the same. Accordingly, demand may be more fragile.

In this way, informational cascades and herd behaviour provide an explanation why markets for cultural products are likely to hover around the margin where small changes in the underlying conditions – say when additional information on product quality becomes available through a review in a magazine – can have very far-reaching effects on which cultural products are in high demand. Demand may be characterised by a sequence of short-lived fads, that is "drastic and seemingly whimsical swings in mass behaviour without obvious external impetus" (…) and "it can be futile to seek grand causal forces" for such swings in mass behaviour (Bikhchandani et al., 1992:1003).

Informational cascades are more likely to occur where consumers' are so ill informed before purchase that they do not value their own pre-purchase assessment much higher than signals from others. Cascades are also more probable to set in where the interpersonal transfer of information on product quality is crude. In their formal models, both Bikhchandani et al. (1992) as well as Banerjee (1992) assume that actors only observe a binary signal from others' actions ('buy' or 'no buy') rather than their attitudes after consumption. They also assume that any individuals' signal has equal chances of being correct. Where preferences are heterogeneous and consumers take heterogeneity into account, straightforward cascades are less likely.

What unites all these conditions is the strategic role of pre-purchase information on product quality as addressed in section 4.2. Not surprisingly, informational cascades and herd

behaviour imply that the more information on product quality can be processed efficiently before a consumption decision is taken, the closer decisions will converge to an optimum. This holds for the information that would-be consumers access on actions and experiences by previous consumers, critiques and commentaries. It also holds for more direct information on product quality that is available to consumers through sampling. Sampling has the greater potential to approximate an 'optimum' where preferences are heterogeneous.

In this way, informational cascades and herd behaviour provide a rationalisation of bandwagon effects in markets for cultural products that may be either complementary or rival to an explanation on the basis of network effects. Informational cascades and network effects may occur simultaneously in real markets. Whether one theory provides the more adequate explanation depends on the extent to which the value of cultural products is enhanced with the number of others using it (say because consumers value a shared experience with cultural product) or whether the consumption decisions of others only work as a signal of quality. The more important network effects are in relation to informational cascades, the more stable demand for the most popular product will be in case new information on product quality becomes available. This author is not aware of empirical studies addressing this issue in the context of the cultural industries.

Summary

Network theory and models of informational cascades/herd behaviour offer a general framework to explain a number of longstanding issues in the economic analysis of cultural industries, including cumulative taste, the presence of superstar creators and the role of talent in determining star status, concentration and market power of incumbent intermediary firms.

That said, economic theory provides no particularly good predictions of the market success of a specific cultural product ex ante. However, network theory and informational cascades do identify a range of factors that may explain the extent of uncertainty and of the cumulativeness and volatility of demand in fads and fashions. According to these theories, demand is not only a question of any inherent quality of a cultural product (for which there are few reliable yardsticks).[84] An edge in the race for perpetuating a process of social contagion versus rival 'snowballs' can also derive from superior promotion. Demand is also determined in a complex system of social interaction where small, unpredictable subjective decisions (e.g. one DJ playing an unknown track) can have great consequences in the attention that a cultural product receives. Due to the cumulativeness of demand, it is hard to predict the market value an individual work will acquire.

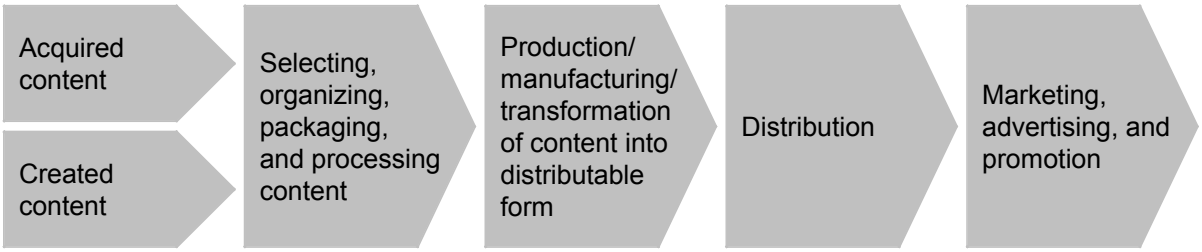
[84] To incorporate differences in product quality into models of informational cascades or herd behaviour, one might assume that the inherent quality of a cultural product translates into a probability of two types of positive reactions: first, the probability that each individual exposed to aspects of it will purchase; second a probability that each individual that receives a signal or consumes will pass on positive signals to others (falling into a range between 1 (everyone who receives the signal will purchase or recommend) and 0 (no one purchases or recommends).

These theoretical insights will be of use in the discussion of digitisation in the cultural industries, since the application of digital ICT alters the way in which consumers interact and how pre-purchase information reaches consumer.

4.4 SUPPLY I: DEALING WITH UNCERTAINTY AND THE COORDINATION OF DIVERSE INPUTS

The cultural industries are defined as all specialist contributors to the production and dissemination of cultural products. The production of cultural products typically requires diverse skills and inputs from a variety of specialised collaborators (cf. Caves, 2000). Following Caves (2000), this study distinguishes between creative inputs and humdrum inputs. Creators directly contribute to the creation of a new cultural work; that is they generate the informational content. The creative process also requires more conventional, humdrum inputs and so does the commercialisation of a finished cultural work. In the cultural industries, important humdrum inputs are provided by intermediaries that link creators with an audience by financing selected creative projects and by organising the reproduction and dissemination of content.

Figure 4.1: Media Firm Value Chain



Source: adapted from Picard (2002)

Picard (2002:34) offers a general, value chain model for media firms, which starts with the acquisition or creation of content (see figure 4.1). Acquiring rights to a repertoire of cultural products that are of sufficient quality to receive positive attention potentially is a necessary precondition for any intermediaries' market success. A second step is the selection, organisation, packaging, and processing of content. Third, content is transformed into distributable form. Fourth, the final product is distributed and marketing, advertising and promotion sets in. When no vast and reliable quality advantage is to be had, the core capability of suppliers is the effective promotion and distribution of cultural products for which there are many close substitutes. There are two central objectives: first, making the product in question easily available to as many potential consumers as possible; second, creating abundant signals of quality in order increase the probability of bandwagon effects in favour of a release.

All steps of production and commercialisation may be either produced by the media firm itself or acquired from outside suppliers. This sequence of basic activities applies well to the industries that produce reproducible cultural products. Chapter 5 introduces an overview of the specific case of the record industry, which also illustrates that the division of labour between various types of actors in the cultural industries can vary widely from project to project.

Dealing with uncertainty

Perhaps the most pivotal feature of the cultural industries is the market uncertainty that suppliers are faced with (e.g. McCain, 1981; Landes and Posner, 1989; Burnett, 1996; Towse, 2000; Caves, 2000:2). In many cases, suppliers need to incur high and sunk costs of producing, reproducing, promoting and disseminating a cultural product before valid information on demand transpires – usually after production and marketing the first issue.

Several factors that contribute to demand uncertainty have been introduced above. These include bandwagon effects – the feedback of initial commercial success into further sales – that may exaggerate the commercial success of a few 'hits' at the cost of all other releases over and beyond any ex ante differences in quality. This is consistent with the observation that only a small minority of all published works recoup their production and marketing costs, while these few 'hits' can make very substantial profits.

Organisations that commercialise cultural products employ several methods aimed at minimising their financial risk in the face of uncertain demand conditions. These include:

- pretesting of either unfinished products (to decide whether to finish them) or of finished products to at least guide investment decisions on which finished works to promote heavily (cf. Caves, 2000);[85]
- spreading risks over a great and diverse repertoire to achieve a reasonably predictable stream of revenues;
- influencing consumer awareness through massive promotion campaigns or controlling promotion channels;
- controlling distribution and influencing retail outlets in order to secure a privileged position for certain publications (Burnett, 1990);
- cultivating widely recognised 'brands';
- outsourcing risk where the negotiation position is strong enough and the quality of inputs does not suffer very much in the process;[86]

[85] Some firms apply software to analyse the extent to which productions adhere to a statistically determined 'winning formula'.

[86] Lash and Urry (1994) provide an account of how cultural industries such as the record industry have increasingly outsourced the risky aspects of content creation. Whereas major record companies used to employ authors and composers permanently and dictated which performer would perform what repertoire, with the late 1950s, they began exerting less control over creative processes and treating creators a free-lancers. A singer-songwriter tradition developed as widely adopted model even for very commercial productions. A&R

One example of outsourcing financial risk is that intermediaries often engage in unilaterally flexible agreements with creators. Under uncertain demand conditions it is in the interest of intermediaries to organise agreements with creators in such a way that the intermediary's commitments are optional – retaining the right to 'drop' creators or at least to stop substantial investments into their career at any point in time – while the creator is contractually bound to an exclusive agreement to provide a certain minimum number of creations over the duration of his contract. This type of control is associated with the practice that intermediaries acquire all alienable copyrights. Caves (2000) explains this with the risk that intermediaries take on when they finance content creation. He seems to downplay the up-front expenses that creators incur in terms of their education and time, even if they do not make direct financial contributions in the co-operation with intermediaries. The market power of large intermediaries when they negotiate terms with more fragmented creative inputs may deserve more attention than Caves allows for (see Towse, 2001). Conflicts between creators and intermediaries where the former feel insufficiently supported – e.g. because the intermediary refuses to invest into the promotion of a new creation – are well familiar in the record industry. Prince, George Michael and Radiohead are examples of creators that had widely reported conflicts with record companies over adequate marketing strategies.

A problem in this type of contracts between creators and intermediaries is controlling and enforcing that creators do the best they can when there are no objective measures of their output and property rights end up with intermediaries. Contractual solutions include the exclusivity of the contract – binding the creator to one intermediary for its duration – and revenue sharing. (Caves (2003) emphasises that due to asymmetric information on costs, profit sharing is not the standard solution.) A mitigating factor that requires no formal agreement is the creators' need to build up a reputation throughout their career. A rational creator might have to grit her teeth and do her best even if she feels short-changed in the temporary cooperation with an intermediary firm.[87] For star creators that are free to negotiate a new contract, the bargaining position is much stronger. Stars can often secure high advances so that the intermediary carries a greater part of the risk (Madonna and Robbie Williams being recent examples in the music industry).

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departments concerned with 'discovering' talented creators were sometimes outsourced. In any case, creators were regularly only signed by major firms when they had already developed a substantial career in the niche markets served by smaller, independent record companies.

[87] For a discussion of flexible contracts see, e.g., Lash and Urry (1994:127) and on tv programming Caves (2000).

Product diversity and congestion

The number of different cultural products supplied in the major markets usually far exceeds what any individual consumer can inform herself about.[88] For example, the British Board of Film Classification (BBFC) that ranks audio-visual media content in Britain according to their suitability for younger audiences, worked itself through 15,677 newly released films and videos in 2006.[89] Theoretically, this would be enough to watch well over forty newly released films and videos each day of the year – clearly too many for any individual even if she can exclude a major part of the supply because she dislikes certain genres (in practice, not all of these releases will be easily available throughout the country). In 2005, the British Phonographic Industry (BPI) registered 25,805 newly released albums. In Germany, the 'Bundesverband der Phonographischen Wirtschaft' (BV Phono) registered 14,624 new long-play releases on physical sound-carriers in 2006.[90]

Due to the pronounced discrepancy between individuals' capacity to process market information and the number of different product variants supplied, some speak of congestion in the market or an 'oversupply' of cultural products. It is difficult to imagine this kind of product diversity to come about without four conditions: first, heterogeneous consumer preferences and/or a widespread preference for diversity; second, suppliers' uncertainty about specific publications' chances of success before testing the market (otherwise suppliers would hardly invest in the production and marketing of products that turn out not to recover their costs); third, a great number of suppliers competing in the market; and fourth, relatively low costs of production for many releases in comparison to the size of the market.

Congestion might be self-reinforcing. The more products are released, the less certain will be the market outcome for individual releases. In response, individual suppliers may find it rational to release even more products in order to diversify their repertoire and minimise the risk of complete failure (or in the case of newcomers, to increase the chances of a lucky-punch).

Another factor promoting diversity of supply is associated with observations of creators' peculiar behaviour. Many studies of artists/creators suggest that these derive positive value from creative work and creators' incentives are addressed in the next section.

Self-motivated or risk-seeking creators

Many studies of creators' and artists' labour markets find that creative workers are more likely to hold non-standard forms of employment than the workforce as a whole, including more frequent "part-time, temporary and fixed-term contracts, second job-holding and self-employment" (Benhamou, 2003:70). Many also find that creators receive lower than average

[88] Kretschmer et al. (1999: 62) locate oversupply earlier. To them, only a fraction of cultural creations are actually "turned into products".

[89] The respective figures for films were 555 and for videos 15,122.

[90] Products that are customised for individual consumers are not counted towards these figures.

earnings (e.g. Wassal and Alper, 1992)[91] and tolerate recurrent periods of underemployment (cf. Towse, 2001). What is more, many amateur creators operate who derive low or even negative pecuniary incomes from their creative activity (cf. Brosio, 1994).

Towse (2001) suggests that below average earnings and the tolerance for underemployment are due to systematically exaggerated expectations of future rewards – a type of imperfect information. A related argument is that some aspiring creators might behave as risk-seekers similar to lottery players (cf. Rosen, 1986:681) that pay a dividend for the miniscule chance of a big win, that is the chance of a life as one of the few well-paid creators that receive so much attention in the news. If aspiring creators were not fully aware of the low probability of major commercial success, this would be consistent with Towse' 'exaggerated expectations' argument (2001). Benhamou (2003) regards risk-seeking to be consistent with the below average age of creators. As they grow older, preferences change and most move on to more predictable careers. To Rosen (1986:681) and MacDonald (1988), many creators simply test the unpredictable market for their creative skills. They have a go at creative work when they are young. Most move into other types of work when a resounding success fails to materialise within a certain amount of time.

Others explain below average pecuniary earnings from creative work by many individuals' preference for creative labour over alternative types of work (cf. Abbing, 2003). Frey (2000) invokes the concept of 'intrinsic motivation' of artists to explain continued activity in spite of below average earnings. Throsby (1994; 2001) develops a 'work-preference model' of the creative process, in which creators seek to maximise (a) the time spend on creative work after they cover their minimum needs from the alternative of (more lucrative) non-artistic work, and (b) the cultural value as well as the economic value of their creative output. He further proposes a hierarchy within creative industries according to the relative importance of the maximisation of cultural and economic value for creators (Throsby, 2001). Similarly, to Caves (2000:3) 'creative workers' are extraordinary because they "care about their product", which is a main difference between creative inputs and humdrum inputs. Creative workers "turn out more creative product than if they valued only the incomes they receive, and on average earn lower pecuniary incomes than their general ability, skill, and education would otherwise warrant" (Caves, 2000:4). On the other hand, "[…] humdrum inputs demand a wage at least equal to what they earn in the outside market for inputs of their type. They do not care who employs them or what task (within their competence) they are asked to undertake. They are just in it for the money" (Caves, 2000:4).

[91] See also Towse (2001:66), Abbing (2003:443), Benhamou (2003) and Caves (2000:73ff.). Filer (1989) finds no evidence for below average earnings. The specification of any income penalty for creators depends very much on the definition of who is to count as a creator or "artist". It has proven challenging to define creators (or artists), how to take account of their investment in skills acquisition, and to distinguish income from creative work rather than from conventional work within this group. It is thus difficult to arrive at a firm conclusion as to the existence and size of any earnings penalty in creative work.

Two qualifications need to be made regarding this distinction of creative inputs and humdrum inputs. First, the income of creators is skewed and a minority of popular creators earn extremely well (see section 4.4). That is, some of the most important creators may well be in it for the money. Second, to this date, there seem to have been no attempts to explore how far the peculiar behaviour exhibited by creators extends into activities related or complementary to the creative process in the creative industries or in other areas of creative work.

Where many aspiring creators accept below average earnings and there is an oversupply of creative inputs, other market participants who face less intense competition are in a comfortable position when they negotiate the terms of co-operation with suppliers of abundant creative inputs. This could help well-established intermediary firms to push through favourable conditions for themselves when they co-operate with aspiring creators.

However, if creators care about whether they will like the results of their work for other reasons than that they acquire a market value in excess of the costs in production and marketing, they might not be that easy for intermediaries to work with after all. Creators might be reluctant to compromise creative decisions they perceive to be likely to boost the cultural value of their output in order to please their business partners and/or their potential audience (cf. Caves, 2000:4). This might be one possible way to specify the broad notion that a "creative tension" between "economic and cultural forces" would be characteristic of many creative industries (Sadler, 1997:1919; DiMaggio, 1977).

The observed willingness of creators to work for what amounts to highly skewed, below average pecuniary earnings and to accept non-standard types of employment has important implications for the cultural industries as a whole. It creates a problem for the application of standard economics, which tries to explain suppliers' behaviour by pecuniary incentives alone.

Differentiated skills of creators, disparate rewards and stars

Similar to Caves (2000:73), three types of creators can be distinguished. First, professional creators that have acquired the skills, the reputation among industry insiders and/or the commercial appeal to by and large live of their creative work over longer periods of time. Professionalisation often entails a co-operation agreement with intermediaries that act as gatekeepers between creators and the wider public (see section 4.4). Second, aspiring creators seek to maximise creative work and to become professionals but lack the skills, reputation or commercial appeal to secure a sufficient income from their creative activity. Third, amateur creators derive negligible or even negative pecuniary earnings from their creative activity. Many of these amateurs permanently settle for the pleasure of creating in their spare time. Over time, the boundaries between these three types are permeable. Most professionals, for example, will have gone through periods of amateurism and aspiration that is not immediately fulfilled at the beginning of their career.

Oversupply of creative inputs implies that creators can face fierce competition in the labour market. Nevertheless, even among professional creators the distribution of pecuniary earnings is extremely skewed. A few well-known 'superstars' earn extremely well in comparison to the vast majority of creators. The economic literature on the star phenomenon starts with the more or less casual observation that the rewards for a minority of stars seems out of proportion in comparison to what appear to be minor differences in the apparent talent of creators (Rosen, 1981; Adler, 1985; Caves, 2000; Schulze, 2003).[92]

Rosen (1981) observes that the labour market for creators illustrate a wider superstar phenomenon in which (a) personal rewards are tightly linked to the size of the market served, and (b) there is a pronounced tendency for the most talented people to serve more sizable markets and reap rewards that exceed the average in their profession by a very large margin. Two concepts are central to Rosen's (1981) theoretical rationalisation of the star phenomenon. First, the privileged position of star creators is feasible because the skills and the reputation of creators are differentiated, similar to the content they supply. Second, harking back to Marshall (1947), he argues that advances in delivery technology plays a central role to explain the superstar phenomenon, because it extends the reach of the most talented individuals. The most obvious example are the mass media that allow creators to serve a much greater market and exploit the "scale economies of joint consumption" (1981:847) associated with spreading the high fixed costs of creating an original cultural product over a greater number of reproductions. Successful creators expand the number of units supplied (Rosen, 1981). They have lower average unit costs and they might be able to exert a higher price per unit thanks to their reputation. Where a larger edition is planned at the outset, the lower unit costs per copy can also allow for higher investments in content creation (MacDonald, 1988). Pop musicians that have acquired a star-status often spend 10 times, sometimes 100 times more on recording an album than other creators (see Vogel, 2004). The greater availability of other inputs should allow successful creators to extend on any lead in talent they might have had at the outset.

On the demand side, an additional explanation for the star phenomenon is that much of the costs of consuming cultural products are related to the opportunity costs of the time spend searching and consuming cultural products rather than just the retail price. If consumers have little leisure time and/or high opportunity costs, they might be prepared to pay considerably higher prices for one high-quality product, even if they could acquire many inferior products for the same price (Caves, 2000; Schulze, 2003).

The star phenomenon will be more pronounced where stars enjoy a greater lead in terms of the quality they supply, where they can sustain this lead over time as they embellish their reputation and make liberal use of related inputs. Stars will also take a greater share of

[92] A problem with formally testing the proposition that the ratio between the rewards to the top creators divided by the overall rewards is much greater than the ratio between these top creators' talent (or 'performance') and the average talent is that there is no generally accepted quantitative measure of talent or performance (other than pecuniary rewards as an indirect measure).

the market where technology admits the same creator to supply a greater number of consumers (which makes a difference between markets for live performances and for reproducible cultural products) and where audiences do not tire of the same creators after repeat consumption (see Caves, 2000:74-5). Of course, intermediaries that invest in content creation will adapt their strategies accordingly. The strong position of stars might not only prevent competitors from reaching a large audience. It might also pre-empt investments in unknown creators and creative projects without star participation.

The above arguments may explain the skewed distribution of income in favour of a small number of star-creators in many markets for cultural products by elaborating on why "lesser talent often is a poor substitute for greater talent" (Rosen, 1981:846) and why small differences in talent might be associated with very disparate rewards. Going one step further, Adler (1985) demonstrates that in theory and "where consumption requires knowledge", differences in talent are not needed at all for superstars to emerge. Any initial difference in consumers' knowledge related to a specific cultural product can lead to "a hierarchy in income (…) without a hierarchy in talent" (Adler 1985:212; cf. Chung and Cox, 1994). No initial difference in creators' talent is needed for a star to emerge. Who turns out to be a star could be down to luck – "factors other than talent" that Adler (1985:211) does not specify.

The decisive aspect of stars is probably that they provide an opportunity to counter some of the quality uncertainty in markets for cultural products. Established, well-known creators become a brand. Their participation in a creative project signals a certain quality and reduces consumers' uncertainty about which creative products to pick from the vast selection available to them (see Caves, 2000:73ff.). For suppliers, this signal helps to counter some of the unpredictability of demand for creative products (see Caves 2000:7). Not only does the market performance of stars' past output provide an intersubjective (if imperfect) indication of the commercial value of their own skills and reputation (cf. MacDonald, 1988). The participation of a star is also likely to boost the chances of commercial success of the entire product – fostering the value of all the other inputs going into its production and commercialisation – because it provides a strong signal of quality and helps to attain some attention from the mass media for the project.

The literature on the star phenomenon is roughly compatible with the discussion of bandwagons in the demand for cultural products in section 4.2, with some noteworthy differences. First, according to theories of network effects and informational cascades that elaborate on the conditions under which bandwagons arise, it is not only feasible that one of many equally talented creators enjoys stardom but even that a less talented creator acquires and sustains star-status. Second, the literature on network effects and informational cascades also elaborates further on the "factors other than talent" that co-determine what turns out to be a hit and which creator turns out to be a star: while a strong element of chance remains, the probability of high sales can be maximised by effectively spreading signals of quality in order to trigger a self-perpetuating process of consumer interaction.

An interesting contrast between the theory of superstars and the theory of experience goods concerns the consequences of advances in ICT. Superstar theory implies that the market should become more concentrated as information technology erodes the geographical boundaries of markets. On the basis of the theory of experience goods, advances in ICT should allow for more effective product searches, which should increase the contestability of the market and undermine the market power of incumbent suppliers, including star creators. Which prediction will be more adequate depends on two issues. First, to what extent do productivity gains from technological change apply differently to market leaders and their less established competitors? This has to do with the fixed costs associated with related innovations, different incentives to conduct innovation, and regulation. Second, to what extent does the market leadership reflect superior talent and to what extent does it depend on entry barriers and economies of scale, including those in sales promotion?

4.5 SUPPLY II: INDUSTRY STRUCTURE

Due to extensive product differentiation, suppliers of musical sound recordings are in a situation of monopolistic competition. In addition, there tend to be some barriers to entry in cultural industries and many are organised in narrow oligopolies (Vogel, 2004). The coincidence of product differentiation and barriers to entry make it hard to classify cultural industries in standard economic models of market structure.

Economic theories of oligopolies with product differentiation provide few certainties. This is one of the reasons why this dissertation emphasises empirical work over deductive reasoning. As will be discussed below, the situation in the record industry is even more complicated, for example because next to a handful of dominant firms there are literally thousands of smaller suppliers competing more or less directly with the 'majors'. The strategic situation between large incumbents and smaller 'indies' in a context of technological change will be of particular interest in the following. This situation is studied in terms of gradual changes in market contestability and inter-firm rivalry in the course of technological change. This approach has less to do with standard, neo-classical economics than with conceptions of competition in evolutionary economic theory (see also chapter 7).

Cultural industries are organised in tightly connected, inter-organisational networks of considerable complexity. For any type of reproducible cultural product – e.g. films, records or books – there tend to be many different organisational constellations in which specific works are produced and marketed.

One extreme are cases of far-reaching vertical integration. Some large publishing houses, film production companies or record companies conduct many aspects of the production and marketing process in-house. They employ creators, run reproduction plants, promotion departments as well as distributors and retail outlets. Corporations like Vivendi

Universal, Bertelsmann or Time Warner are important players throughout the media industries. Sony even combines the supply of media content with supplying related manufactured goods such as consumer electronics or recording equipment. These large corporations tend to operate in all major markets and they are usually organised in several semi-autonomous business units that cater for various sub-markets, i.e. they are horizontally integrated.

On the other hand, cultural content is often produced and marketed through a group of separate firms, each of which makes a more specialised contribution. Sometimes these arrangements take the shape of alliances with shared ownership over the final product. The copyright system in many countries enforces such arrangements in the case of films where many creative contributors obtain inalienable intellectual property rights so that there turn out to be multiple rights holders. Sometimes a single firm attains ownership to the final product and purchases all necessary services from other firms. To complicate things further, even major firms that entertain specialised departments for virtually any aspect of production, often opt to co-operate with outside suppliers for some specific cultural products.

Due to this complexity, there are limits to what can be said about the organisation of the cultural industries as a whole. Chapter 5 addresses the illustrative case of the record industry in greater detail.

This discussion of the structure of cultural industries revolves around the observation that these industries tend to be polarised along two dimensions. The first of these dimensions regards fragmented creative inputs and concentration among intermediary firms that provide humdrum inputs. Creators are relatively likely to work self-employed or hold only temporary employment and they co-operate with other creators in makeshift, project-based groups.[93] Humdrum inputs, on the other hand, are usually supplied via more conventional, more durable forms of organisation and by workers that are more likely to hold standard jobs. The organisational links between creative inputs and humdrum inputs are characterised by relatively short-term contracts (Caves, 2000) that are typically exclusive for the creator, while intermediaries tend to contract many creators at the same time.

A second division within cultural industries separates a handful of very large conglomerates that make up the bulk of the market and literally thousands of more specialised, smaller intermediary firms. By reviewing theoretical explanations for the most striking aspects of the current industry structure, the following sections prepare the discussion of the likely impacts of technological change on industry structure. Two central issues regarding the industrial organisation of cultural industries are: (1) what is the role of intermediaries and why is there a tendency towards high degrees of concentration among

[93] Depending on the complexity of the creation process, the size of creative teams varies substantially. For some cultural products such as many books, a single individual can conduct most of the creative process by herself. A handful of individuals can co-operate, e.g. for many pop recordings. In the case of a major film production, hundreds of individuals can make a creative contribution.

them? (2) How come markets tend to support a few predominant, very large enterprises and a multitude of much smaller firms at the same time?

Central intermediaries and concentration of humdrum inputs

Suppliers of cultural products fall into two rough-and-ready categories. First, creators contribute to the first fixation of original cultural products. Second, humdrum inputs contribute a range of more conventional goods and services from standardised technical equipment to accounting and legal advice that are necessary to generate final products on the basis of creative inputs and to market them effectively (Caves, 2000). Suppliers of humdrum inputs are also referred to as 'intermediaries' that help to bring cultural products and audiences together (e.g. Hirsch, 1972). The distinction between creative inputs and humdrum inputs is not absolute because in practice, creative activities and humdrum contributions are often conducted within the same organisation or even by the same individual, e.g. when a film director raises finance for her project, when musicians run record companies or when a publisher influences creative processes.

One common pattern in the cultural industries is that, as a rule, there tend to be central intermediaries such as (book) publishers, film production companies or record companies, who acquire copyrights from creators. These central intermediaries are typically in a position to select from an abundant pool of creative inputs and their contributions tend to be essential for commercial success. That is, central intermediaries may act as gatekeepers whose selection determines, which creative projects have the chance to reach a mass audience. These central intermediaries provide three basic functions.

First, they provide advance finance for creative projects. The costs of producing the first copy of a reproducible cultural product and introducing it to the market can be high and, as a rule, these costs precede any income from end-users. Where these initial costs of production exceed the means of the creators involved, an intermediary that provides advance finance can make production possible. However, by far not all creative projects are financed in advance by intermediaries. Often intermediaries acquire finished cultural products to market them and the role of intermediaries in the cultural industries is often broader than that of a specialised financiers. A particular important contribution of central intermediaries is their superior ability to win attention for the cultural products they market.

Caves (2000) emphasises a second function of intermediaries as co-ordinators of production in his application of contract theory.[94] Many cultural projects require diverse inputs by various contributors. Feature films are an extreme example where this could involve hundreds or thousands of individuals whose efforts need to be co-ordinated. For both the creative process as well as the humdrum aspects of production, it can be very important to have a central organisation, which deals with the logistics of bringing these inputs together while minimizing the potential for opportunistic behaviour and conflicts.

[94] DiMaggio (1977) referred to this function as a form of brokerage between the creative and the commercial.

Third, central intermediaries in the cultural industries usually co-operate with several creators at any point in time. Central intermediaries exploit economies of scale and scope that apply in particular to capital intensive, humdrum aspects of production and promotion rather than in the labour-intensive process of creation. Potential sources of economies of scale and scope are discussed in the following.

Economies of scale and scope

Economies of scale, where the average cost falls with an expansion of output, arise on several levels in the cultural industries (cf. Scherer and Ross, 1990). For instance, larger firms that entertain standing, global distribution networks may be able to spread the fixed costs of creation over larger editions.

There may be cost advantages within large enterprises due to specialisation and continuous production, especially where inputs are indivisible and the transaction costs with acquiring them in the market are great. Economies of scale also arise where larger intermediaries trade goods and services in the market rather than producing them in-house (Scherer and Ross, 1990:109). Often, intermediaries that match various producers and deliver finished products to end-consumers reduce transaction costs and increase efficiency of production by aggregating transactions (cf. Sarkar et al., 1998).

A further advantage of larger intermediaries in the cultural industries is rooted in the uncertainty of demand for any specific cultural product. An individual creator's production capacity and means are limited. On her own, she will be exposed to the full uncertainty of the market. If one of her offering fails – perhaps by accident rather than a lack of talent – she might be out of business because she cannot afford to raise the means to produce and market another competitive cultural product. Larger intermediaries can mitigate risk by bundling a number of the risky assets into a larger portfolio. Larger enterprises with a diverse repertoire are less likely to experience dramatic fluctuations in revenues. Risk reduction through diversification could secure a reliable, minimum income and continued production for all creators involved as the intermediary subsidises contributors to less successful projects by transferring some of the revenues from more commercially successful projects.

Next to this non-exhaustive list of instances where economies of scale might explain the presence of larger intermediaries in the cultural industries, there might also be economies of scope where it is more efficient to jointly produce more than one type of product. Cultural industries often serve a primary market where copies are sold to end-consumers, a secondary market for commercial users of cultural products and they might sell merchandising products and other related goods and services. The more complex the product mix becomes, the more demanding it can become to serve these related types of markets simultaneously and to co-ordinate them well. Individual creators or smaller intermediaries might find it hard to do so as effectively as larger intermediaries that employ specialised staff for the various tasks involved.

Due to the product differentiation in cultural industries, the distinction between economies of scale and economies of scope is not straightforward. Because of the differentiated nature of cultural products, it would be possible to coin the entire discussion on the advantages of greater size and intermediation in cultural industries in terms of economies of scope. That would mean treating each publication as a product in its own right. For convenience, we have opted for the more conventional perspective of regarding publications of similar outer shape – e.g. feature films and music albums – as a the same class of products.

Where promotion and reputation building is concerned, a meaningful distinction between economies of scale and economies of scope seem particularly hard to make. Therefore, economies of scale and scope in this realm are addressed jointly in the following. Promotion and reputation building is particularly important in the cultural industries, due to the experience good characteristics of cultural products (see section 4.2). In this context, several constellations associated with economies of scale and scope come together.

Important channels of promotion have a relatively narrow capacity. Any broadcaster or magazine tends to feature only a miniscule fraction of the available cultural products in their programmes. Making it through this bottleneck and to be present in the broadcasting media is often a necessary aspect of mass success for a reproducible cultural product because these programmes reach a great number of individuals simultaneously. For several reasons, well-established, large intermediaries may find it easier to secure media presence for 'their' releases.

On the one hand, some opportunities to present information on cultural products come in rather expensive and indivisible chunks. For example, advertising time in traditional broadcasting programmes comes at a relatively high minimum price, which puts firms with a higher up-front promotion budget at an advantage. On the other, much promotion results not so much from the straightforward purchasing of advertising space but from informal contacts between suppliers and multipliers in the mass media. Here, well-established intermediaries are at an advantage, too. They systematically invest in their contacts with multipliers (who might occasionally be employed within the same media conglomerate). They can offer a relatively steady flow of new releases and their reputation for quality helps them to draw some attention to their newest releases. What is more, once a cultural product receives a lot of attention – in particular in key markets such as the USA – multipliers and other users will be much more likely to pay attention so that a self-perpetuating process of social contagion may set in, which can exaggerate the effect of initial differences in the effectiveness of promotion campaigns.

Over time, repeated success – as a function of talent, successful promotion and luck – will result in a durable positive reputation. This reputation increases the probability of continued presence in the mass media and commercial success of new releases, also because risk-averse users may value cultural products associated with a reputable suppliers higher than

justified by their relative quality. Due to the significance of reputation, larger and well-known suppliers will have a competitive advantage.[95]

Economies of scale and scope offer theoretical explanations why creators should find it worthwhile to co-operate with intermediaries that market the output of a number of creators simultaneously. The need to co-ordinate diverse inputs helps to explain why there should be central intermediaries such as record companies or book publishers that assume some control over much of the production and marketing process (Caves, 2000). Caves (2000; 2003) further argues that ownership rests with central intermediaries because these tend to take on the greatest financial risk. Furthermore, economies of scale and scope are probably a reason why the cultural industries are typically organised in a few major intermediaries that dominate the bulk of the market.

Large corporations have other advantages than their ability to exploit economies of scale and scope, however, and that larger intermediaries can increase the efficiency of cultural industries and the market for cultural products does not mean that their interests will always easily coincide with those of other market participants such as creators and consumers. First, if major intermediaries control a large part of the market, they might be able to behave as oligopolists and maximise their profits by charging higher prices and supply fewer consumers than they would under more intensive competitive pressure. Second, incumbents with considerable market power are likely to be in a position to negotiate favourable terms when acquiring services from a more fragmented group of suppliers, e.g. creators. Third, once an oligopoly of intermediary firms has emerged, it could perpetuate itself through strategic behaviour over and beyond the extent at which industry concentration enhances efficiency and benefits creators and consumers. While strategic barriers to entry may rarely present a permanent deterrence for the "entry and expansion of fringe rivals" (cf. Scherer and Ross 1990:360), they may help to prolong periods in which incumbents enjoy super-normal profits. A case in point may be incumbents' resistance to radical technological changes as addressed in the specialised literature (see chapters 6 and 7).

Diseconomies of scale and scope

That said, markets for different types of cultural products – feature films, tv productions of various sorts, recorded music or spoken word recordings – invariably do support several firms. Typically, cultural industries operate as an oligopoly (cf. Vogel 2004) but there are hardly any pure monopolies. Economies of scale and scope must have their limits.

One limiting factor to merger activity may be competition authorities that have tended to restrict vertical and horizontal integration in some cultural industries. Another limiting

[95] It seems that only a few well-informed users pay attention to the reputation of an intermediary when purchasing a cultural product, so that this issue may be of limited relevance when explaining the presence of large intermediary firms.

factors to integration may be diseconomies of scale that set limits to the efficient scale and scope of enterprises. Diseconomies of scale may arise on several levels.

A general problem for larger firms is that it tends to be much harder to manage huge enterprises. Top decision makers in large organisations are eventually further removed from many workaday activities within the organisation and the initiative of subaltern employees is easily bugged down by the need to consult their superiors before taking actions that divert from the expectations at head-office.[96] Especially where creative adaptation is important, complex structures of hierarchical control can diminish an organisation's competitiveness. Decentralised, multidivisional corporate structures can alleviate some of these problems for large firms that seek to exploit important economies of scale in other parts of their activities (Scherer and Ross 1990:98,105-6). Often, larger organisations that supply cultural products are horizontally integrated constructions of several semi-autonomous business units that conduct overlapping functions. What is more, mergers and acquisitions in some cultural industries are so commonplace that they might well appear as a constant aspect of industry organisation.

The most important counterbalance to economies of scale and scope in the cultural industries is probably that there are disadvantages for large corporations in managing the acquisition of creative content. As a rule, intermediary enterprises in the cultural industries organise creativity in relatively small, semi-autonomous teams whose members develop a certain level of mutual trust, are able to make quick decisions and where several key contributors have some grasp of the entire creative process to make sure that their specialised contribution falls into place. As a rule, intermediaries exert much less control over creative inputs than over humdrum inputs (Caves, 2000).

Again, traditional IO theory offers several explanations for this type of industry structure. On the one hand, producing a new cultural product tends to be labour- and knowledge intensive and the productivity increases that can be achieved from routinisation and replacing human skills with capital goods tend to be relatively modest in comparison to manufacturing processes (Baumol and Bowen, 1966). On the other, the quintessential function of creators in cultural industries is to develop prototypes of new products (or at least new versions of what is already a well-established type of cultural products that is unique enough to enjoy IP protection). These new prototypes need to meet the taste of as many potential consumers as possible to make the additional investment of reproduction, promotion and delivery worthwhile. As discussed above, the ultimate commercial success of specific cultural products tends to be uncertain. What is more, the product life-cycle of even a relatively successful specific creative product can be very short. Suppliers that wish to counter uncertainty regarding their commercial success need to anticipate or even create fads and trends and react quickly to market signals. It thus can be a significant problem for large

[96] For a general discussion of sources of diseconomies of scale see Scherer and Ross (1990:98ff).

corporations that a great degree of specialisation and centralised decision-making in large hierarchical firm structures can be antithetic to an organisations' ability to change, be it by bringing up radical innovations itself or by adapting to altering market conditions (e.g. Peterson and Berger, 1971). Under these circumstances, the creation of the 'right', new cultural content at the right time is a central challenge in the cultural industries (Caves, 2000). In short, because creativity is an extreme example of a labour-intensive process and due to the volatility of markets for cultural products, the creative process is characterised by relatively few economies of scale and relatively significant diseconomies of scale.

This leads to a challenging situation in the cultural industries where large organisations frequently co-ordinate several different production processes for which the 'optimal' size of the enterprise (or 'minimum efficient scales' as the IO literature has it) should be different. To manage the creative process and keep in touch with the newest trends in high-growth niches, intermediaries in the cultural industries would ideally be flexible and nimble, which tends to be easier for small organisations. To reproduce, distribute and promote cultural products and to administer rights, much larger organisations have an advantage.

The solution favoured by many organisations in the cultural industries is to vary the degree of integration and control over various aspects of production (cf. Lash and Urry, 1994). For-profit organisations usually negotiate temporary contracts with creators as an intermediate solution to fully integrating creators into firm hierarchies and acquiring their services in the market at each instance they are needed. These contracts tend to include conditions that limit the potential for hold-ups and discourage other opportunistic behaviour (Caves, 2003:132) that complicate coordination through the market. Humdrum inputs, on the other hand, are either more unambiguously incorporated into firm hierarchies or they are bought in the market as they are needed. Creative inputs are usually left with relatively much autonomy, even for the duration of contractual agreements. The decisive evaluation of their performance occurs only after the finished product is introduced to the market.

The split between large and small intermediaries

The preceding sections suggest theoretical reasons why creators should be loosely organised in small, project-based groupings, why they should co-operate with intermediaries and why larger intermediaries should gain a dominant position within the cultural industries. Next to this bipolarity of fragmented creators and concentrated intermediaries, there is a second dimension along which a palpable bipolarity is characteristic of many cultural industries: that between a relatively small group of well-established incumbent intermediary firms and a great number of fringe intermediaries.

In the cultural industries, a handful of multinational corporations usually account for the bulk of the market. At the same time, the market sustains a multitude of smaller organisations that are either more specialised on a particular genre of cultural products or on a more narrow aspect of the production process. Such smaller enterprises typically supply niche

markets, which are relatively abundant due to heterogeneous preferences. Their presence can probably be explained by some advantages associated with local presence and user-producer interaction that globally operating firms cannot emulate in all locations. In the record industry, this type of dichotomy is referred to as the split between dominant 'majors' and 'independents' (Gillet, 1970).

The vast majority of the smaller intermediaries stay put in their niche market. Occasionally, smaller intermediaries can grow very rapidly if a particular creator or the entire niche market they cater for expands into the mainstream. At this point, joint ventures with one of the predominant larger firms to make use of economies in scale in distribution and promotion or even take-overs and mergers are the rule.

Section 4.3 addressed the entrenched position of well-established 'superstar' creators in contrast to as yet unknown creators. In some respects, the competition between a multitude of small intermediaries and the predominant incumbents resembles the situation between well-established stars and unknown creators. The presence of smaller competitors in a highly integrated industry checks some the market power of incumbents and thus benefits both the suppliers of large intermediaries (say creators) as well as the users of their products. One difference is that intermediary firms can and do buy-out their competition or take-over creative projects that have demonstrated some potential with a smaller intermediary. That is not usually an option for well-established creators to deal with their direct competition. In this way, larger firms often come to benefit from the presence of their smaller competitors. Smaller firms see to it that there is an abundant supply of creators that have some experience with the cultural industries and that have been tested in niche markets. Smaller firms are also often central actors in the development of innovative styles and trends with a high growth potential.

4.6 MARKET VALUE AND TOTAL SOCIAL VALUE OF CULTURAL PRODUCTION

As this chapter should have demonstrated, cultural economics is often concerned with constellations in which several of the default assumptions of mainstream economic theory are breached simultaneously and in a way that may render the heedless application of standard theories problematic. An illustrative example is that many cultural economists emphasise a substantial rift between the market value of cultural products and their wider social or cultural value (e.g. Klamer, 1996; Throsby, 2001; Ginsburgh and Throsby, 2008). While there might be a discrepancy between market value (the number of units sold times unit price[97]) and total utility for many goods, many economists concerned with cultural industries insist that a rift between market value and total social value is particularly wide where cultural products are concerned.

[97] Plus the value of direct subsidies a society decides to grant in the case of subsidised arts.

To begin with, any rift between the market value and social value of culture may relate to consumer surplus, which may be particularly great where consumers' willingness to pay is variable (say due to divergent incomes or differentiated preferences) and suppliers lack the market oversight for extensive price discrimination. Second, consumers' total cost of cultural products may far exceed the retail price. Transaction costs including search costs and the opportunity costs of the time devoted to consumption may be substantial. Third, incomplete information and quality uncertainty will decrease the willingness to pay of risk-averse would-be consumers and lead to sub-optimal consumption decisions (Caves, 2000:178; Throsby, 2001). Fourth, due to the quasi-public goods characteristics of cultural products, they give rise to positive external effects. External benefits may accrue to end-consumers as well as follow-up creators and commercial users.[98] Consumers might even be inclined to actively pass cultural products on if they expect to benefit from the shared experience or to have the favour returned.[99]

What is more, if creators attach positive value to creative work, the non-pecuniary benefit from creative work to creators (the opportunity cost of the time, skills and capital invested in creative work minus the pecuniary rewards attained through the market) may not be fully reflected in the market value of cultural output. A related point is that there may be fierce competition among creators. Some differentiation of creative skills notwithstanding, competitive pressures will drive down pecuniary rewards to creators and drive up consumers' surplus (unless intermediaries with market power appropriate it).

Most of these arguments imply that the market value of cultural products is lower than total social value (with the notable exception of incomplete information that may go both ways). Many authors insist that unregulated markets are prone to underestimate the value of culture (e.g. Picard, 1989; Klamer, 1996; Frey, 1999; Throsby, 2001; Liebowitz, 2003; Liebowitz and Watt, 2006).

In addition, individual learning through consumption and social contagion imply that individual preferences and aggregate utility change significantly over time as they are exposed to cultural products or relevant information on such products. Over time, this could result in substantial and unpredictable changes in the market value and total social utility of cultural products – and thus any discrepancy between the two.

A possible discrepancy between the market value and the total utility of cultural products has received particular attention in debates on public support to the traditional arts. Any rift between market value and the total utility of cultural products is also of interest for the normative, welfare analysis of changes in the cultural industries. Most importantly, this

[98] Some authors also ponder whether cultural products have a civilising effect so that even those that do not participate in cultural practices benefit from its presence in society (see e.g. Throsby, 2001).

[99] In the latter case, cultural products would be treated as 'anti-rival goods'. As in the case of non-rival goods, someone who helps others to consume them does not adversely affect her own access to the good in question. In the case of anti-rival goods, the helper even benefits. The archetypal example is open source software, where additional users make it more likely that the product is improved (Weber, 2004).

insight challenges the common-sensical notion that falling pecuniary turnover in the market for cultural products would mean that the value generated in cultural industries has declined.

Data on media usage in Germany (van Eimeren and Ridder, 2005 as quoted in Hutter, 2006) provides an example that is of relevance for the argument developed in this dissertation. As discussed in chapter 3, revenues in the primary market for sound recordings have declined very substantially in Germany after 1998, while the number of titles supplied expanded. Table 4.2 presents data on media usage in Germany in minutes per day. Falling revenues to suppliers after 1998 could indicate that unauthorised copying displaces demand. If the value of supply were unaffected, the total consumption time of sound recordings would be expected to increase, since piracy implies falling prices to consumers. Falling revenues to suppliers could also indicate a reduced value of the works supplied – say because suppliers reduce investments or because substitutes improve. In that case, the consumption time of sound recordings would be expected to fall. According to the data presented in table 4.2, the picture is quite clear: Germans spent three times as much time listening to sound recordings (mainly music and excluding broadcasts) in 2005 than in 1995 or any other year in the 1990s and 1980s covered. This data conflicts with the notion that the value of the sound recordings supplied would have decreased substantially with the recession in the record industry after 1998. It illustrates that revenues to suppliers do not provide a dependable indication of the social value of cultural products.

Table 4.2: Media usage in Germany, minutes per day and media format [(a) (b)]

	1980	1985	1990	1995	2000	2005
TV	125	121	135	158	185	220
Radio	135	154	170	162	206	221
Newspapers	38	33	28	30	30	28
Magazines	11	10	11	11	10	12
Books	22	17	18	15	18	25
CD, LP, MC, MP3	15	14	14	14	36	45
Video, DVD	--	2	4	3	4	5
Internet	--	--	--	--	13	44
Total	346	351	380	393	502	600

[(a)] Federal Republic of Germany (after 1990 including new Länder).
[(b)] Mondays to Saturdays (1980 and 1985) or Monday to Sunday (after 1990), 5:00 to 24:00hrs, persons older than 13, in gross minutes per day.

4.7 SUMMARY AND OUTLOOK

Cultural economics provides a range of insights concerning idiosyncratic characteristics of the cultural sector, which may make the heedless application of basic economic theory problematic for the purpose of developing realistic results. Particularly important contributions to the cultural economics literature – regarding for instance quality uncertainty, consumer interaction and the formation of preferences as well as creators' incentives and the

concept of value[100] – and related insights are not always sufficiently appreciated in studies of the cultural industries.

The theory surveyed in this chapter will provide hypothetical explanations for some of the empirical findings to be presented in the following, which are inconsistent with – or not addressed by – more standard economic theory. That said, few authors in the field of cultural economics have explored technological change in the cultural industries (exceptions include Tschmuck (2003), Baumol (2006) and perhaps Alexander (1994, 2002)). Systematic studies of current technological change – sometimes referred to as 'digitisation' – are rare. It remains unclear, for example, on what level the diffusion of digital ICT has its most important effects, say whether effects on the costs of reproduction and distribution or on the costs of creation are proportionally greater. By synthesising theories of technological change and cultural economics, this dissertation seeks to develop novel insights on copyright policy.

Rival notions about the consequences of digitisation are the 'frictionless market' hypothesis and superstar effects. According to the former idea, online markets will approximate a situation of perfect competition more closely than real, offline markets for cultural products have done. That would be the case where fixed costs fall – in particular for the reproduction and distribution of cultural products and perhaps less so in labour intensive production of content. Furthermore, barriers to entry may be eroded by more effective product searches online. Superstar effects, on the other hand, imply that the market share of the biggest hits would increase as more international markets take shape online. These two predictions are not strictly contradictory, since the contestability of online markets concerns the probability of success ex ante and the superstar theory concerns market outcomes. The concentration of sales on a small number of hits might increase or decrease as online markets expand, depending on the differentiation of preferences, the inclination of consumers to rely on their private signals rather than market signals, and the shape that online intermediation takes online. At the same time, in a 'frictionless market', incumbents might rely less on brands and economies of scale in sales promotion to sustain a greater probability of their publications to turn into hits.

Whether markets for cultural industries will change in the process – and of what nature these changes will be – is an empirical question that is of central importance for copyright policy and businesses in the cultural industries. Finding an answer requires a reasonably detailed understanding of the idiosyncrasies of these markets. As argued above, there are reasons to believe that more abundant pre-purchase information will have asymmetric effects on different types of stakeholders. Markets for different types of reproducible cultural products may be affected differently, depending on the effects of sampling on demand. The competitiveness of different types of suppliers may also change in the course of technological

[100] Throsby (2001:13) makes the sweeping statement "The economic impulse is individualistic, the cultural impulse is collective". According to him, culture cannot be fully explained by the strict individualism of standard economics.

change. None of these issues concerning the consequences of digitisation in the cultural industries have received much attention in the cultural economics literature. Therefore, the following chapter on the record industry draws on the wider social science literature in order to describe the specific features of this cultural industry, including changes over recent years.

5. DYNAMICS OF THE RECORD INDUSTRY

This chapter presents some of the basic features of the record industry. It serves three purposes. The first purpose is to provide the context for the following, more detailed discussion of recent developments in the record industry concerning digitisation and the copyright system. Second, this chapter illustrates how the basic economic properties of cultural industries as presented in the previous chapter play out in the specific case of the record industry. Third, this chapter complements economic analyses with insights from the specialised literature on the record industry from a variety of social sciences. A central theme is to move from the static perspective that prevails in the cultural economics literature to a more dynamic description of the specific case of the record industry and how it has evolved.

Section 5.1 briefly discusses industry growth and its determinants over the last decades, which illustrate the difficulties in identifying the consequences of unauthorised digital copying (see also section 2.8). Section 5.2 discusses attributes of the record industry according to the specialised, social science literature. It clarifies the terminology and structure of the contemporary record industry and illustrates the way some of the main economic characteristics of the cultural industries are exhibited in the record industry. The specialised, social science literature on the record industry stresses two aspects that are frequently sidelined in economic analyses. This concerns technological change as well as the relationship between major incumbents and so-called 'independent' fringe suppliers and these issues are also developed upon in section 5.2.

The record industry has a long tradition as a global industry, in which multinational firms generate much of their revenues by commercialising virtually identical products throughout the major economies. Music tends to pervade cultural boundaries more easily than many other cultural products, say those that are more language-based. The commercialisation of a large number of copies of the same content generates cost advantages and may be very profitable due to the coincidence of high fixed costs in sound recordings and relatively low, non-increasing variable costs. Nevertheless, domestic repertoire has become more important over the last decade in some major markets such as France or Germany.

Research on the record industry mostly deals with the few leading national economies. These continue to account for the bulk of the market for sound recordings. This market requires a relatively sophisticated technical infrastructure including a network of adequate retail outlets. What is more, the traditional business models rely on a level of copyright protection beyond that encountered in many emerging markets. For detailed accounts of the historic development of the music industry and the record industry in particular see for example Chapple and Garofalo (1977), Burnett (1996), Coleman (2003), Tschmuck (2003), or Barfe (2004).

5.1 BOOM AND BUST IN THE PRIMARY MARKET FOR SOUND RECORDINGS

To put the recession in the German record industry since the late 1990s into perspective, this section provides an overview of the waxing and waning of turnover in the primary market for sound recordings over the last decades.[101] During the evolution of the record industry, several periods of sustained growth have been interrupted by recessions.

Determinants of growth

The academic literature suggests several fundamental factors that co-determine economic growth in the record industry (e.g. Vogel, 1998; 2004; Liebowitz, 2004; Peitz and Waelbroeck, 2005). First, demand for recorded music appears to be extremely sensitive to general economic development (Vogel 1998:135ff.). Recorded music is a luxury good like most entertainment goods and services, some deviations across musical genres and sound-recording formats notwithstanding. That musical recordings are durables may further exaggerate demand volatility. A large target group of teenagers and young adults within a thriving middle class is usually seen to boost the market, even though some authors reject demographic change as an explanation for the Rock'n'Roll revolution in particular (Peterson, 1996) and recent years saw an increasing relative significance of older age brackets among consumers of popular music (e.g. BV Phono, 2003).

Regarding supply-side factors, it is contentious whether and when the attractiveness of new productions varies enough over time to explain fluctuations in how many recordings are purchased in the market at large rather than which ones. The quality of content supplied escapes precise quantification. Technical change is somewhat easier to measure. New media techniques have altered creative options, improved the sound quality of recordings and the ease of use. This development tends to come in fits and starts.

The own-price elasticity of demand for recorded music has rarely been discussed in any detail. That may be because suppliers of sound recordings rarely compete on price. Due to its peculiar cost structure, competing suppliers of reproducible cultural products cannot apply marginal cost pricing and retail prices tend to vary within a narrow range of conventional prices with some systematic variation according to the age of a release and its sales history (cf. Peitz and Waelbroeck, 2005). Over the years, various competition authorities have investigated the evidence for price fixing or withholding licences from users by the major record companies, distributors and retailers of sound recordings (e.g. Federal Trade Commission, 2000; Barkley, 2006).

Effective advertising media and journalistic commentary are often regarded to be important complements to sound recordings. Other media play an ambiguous role: as complements when they draw attention to musical works; and as possible substitutes that

[101] For a detailed overview also covering the period before 1969, see e.g. Tschmuck (2003).

compete for limited budgets and time available for leisure activities. Broadcasters are a good example. On the one hand, broadcasters introduce their audience to musical works available for purchase and securing 'air-time' for new releases is an essential part of major firms' promotion campaigns. On the other, broadcasting may compete with purchased recorded music for consumers' listening time and the rise of radio broadcasting in the USA coincided with a slump in record sales (e.g. Tschmuck, 2003; Liebowitz, 2004). Whether the emergence of new entertainment and media services featuring music will boost demand in the primary market for recorded music can thus be difficult to determine a priori.

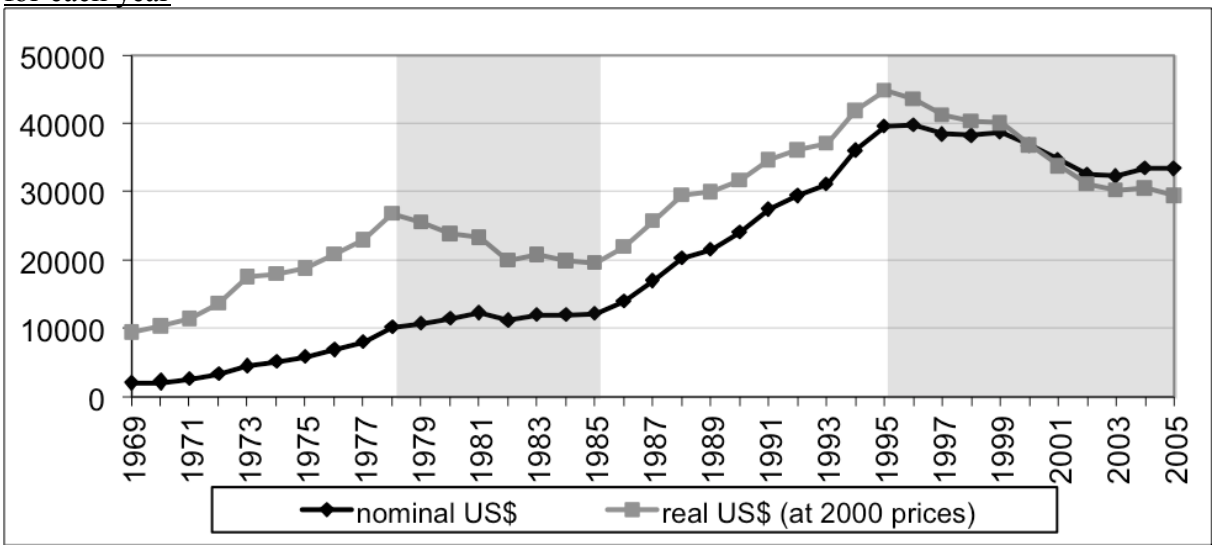
Last but not least, dynamics in the market for sound recordings also need to be understood in terms of the cumulative nature of demand for cultural products and network effects in media technologies. Where demand for recorded music is associated with 'rational addiction' and network effects, or where there is inertia in the market for sound recordings, differences between national markets may come about due to more or less minor initial differences and remain quite stable. A recent example concerning technical formats may be that in the two leading markets for digital downloads, different types of networks prevail: in the USA, online downloads are predominant whereas in Japan, mobile phones account for he bulk of 'digital' sales.

Boom and recessions in the global market for sound recordings

Figure 5.1 exhibits global recorded music sales between 1969 and 2005 in nominal US$ as estimated by the IFPI (2007), which covers the bulk of the primary market for sound recordings.[102] In order to provide some indication of real value, Figure 5.1 also contains the same time series recalculated in real US$ at 2000 prices. US inflation is of limited value in order to determine the real value of global sales but it is preferable to using nominal values as a basis for comparisons across longer time periods. The problem with using US inflation is alleviated somewhat since all major record companies run much of their business from headquarters in New York, even though only two of four are owned by multinational conglomerates based in the USA. Figure 5.2 exhibits unit sales of singles and albums for the same time period.

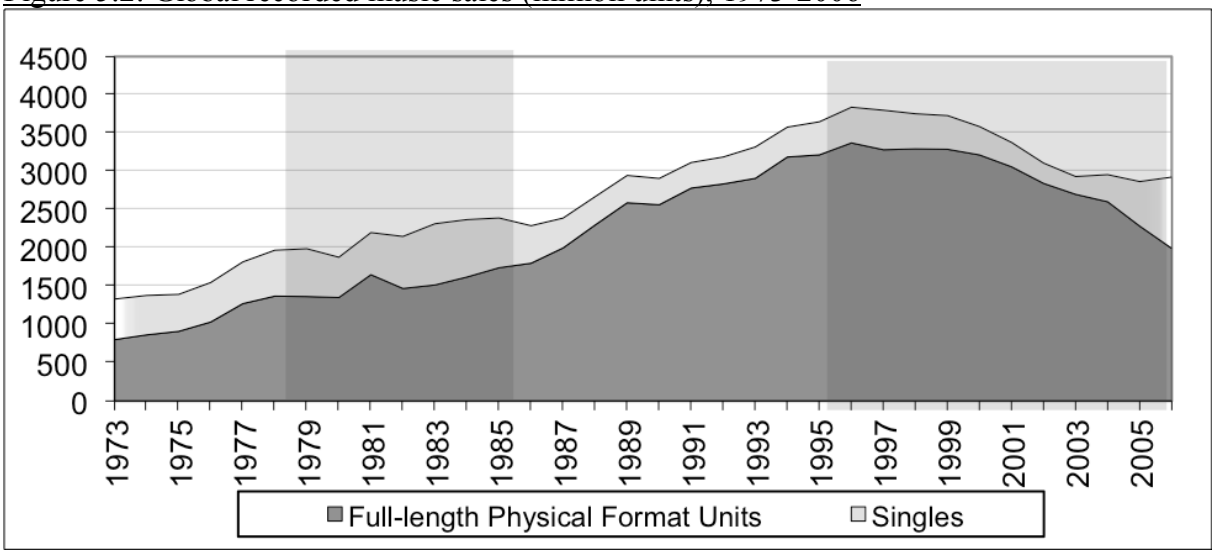
[102] The IFPI calculates this data on the basis of reports by its national member organisations (e.g. the RIAA in the USA, RIAJ in Japan or BPI in the UK) and at average exchange rates for each year. IFPI data is by far the most frequently quoted in discussions of the record industry.

Figure 5.1: Global recorded music sales 1969-2005 in million US$ at average exchange rate for each year [(a)]



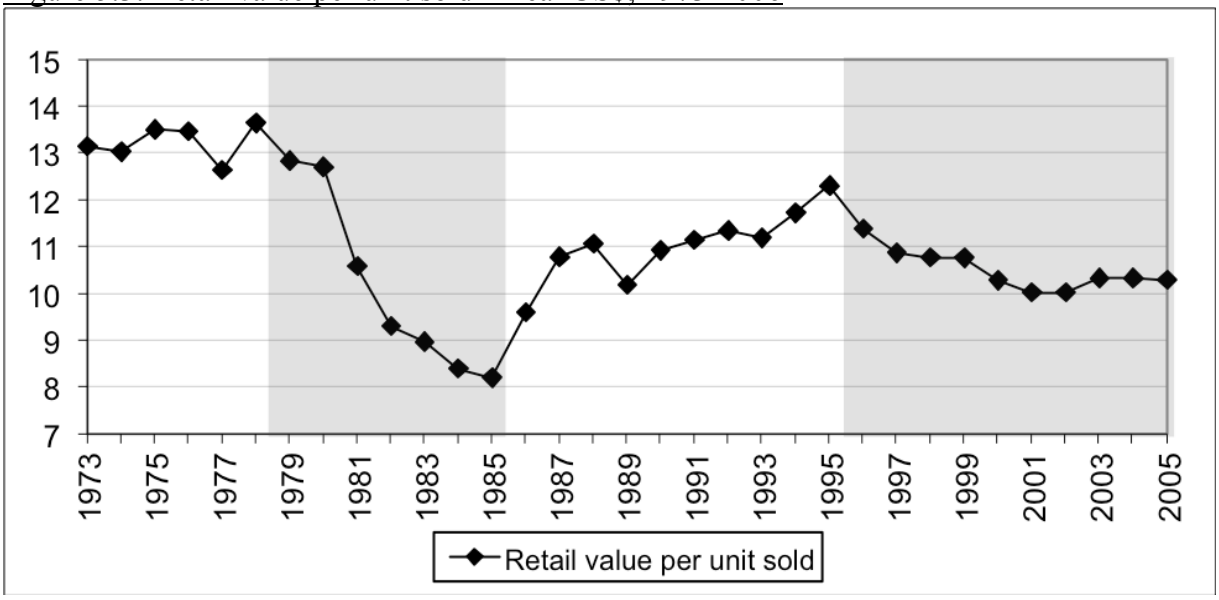
Source: for 1969-1972, IFPI 2002; for 1973-2006, IFPI 2007; real values are calculated on inflation data as reported by the OECD (2008).
[(a)] Online single tracks included since 2004.

Figure 5.2: Global recorded music sales (million units), 1973-2006 [(a)]



Source: IFPI 2007.
[(a)] Online single tracks included from 2004.

Figure 5.3: Retail value per unit sold in real US$, 1973-2006 [(a)]



Source: Calculated on the basis of IFPI 2007.
[(a)] Online single tracks included from 2004.

Record sales have expanded substantially for much of the last forty years. Between 1969 and 1995, global sales had expanded by more than four and a half times in real US$ terms and they stood at more than three times their 1969-level in 2005. This upward trend has been interrupted by two recessions in the time period covered.[103] The first recession period lasted between 1979 and 1985. By 1985, global sales in real US$ terms had fallen by nearly 27% in comparison to their 1978-level.

There are no comprehensive explanations of long-term trends in the market for sound-recordings. The recession between 1979 and 1985 was often explained with a downturn in the general economy of the main markets for sound recordings after the second oil price shock of 1979 and the diffusion of blank compact cassettes. Cassettes and cassette players had been introduced by the electronics firm Philips in the 1960s and made it possible for the first time for many end-consumers to create reasonable copies of sound-recordings at home. The technology was fought by the major record companies and Philips itself seemed concerned with limiting unauthorised copying, perhaps because it developed a stake in content provision as owner of the major record company Polygram (later part of the Universal Music Group). The quality of supply is harder to measure and its influence on demand is difficult to assess. It has been argued that in the late 1970s the record industry – by now a narrow oligopoly – started to emphasise market segmentation and market control. This seems to have increased costs and to have diverted interest in experimentation with new styles and technological innovation. Over time, short-termism and conservatism might have rendered the musical

[103] For the purpose of this descriptive analysis, a recession is defined as a period of at least three consecutive years of real falls in turnover.

content available to a broader public less attractive in a market characterised by changing and diverse consumer preferences (e.g. Gronow and Saunio, 1998).

Be that as it may, in 1986 a rapid recovery set in. This recovery coincided with solid economic growth in some major markets and widespread use of compact cassettes for unauthorised copying as well as a carrier format for authorized copies. Pre-recorded music cassettes were the most popular carrier format in terms of unit sales between 1985 and 1993 according to IFPI (2007). With hindsight, the music cassettes turned out to provide the record industry with opportunities to expand their market, since it was suitable for portable or car-based personal stereo devices that allowed purchased copies of sound recordings to cater for a type of use previously reserved to mobile radios. What is more, in the 1980s the majors began to change the organisation of content creation and acquisition. They reduced central control over artist related activities and ran small, highly specialised sub-labels as semi-autonomous business units. It became the convention that major record companies owned dozens of smaller labels and co-operated with even more in various constellations (see section 5.2). Some of the boom after 1985 may illustrate the strength of this new strategy in the record industry. In addition, the boom period continued as the CD – first introduced to the market in 1983 – gradually became the standard sound carrier. With the year 1993, unit sales of CDs exceeded all other formats combined and this predominance is even more pronounced in value terms, since CDs sold for a considerably higher average price than other formats for much of the period covered. Re-purchases of the same content by consumers who wanted to own their favourite older recordings in the new digital format boosted demand.

After its historic peak in 1995, global record sales followed a downward trend up to 2005, the last year for which data was available. In this period, sales have declined by just over 34% in real US$ terms. Much of this decline accrued during the three-year period from 2000 to 2002, which saw a total decline of 22.5% compared to the 1999 level.

Unit sales as displayed in Figure 5.2 provide an additional indicator of industry growth. Unit sales followed a relatively consistent upward trend during the entire period covered up to the year 1999. Then unit sales of full-length physical units have fallen by over 39% between 1999 and 2006. Single sales had already been falling since 1997. Between 1999 and 2003 alone, sales of physical singles continued to fall by over 46%. This trend was dramatically reversed once unit sales of single tracks as downloads were accounted for since 2004. The market for downloads is driven by sales of single tracks rather than larger bundles of songs in albums and exhibits lower prices per unit. Within a three-year period between 2004 and 2006, single sales including digital downloads almost tripled. In the course of this, sales of ‘singles’ in 2006 – now almost entirely as digital downloads – had reached 31.8% of global unit sales, which is their highest share since 1983 and more than three times the level in the year 2000. This revival of the single does not need to be good news for the record industry since the bundling of songs on albums could be used to capture more of the willingness to pay for individual hit songs (cf. Leyshon et al., 2003).

Finally, the calculation of the retail price per unit sold as presented in Figure 5.3 illustrates that real prices came down more substantially during the early 1980s than during the current recession. Between 1979 and 1985, unit prices fell by 40%, from an average of 13.65 US$ per unit to 8.20 US$. During the subsequent boom, real prices per unit rose back to around 11 US$ for most of the period, with a peak of 12.30 US$ in 1995, but they never reached the levels of the late 1970s. During the current recession, unit prices in real terms have been more stable than in the post-1978 recession. Between 1995 and 2001, prices did come down by nearly 19% to 10.02 US$ per unit but much of this price decline took place before digital copying affected the market. Between 1998 and 2001, average unit prices fell by just over 7%. Prices even picked up somewhat afterwards during the recession and were at nearly 10.30 US$ in 2006. The latter development is particularly surprising, since the share of (digital) singles that retail at much lower prices than full-length physical releases, has risen substantially after 2003. That is, prices for sound recordings on physical sound carriers have risen in spite of a recession in the market and the emergence of additional, 'digital' retail outlets. It is difficult to imagine that this slight rise in retail prices would reflect increasing production costs. In any case, rising prices might play a role in prolonging the recession in the market for physical copies and in speeding up the growth of the 'digital' market.

This data on global record sales is not conducive to any immediate, clear conclusions on whether digital, unauthorised copying has so strong an impact on the record industry that it would require regulatory intervention. On the one hand, a rapid expansion in digital copying with the emergence of file-sharing in June 1999 coincides with severe falls in sales of authorised copies. On the other, global sales had declined since 1996, a few years before any evidence for increasing levels of digital, unauthorised copying, so that other factors suppressing sales have been present at the beginning of the current recession. Sophisticated empirical studies such as those surveyed in chapter 2.8 often suggest some immediate, adverse effect of file-sharing on sales of authorized copies but results stray widely.

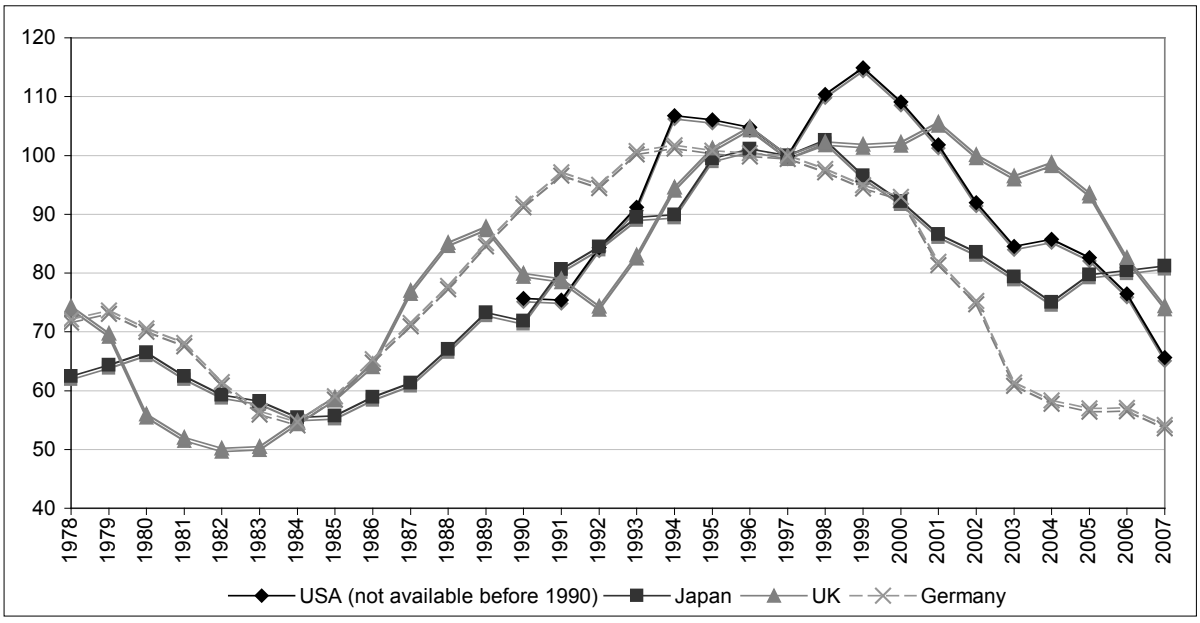
The example of the previous recession between 1979 and 1985 illustrates that in the long-run, a recovery may set in where suppliers adapt. In the late 1970s, compact cassettes had made it possible for many end-consumers to create reasonable copies of sound-recordings at home. The record industry managed to thrive in spite of continued unauthorised copying after 1986. Whether adaptation is possible even to the more powerful digital copying technology is a central issue in the current recession.

Growth in the major national markets

Considerable differences between national markets further illustrate the difficulty of isolating the effect of digital copying. Figure 5.4 exhibits the real turnover in four major markets for

sound recordings – the USA, Japan, the United Kingdom and Germany[104] – as reported by the national industry lead-bodies and calculated as an index in order to facilitate cross-country comparisons of changes over time. The year 1997 is set as the base year, since it is the last year before digital copying was reported as a mass phenomenon in any of the respective markets. CD-burners became widely available around the year 1998 and Napster popularised file-sharing in the summer of 1999. There are reports of widespread, unauthorised digital copying for all these major markets between 1999 and today. Exact and comparable measures of digital copying are not available, however, which complicates those econometric studies, which try to infer on the impact of file-sharing from correlations between 'piracy'-levels and record sales in different countries.

Figure 5.4: Real turnover in four major markets for sound recordings, 1978-2007 (1997=100)



Sources: calculated on the basis of RIAA (2000; 2008), RIAJ (2008), BPI (various issues), BV Phono (various issues) and inflation data as reported on OECD (2008).

All national lead-bodies report a considerable decline in average growth of industry revenues with the diffusion of digital copying technology after 1997, which is consistent with a serious threat from digital copying. The total decline from 1997 to 2007 lay between nearly 19% in Japan and nearly 46% in Germany. Yet, the data from these four national markets also illustrates the volatility of sound recording sales and the complexity of isolating the effect of digital copying. In all of the markets covered, the 1990s exhibit a strong upward trend but turnover stagnated or fell in 1997, before the surge of digital copying. In the US market, which accounts for over a third of global turnover, turnover developed in a manner that is

[104] Incidentally, all four of these main markets host headquarters of conglomerates that own substantial parts of one of the major record companies (EMI in the UK, Sony of SonyBMG in Japan and BMG in Germany, Warner and Universal in the USA).

most consistent with a serious threat of file-sharing for the record industry. Turnover had grown substantially in the decade up to 1999 in spite of a slowdown between 1995 and 1997. This trend reversed in the year 2000 and turnover fell rapidly and consistently since, except for the year 2004, in which digital sales were first accounted for by the IFPI. However, in the case of the other four markets covered, the evidence is less consistent with file-sharing as a permanent and substantial threat to the viability of a record industry. In the UK, turnover first appeared relatively resilient in the presence of digital copying, in spite of widespread relevant ICT usage. Turnover peaked in 2001 but fell thereafter with particularly steep declines during the last years. In Germany, real turnover had stagnated since 1993 and declined consistently since 1995. Here, the presence of digital copying did not reverse an upward trend but the period of widespread digital copying coincides with a severe recession. In Japan, turnover started to grow again in the year 2004. This is due to rapid growth in authorised digital downloads – included only since 2005 in RIAJ statistics presented here – that were widely available for purchase to Japanese consumers since at least the year 2001 in contrast to all other major markets.

Many studies focus on the US market, in which the temporal coincidence of file-sharing with an adverse shift in turnover growth is relatively pronounced. File-sharing networks have a global reach and Internet usage is widespread in many other major markets, in which the prima facie evidence for a devastating effect of digital copying on record sales is less straightforward. Other factors than unauthorised digital copying seem to have played a role in explaining negative growth in the record industry over the last years and this is the result of most econometric studies reviewed in section 2.7, but there is little systematic evidence on these other factors. In short, the available evidence still does not support firm conclusions on the causes of the current recession in the record industry and there are technical difficulties in isolating the economic effect of unauthorised copying in the volatile market for sound recordings.

5.2 ATTRIBUTES OF THE RECORD INDUSTRY

A taxonomy of agents and functions

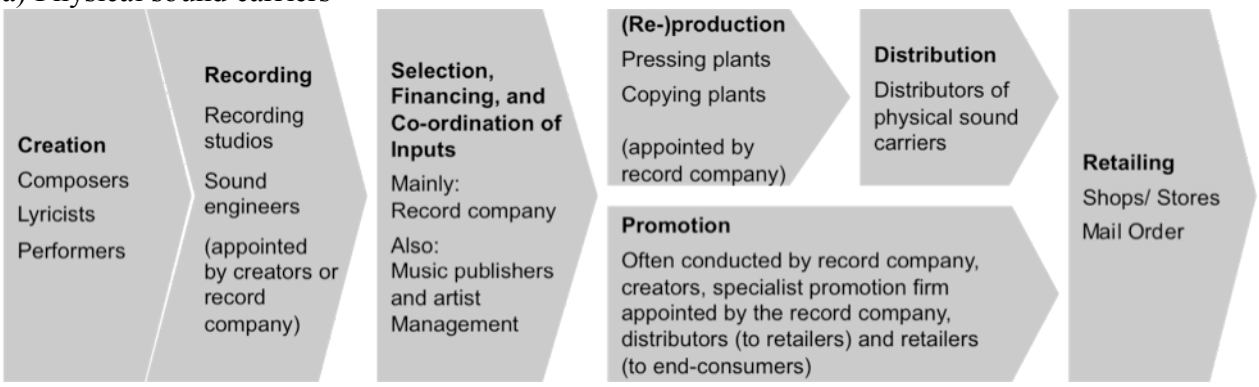
Figures 5.5 adapt Picard's (2002:34) general value chain model of media industries to illustrate the main activities in the specific case of the record industry and the types of organisation that typically play a central role in each of these steps.[105] In this schematic overview, the main activities in the traditional record industry or any other industry that supplies reproducible cultural products on physical carriers are: (1) the creation and recording of new content; (2) the selection of creative inputs, the co-ordination of various creative and

[105] For a broader model of the record industry as a system of four overlapping networks (creation, reproduction, distribution, and consumption), see Leyshon (2001).

humdrum inputs along the entire value chain and the financing of overheads; (3) the (re-)production of copies in a standardised, tradable format; (4) the distribution of copies; and (5) retailing.

Figures 5.5: Value chain of the record industry including main types of producers involved

a) Physical sound carriers



b) Downloads

One modification from Picard (2002) is that promotion is presented to take place continuously; it typically has set in when the recording is finished and carries on at least in parallel with the first cycle of re-production and distribution. Another modification is that retailers are included. This is essential in order to capture the difference between the traditional market for physical sound carriers and the emerging market for downloads.

In the record industry, the main creators are composers and lyricists as well as performers such as instrumentalists and singers. The subsystem of creation exhibits a number of idiosyncrasies that were discussed for the cultural industries in general in the preceding chapter. Creators perceive, select, recombine and manipulate elements of what one might call a public sphere of symbols, information or ideas (e.g. Vaidhyanathan, 2001). In this way, the system of creators is 'circular' (Toynbee, 2000:40ff.) and the Schumpeterian notion of innovation as mostly new combinations of existing knowledge holds for the special case of cultural creations (cf. Landes and Posner, 1989; Tschmuck, 2003b).

In order to create a new sound recording that meets state-of-the-art technical standards, the contribution of recording experts, such as sound engineers, and the use of

sound recording studios can be essential. Some recording experts (sometimes called 'producers') are creators in the sense of making a considerable, creative contribution to the sound recording, for which they can be compensated with a share in the copyrights similar to composers and performers. Sound recording studios and recording experts are either appointed by the creators or the record company. The process of recording ends with mixing the various tracks that have been recorded and completes the task of content creation. It concludes with the generation of the master copy of a new sound recording.[106]

All subsequent contributors are intermediaries, meaning they transmit a finished core product to an audience. In the music industry at large, record companies and music publishers play a central role. On the one hand, they acquire copyrights from selected creators. Nearly all creators permanently cede copyrights to these types of central intermediaries. On the other, central intermediaries co-ordinate the various inputs necessary to market musical creations effectively. Record companies' and music publishers' support is usually a precondition for market success. The humdrum inputs they organise may be more scarce and they are often under more concentrated ownership than creative inputs, which puts intermediary firms into a position to exert some influence over which creations enter the market. They act as gatekeepers, who assume some direct or indirect control of the creative process.

Publishers make contractual arrangements with authors to promote use of compositions and lyrics in return for a share in economically significant and waivable copyrights. Record companies (also known as 'labels') may be entitled to copyrights for a sound recording that they commissioned or financed. They will also acquire rights from creators and publishers.

Record companies play the pivotal role in the primary market for sound recordings and contribute the following services. First, record companies traditionally select or initiate projects and finance the production of a first fixation (master tape) of a work with an advance payment on expected sales. According to Vogel (2004:207) the production costs for a major backed pop-music album range from US$200,000 to "well past US$350,000", which should be beyond the private means of all but the most wealthy creators. These costs of expression exclude the promotion costs. However, especially at the low end of the market, record companies often also acquire rights to finished recordings rather than contribute to the costs of production in advance.[107] Here, the financial costs of expression can be much lower, sometimes no more than a few thousand US$. In this segment of the industry, many contributors settle for very low pecuniary rewards. It seems that creative projects run by major record companies and involving star creators adopt a different strategy than projects concerning fringe suppliers and newcomers. The former seek to maximise mass appeal and the reliability with which they generate hits by investing relatively heavily in content creation

[106] For the sake of simplicity, the design of packaging, covers and leaflets is ignored.

[107] See Picard's (2002:34) distinction between "acquired content" and "created content" in figure 5.1.

and promotion. The latter minimise financial risk by limiting up-front investments, specialize on niche markets or speculate on a lucky punch.

Second, record companies finance and/or organise and co-ordinate the various humdrum inputs necessary for the effective commercialisation of a finished sound recordings. Record companies will appoint specialised firms or conduct further functions such as the promotion and distribution of sound recordings with their own resources. Music publishers (that acquire rights to compositions and commercialise them) and artist management (that represent creators in negotiations and manage their career across the various aspects of the music industry) can sometimes play an active part in the record industry in addition to record companies.

Figure 5.5b illustrates a common constellation of contributors where sound recordings are marketed on physical sound carriers (e.g. vinyl records or CDs). Under commission from record companies, pressing plants and copying plants (re-)produce tradable copies on physical sound carriers. Distributors inform retailers about releases, take orders and deliver physical copies from the manufacturing site or their inventory to retailers. They operate similar to wholesalers with the difference that they usually do not own pre-recorded sound carriers and thus avoid some of the risk of the market. Distribution tends to the most concentrated part of the industry. The major record companies run the most important distributors (Vogel, 1998:146) and sell the service to their smaller competitors. Retailers that sell single copies to end-consumers are specialised record shops and multi-purpose stores (department stores, supermarkets, gas stations, etc.), as well mail order services.

In a noisy market environment with several thousand full length releases annually, much can depend on the effective promotion of releases, i.e. the dissemination of related information so that potential consumers become aware of the product. As a rule, creators will promote a new publication with a series of live concerts – and appearances in the media if they can get them – around the release date. Record companies will send out promotional copies and information material to multipliers such as DJs, critiques and journalists, and foster personal contacts in order to make sure their releases are featured in broadcasts, magazines and clubs.[108] Where they see fit, record companies will also organise advertisements as well as more subtle types of promotion, including tie-ins with other products[109] and 'viral marketing', where consumers are provided with the opportunity to pass on information to others, especially via various types of Internet-based communication. Distributors can be important in informing retailers about promising releases and convincing them to dedicate some of their limited shelf-space to them. Finally, retailers promote a few

[108] The infamous 'payola', where broadcasting staff receives payments to play a recording, is an extreme example (Vogel, 1998:146/7). Many record companies hire so-called 'pluggers' who are responsible to communicate with programmers in the mass media and to convince them to include specific works into their programmes.

[109] E.g. films, advertisements, video games.

publications among their customers. All this needs to be well co-ordinated to create synergies, which is usually the responsibility of the record company.

Since 2004, a market for authorised music downloads via the Internet or mobile telephony has been growing rapidly in major markets, even though the traditional market for sound-recordings on physical sound-carriers remains considerably larger in terms of turnover at the time of writing (see figure 5.3). Figure 5.5b depicts a common constellation where sound recordings are marketed as downloads via the Internet of mobile telephony networks. In these markets for downloads, telecommunication networks provide a standing, multi-purpose infrastructure via which digital files can be delivered cheaply and easily. Where copies of reproducible cultural products are marketed as downloads of digital files – via the Internet (e.g. iTunes) or via mobile telephony networks (e.g. NTTDoCoMo and KDDI in Japan or Jamba in Europe) – the stages of (re-)producing, distributing and retailing sound recordings change fundamentally. The manufacturing of physical copies and the logistics of distributing them become obsolete. Bricks-and-mortar distributors and retailers are replaced by download service providers. The logistics of transmitting sound recordings to users of the adequate ICT technology become less costly and more flexible. For rights holders that market a small repertoire, content aggregators (e.g. Merlin) can still play a role if bundling the repertoires of a number of rights holders reduces average transaction costs and strengthens the bargaining position with retailers.

Where sound recordings are marketed as downloads, the costs of reproducing, distributing and retailing downloads can be considerably lower than for physical sound carriers. What is more, the cost structure changes. In the case of physical sound carriers, much of the reproduction costs came as sunk overheads and record companies needed to predict demand and get the numbers of copies produced and shipped right. This was usually approximated by several runs of reproduction, shipping and re-stocking (Burnett, 1996). By contrast, downloads are available on demand. These changes have important implications. For example, downloads are usually supplied at lower prices. In the Euro zone, single tracks cost about €0.99 and a full-price album about €9.99, while the retail price of CDs containing a recently released album are usually above €15. It becomes feasible to supply more flexible bundles of works, e.g. by selling all tracks of an album individually as well. The bottle-neck of limited shelf-space in inventories and retail outlets is largely removed so that it may become economically feasible to supply an even greater diversity of products. Creators may even find it easier to reach an audience without the support of record companies or most other intermediaries. By now, there are numerous examples of pop music acts that gained a mass audience before signing a record deal with a larger label (e.g. Ani di Franco, Grammy award winner Maria Schneider or the Arctic Monkeys). Yet, creators that advance a long-lasting, lucrative career outside of the traditional record industry are certainly a small minority of recording artists so far.

As helpful as a general overview such as the one in figures 5.2 may be, in practice there are many different constellations in which sound recordings are produced and marketed, which escape a comprehensive graphical representation. For example, in practice record companies and publishers are frequently the same firm, and performers and authors the same individual(s). Perhaps the most important insight is that the conventional typology of producers in the record industry does not reflect the activities conducted by the individual or organisation in question in any straightforward manner. The most obvious examples are creators and record companies. As a rule, a record company will be important throughout the value chain, appointing and co-ordinating inputs by a number of other firms and/or running recording studios, promotion campaigns, distribution and other activities within the organisation. Record companies even often try to foster synergies with other aspects of the music business and get involved in the publishing business or the live music circuit. Creators can be involved with various aspects of production as well, in particular the promotion of new publications. Newcomers that have not gained the full backing of a record company will often have to take many things into their own hands and act as their own record company. At the other end of the scale, well-established creators occasionally try to cut out some of the middlemen and retain greater control over output and marketing strategy by setting up their own record company. What is more, there are many variations in the sequence and constellation in which different contributors interact in the process of production and marketing of different sound recordings. For example, Vogel (2004:206) reports on no less than seven fundamentally different types of arrangements between creators and one or several record companies.[110] In some cases, creators produce a master copy at their own expense and try to sell it to a record company. By contrast, record companies often assume far-reaching control over the recording process and sometimes of the entire creative process when they hire musicians to produce a recording according to a commercial blue-print. These types of variations along the value chain multiply to a great number of different constellations and the ingenuity of participants leads to ever new solutions.

The overview provided in this value chain model of the industry does not capture the wider context in which the record industry operates. For maps of the wider infrastructure in which the record industry operates, see Leyshon (2001) or Wikström (2006). Creators require specialised inputs such as musical instruments and recording equipment and they often co-operate with artists' management agencies or talent agencies that offer to direct their career and to help them hook up with other intermediaries such as record companies.[111] The commercialisation of sound recordings depends on complementary electronic hard- and software. Most participants require legal services.

[110] Vogel (2004) is not including cases where creators produce and market their own recordings without backing by a separate record company.

[111] In the latter case, talent agencies operate as an external A&R (artist and repertoire) department for the record companies that make use of their services.

Besides the essential media infrastructure, the most important aspect of the institutional set-up of legal, social, political and cultural factors within which these actors operate is probably the copyright system and organisations that administer it, including legislators, regulators and copyright collecting societies. The legal institution of copyright protects rights holders from competition by free-riders. The most valuable music company assets are the catalogue (of past releases), "often nothing more than a bundle of [copy]rights" (Vogel, 1998:152), and the prospective ability to secure and exploit valuable information assets in the future.

Finally, rights holders to sound recordings do not only make money from selling copies of sound recordings to private end-consumers. There are additional sources of revenue that need to be accounted for in an analysis of the record industry. These are discussed in the following section.

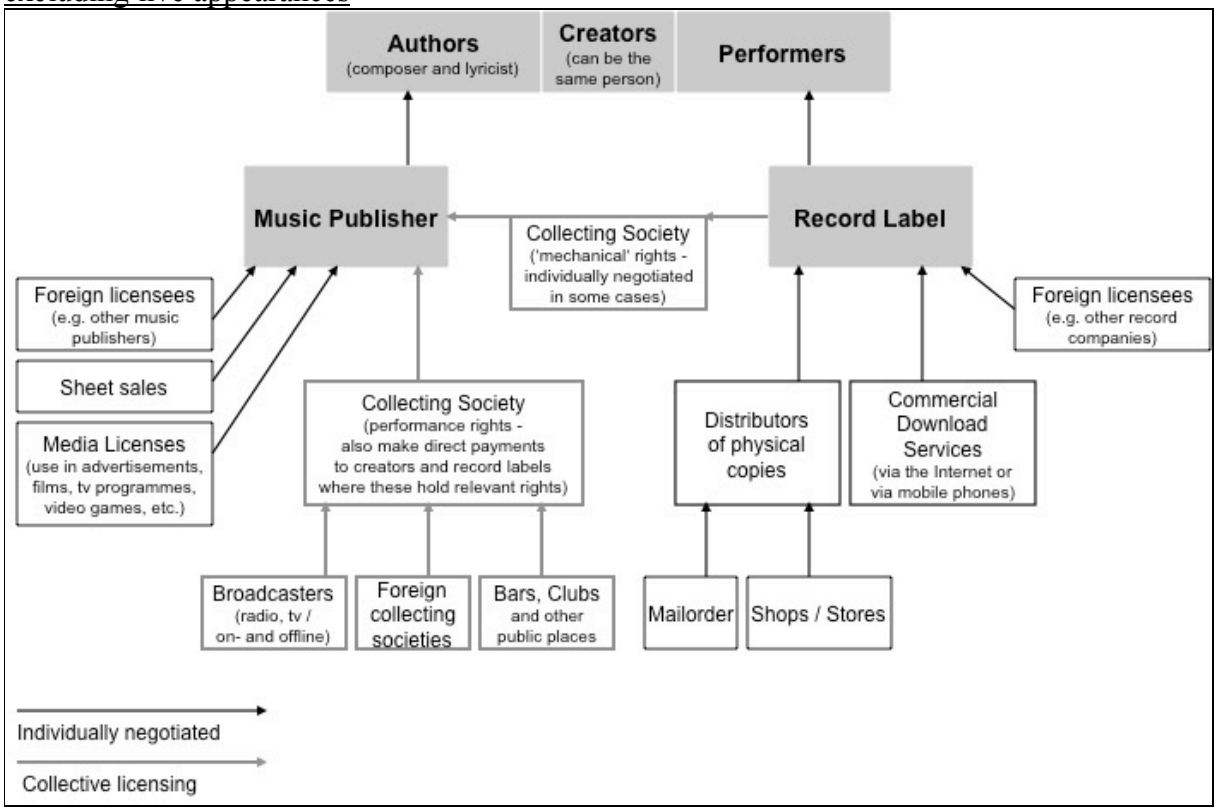
Moneyflows in the music industry

The commercialisation of music generates a variety of revenues. In the fully developed music industry, income is created via three "avenues of consumer awareness" (Cusic, 1996:24). Figure 5.6, which is an adaptation from Vogel (1998:136; see also Berndorff et al., 2000:11; Leyshon, 2001:61), maps out the moneyflows towards creators in two of these markets served by the music industry. The typical money flows towards creators are visualised by arrows. There are contractual ties in the opposite direction of each of these arrows, some negotiated freely between contracting parties, others determined by collective license agreements made possible by collecting societies that represent a great number of rights holders (see Handke and Towse, 2007). Live appearances (e.g. concerts, gigs) are an additional source of revenue for creators, which is not directly dependent on mass media technology as a means of delivery and which is not included in the flow chart. Neither is merchandising, the commercialisation of paraphernalia associated with a popular creation or creator.

In the primary market as discussed above and represented in the right half of the figure, copies of sound recordings are sold to private end-consumers. Here, record companies that acquire copyrights from selected creators tend to be pivotal suppliers. Record companies sell records to retailers, usually going through distributors in the traditional market for physical copies. Record companies pay performers a share of the revenues. They also pay 'mechanical' royalties to authors/music publishers under compulsory license agreements with collecting societies.[112]

[112] Vogel (1998:141) reports that these mechanical royalties are about 7 cents per song in the US. In Germany, mechanical royalties lay in practice around 7% of the net retail price (excluding VAT) for full-price albums. These generally applicable rates are negotiated between the members of collecting societies, i.e. representatives of the interested parties.

Figure 5.6: Music in the Media – moneyflows to main creators in the music industry, excluding live appearances



Sources: adapted from Vogel (1998:136), Berndorff et al. (2000:11), and Leyshon (2001:61).

In figure 5.6, the moneyflows that are typically managed by collecting societies are represented by thicker, grey arrows. Collecting societies are usually non-profit-making collective organisations that represent creators/rights holders and operate as national monopolies. In contemporary pop-music, performers and authors are frequently the same person, which is sometimes referred to as the 'singer-songwriter' constellation. Sometimes, the record company and the music publisher that deal with the various rights to the same product are part of the same firm. In such constellations, the strict division of rights in compositions and performances/recordings may seem overly complicated. This holds in particular, where composers' collecting societies collect royalties from the singer-songwriter, who is performing his own compositions. The right holder thus ends up paying royalties to herself, which reduce her liquid assets as the collecting society processes the distribution and deducts administration costs. Depending on the distribution key used, some right holders may not receive their money back at all. A relatively new problem in the collective administration of copyrights to sound recordings concerns the supply of promotional copies. Many music authors' collecting societies have the right to collect royalties from right holders, who make 'free' downloads of available for promotional purposes. A strict application of this rule would make promotional 'free' distribution quite expensive for right holders. This situation curtails some the strategic use of free downloads even in cases where all rights holders regard it to be

in their interest to make aspects of their repertoire available without payment for the time being.

In the secondary market (sketched out in the left half of figure 5.3), rights holders receive revenues from professional users that pay for the right to bundle their products with musical works or to exploit them commercially in some other way. For example, if a radio station features a sound recording in its programme, the rights holder to the broadcasting rights (say the music publisher) will be entitled to a royalty payment under many national copyright systems (in the US, no such royalties are collected from radio stations). These types of payments as compensations for the public performance of copyrighted works are usually administered by copyright collecting societies where broadcasters, foreign licensees and public places such as bars and clubs are concerned. Publishers negotiate individual deals for sheet music and where music is to be used in films, advertisements or video games, etc.

Except for live appearances, creators are rarely the direct recipients of payments, intermediary firms are. Composers are reimbursed by music publishers, who collect royalties on their behalf. As a rule-of-thumb, a fifty-fifty split of copyright royalties is agreed between composers and music publishers (Vogel, 1998:139). Performers typically receive overheads, a prior payment of a lump sum, from record companies for the production of a sound recording such as an album. In standard contracts with a record company, the performers receive a percentage share of the revenues only if these prior investments by the intermediary are recovered.

Some industry insiders describe accounting methods by publishers and record companies that lead to favourable results for these types of intermediaries (e.g. Albini, 1993). Creators' share in the actual revenue tends to be modest (Cusic, 1996; Vogel, 1998). According to estimates by Vogel, well-established creators who are in high demand in the USA can expect to divide just over 15% of total revenues amongst each other and minor players receive 10% or less. Towse (1999; 2001; cf. Kretschmer, 2002) documents that in practice, creators' copyright related income is very modest in the overwhelming majority of cases. Revenues to creators are further extremely disparate. Personal appearances (e.g. concerts or gigs) remain to be the more continuous and the most significant source of revenue for most creators (Cusic, 1996:24).

To fully capture pecuniary incentives to create, all sources of revenues need to be accounted for. Success in any one of these three 'avenues' tends to facilitate success in the others and in order to determine incentives to supply music related goods and services, the promotion effect of market presence across related submarkets requires some attention. Tschmuck (2003) has argued that the music industry is shifting from a business model in which sales of sound recordings was the main source of income to a predominant model in which live appearances generate most revenues and recordings promote concerts rather than the reverse. In any case, record companies have started to experiment with so-called '360-degree deals', in which they directly partake in all types of revenues rather than focusing on

the primary market. This breaks with established routines and the traditional division of labour in the music industry and is sometimes associated with considerable friction between various types of firms.

Technical innovation

Of particular interest for this study is technical change as a factor in the evolution of the market for sound recordings (note that this section focuses on technical devices rather than the broader concept of technology as defined in chapter 7). In this market, major technical developments usually directly affect one of two levels. First, advances in sound recording and sound manipulation equipment increase the feasible quality of recordings, make recording of a given quality cheaper and push the boundaries of the types of recordings that are attainable. A case in point is the transition from mechanical 'engraving' on shellac records to electronic microphones and magnetic tape used for capturing the master copy, which made it possible to pick up several sources of sound simultaneously and to edit tracks after recording. Since the late 1980s, gradual advances in sound processing software that runs on general purpose personal computers continues to open up new opportunities in recording and music production and to lower the minimum costs of recording. Few studies of digital copying and copyright seem to pay attention to this more long-standing aspect of the diffusion of digital ICT.

Second, the introduction of some new sound carriers marked turning points in the evolution of the market.[113] For example, vinyl records increased the quality and playing time of recordings, reduced breakage and facilitated distribution in comparison to shellac records. The introduction of the compact cassettes in the 1960s and the Compact Disc (CD) in 1983 are other examples of new types of sound carriers that lowered production and distribution costs in comparison to preceding formats. In both cases, it took several years before even these successful new formats were widely adopted. Cassettes were the single most popular sound carrier format in terms of global unit sales from 1985 to 1992 but the format never accounted for the majority of the market to justify calling it a standard and it played a relatively minor role in the main economies. CD sales exceeded all other sound carrier formats from 1993 onwards and became nearly as dominant as the vinyl record had been in the 1960s and much of the 1970s (IFPI, 2007). The accession of the CD was particularly beneficial to the established record industry as reproduction costs and creators' share in royalties fell while retail prices rose in the process (Vogel, 1998). It was also seen to favour the major firms at least initially as they ran the main CD pressing plants and managed to conduct the transition from vinyl records and cassettes to CDs more rapidly than many smaller competitors. What is more, in contrast to cassette players, conventional CD-players could not be used to record music in the 1980s and much of the 1990s and their sound quality

[113] Other formats that were introduced to the market – such as the MiniDisc or digital audio tapes (DAT) – failed to capture a sizable share of the market and disappeared almost entirely.

was perceived as an advance that increased the quality gap between authorised copies and unauthorised copies on cassettes.

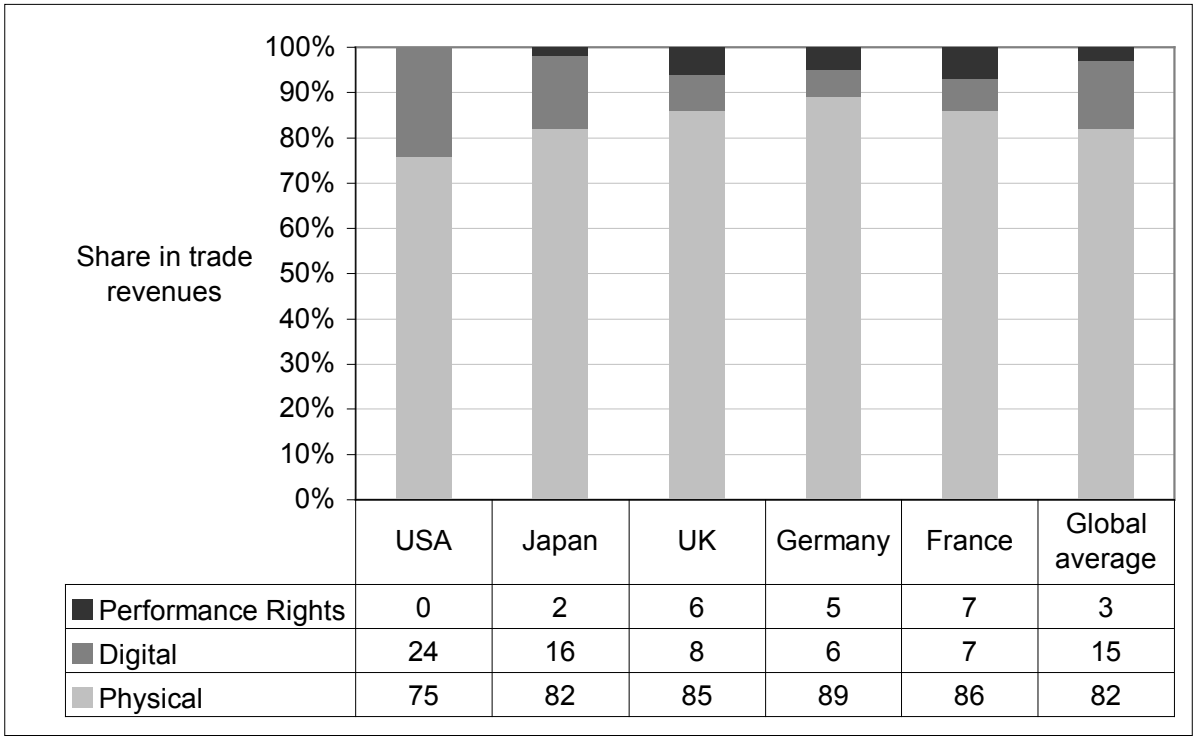
This initial advantage of the CD-format has reversed dramatically as digital copying devices today allow users of standard, end-consumer PCs to make virtually perfect copies of digital recordings. The industry developed effective retail outlets for authorised digital copies only several years after unauthorised digital copying had turned into a mass phenomenon and the market they catered for was going through a severe recession. At least since the year 2003, however, authorised sales of digital downloads via the Internet or via mobile telephony networks are growing rapidly.

In Japan, unit sales of downloads – overwhelmingly onto mobile phones and at lower prices per unit than for physical copies – exceed unit sales of all pre-recorded physical sound carriers at least since 2005. The introduction of the online music download retailer iTunes Store in the USA during 2003 marked another milestone. This service started to operate in most other major markets in the course of 2004 and 2005, was the first to unite the repertoire of all major record companies on one platform and its services proved attractive at the asking price (usually 99 US cents or Euro cents per single track without a subscription fee, for instance) in spite of unauthorised copying. The enterprise continues to dominate the US market for digital downloads and enjoys large market shares in many European countries, even though precise reports on market shares are hard to come by. Supposedly, iTunes has not been profitable but its owner, the IT firm Apple, uses the service to promote sales of mp3-players, a business model which includes a contentious DRM system obstructing playback on competitors' hardware.

For 2007, the IFPI (2008) reports on global revenues of record companies from digital sales at 2.9 billion US$ or 15% of the total. See graph 5.7 for the key figures. Since digital distribution omits several costly production steps, retail prices and revenues from commercialising downloads should underestimate their value to copyright holders relative to the same figures from the market for physical copies.

Concerning the drivers of technical innovation, generally speaking, a shift occurred early on in the record industry. Initially, suppliers of sound recordings were also selling playing devices and competed on the technical quality of hardware and recordings at least as much as on content. In the late 19th and early 20th Century, market leadership was often decided in legal battles over patents (for a detailed account see Barfe, 2004). As the market matured, radical technical breakthroughs became less frequent. The vinyl record was the last new sound-carrier format that was developed and introduced by a record company – RCA Victor – in 1930 and technically, it constituted more of an improvement to an existing design than a radical technical change. Record companies increasingly specialised on content and the acquisition and commercialisation of copyrights. Technical advances emerged from the activities of specialised producers of consumer electronics (such as Philips in the case of the music cassette and Philips and Sony in the case of the CD).

Figure 5.7: The market split in the five largest national markets for sound recordings (%-shares in trade revenues during 2007) [(a)(b)]



	USA	Japan	UK	Germany	France	Global average
Performance Rights	0	2	6	5	7	3
Digital	24	16	8	6	7	15
Physical	75	82	85	89	86	82

[(a)] Source: IFPI (2008).
[(b)] According to the IFPI (2008), physical sales include audio formats (singles, LPs, cassettes, CDs, DVD Audio, SACD, MiniDisc) and music video formats (DVD, VHS, VCD). Digital sales include: single track downloads, album downloads, music video online downloads, streams, master recording ringtones, full track audio download to mobile, ringback tunes, music video downloads to mobile and subscription income.

Therefore, it is sometimes claimed that the record industry came to resemble an archetypal service industry, in which the limited technical innovation activity remains supplier-driven in a 'reverse product cycle' (Barras, 1986; 1990). It has also been claimed that radical innovations were introduced by outsiders in line with predictions of economic theories of innovation (cf. Handke, 2001; Tschmuck, 2003). This would be consistent with the conventional observation that fringe suppliers generate a disproportionately large share of radical innovations concerning musical content, some of which is picked up by majors if it proves its commercial potential. An important difference between technical innovations and new types of recordings is that new technical formats regularly require much higher up-front investments than new recordings so that larger conglomerates than even the major record companies tend to play a main role in technical innovation, whereas small fringe suppliers are of disproportionate significance in developing qualitatively new musical recordings and styles (see section 5.4). However, Philips for example was not a complete outsider to the record industry, as it had a stake in a major record company when it developed both the compact cassette as well as the CD. Sony, on the other hand, only became a major player in the record industry after the introduction of the CD.

The mp3 sound compression format that made the massive distribution of sound-files feasible, is an even clearer example of radical 'outsider innovation' concerning technical formats in which to handle musical sound recordings. This open technical standard was developed and introduced by a research enterprise – the Fraunhofer Institute – under partial public funding by the German government. Canny end-consumers as well as start-up firms picked up on it to develop new practices of distributing and exchanging sound-files. The online distribution of musical recordings thus appears to be a prime example of user innovation. It illustrates the problems that can occur for incumbent firms if they allow too wide a gap to open between the quality of products that is technically feasible and what they offer within established business models. This is not to say, though, that the industry had a rational alternative to dragging its feet. The risks to copyright enforcement associated with online distribution were apparent. It seems likely that incumbents enjoyed some degree of market power in the traditional market and they certainly faced huge sunk costs associated with traded business models. The major firms also faced another dilemma. On the one hand, an attractive retail outlet for downloads needed to offer as much of the available catalogue as possible, regardless which record company held the rights (as was the case on file-sharing platforms). On the other, even if the majors had found an agreement, any concerted action by them would have been likely to receive unwanted attention by anti-trust authorities.

Over time, technical change has made it easier to record, manipulate and distribute sound recordings. That is, the costs of producing a given product have fallen – a case of process innovation as will be discussed in section 7. Ceteris paribus, falling fixed costs of production would entail lower barriers to entry and reduced economies of scale. Smaller suppliers would become more competitive in the process, which should show up in the industry structure if the effect is pronounced enough. However, technical change is also associated with falling variable costs and product innovation. Thus, technical change has two contradictory effects: it lowers the costs of producing a given product and it raises the threshold in terms of technical quality that needs to be reached to make a product competitive. What is more, the diffusion of electronic media equipment was an essential aspect of the emergence of a number of new musical styles that came to capture large parts of the market – electronic dance music and HipHop/Rap being particularly obvious examples. Accordingly, the effect of technical change on economies of scale and industry structure has been very different in different stages of the industry's evolution and it may not be trivial concerning the adoption of advanced digital ICT.

Majors and indies in the record industry and organisational change

Record companies play a central role in the record industry (Garofalo, 1994; Tschmuck, 2003), since they usually coordinate the various inputs and operations. This includes selecting and supporting suitable creators as well as organising the reproduction and marketing of finished cultural products that entail more clear-cut routines (cf. Caves, 2000). Under current

arrangements, record companies can be defined as firms that acquire permanent (copy)rights[114] to sound recordings and who commercialise sound recordings. Record companies need not be restricted to the definitive activities of A&R and the coordination of various production steps. They often also provide related services in-house, say by acting as publishers and distributors and running sound recording studios.

The record industry is an archetypal example of a polarised industry structure: for much of its post-war history a handful of dominant, multinational conglomerates have co-existed with literally thousands of smaller firms. Gillet (1970) coined the expressions 'majors' for large firms that operate internationally and enjoy some market power, and 'independents' (or short 'indies') for their smaller competitors. The polarisation into majors and indies is so striking that the evolution of the record industry has often been described in terms of a struggle between these two types of intermediary firms (e.g. Gillet, 1970; Peterson and Berger, 1971; Chapple and Garofalo, 1977; Garofalo, 1994; Tschmuck, 2003). This approach in the broader social science literature that emphasises changes in the intensity of inter-firm rivalry, is not found in important contributions by economists such as Caves (2000).

The meaning of the term 'major' is rarely disputed. Today the majors are the four largest record companies Universal Music, SonyBMG, Warner Music and the EMI.[115] These four organisations are part of larger media conglomerates. They play a central role in all important markets and they deal with all genres for which there exists a mass market. The combined global market share of the majors has long been quite stable at around 75%. Majors run specialised departments in-house for virtually any stage in the production and marketing of sound recordings. Besides the functions of record companies, majors (or their parent company) run the largest music publishers, pressing plants and distributors. The position of majors tends to be particularly strong where distribution and access to the financial market is concerned. They are also very effective in securing space in the traditional channels of promotion (e.g. radio, tv, film and the press) for the publications to which they hold rights.

The term 'indies' refers to record companies that are much smaller than majors and that operate independently of these dominant firms. In practice, it may be hard to establish whether a firm fulfils the second criterion. That is because at least since the 1980s, the majors have intertwined their activities with a multitude of smaller firms. Majors developed part of their enterprises into decentralised networks (Burnett, 1990; 1996) arguably in order to reduce their relative weakness in reacting to 'new sounds'. Today, the phonogram industry consists of a "web of major and minor companies, within which majors are split into semiautonomous working groups and label divisions, and minor companies connect these by complex patterns of ownership, investment, licensing, formal and informal and sometimes deliberately

[114] 'Permanent' means here: 'for the entire duration of copyrights'.

[115] Due to continued merger activity, this constellation is likely to change in the foreseeable future.

obscured relationships" (Negus, 1996:43).[116] Co-operations range from mere 'distribution-deals', where majors distribute publications of smaller record companies, to joint ventures and mergers (Negus, 1992).

The literature on the record industry contains other approaches to defining 'indies'. First, this type of record companies is often specialized on very few core functions in the record industry. When Gillet (1970) coined the expression, for example, he defined indies as record companies that entertained no nation-wide distribution network of their own. However, this definition criterion cannot be transferred to smaller or less integrated markets than that of the USA before 1970. Entertaining a nation-wide distribution network in smaller countries, say the Netherlands or even the UK, is considerably less demanding than in the USA. Second, indies are traditionally presumed to limit their activities to a national market or region in contrast to majors with their global operations. This definition criterion for indies runs into a similar problem: a record company that operates in several smaller countries, say the Benelux countries or the UK and Ireland may have considerably less reach than a firm operating in the USA or Japan. What is more, with the emergence of Internet-based distribution, national boundaries may loose some of their significance. Third, indies are often focused on specific musical genres and rooted in scenes in which this type of music is developed and consumed. Finally, some authors invoke socio-political and aesthetic issues for the definition of indies (e.g. Vormehr, 2003). Especially in the 1970s, indies appeared to be an alternative to the perceived pure commercialism of majors. This may apply to many smaller record companies but it is hardly a universal criterion with which to distinguish majors and their smaller competitors (Frith, 1981; Garofalo, 1994). For the purpose of discussing the structure of the record industry as a whole, the definition of indies as small firms that operate independently of the majors thus appears to be most suitable.

In the perception of small, independent record companies there are two extremes. On the one hand, the literature often describes indies as a particularly dynamic, progressive part of the record industry (e.g. Gillet, 1970; Negus, 1996). They seem to enjoy a competitive advantage in 'discovering' and promoting new creative projects and new musical styles (e.g. Frith, 1990; Burnett, 1990; 1996; Negus, 1996; Gander and Rieple, 2004). The greater the market share of indies, the more innovative and diverse seems to be the supply of music (Peterson and Berger, 1975; Burnett, 1990; Negus, 1996). Some authors suggest that strong networks of independent record companies explain the disproportionate success of some countries and regions as international centres of music production and their ability to attract investments by multinational corporations (Lash and Urry, 1994:130-1; Power and Hallencreutz, 2002).

[116] For organisation charts of (AOL) Time Warner Inc. that illustrate this point well, see Scott (1999:1967) and Power and Hallencreutz (2002:31). A practical consideration for this study is that the distinction between majors, their affiliates and independents might be difficult to make in practice both for lack of relevant information and due to many intermediate cases of indirect and partial control.

On the other hand, some authors address indies as economically marginal and not competitive in internationalizing markets, which in many cases such firms are almost by definition. For example, when Burke (1997) discusses creators that found record companies, he describes them as the 'chaff' that has failed to secure a contract with incumbent firms. He infers that this type of firms will not make a strong contribution to the market.

Two points may explain the contrast between these two perspectives. First, the term 'indies' refers to a heterogeneous group (cf. Schulze, 1995). The spectrum spans from one-man, spare-time operations to internationally operating firms with over a hundred full-time employees that distance themselves from the majors for strategic purposes. Regarding the obvious differences within this group, there will be numerous exceptions to most general statements on the characteristics of indies.

Second, the role of indies has changed notably over time. For much of the 20th century, the record industry exhibited a cyclical pattern. Long periods during which majors enjoyed a dominant position in the market alternated with shorter periods where new musical genres and new media technologies diffused quickly and where some indies thrived as majors lost some of their market share (Gillet, 1970; Peterson and Berger, 1971; 1975; Peterson, 1990; Tschmuck, 2003). Such periods of pervasive change were associated with the emergence of Jazz and later Rock'n'Roll as the most popular musical genres, both of which were promoted by indies against the initial resistance of the major firms at the time (Gillet, 1970; Tschmuck, 2003). The intensified struggle between conservative incumbents and their smaller competitors with the rise of Jazz and later Rock'n'Roll culminated when some of the most successful indies took over previously dominant firms so that the role of 'majors' changed from one organisation to another. Several authors explain changes in industry structure and the diversity of supply with the evolution of media technology (e.g. Alexander, 1994; Tschmuck, 2003; Tschmuck, 2006).

Peterson (1990) developed an influential account of the period of radical change that took shape in the US record industry between 1954 and 1956.[117] Rejecting exceptional individuals and demographic changes as valid explanations for the 'Rock'n'Roll revolution' in the USA, he emphasises technical changes (e.g. electronic recording devices used in recording studios, the diffusion of vinyl records and transistor radios) that lowered barriers to entry as well as legal changes that allowed a diversification of radio broadcasts in the USA and started to feature new musical genres not associated with majors. Peterson further documents how subsequent changes in the industry structure, organisational forms and market conditions perpetuated each other.

This account corresponds with general theories concerning the consequences of radical innovations on industry structure as addressed also in section 7.1 (e.g. Abernathy and Utterback, 1975; 1978; Freeman and Perez, 1988; Klepper, 1996; Dowd, 2004). The

[117] Peterson (1990) bases his account of the emergence of Rock'n'Roll on his 'production of culture'-model as laid out in Peterson (1976; 2004).

probabilistic prediction is that ground-breaking, radical innovations that open new markets or make substantial productivity increases possible, trigger a period of increased market entries, competition and innovation as more and more of the new opportunities are exploited over time. Firms that are able to instigate such changes or to adapt to them quickly displace more conservative suppliers and often, the competitiveness of smaller and flexible firms increases (Peterson and Berger, 1971; Freeman and Soete, 1997; Evans and Wurster, 1999; Tripsas, 2001). The productivity of the affected industries may increase very rapidly. Eventually, the market stabilizes, the industry hierarchy consolidates and new, stable and relatively concentrated industry structure takes shape again.[118]

However, in the 1980s and 1990s many authors argued that this cyclical model would not apply to the record industry any longer. In this period, the majors had diversified their activities in relation to creative processes by developing complex networks of semi-autonomous business units and joint ventures with smaller firms (e.g. Hellmann, 1983; Frith, 1987; Burnett, 1990; 1996; Lopes, 1992; Dowd, 2004). This coincided with a relatively stable situation that has been likened to a symbiosis between majors and a large share of the indies (Hellmann, 1983; Burnett, 1996). During this period, the majors succeeded in quickly absorbing new musical trends and genres (e.g. Punk, Rap and electronic dance music) before shifts in demand would challenge the majors' predominant role (Garofalo, 1997; Hesmondhalgh, 1998a; 1998b). Neither did the diffusion of new sound carrier formats – such as the compact cassette or the CD – destabilize the majors' position. Their predominance appeared well entrenched and less at odds with a diverse supply of sound recordings as assumed previously (Lopes, 1992; Dowd, 2004).

Roughly since the millennium it seems that the majors face the first serious challenge to their dominant position in the market for sound recordings for at least 25 years (cf. Alexander, 1994; 2002; Burnett, 1996; Röttgers, 2003; Tschmuck, 2003). Current cataclysms in the market directly concern pillars of majors' competitiveness: distribution and promotion (Alexander, 2002). The Internet offers new possibilities to promote and distribute sound recordings that circumvent the bottlenecks of the traditional media as well the traditional distribution and retail outlets. The outstanding capabilities of the majors in these areas, which are prone to economies of scale, lose some of their value in the process. This development coincides with a surge in unauthorised copying that challenges the copyright system as a foundation of the record industry as we know it.

[118] In a study of the changes in the market structure in the evolution of over 50 industries, Klepper and Graddy (1990) confirmed that these industries by and large evolved along a pattern of three stages: (1) growth in the number of firms after the inception of the industry; (2) a shake-out during which the number of firms declines; (3) a stable period of relatively high integration. What makes this study particularly interesting is that the record industry was one of two industries that had exhibited a repetition of this pattern of integration and fragmentation in the time period investigated (1887-1981 for the record industry). See footnote 10 in Klepper and Graddy (1990:31).

5.3 SUMMARY AND OUTLOOK

The broader, social science literature on the record industry inspired the approach adopted in this dissertation. This concerns the emphasis on technological change in this literature and on the rivalry between major incumbents and 'independent', smaller firms. The related literature draws on evolutionary economic theory that will be discussed more thoroughly in chapter 7, emphasising the contrast to standard economics.

A fundamental issue in the record industry is what the consequences of digitisation will be. An aspect of this broader issue concerns the implications of digital copying and the question whether a severe recession in many major markets after 1998 is due to an erosion of copyright protection or whether it is better understood as a side-effect of broader technological change, which may play our in a similar way as previous periods of technological discontinuity. The following chapter 6 develops a method to identify radical technological change as it unfolds.

6. TWO SCENARIOS – CREATIVE DESTRUCTION, PLAIN DESTRUCTION AND HOW TO DISTINGUISH THEM

One way to express the reasoning behind the institution of copyright is that it is a means to approximate an efficient level of diversity in the supply of cultural products – innovation and creativity being processes that foster the diversity of supply. Chapter 3 presented evidence that the supply of sound recordings has increased over recent years in spite of a severe recession and a surge in copyright infringements that have affected the record industry. This observation is not consistent with the heedless application of standard economic theory and its prediction that unauthorised copying undermines the supply of copyright works.

Taking a cue from the literature on the record industry, this chapter develops an alternative account that releases some of the simplifying assumptions prevalent in standard economics. This alternative account hinges on the related concepts of creative destruction and radical technological change in the record industry with the diffusion of advanced digital ICT. This section also develops a number of hypotheses to test the validity of this alternative account.

6.1 STUDIES OF PLAIN DESTRUCTION AND STUDIES OF CREATIVE DESTRUCTION IN THE RECORD INDUSTRY

This dissertation distinguishes between two types of studies that have addressed digital copying, the copyright system and the record industry. First, studies of plain destruction focus on the impact of unauthorised copying on the established industry at large. The bulk of empirical studies discussed in section 2.8 fall into this category. Second, studies of creative destruction try to incorporate broader technological change – in addition to the diffusion of digital copying technology among users – and an adaptation of the industry to a new market environment into the analysis. Some examples will be introduced below.

There are different ways of pinpointing the divergence between archetypal studies of plain destruction in the record industry and broader approaches of creative destruction. One distinction is that studies of plain destruction will implicitly or explicitly assume that the record industry operated in a way that resembled a state of competitive, static equilibrium reasonably closely before it was hit by a surge of unauthorised copying. This assumption facilitates a normative assessment since it implies that deviations from the modus operandi prior to the diffusion of digital copying technology is very likely to be welfare decreasing. Studies of creative destruction refute this notion, which tends to complicate the assessment considerably. Another, related distinction between these two perspectives is that plain destruction studies are (mainly) static in the sense of focusing on the short-run, while creative

destruction approaches are dynamic because they attempt to allow for adaptations within the industry over time (Nelson and Winter, 1982:163ff.).

Positive analysis in studies of plain destruction

Much of the economic literature on digital copying takes the standard neoclassical assumptions in mainstream economic theory as its starting point. In its archetypal version, agents are assumed to maximise their individual utility (or profits in the case of firms) by making decisions between a set of mutually exclusive alternatives based on perfect information. Markets are studied in terms of a static, competitive equilibrium, in which there is no (or constant) technological change and all market participants are price takers. Neoclassical microeconomic theory makes it possible to study the impact of a clearly defined external shock on markets that conform to equilibrium conditions by adhering to strict logical deduction as exemplified in formal-mathematical models. The external validity or relevance of results – and thus their practical usefulness – depends to a large extent on whether the markets studied resemble the theoretical assumptions reasonably well.

Of course, the economic literature on copyright cannot be reduced to this archetypal position. As discussed in chapter 2, some concern for the long run and technological change are reflected for example in the discussion on business models. Yet, neither broader technological change that may coincide with the diffusion of digital ICT nor induced changes to the contestability of markets are systematically incorporated in the standard literature.

An important aspect in the development of mainstream economic theory is that it expands to cover more situations in which particular aspects of the axiomatic assumptions of neoclassical economics are released. An important case in point is the IO literature that studies issues related to imperfect competition and imperfect information on the micro-level. In this sense, archetypal neoclassical theory may be understood as the default starting point in applied economic research. Yet, the disposition of mainstream economics to release axiomatic assumptions remains limited (Lipsey et al., 2005).

Applied to study the impact of unauthorised copying on the record industry, neoclassical theory has motivated empirical studies of *plain destruction* that aim to specify the short-run impact of copying on the industry at large.[119] Based on the implicit assumption that the record industry was efficient before the external shock of digital copying technology struck, such studies pay limited attention to wider technological change, modifications of the industry structure or issues of competition. The conventional understanding is that unauthorised copying introduces a market failure associated with the public goods characteristics of information goods. Unauthorised copying displaces demand for authorised copies, erodes revenues to creators and thus diminishes incentives to create below a socially desirable level.

[119] As discussed in section 2.7, the conventional economic justification of copyright does mix static and dynamic analysis in a noteworthy manner.

Positive analysis in studies of creative destruction

By contrast, broader technological change (beyond the diffusion of advanced copying technology among consumers and unauthorised users) changes in industry structure and competition feature prominently in much of the specialised literature on the record industry. The pervasive use of ICT is expected to bring substantial cost reductions and productivity increases in copyright industries (Varian, 2005; Liebowitz and Watt, forthcoming). It is also associated with the rise of new products and services. Studies that incorporate broader technological change into the analysis are referred to as studies of *creative destruction*. Such studies either point to technological change that occurs roughly simultaneously to the diffusion of digital copying technology among unauthorised users, or they treat technological change as endogenous when they try to determine how firms adapt to a changing environment. In any case, such studies are united by the assumption that the record industry is undergoing substantial and relatively swift technological changes, which need to be accounted for in models that seek to bring about realistic explanations.

Studies of the contemporary record industry focus on two issues that are largely absent in more conventional, neoclassical analyses and studies of plain destruction. First, some record industry analysts have predicted that technological change with the widespread diffusion of digital ICT will have asymmetric effects on different kinds of suppliers and will result in structural change (e.g. Alexander, 2002; Coles et al., 2004; on creative industries more generally Caves, 2000:174 and 201ff.). This reflects accounts of several periods of radical technological change in the history of the record industry, in all of which more efficient reproduction technology played a significant role. During these periods of radical change, some of the advantages of larger enterprises were eroded and barriers to entry were lowered, which stirred competition, gave the incentive to further innovation and even saw changes in the organisations that enjoyed industry leadership (see Peterson and Berger, 1975; Chapple and Garofalo, 1977; Murph, 1984; Caves, 2000; Tschmuck, 2003).

An interest in the intensity of inter-firm rivalry is a second extension that unites many studies of creative destruction in the record industry. Today, the record industry is highly concentrated in four major multinational firms that control around three quarters of the world market (IFPI, 2007) and wield considerable market power according to most accounts (see e.g. Burnett, 1996; Silva and Ramello, 2000). In spite of their specialised expertise and substantial means, incumbent firms seem to have missed any opportunity to drive the development of online distribution before industry outsiders established enormously popular versions of the long-anticipated ‘celestial jukebox’ (Goldstein, 1994; Burnett, 1996) in the guise of file-sharing networks such as Napster. Some conclude that the majors have actively resisted online distribution to protect well-established bricks-and-mortar business models (Aldermann, 2001).

At their most ambitious, studies of wider technological change in the record industry suggest that the record industry is going through an archetypal process of pervasive and radical technological change at this point in time (e.g. Alexander, 1994) and that this should

have implications for copyright policy (Tschmuck, 2003). The related prediction is that an intense process of creative destruction will take place. In such a scenario, existing business models would be supplemented by new and more productive ones over a short period of time, and organisations with a greater capacity to drive or adapt to such changes would outcompete more conservative market participants. Furthermore, the industry at large would exhibit far-reaching productivity increases.

As will be discussed below, there are problems with such predictions, and among studies of creative destruction of the record industry, there are more or less comprehensive, ambitious and rigorous versions. Basic caveats are that the underlying argument is complex and that it is not convincing without considerable empirical evidence supporting it. The finer theoretical points and limitations will be discussed in the following chapter 7.

6.2 DOES THE DISTINCTION BETWEEN PLAIN DESTRUCTION AND CREATIVE DESTRUCTION MATTER FOR NORMATIVE ASSESSMENTS RELATING TO COPYRIGHT?

Studies of plain destruction and studies of creative destruction diverge fundamentally in their assumptions about market conditions and the industry's ability to cope with change. Studies of plain destruction have a clear normative dimension. If the assumption is that the modus operandi prior to an increase in unauthorised copying was efficient, any deviation from it is likely to be welfare decreasing. Focusing on plain destruction, once it is established that the net effect of a surge in unauthorised copying is damaging to existing suppliers, counter-measures seem desirable. Given the capacity of new copying technologies, many analysts suggest that a continued erosion of the copyright regime would threaten the very existence of economically viable cultural industries and therefore believe it is essential that the copyright system be strengthened. Copyright enforcement is seen as *the* central challenge to the industry today.

From a perspective of creative destruction, there are several caveats:

- First, the effects of other ongoing technological change might overlap with the effects of unauthorised copying. Significant broader technological changes could create additional difficulties in isolating and correctly assessing the short run impact of unauthorised copying.
- Second, any successful adaptation to changed market conditions – beyond efforts to enforce exclusive rights – would mean that some of the adverse impacts of unauthorised copying would be temporary and that some positive impacts could become more significant over time as suppliers learn to handle these developments better. Adaptation would mean that studies of plain destruction overestimate the long-run damage brought by unauthorised copying.

- A third point raised by studies of creative destruction is that technological change may have to be treated as endogenous, which leads to a more complex argument. Ongoing broader technological changes within the industry and efforts to adapt to the presence of digital copying technology are likely to be linked and might come to perpetuate each other, in particular where any technological change diminishes barriers to entry, increases competition and incentives to innovate. This endogenous and cumulative nature of technological change is a key component of theories of radical technological change (e.g. Abernathy and Utterback, 1975; 1978; Freeman and Perez, 1988; Klepper, 1996). If technological change occurs and these developments have asymmetric effects on various types of market participants, it would be desirable to distinguish between the destruction due to unauthorised copying on the one hand, and any adverse effects on incumbent firms due to increased competition with emergent markets for close substitutes (cf. Michel, 2005; Liebowitz, 2006), with legitimate new market entries, or with particularly innovative competitors.
- Fourth, specific aspects of copyright systems might even be at odds with the desirable aspects of competition and swift technological change – see chapter 2.

To express this divergence in terms of quantitative methods, what the alternative perspective of creative destruction implies is that studies of plain destruction may commit three types of over-abstractions. First, studies of plain destruction simplify the process of technological change into a single variable: an increase of unauthorised copying due to the diffusion of digital copying technology among unauthorised users and end-consumers. This might be inadequate if technological change has other, simultaneous effects that should be included into the analysis. For example, the production costs for right holders may fall substantially where they apply digital ICT. There may also be changes in related markets that generate new sources of income to right holders. Second, studies of plain destruction may treat what is an endogenous variable – technological change – as exogenous, thus ignoring any feedback between industry turnover, digital copying and broader technological change. Third, studies of plain destruction may erroneously assume that a given level of copyright protection was efficient prior to the introduction of digital copying technology and/or that this given level remains unaffected by changing market conditions.

That said, whether file-sharing in the record industry is studied solely in terms of plain destruction or also within a context of creative destruction can lead to different predictions about developments in the industry. Accordingly, these two perspectives are likely to lead to conflicting conclusions as to the need for adaptations of the copyright system. Where broader technological changes coincide with the diffusion of digital copying technology or where there are inefficiencies within the record industry, it is possible that copyright enforcement will not provide the only way of countering the trend of falling sales. Other types of innovation and structural change might make a contribution to saving the industry, if not all firms in it. The different emphasis comes out clearly in the perception of online distribution.

In addition to the appropriability problems associated with it, the explosive growth of file-sharing networks clearly demonstrated some of the potential for distributing recordings without physical sound carriers – five years before iTunes generated the first, reasonably successful retailing outlet for authorised downloads in the US. Innovative firms that succeed in introducing new or improved products as well as new processes – even where these compete with established business models – might stand a better chance to thrive in spite of the potential for unauthorised copying. Overall, if an industry is undergoing a process of creative destruction, public policy is best advised to facilitate transition rather than supporting traditional business models.

This divergence between studies of plain destruction and studies of creative destruction raises the question how important the additional analytical dimensions entailed in studies of creative destruction are in practice and at this point in time. In order to draw policy implications, it is hardly sufficient to point out the mere possibility of market distortions for other reasons than unauthorised digital copying. The purpose of this part of the dissertation is therefore to determine whether recent, observable developments in the record industry are consistent with a process of plain destruction due to an increase in authorised copying or with a more ambiguous process of creative destruction. The emphasis is less on the daunting task of trying to discuss the relative significance of all possible factors that may bear on the development of the record industry and the desirable type of copyright policy, even though chapters 13 and 14 address possible explanations for creative destruction in the record industry. The focus is rather on identifying creative destruction by studying overall developments in the record industry in the presence of digital copying. In the particular constellation of the contemporary record industry, neoclassical studies of plain destruction and studies of creative destruction make divergent, testable predictions. Section 6.3 sets out how an empirical research design for distinguishing plain destruction and creative destruction can be developed based on these divergent predictions. In this way, this study develops an empirical indication of the net effect of the various additional analytical dimensions suggested in studies of creative destruction.

Finally, it needs to be clear from the outset that processes of plain destruction and creative destruction are not mutually exclusive. Technological change in the record industry may very well lower barriers to entry, promote competition and spur further innovation at the same time as unauthorised copying – as a specific aspect of the diffusion of new technologies – displaces demand. This insight will be important for the interpretation of results.

6.3 HOW TO DISTINGUISH PLAIN DESTRUCTION AND CREATIVE DESTRUCTION

In order to determine empirically whether developments in the record industry are more consistent with a process of plain destruction or with one of creative destruction, empirical

observations need to be specified that would be consistent with one of these two processes but inconsistent with the other. This section develops on such indicators.

Where the conditions for profitable production cease to exist, the plain destruction of an industry will occur: "plants close, employment shrinks, output declines, and productivity stagnates" (Levinsohn and Petropoulos, 2001:1). The conventional understanding of the economics of copyright suggests that unauthorised digital copying has caused these adverse effects on the record industry by eroding property rights.

Creative destruction is a more ambiguous process. Creative destruction takes place when innovative firms generate productivity increases or new superior products, gain competitive advantages and take over market share at the expense of more conservative suppliers, which leads to productivity increases throughout the industry (Schumpeter, 1942). This process has three dimensions.

The first and essential aspect of creative destruction is the introduction to the market of new superior products or more efficient production processes, which will diffuse at the expense of preceding solutions. In order to identify a process of creative destruction, it is thus necessary to determine whether there are new product substitutes or new production processes (including new organisational forms in which production takes place) that are superior at least for some purposes. Creative destruction may thus be distinguished from plain destruction because it entails high innovation intensity in the respective industry, the introduction and growth of new services and products or new production processes.

Second, on an organisational level, a process of creative destruction means that more innovative firms gain market share from more conservative market participants. If firms differ in their capacities to conduct technological change, such changes on the organisational level are characteristic of intense periods of creative destruction.[120] Third, the industry at large will become more productive. These productivity increases may show up in falling prices without proportional losses in quality or in greater quality without a proportional appreciation of prices. These productivity increases may take a relatively long time to transpire, however. What is more, in the context of adverse changes to the market environment, creative destruction may not show up in falling prices or greater quality at all but just in an adaptation of the industry that limits the negative impact of an external shock. Productivity increases will usually be a component part of creative destruction but it is feasible that a gradual change in products and processes will take place without productivity increases (Lipsey et al., 2005). Therefore, changes on the organisational level or productivity increases are both limited as indicators for a process of creative destruction as an ongoing process. The former will only indicate a typical process of creative destruction that affects industry structure. The latter will only indicate a typical process of creative destruction that reduces costs rather than a process of adaptation to increased costs or changes with no immediate effect on productivity.

[120] Strictly speaking, creative destruction in the first dimension is imaginable without changes to the industry structure if all incumbent firms turn out to be reasonably efficient innovators.

One important, initial insight for the purpose of this dissertation is that creative destruction cannot be distinguished from plain destruction on the basis of aggregate revenue or turnover levels. That is because technological change associated with a process of creative destruction may often depress turnover in the affected market, like a process of plain destruction always would.

Three examples of constellations in which a process of creative destruction would cause falling turnover are the following. First, by definition, digitisation reduces the costs of producing a given output. Under competitive pressures, suppliers will pass on cost reductions to consumers by lowering price, which will decrease revenues if demand is inelastic over the range of the price change. Firms' profitability may remain unaffected after a period of adjustment, since in a functioning market, any reduction in revenues will be proportional to cost reductions.

Second, technological change may increase the contestability of markets that exhibit imperfect competition. On the one hand, digitisation may reduce fixed costs, which would facilitate market entry and increase contestability. On the other, product innovation may introduce competitive substitutes. In both cases, the market power of incumbents is eroded, prices fall and super-normal profits diminish. Again, if the price elasticity of demand is inelastic, accumulated industry revenue will fall.

Finally, many markets for information goods and services are characterised by network effects. In such markets, firms introducing a new product or process will often compete with other innovators for establishing their own technology as a new standard. Where the future expected benefits of owning the ultimate standard technology are high, firms may set promotional prices in order to maximise their market share rather than revenues at present. A well-researched example is the battle between the firms JVC and Sony for establishing VHS or Betamax video tapes as the standard for home use. A recent example is the rivalry between the Sony's Blu-ray and Toshiba's HD DVD data carrier formats and, in the record industry, the rivalry between various digital file-formats and encryption techniques used by download providers.[121] Where firms compete for market share via promotional pricing, revenues may slump temporarily until a standard emerges and the winner can hope for super-normal profits.

In short, there are several market constellations in which creative destruction associated with technological change could depress turnover. Therefore, creative destruction or plain destruction could look the same to an observer who focuses her attention on aggregate turnover levels. The same holds for other aggregate industry data such as the number of jobs (Levinsohn and Petropoulos, 2001). That is why falling sales in the record industry cannot settle the issue whether the industry is going through plain destruction or creative destruction. Other indicators may be required to make this distinction.

[121] The market leader Apple allegedly defended its leadership in the market for so-called mp3-players and Internet-downloads by keeping their Fairplay DRM technique incompatible with other firms' products and by not licensing it to their competition.

Table 6.1 gives an overview of aspects in the development of an industry in which a process of creative destruction *may* result in observations that conflict with a pure process of plain destruction. The discussion is restricted to a situation in which an industry is affected by an adverse, external shock. The second column from the right indicates the extent to which a development is suitable to make the distinction (in other words, whether not making an observation consistent with a typical process of creative would make it appear unlikely that such a process occurs). The far-right column indicates the chapter in which empirical evidence on the respective development is discussed with the intention to test for creative destruction and whether this data is particularly limited. Data on accumulated industry turnover and employment features in chapters 5 and 11, but this type of information is not suitable to make this distinction. Innovation intensity is tricky to measure. Chapter 3 deals with a quantitative measure of content creation as a peculiar sub-type of innovation. Chapter 12 presents a method to measure innovation in the cultural industries and some empirical results from the record industry. Regarding changes on the organisational level, secondary data was more readily available, which will be discussed in chapters 8 and 11. Finally, data on productivity was not available, not least because data on costs is extremely restricted. In any case, productivity increases throughout the industry might become visible with a considerable delay.

Table 6.1: Predictions for a pure process of plain destruction and a typical process of creative destruction in the context of an external shock

		Plain destruction	Creative destruction	Suitability for distinction?	Relevant data covered in chapter
Accumulated industry turnover		Decreases	Could go either way	Limited	X (not suitable; documented in chapter 5 as background information)
Accumulated industry employment		Decreases	Could go either way	Limited	X (not suitable; limited data)
Innovation intensity [(a)]		Stagnates or decreases	Increases	Yes	Chapters 3 and 12 (suitable; limited data on most indicators) [(a)]
Changes on the organisational level	**Market entries**	(1) Decreases, and/or (2) less new firms are sustainable	(1) Does not decrease, even increases where fixed costs fall substantially, (2) more new firms are sustainable	Yes	Chapter 8 (suitable; background information also in chapters 9-11)
	Market exits	Increases, especially if the industry was fragmented to begin with	Could go either way; an increasing number of firms may exit but this process is offset by market entries	Limited by itself; complements information on market entries	Chapter 8 (suitable)
	Market share of different types of firms	Not addressed by theory	(1) Some successful innovators grow at the expense of more conservative market participants; (2) Often newcomers and small, firms grow at the expense of larger incumbents	Yes	Chapters 8 and 11 (suitable to confirm creative destruction; limited data)
Productivity		Stagnates	Over time, productivity is likely to increase substantially	Yes	X (suitable; insufficient data)

[(a)] Indicators of innovation intensity include: (1) the number of new products and processes introduced; (2) the speed with which new technologies diffuse; (3) the correlation between the use of new technologies and market success; (4) productivity increases as addressed separately in the last row of this table.

Innovation intensity

One level on which plain destruction and creative destruction will differ is innovation intensity. If an industry is going through a process of plain destruction, say because appropriability is undermined, firms will lack the means and the incentives to invest in innovation. If there are no solutions that allow for adaptation to a changed market environment, the innovation intensity will be low. If there are new business models that either allow firms to repel the external shock or to adapt to it and operate profitably under its consequences, the situation is fundamentally different. The situation is also distinct in situations in which the external shock is ambiguous and entails new business opportunities or if it coincides with other technological changes in the industry that offer relatively pronounced opportunities to improve on existing production processes or to introduce new products to the market. In these cases, a process of creative destruction will ensue in which innovation intensity is high. That is, many new products and processes are introduced and/or new technologies diffuse rapidly. The ability to innovate will correlate with market success. Digitisation will lead to more efficiency or new related products will be introduced to the market. Innovation intensity is thus suitable to distinguish a process of pain destruction form a process of creative destruction. However, innovation intensity is hard to measure and for the record industry, hardly any secondary data is available. Part of this dissertation is an innovation survey of small and medium sized record companies that will be reported on in the following chapters.

In the case of the record industry, the rapid growth of authorised music delivery services online (such as iTunes) and via mobile telephone networks (such as Jamba) over the last years illustrate incidences of innovation that are widely regarded to be of great significance for the future of the industry. At present, however, the economic value of these innovative services and products remains marginal in comparison to the commercialisation of physical phonograms and secondary rights for conventional, offline use. In Germany, the revenues from Internet and mobile downloads amounted to no more than 6% in 2007 – even though unit sales in this segment grew by 40% – while CDs continue to account for the bulk of revenues with 81% (Bundesverband Musikindustrie, 2007.) That is, in this dimension there is some evidence for creative destruction but the available empirical evidence remains inconclusive regarding the scale and scope of these changes. Therefore, the discussion of other characteristic features of creative destruction is central in this study.

Changes on the organisational level

Plain destruction and creative destruction are associated with different changes on the organisational level and potential alterations to the industry structure. In a pure case of plain destruction, few if any firms will enter the market. If new firms are founded, they will usually not be sustainable and cease to operate soon. The number of market exits is likely to increase,

as a recession affects the industry. Studies of plain destruction do not address the issue whether different types of suppliers will be affected differently.

By contrast, in a period of swift, competence-destroying technological change, a process of creative destruction comprises of two roughly simultaneous phenomena at the industry level. One is growth amongst innovative and thus more productive firms (the creative part of 'creative destruction'). The other is recession amongst firms that remain focused on traditional processes, products and services and do not partake in productivity increases even when they are losing market share to innovators (i.e. destruction).

In an initial phase, radical technological change is regularly accompanied by an increase in the number of market entries as new firms seek to exploit the opportunities offered by new technologies (e.g. Abernathy and Utterback, 1975; 1978; Klepper and Graddy, 1990; Klepper, 1996; Breschi and Malerba, 2001). Levinsohn and Petropoulos (2001:9) used this pattern to distinguish creative destruction from plain destruction: "Declining industries, as well as those undergoing creative destruction, exhibit substantial exit. The difference between the two is that in industries undergoing creative destruction, the exit is, at least in part, countered with simultaneous entry." Furthermore, initially a period of swift technological change and creative destruction will frequently shift competitive advantages from large organisations to small firms (e.g. Peterson and Berger, 1975; Evans and Wurster, 1999; Tripsas, 1997). It appears that as a rule small firms "have some comparative advantage in the earlier stages of inventive work and the less expensive, but more radical innovations, whereas large firms have an advantage in the later stages and in the improvement and scaling up of early breakthroughs" (Freeman and Soete, 1997:234). Peterson and Berger (1975) identified such patterns in past periods of swift technological change in the music industry (see also Chapple and Garofalo, 1997; Tschmuck, 2003).

In short, in a typical case of creative destruction there are relatively many market entries and at least some of these prove to be sustainable. Market exits may be high in a process of creative destruction, too, but they may be offset at least in part by market entries or growth among some new firms. At an early stage, there may also be asymmetric effects as newcomers and small, more flexible firms enjoy a temporary competitive advantage over larger incumbents (see section 7.1). A process of plain destruction and a process of creative destruction can be distinguished by different changes to the industry structure.

These indicators have the advantage that reasonably comprehensive secondary data is available and chapter 8 analysis this data. As argued above, it needs to be clear, however, that any predictions on organisational changes in an industry undergoing creative destruction are probabilistic and that when market entries and exits and shifts in the market share of different types of firms are used as indicators, what is tested for is a typical process of creative destruction – these indicators can confirm creative destruction, but they are less useful to reject the possibility of such a process.

Productivity

Creative destruction will ultimately lead to productivity increases. As argued above, these productivity increases may not show up in absolute terms. They may only partially offset the adverse consequences of an external shock. Productivity increases in individual firms or the industry at large are hard to measure directly. One main problem is the private nature of information on costs. What is more, productivity increases may only become visible after a long period of experimentation and learning. Since this study addresses technological change as an ongoing process and there are reasons to believe that the record industry may be at the early stages of a radical technological change, productivity increases are not addressed in great detail.

6.4 SUMMARY AND OUTLOOK

This chapter develops on a number of indicators for a process of creative destruction where an industry in recession is concerned. A combination of these indicators should provide for a useful test for creative destruction that has the advantage of being adaptable to specific data restrictions. In the following chapters 8 to 12, a test for creative destruction along these lines is conducted. Beforehand, chapter 7 lays out the broader theoretical foundations of this study. It clarifies several concepts that have been taken for granted so far and places this study within the broader context of rival approaches to studying economic developments.

7. TECHNOLOGICAL CHANGE, NEO-CLASSICAL AND STRUCTURALIST-EVOLUTIONARY ECONOMIC THEORY

Before conducting the empirical investigation prepared in the preceding chapter, this chapter presents the broader theoretical context for the discussion on copyright in the record industry developed in this dissertation. It highlights shortcomings in the existing literature and completes the case for more systematic empirical research on innovation and technological change in the record industry.

The two archetypal approaches to studying the consequences of digital copying on cultural industries – studies of 'plain destruction' and of 'creative destruction' – relate to a broader fault line in economics between neo-classical and "structuralist-evolutionary" economic theory (Lipsey et al., 2005). The core of this chapter is a juxtaposition of these two approaches to studying economic developments.

Studies of plain destruction are based on neo-classical economics and tend to address innovation and technological change in a relatively abstract and limited manner as discussed in chapter 2. Often, the only dynamic component allowed for is the long-term effect of copyright protection on the supply of protected works. This approach appears to be problematic in studies of digital copying and the record industry, since there are indications for swift technological change in this industry beyond the diffusion of advanced copying technology (see chapter 5). The resilience of supply in spite of a severe recession as documented in chapter 3 of this dissertation raises further doubts whether developments in the record industry after 1998 can be explained by a process of destruction due to reduced appropriability.

By contrast, a diverse literature on digitisation in the record industry suggests that the industry is going through a period of radical technological change. As will be discussed below, this assertion has not been supported by systematic empirical evidence and there seems to be a tendency to jump to conclusions on the basis of scant empirical evidence and probabilistic theory.

The central gap in both types of the existing literature on the record industry and digital copying is that the consequences of technological change in practice remain unclear. The structuralist-evolutionary economic literature outlined below provides a reasonably coherent, empirically based and general foundation for studies of technological change. Main points in this perspective are that research on technological change in real markets is very much about accepting and dealing with uncertainty and that continuous and broad empirical research is often essential to support reasonably precise explanations of developments. The test for creative destruction in the record industry – conducted in the following chapters 8 to 12 – is a means way to investigate the evidence for technological change as it unfolds and the specific consequences that innovation has had. As argued in chapter 6, the result may be important to inform the debate on copyright policy and digitisation.

7.1 CLARIFICATION OF TERMINOLOGY: TECHNOLOGICAL CHANGE, INNOVATION AND CREATIVE DESTRUCTION

The concept of *technology* can be defined as applied knowledge and conventions, tacit or codifiable, about how to produce goods or services, including capital goods, end-products and the organisation of production. It also encompasses the capital goods, end-products, and organisational forms that incorporate this knowledge (for a further discussion of the term, see Lipsey et al., 2005:57-61).

Technological change refers to processes in which the applied knowledge or its incorporations in capital goods, end-products or the organisation of production is altered, or more concisely: technological change is the diffusion of new products and production processes.[122] In the long run, technological change is the main source of economic growth as it gives rise to new markets and productivity increases (Schumpeter, 1942; Solow, 1956).

Therefore, capacity to innovate – to change and adapt – is an essential aspect of a firm's competitiveness over time. *Innovation* is a multifaceted concept, however. On the one hand, the term can refer to procedures. According to Dosi (1988), for example, "innovation concerns the search for, and the discovery, experimentation, development, imitation, and adoption of new products, new production processes and new organisational set ups". On the other, innovation can also refer to the outcomes of such procedures. Edquist (1997) defines innovation simply as "new creations of economic significance of either a tangible or intangible nature".[123] The literature distinguishes between product innovations that create a new commodity with its own demand function and process innovations that reduce "average costs per unit of output at given input prices" (see Blaug, 1997a:455). Innovations and technological change entail externalities and spill-overs because they change the relative price and quality of goods, and because aspects of innovations tend to be non-rival and non-excludable. They are no perfect public goods, however (cf. Romer, 1990; Lipsey et al., 2005). Of particular interest for the study at hand is the distinction between incremental innovations and radical innovations (Abernathy, 1978; Freeman and Perez, 1988).[124] Incremental innovations build upon existing know-how and infrastructure. Radical innovations are problem solutions that circumvent substantial parts of the established infrastructure. Where radical innovations are applied, assets and competencies associated with the previous modus

[122] The novelty aspect does not imply that new products and production processes were not known or did not exist previously. It suffices that a product was not produced or a process was not applied previously by the agents in question or even that their use is expanded.

[123] Their economic significance distinguishes innovations from the wider concept of inventions, which are simply new creations (Edquist, 1997).

[124] This dichotomy between incremental and radical innovations has been expressed in several other, roughly synonymous terms. Radical innovation has been referred to as 'disruptive innovation' or 'breakthrough innovation', for example.

operandi are devalued. The externalities of radical innovations may thus be particularly important.[125]

Creative destruction refers to a process in which innovative suppliers generate productivity increases or new superior products, gain competitive advantages and win over market share at the expense of more conservative suppliers, which leads to productivity increases throughout the industry (Schumpeter, 1942). The concept of creative destruction entails important insights on technological change by referring to the relationship between the old and the new. First, as a rule innovative products and processes do not fill a vacuum but they replace previous solutions at least partially. Second, this process of replacement tends to have consequences on an organisational level and for industry structure as a whole when successful innovators take over market shares from more conservative firms. The concept of creative destruction also entails an understanding of technological change as an endogenous process in which induced changes to the industry structure affect the direction of future technological change.

A process of creative destruction will often lead to a challenging situation for policy-makers. On the one hand, the benefits of a new technology will initially be vague. On the other, the short-term costs of change may be very substantial and incumbent firms might resist change by erecting strategic barriers to entry and by lobbying / rent-seeking.

If radical innovations turn out to be perceived as a superior substitute for traded products or processes and if it is endorsed by a sufficient number of market participants, they can lead to a process of *radical technological change*. In the course of such a technological discontinuity, large parts of the established infrastructure are replaced. Productivity would increase relatively suddenly and often by a large margin. In this study, radical technological change is defined as a situation in which new products and processes acquire a predominant role in the market, leaving no more than a niche role for the previous state of the art. Typically, radical technological change is associated with a whole series of related product and process innovations.

Theories based on historical studies, like industry life-cycle theory (Klepper and Graddy, 1990; Utterback, 1994) or systems of innovation approaches (Breschi and Malerba, 2001), suggest that there are discernible regularities of radical technological change. Abernathy and Utterback (1975; 1978) were among the first to distinguish different phases of industrial innovation. A radical innovation that picks up sufficient mass and momentum can bring about a “fluid phase”. During such a phase, there tend to be high opportunities for firm growth, relatively high numbers of market entries and greater turbulence, i.e. changes to the size of firms and concentration (cf. Klepper, 1996; Breschi and Malerba, 2001). Innovation intensity and the diversity of products are high. Revenues and/or profits for many firms and possibly the entire sector in transition might be initially suppressed in this environment of (a)

[125] Real innovations may be hard to classify in these terms. There are no quantitative thresholds as to the magnitude and speed of change to make this distinction between radical and incremental innovations.

diverse experimentation, (b) expectations of great future profits for the most successful innovators, and (c) extreme uncertainty. Initially, a period of swift technological change and creative destruction will frequently shift competitive advantages from large organisations to small firms (e.g. Peterson and Berger, 1975; Tripsas, 1997; Evans and Wurster, 1999). It appears that as a rule small firms "have some comparative advantage in the earlier stages of inventive work and the less expensive, but more radical innovations, whereas large firms have an advantage in the later stages and in the improvement and scaling up of early breakthroughs" (Freeman and Soete, 1997: 234).

Under competition with new firms that exploit the productivity increases of new technologies, established firms that fail to adapt and innovate will lose market share. Most newcomers that fail to predict the market and/or lack the financial stamina to compete will also incur losses and dissolve. The most successful innovators, however, develop routines and technological standards that culminate in a "dominant design" (Abernathy and Utterback, 1978; Anderson and Tushman, 1991). Eventually, a fluid phase ends as product differentiation decreases and a dominant design and technological standards are established. Innovations become increasingly incremental and the industry consolidates. Market entries into such mature industries are rarely attempted, the firm hierarchy in the sector stabilises, and competition occurs increasingly on the basis of the efficiency of production rather than innovative capacities.[126] Innovative activity tends to focus on process innovations (Utterback, 1994). This industry 'life-cycle' may begin anew, when a new radical innovation picks up enough mass and momentum to instigate another period of radical technological change and destabilise the industry's status quo (Edquist et al., 1998).

Radical technological change thus implies an intensification of the 'incessant' process of *creative destruction*.[127] Within a relatively short time-frame, traded products are substituted by superior substitutes and customary production processes are supplemented by new and more productive alternatives. Organisations with a greater capacity to drive or adapt to such changes would outcompete more conservative market participants. Often, the competitiveness of small firms and newcomers would be increased. However, the predictory power of cyclical models of technological change is limited. On the one hand, many concepts underlying theories of radical technological change – e.g. radical innovation, radical technological change, trajectories or dominant design – can be hard to distinguish clearly, which complicates robust quantitative empirical investigations. On the other, there are many examples where technological discontinuities would not be accompanied by a fragmentation of the industry and market entries. This would be the case in particular when innovation processes require high upfront investments or when new technologies entail vast economies

[126] Utterback (1994:95) further distinguishes a "transitional" and a "specific phase". For a development of the concept "dominant design", see Utterback (1994:29-51).

[127] The famous passage in Schumpeter (1942) alluded to here is that there is a "process of industrial mutation that incessantly revolutionizes the economic structure from within, incessantly destroying the old one, incessantly creating a new one."

of scale and scope (Tripsas, 1997). What is more, many larger organisations seem to have incorporated the possibility of radical technological change into their strategic decision-making.

7.2 DIFFERENCES BETWEEN NEO-CLASSICAL AND STRUCTURALIST-EVOLUTIONARY ECONOMIC THEORY[128]

"Structuralist-evolutionary" (Lipsey et al., 2005) economic theory, which sometimes referred to as "systems of innovation" theorizing especially by European scholars, is motivated by the perception that innovations and technological change are the most important factor determining long-term economic growth. The growing significance of innovation in an internationalising and increasingly competitive economy is frequently emphasised and neo-classical economic theory is seen to address innovation insufficiently (Nelson and Winter, 1977; Smith, 1991). Structuralist-evolutionary approaches generally reject three abstractions that are fundamental in standard, neo-classical economic theory: (1) static equilibrium, as well as (2) 'perfect rationality' and (3) 'perfect information' of actors.[129] This perspective relates to a different understanding of competition and greater emphasis on the difference between agents than in neo-classical analysis. Proponents of structuralist-evolutionary theory model economic development as an evolutionary and path-dependent process and they emphasise the interactivity between different agents. What is more, technological change is studied as endogenous, so that the specific characteristics of industries and often a wider context of non-firm organisations and institutions are of interest.

Competition

A fundamental divergence between neo-classical and structuralist-evolutionary theory concerns the concept of competition (see Nelson, 1995; Blaug, 1997b; Lipsey et al., 2005). In neo-classical theory, competition does not refer to a process but to a static end-state in economic development at which a unique, optimal allocation of resources is achieved. The concept of a competitive equilibrium (or equilibrium under monopolistic competition) describes an 'attractor', which real economies converge on but that is hardly ever reached due to a myriad of disturbances in real markets (Nelson, 1995). Neo-classical economics says little about the process in which a competitive equilibrium is approximated.

Structuralist-evolutionary economics applies a concept of competition as a continuous process. Blaug (1997a:255/6) describes this perspective, which is akin to classical economics and Austrian economics, as follows:

[128] For more extensive overviews, see Edquist (1997) and Lipsey et al. (2005).

[129] Instead, since actors are clearly unable to know about all possible options and their full implications, they operate under 'bounded rationality', which is co-determined by firms past experiences (e.g. McKelvey, 1994).

> *"(...) Firms jostle for advantage by price and non-price competition, undercutting and outbidding rivals in the market-place by advertising outlays and promotional expenses, launching new differentiated products, new technical processes, new methods of marketing and new organisational forms, and even new reward structures for their employees, all for the sake of head-start profits that they know will soon be eroded (...)."*

This understanding of competition as a process is closer to the popular conception of the term and it is intuitively appealing since it acknowledges the complexity and uncertainty that real economic agents do experience due to the permanence of rivalry, frequent changes to the market environment and the endogenous nature of technological change. In the structuralist-evolutionary perspective, long-run equilibrium analysis will often bring up unrealistic results because it fails to include endogenous technological change and its potentially profound impact on market conditions before any long-term equilibrium is reached (Lipsey et al., 2005). Acknowledging the complexity and ultimate uncertainty of the process of competition over time can render it much harder to develop formal models and clear, unambiguous results, however. The argument would be that as a rule, formal neo-classical analysis achieves greater internal validity while structuralist-evolutionary analysis aspires to achieve greater external validity or 'realism'.

Competition and innovation

An issue that has received much attention both in the formal-theoretical IO literature and in the structuralist-evolutionary literature is the relationship between the intensity of competition and the intensity of innovation.[130] Complementary surveys of the formal IO literature are Gilbert (2006a) and Gilbert (2006b). One extreme position is that innovation will generally increase with the market power of suppliers (e.g. Aghion and Howitt, 1992). This is often presented as a (grossly simplified) version of Schumpeter's (1942) insight that under perfect competition, firms would not have the means to invest in innovation nor the incentives to innovate because they could not appropriate the benefits. It seems reasonable to assume that monopoly profits to successful innovators can provide an innovation incentive. This is the reasoning behind intellectual property systems including copyright. It would also imply that a monopolist might have greater incentives to innovate under imperfect appropriability of innovations for the innovator, because he would not have to share any of the rewards with competitors. The other extreme position is that market power will generally decrease innovation, say because there are x-inefficiencies (Leibenstein, 1966) where managers prefer a 'quiet life' to the relentless pursuit of innovations (Hicks, 1935; Hart, 1983).

[130] For the sake of argument, the formal-theoretical IO literature is classified as a branch of neo-classical economics. This is clearly a simplification, also because the line between some contributions to the IO literature and the structuralist-evolutionary literature is increasingly blurry.

Neither of these two extreme positions is tenable according to the empirical evidence. A popular notion at the moment is that the relation between competition and innovation is not monotonic but that its plot resembles an 'inverted U-shape', which Aghion et al. (2005) illustrate empirically in a study of UK industries. For micro-studies of specific industries, this raises a number of questions, say: is innovation elastic or inelastic to changes in competition under the current situation? How close to the maximum are observed levels of innovations in the industry? And is this innovation maximum dynamically efficient?

There are complications in the measurement of either competition or innovation. Frequently used proxies for competition are measures of industry concentration, entry rates or profits. Innovation has often been measured by IP registrations.[131] In this dissertation, chapter 12 will discuss innovation measurement in the cultural industries.

The IO literature further suggests that the relationship between competition and innovation depends on a variety of factors including the appropriability of innovations to the innovator and the type of innovation. A particularly interesting insight for this dissertation is that incumbents may have a lower incentive to invest in radical innovation than a potential entrant because incumbents' older assets will by definition lose some of their value in the course of radical innovation (e.g. Reinganum, 1983). The discussion is roughly equivalent to that on the socially efficient level of product variety (as a result of product innovation) and business stealing effects as discussed in section 3.5. It thus seems likely that investments in radical innovation would fall below their socially desirable level in industries with great barriers to entry and that these investments could be excessive under extreme competition.

Section 7.1 summarised industry life-cycle theory, which exemplifies a structuralist-evolutionary approach emphasising differences between agents and changes over time. An important difference from much of the IO literature is that in life-cycle theory, the intensity of competition is also determined by innovation rather than just the other way around.[132] There may be periods of positive feedback between innovation and competition, which is one way to explain how a 'fluid phase' takes shape. These theoretical insights are consistent with two observations from the historical development of the record industry: first, that industry outsiders and fringe suppliers have usually been the drivers of radical innovations; second, that the competitiveness of newcomers and fringe suppliers increases during periods of radical technological change (see chapter 5).

Evolution

Advancing on Marshall and Schumpeter, technological change is often understood as an evolutionary process (Nelson and Winter, 1982; Nelson, 1995). In stark contrast to neo-classical economic theory, evolutionary theories of technological change emphasise

[131] Aghion et al. (2006) measure competition by firms' average price cost margin within an industry. They measure innovation by firms' average number of new patents within an industry weighted according to patent citations in an attempt to control for the different value of patents.

[132] See also Aghion et al. (2005).

differences between – and thus the diversity of – agents in a system (Klepper and Graddy, 1990). Selection processes (e.g. the market) continuously reduce diversity.[133] Innovations can be seen as the major mode of diversity creation. From an evolutionary perspective, sustained economic growth does not depend so much on the optimal allocation of resources in the short-run. Instead, it requires an adequate balance between variety creation and its reduction through selection. This holds for products and processes as well as for organisations including firms.

In economic development seen as an evolutionary process, there is no absolute optimality and the system under investigation never reaches a state of equilibrium. What is more, the costs and time-dimension of adaptation is acknowledged. From this perspective, technological change is a continuous and uncertain process that is path-dependent and open-ended. Uncertainty means that there can be situations in which two rational agents of identical faculties and preferences might take different decisions when faced with the same choice (Rosenberg, 1996; Lipsey et al., 2005).[134] Uncertainty does not imply pure randomness – analysis can hope to develop partial explanations of the direction and pace of real economic development. But uncertain processes like technological change imply that "a strong element of randomness will always remain" (Lundvall, 2001:72) which cautions for humility and flexibility in analysis and policy.

Path-dependence

In structuralist-evolutionary economic theories, past developments determine present opportunities in paths (also referred to as trajectories or paradigms) (David, 1985). Agents are generally seen to differ, e.g. in their access to information, their ability to handle information, their capital and knowledge base or their routines (Nelson and Winter, 1982; Lipsey et al., 2005:55ff.). Structuralist-evolutionary theories further assume that it takes time and resources for agents to change so that decisions can quickly become virtually irreversible with the passing of time. Not all options will remain open forever. Under these circumstances, different rational agents who face substantial costs of change can make different decisions when faced with the same stimulus.[135]

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[133] Selection processes that reduce diversity include imitation and – on firm level – the extension of market shares of firms with a competitive advantage. The intensity of selection differs with degrees of competitive pressure. Carlsson and Stankiewicz (1991) distinguish further between pre-market selection mechanisms (firms' strategies) and non-/quasi-market selection mechanisms (e.g. regulations, standards) that, like a filter, determine which innovations make it to the market in the first place.

[134] Technological change is understood to be not just risky in the sense that there are several, known alternative outcomes for which probabilities can be determined. Instead, technological change is seen as uncertain: not all possible outcomes can be identified and the probability of imaginable outcomes cannot be specified (Lipsey et al., 2005; Lipsey, 2007).

[135] In this context, the expression 'costs of change' is preferable over the more common expression 'switching costs' because 'switching' may imply a binary choice between two mutually exclusive options, whereas the range of options tends to be much more complex especially during a fluid phase in the industry-life cycle (see section 7.1).

Agents can obtain increasing returns if they focus their learning on products and processes that are compatible with their existing endowments. They will tend to follow a technological path once chosen. Under competitive pressures, many agents often coincide in focusing their learning on certain 'core technologies',[136] which can be the basis for a great variety of products or processes and that offer the greatest productivity increases at a given point of socio-economic development. Reinforcing feedback loops between a focus of learning on one type of technology and productivity increases from this technology may stabilise a collective technological trajectory.

At times, however, radical innovations can result in paradigm shifts, a concept famously employed by Schumpeter to explain long-wave economic cycles at the macro-level. Paradigm shifts are periods of radical technological change when a new core technology offers much greater opportunities so that many agents are induced to incur the costs of changing their focus from a previous technological path to another.

Facing uncertainty and substantial costs of change, agents can experience 'lock-ins' where they continue to follow a dated trajectory, either because they do not realise the potential of a radical innovation relevant to their sector, or because they shy away from the temporary costs of change. Therefore, paradigm shifts are often associated with a process of 'creative destruction' on the organisational level: the demise of firms that fail to learn and adapt to radical technological change as competitors successfully exploit the superior opportunities of a new technological paradigm.[137]

While the possibility of path dependence follows from the assumption of different agents and costly change, it is contentious whether path-dependencies are likely to be so strong that they would result in sustained market failure and require public intervention (Liebowitz and Margolis, 1995; David, 2000b).

Interactivity

Much research on innovation has emphasised the interactive nature of innovation processes and technological change besides market exchanges and systematic research and development (R&D) efforts in specialised departments within firms (Fischer, 2001). Next to formal R&D, the learning processes that are the basis for innovations occur by doing, by using and by interacting throughout society (Lundvall, 2001).

On a general level, technological change relates to non-market interaction when it incurs spill-overs: some consequences of innovations are not borne by the initiating agent only but other agents are affected, too. Technological change affects the value of assets throughout the economy, devaluing some assets that were of significance for traded technologies and increasing the value of assets that are in higher demand in a new technology.

[136] Core technologies are also referred to as 'general purpose technologies' if they spread into most economic sectors (Bresnahan and Traijtenberg, 1995; Helpman, 1998; Lipsey et al., 2005).

[137] According to Lundvall (2001:68), this creative destruction takes place both in the "structure of production" as well as in the "structure of knowledge".

It also opens new opportunities for innovation (while eventually precluding others due to path dependencies). What is more, aspects of innovations tend to be non-excludable and IPR systems, designed to ensure appropriability, usually offer only a partial solution. As a rule, some who benefit from an innovation instigated by another agent will not fully compensate the innovator for all uncertain benefits over time. Some who face adversities due to the consequences of another's innovation will not receive full compensation.[138]

Non-market interactions may be more or less premeditated. Firms may consciously seek the proximity to other firms in order to exchange "untraded interdependencies" (Dosi, 1984; Lundvall, 1988; 1990): information exchanges facilitated by geographical proximity and shared conventions, which make it easier for participating firms to co-ordinate their activities and to anticipate market developments. Untraded interdependencies include exchanges between competitors or between product users and producers. The tendency of industries to cluster in specific geographic regions has been explained with the advantages of constant, more or less informal exchanges with other producers and users that are active in the same (or related) market(s) and which go beyond 'arms-lengths' market relationships. Clusters offer an opportunity for firms to co-ordinate their activities while retaining greater flexibility than if they were to integrate. In this dissertation, the geographic clustering dimension of innovation and technological change is sidelined in order to retain a manageable scope for the argument. The topic investigated is indications of technological change, and not where it happens or even how co-operation of various firms bear on any changes.

The role of institutions

Many studies on the economic significance of innovation and technological change abstract the wider context in which markets operate as a stable framework (e.g. Utterback, 1994; Teece, 1992). Similar to neo-institutional economics, structuralist-evolutionary theories of innovation try to incorporate a broadly defined institutional infrastructure, encompassing formalised 'rules of the game' such as laws and technical standards as well as other, informal social rules, cultural norms, routines and habits.[139]

As a rule, formalised institutions such as laws and regulations appear suitable as policy instruments. The wider social and cultural context is much harder to alter by policy but will bear on the process of innovation and technological change, nevertheless (Edquist et al., 1998). The socio-cultural context is continuously recreated by the agents that operate within it. It mutates, if generally at a slow rate of change. Formal institutions are usually designed to be stable over time (Lundvall, 2001). They can be altered rapidly, though. Since direction and velocity of technological change vary and are not always predictable, it is possible that formal

[138] For a detailed discussion of spill-overs in which they are broken down into technological complementarities and externalities, see Lipsey et al. (2005:98,100ff.).

[139] Carlsson and Stankiewicz (1991) for example explicitly include organisations and institutions, political systems, educational systems, patent legislation, institutions regulating labour relations, etc.

institutions, informal institutions, technology, and markets can be 'out of synch', i.e. formal institutions cease to fulfil their intended function.

The scope of the concept 'innovation'

Depending on whether innovations continue or break with a trajectory, they are understood as either incremental or radical, as discussed above. Another dichotomy within the concept of 'innovation' is that concerning product innovation and process innovation. Product innovation refers to changes in product characteristics. In extreme cases, a new product is created for which a new market emerges. Process innovations are all measures that increase the efficiency with which a given product is produced. Process innovation may mean that more units are produced with a given amount of inputs or that the same number of units is produced with fewer inputs.

The process of innovation in its broadest sense encompasses (a) the process of inventing new products and production processes, (b) the process of innovation in a narrow sense when an invention is introduced to the market, and (c) the diffusion and adaptation of innovations by imitators. Widespread technological change entails all three of these stages, which can be difficult to distinguish.

Research methods

Structuralist-evolutionary and neo-classical theories tend to be associated with different methods of research. Contemporary mainstream economics is largely based on formal modelling, which maximises logical rigour, internal validity and strives to attain deterministic theory. Yet, formal models can be relatively limited in their ability to represent complexity. Many social phenomena are so complex that it has not been possible to develop formal models, which would explain the observable evidence and make realistic predictions. Technological changes are usually considered to be a case in point (Lipsey et al., 2005) and neo-classical economics has thus been criticised for either ignoring or over-abstracting technological change. In principle, this might concern the omission of significant variables, the inadequate treatment of endogenous variables as exogenous or other simplifications of relationships between variables, say by assuming a correlation to be described well by a linear or logarithmic function throughout all parameter values when the correlation is more complicated in reality. Formulating a criticism of formalistic studies of technological change in such terms would imply that technological change could be captured in formal models, which is contentious.

The relative importance of formal-mathematical modelling is quite different in the heterogeneous group of structuralist-evolutionary approaches. Here, logical deduction from formal models plays less of a role, whereas 'appreciative theorising' (Nelson and Winter, 1982; Nelson, 1995) and empirics are more important. Appreciative theorising refers to research based on looser and more flexible methods akin to the wider social sciences and classical economics rather than the natural sciences. Arguably, one way of expressing the

essence of this approach is that researchers accept complexity beyond what can be expressed in formal models when they describe agents such as firms as "organizations characterized by different capabilities (including technology) and strategies, and operating under considerable uncertainty", and technology as "organizationally embedded, tacit, cumulative in character, influenced by interaction between these firms and their environments, and geographically localized" (Fagerberg, 1995). The complexity that the structuralist-evolutionary perspective allows for results in probabilistic theory, and how to cope with uncertainty is a central issue in this perspective.

7.3 THE APPROACH OF THIS STUDY

The approach in this dissertation is based on the pragmatic notion that neither neo-classical nor structuralist-evolutionary theory is generally superior in the sense that it poses more relevant questions, brings up more realistic explanations or more adequate policy implications (cf. Lipsey et al., 2005). The additional effort to incorporate technological change into the analysis of a specific market may be justified subject to specific market conditions.

If technological change is slow and exogenous it may be negligible for some purposes, including studies of the immediate – short-run – impacts of an external shock. If technological change proceeds at a constant pace, if it is incremental and entails few spill-overs, it may be easy to incorporate into formal models. If technological change is swift and endogenous, if it waxes and wanes irregularly and if it is radical, generating important externalities and spill-overs, a realistic assessment may require more analytical resolution and the attention to specificities and detail that structuralist-evolutionary approaches aspire to.

(No more than) early indications of radical technological change in the record industry

In the contemporary record industry, there are indications of relatively swift, radical and pervasive technological change and these are likely to matter for the debate on copyright reforms. Changes in the networks of reproduction, distribution and retailing with the emergence of digital downloading have received particular attention. While digital ICT has applications in the production of sound recordings and for back-office task in the record industry, downloading illustrates technological change particularly well. Where cultural products are delivered as downloads, much of the capital and knowledge base associated with the traded production methods of bricks-and-mortar business models is circumvented. Supplying downloads is associated with substantial cost reductions; many economists have even assumed that the variable costs of reproduction and online delivery are approaching zero in the context of what is often referred to as 'digitisation' in media industries.[140] There is no

[140] While the variable costs of delivering downloads are low, the fixed costs for ICT hardware and telecommunication services can be very substantial.

need to manufacture, ship and restock sound carriers or to entertain good relations with traditional retailers (cf. Burnett, 1996). Suppliers are relieved of the need to predict demand for existing cultural products in order to decide on the reproduction and delivery of physical sound carriers preceding sales. Downloading facilitates the de-bundling and re-bundling of products, diminishing the significance of the album format for popular music for example (e.g. Leyshon et al., 2005). It also allows suppliers to be less selective about the content they supply because online delivery makes it financially viable to offer content that caters for smaller and geographically more dispersed markets (Anderson, 2004; 2006). In this sense, downloading exemplifies a radical innovation.[141]

However, if technological change is an uncertain and socially embedded process, it is usually not possible to correctly specify the future consequences of a new technology or product by studying its technical features or by extrapolating current trends far into the future. In the contemporary record industry, the empirical evidence for the nature and scope of innovation and technological change remains fragmentary and inconclusive. This applies even to downloading, which has received by far the most attention. Unit sales of downloads via the Internet or via mobile telephony have grown rapidly over the last years but downloads accounted for only 6% of revenues in the German market in 2007 (Bundesverband Musikindustrie, 2008) and the International Federation of the Phonographic Industry (IFPI, 2008) reports that income related to "digital music" made up 15% of worldwide revenues in 2007 (IFPI, 2008; see figure 5.3). There has been no attempt to empirically gauge related changes to the industry structure and competition. That is, claims that downloading – or digitisation in a broader sense – will revolutionise the record industry or on how this process will play out still constitute quite ambitious predictions.[142]

Studying technological change as an ongoing process

Uncertainty does not imply that it would be impossible to develop predictions of reasonable quality or that it would be pointless to strife for better explanations. To the contrary, it is argued in this paper that policy under this kind of uncertainty may benefit from continuous and systematic empirical work on the question whether developments are consistent with a process of creative destruction associated with technological change and how pronounced these developments are.

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[141] This distinction between radical and incremental innovations remains probabilistic and is easier to make with historical hindsight. It is not associated with any clearly defined quantitative thresholds. Furthermore, no distinction is made here between product and process innovation. It seems unclear whether downloads are product substitutes for conventional sound-carriers or whether downloading is better understood as a new process for the reproduction and delivery of sound-recordings, without altering the characteristics of the sound-recording as the essential product sufficiently for analysing them as new products. The answer lies in the substitutability of downloads for sound-recordings delivered on traditional, physical sound-carriers and is beyond the scope of this study.

[142] In the past, most predictions regarding the growth of e-commerce in the record industry have proved to be exaggerations. Wallis (2002) provides an early overview of such predictions that overestimated the speed with which online delivery would grow (cf. Leyshon, 2001).

An important preparation is to distinguish clearly between (1) radical innovations, (2) the process of creative destruction that will often be associated with technological change, and (3) a period of radical technological change as defined in section 7.1. Radical innovations are new products or processes that circumvent substantial parts of the established infrastructure. Where radical innovations are widely adopted, an intensification of the process of creative destruction will occur. The concept of creative destruction refers to any substitution of old products and process for newer ones. Associated changes on the organisational level – increasing market shares of innovative firms and the demise of conservative firms – are often more visible. Creative destruction does not need to have far-reaching, immediate consequences and is probably best understood as a continuous development that waxes and wanes but never ceases entirely. Radical technological change, on the other hand, is defined by its far-reaching outcome: new products and processes associated with radical innovations having supplemented a previous modus operandi, devaluing a substantial part of the traditional production infrastructure. Such a process will probably be associated with sudden jumps in productivity and structural changes to the affected industry.

Studies of technological change in the contemporary record industry often do not distinguish these concepts clearly enough. It is one thing to identify a radical innovation but it is quite another to infer from any analysis of a new technology that it will be associated with a typical period of radical technological change ex ante. An essential point in this study is that the quality of predictions regarding the likely course of technological change – and the specification of the role played by public policy such as copyright policy – may be improved by studying the process of creative destruction through which some radical innovations translate into radical technological change. This is the reasoning behind the test for creative destruction that will be conducted in the following.

8. DEVELOPMENTS IN THE POPULATION OF RECORD COMPANIES DURING THE RECESSION PERIOD

8.1 INTRODUCTION

This chapter discusses changes in the population of suppliers in the record industry in the presence of digital copying. The central question is whether observations are more consistent with a process of plain destruction or with a process of creative destruction (see chapter 6).

The investigation will focus on the number of record companies operating in Germany. This type of firm can be defined as 'any legal person that acquires mechanical reproduction rights and publishes sound recordings' for commercial purposes, similar to the definition found in German copyright law (§19 (2) *Urheberrechtsgesetz*).[143] The number of record companies provides a useful indicator of developments in the record industry at large, since this type of firms tend to be the most specialised contributors to the production and marketing of sound recordings. Record companies acquire rights to the recordings they deal with and thus directly participate in most sorts of income from the marketing of recordings. Other contributors such as sound recording studios, manufacturers of phonograms, distributors and retailers do not directly participate in income from secondary use of recordings. Record companies may rely entirely on direct income from the marketing of recordings. Publishers of compositions, composers and performing artists usually benefit more directly and to a greater extent from other ways of marketing music, such as the live music business.

The German record industry is served by a single collecting society – the '*Gesellschaft zur Verwertung von Leistungsschutzrechten*' (GVL) – that administers the secondary use of recordings. Furthermore, two industry lead bodies cover a large share of active firms. Changes in this collecting society's and industry lead bodies' membership are used as indicators for changes in the number of record companies in Germany.

Because the two industry lead bodies cater for firms of different size, it is further possible to make a rough and ready distinction between changes in the population of large and small firms. The extent to which smaller record companies in Germany are organised in industry lead bodies seems to be extraordinarily high in international comparison. This provides a rare opportunity to include such firms into the analysis and to distinguish changes among this group of record companies from developments in the accumulated number of firms.

[143] This definition of 'record company' includes 'self-issuing' creators that market recordings of their own creations or retain all related rights when co-operating with intermediaries in doing so.

8.2 ANALYSIS OF THE TIME SERIES ON THE NUMBER OF RECORD COMPANIES REGISTERED WITH THE COLLECTING SOCIETY GVL

The investigation begins with an intervention analysis of a time series on the number of record companies registered by the GVL. This intervention analysis seeks to establish whether there is a significant break in the behaviour of the time series before and after the massive diffusion of digital copying technology. The method employed is largely equivalent to the analysis on the number of sound recordings conducted in chapter 3.

Definition of the pre- and post period

See section 3.1 for the definition criteria of the pre- and post-period. The post-period consists of eight recession years from 1999 to 2006, during which turnover in the primary market for sound recordings fell consistently and the market was affected by much higher levels of unauthorised copying than in preceding years. The pre-period consists of 17 boom years from 1982 to 1998, during which turnover in the primary market first exhibited rapid growth and unauthorised copying was well-contained.

The nature of the intervention

As seen in section 3.1, the recession in the German record industry and the diffusion of digital copying technology conveniently coincide. They need to be understood as a gradual intervention, however, since it took several years for the recession to unfold and for digital copying to reach its peak levels. Furthermore, assuming heterogeneous suppliers it is very likely that the recession's full effect on the number of suppliers will transpire gradually and with some lag. Both the gradual nature of the intervention as well as the potential lag complicates the assessment of the recession's impact.

If suppliers are heterogeneous and the industry was in state that resembled an efficient, static equilibrium reasonably well prior to an adverse shock, a process of plain destruction can be expected to set in almost immediately with the beginning of a recession. Time-plots on the number of firms and the number of market entries would exhibit a gradual downward shift in slope, as market exits take place up to a point where a new equilibrium is approximated. If the number of suppliers does not fall and/or if numerous market entries occur, this would be evidence for a process of creative destruction.

When the full impact of the recession has occurred and how strong the accumulated effect will be is more difficult to predict. However, over time the severe falls in sales after 1998 would appear likely to result in a decreasing number of suppliers in absolute terms (unless there are very substantial countervailing factors). This would be the prediction inferred from more ambitious studies of plain destruction that emphasise the central significance of unauthorised copying via digital media and regard it to pose an existential threat to the copyright industries. It would be evidence of creative destruction if market

entries were so numerous that they offset what should be increased numbers of exits during a severe recession. This might show up in absolute growth in the number of suppliers.

In real markets, some entry and exit turbulence may exist even during relatively stable periods. As illustrated in table 8.1, the record industry is certainly a case in point: the population of record companies in Germany seems to have expanded throughout the period under investigation. It seems that below the relatively stable position of the major firms, an intense adaptation process was ongoing in the record industry throughout the 1990s. This has implications for any assessment concerning the impact of increased unauthorised copying and falling sales after 1998 on the record industry. In order to determine whether the record industry reacted to the recession with plain destruction or with intensified creative destruction and adaptation, the question is not only whether the number of suppliers falls, or whether there are any market exits and entries. Instead, it needs to be determined whether the rate of growth in the number of suppliers as well as entry and exit turbulence during the recession period differs from the boom period.

Hypotheses

The purpose of this chapter is to determine whether the recession in the record industry after 1998 coincided with a relatively pure process of plain destruction or with a process of creative destruction. Since both plain and creative destruction may occur simultaneously during a recession (and creative destruction entails an element of destruction by definition), the investigation cannot be coached in a simple yes/no question. Ultimately, the relative strength of destructive and constructive change is of interest.

That said, the investigation of data on the number of record companies that are registered with the GVL will address two hypotheses:

1. Over time, the number of record companies will decrease in absolute terms during the recession period, as market entries are less numerous than market exits.
2. Time-plots on the number of record companies will exhibit a gradual downward shift that sets in almost immediately with the beginning of the recession.

Registrations with the GVL as a measure of the number of record companies

In Germany, the GVL holds a de facto monopoly in the administration of certain secondary uses of recordings. On behalf of its members, the GVL monitors, collects and distributes fees for the rights of broadcasting, making available, reproduction, rental and distribution via cable of recordings. In 2002, the organisation distributed more than €124 million to its members (GVL, 2003b).

When record companies register with the GVL, they receive one or several so-called 'label codes', a set of symbols identifying the right holder.[144] 6,472 different 'producers of

[144] In the GVL terminology, label codes are given to "producers of phonograms", that is legal entities other than creators that hold secondary rights to recordings. This is practically identical with record companies as defined

phonograms (*Tonträgerhersteller*)' in the GVL nomenclature had one or more such label codes registered with the GVL in 2006.

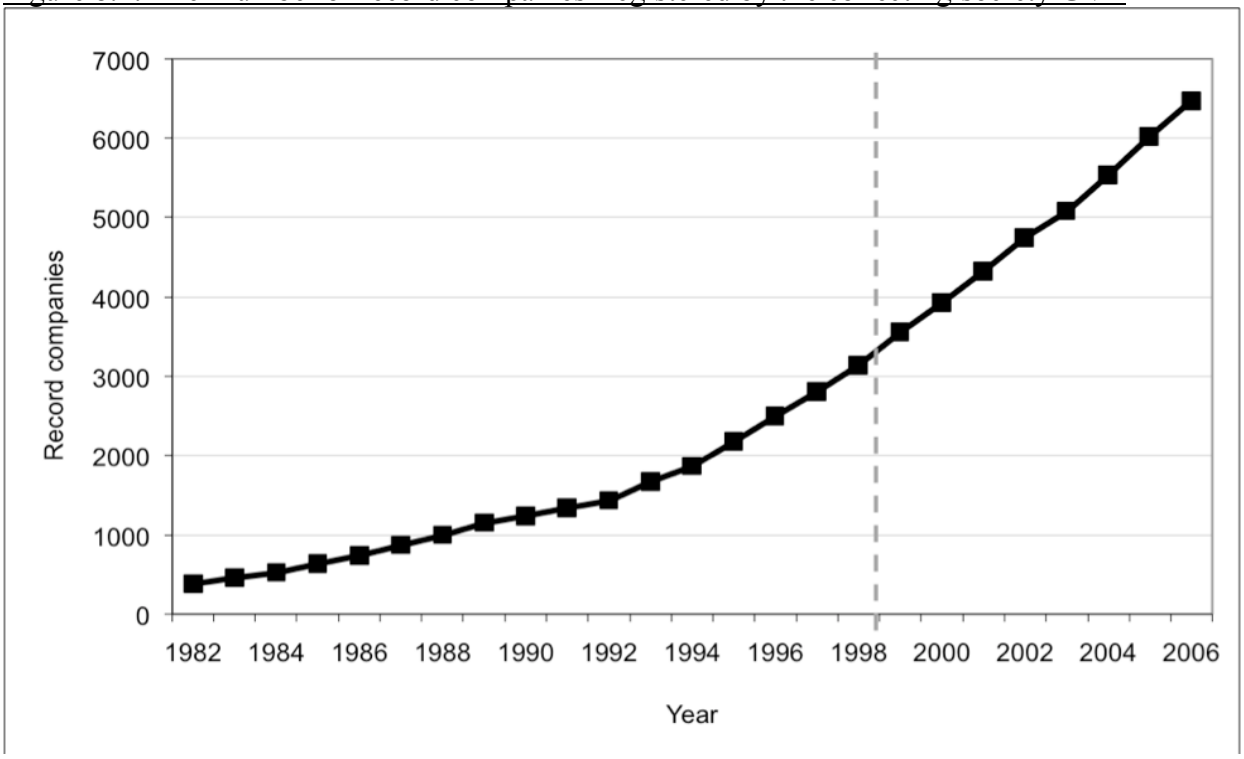
There are good reasons to believe that a very large share of all record companies in Germany become members of the GVL and register their repertoire. First, there are vast economies of scale in monitoring and enforcing the secondary rights administered by the GVL so that it tends to be prohibitively expensive for individual firms to go it alone (Hollander, 1984; Besen and Kirby, 1989; Macqueen and Peacock, 1995; Watt, 2000). Second, the GVL runs the central directory of recordings and right-holders. Registered right-holders make themselves and their repertoire identifiable to potential users. This is a benefit of registration that applies even for those record companies that do not expect to receive any substantial share of the GVL's proceeds. This relates to a third point: the GVL offers a blanket license. Standardised, widely familiar terms of use apply to the entire repertoire administered by collecting societies. The legal certainty associated with this arrangement is a benefit to users and should often make use more likely.[145] Finally, the collecting society finances itself by retaining a share of the collected royalties. The fixed cost of membership is very low.

Due to this method of financing the GVL, not all firm exits will result in the immediate cancellation of the label codes registered by this firm. What is more, firms are free to register subsidiaries separately. Thus, the number of GVL memberships is likely to exceed the number of record companies operating as independent business units at present. Nevertheless, it should be possible to infer from growth in the number of GVL members on growth in the number of record companies. In response to any limitations in measurement validity of this time series, results will be triangulated with data on the number of record companies that are members in industry lead bodies as a second, independent measure.

in this paper. According to GVL management, amongst 5,087 registered "producers of phonograms" in 2003, only three organisations did not fit this definition of record companies. These were the foreign collecting societies PPL (Britain), CENA (the Netherlands), and SPPF (France) that represent a great number of record companies from the respective countries.

[145] For a survey of the economics of collecting societies, see Handke and Towse (2007).

Figure 8.1: The 'number of record companies' registered by the collecting society GVL



Source: GVL 2006

Has the number of record companies decreased during the recession period?

Figure 8.1 exhibits the time series on the number of record companies registered with the GVL between 1982 and 2006. The beginning of the recession period is marked with a dashed grey line. An obvious point is that the number of GVL registrations increased consistently during the last 25 years, including all recession years. This upward trend is quite pronounced. The number of record producers registered with the GVL is more than 16 times higher in 2006 than it was in 1982.

Contrary to what would have been expected in a case of plain destruction, an upward trend persists during the recession period. In 2006, the eighth consecutive recession year, the number of record companies registered by the GVL has more than doubled (increased by 106.2%) in comparison to the peak of the boom period. This upward trend during the recession period hardly requires statistical confirmation. To illustrate the high order of significance, the results of a preliminary linear OLS regression for the recession period are presented in table 8.1 and figure 8.2.[146] The positive slope identified by the linear model is significant at the .001 level. That is, the hypothesis can be rejected that the net growth in the number of firms would fall in absolute terms during the recession period.[147]

[146] For a brief discussion on the limitations of OLS regression for the analysis of time series, see section 3.2.

[147] Due to the pronounced nature of the result, it is extremely improbable that bias from autocorrelation would invalidate the upward slope.

A number of limitations that were addressed in section 3.2 mean that the results of a linear regression for this short sequence of the time series serves only a preliminary exploration. Table 8.2 reports the results of an alternative test for 'non-random variation' for the recession period (for a detailed description see chapter 3). The Z statistic is 2.966, which is significant at the .01 level. Visual inspection implies that this result should be due almost entirely to the upward trend. This corroborates the result of the OLS regression. The number of record companies registered with the GVL increased during the recession period.

Tables 8.1: Linear OLS regression for 'number of record companies' during the recession period [(a)]

a) Model summary and parameter estimates

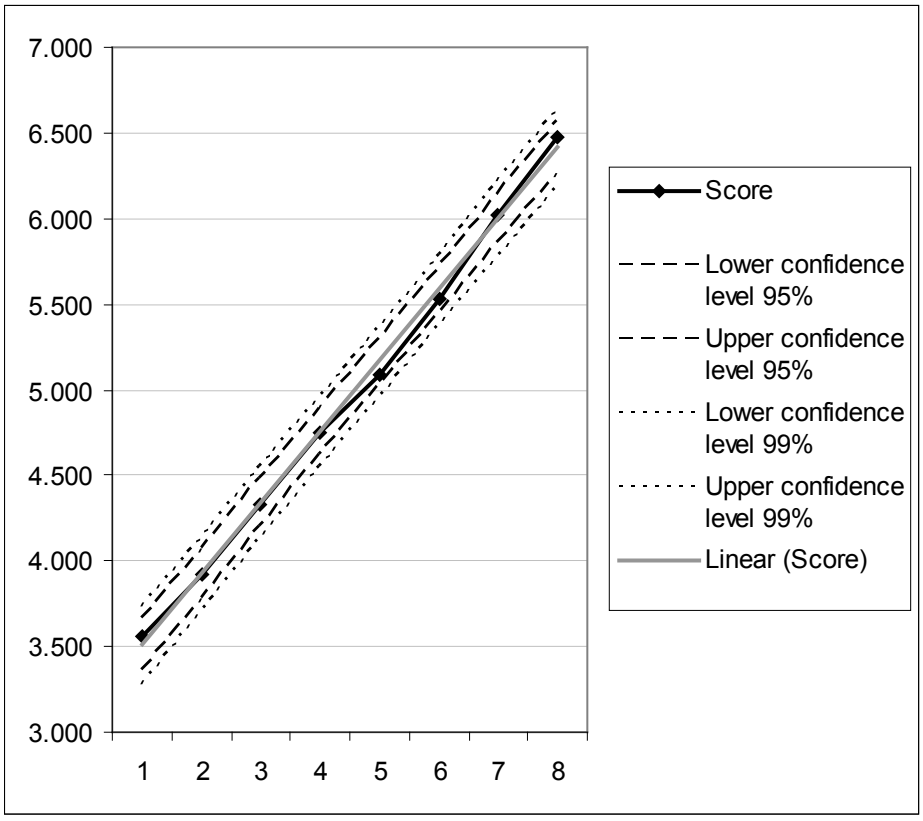
Equation	Model Summary					Parameter Estimates	
	R^2	F	df1	df2	Sig.	Constant	b1
Linear	.998	2700.07	1	6	.000	3,095.79	414.55

b) Coefficients

	Unstandardised Coefficients		Standardised Coefficients		
	B	Std. Error	(Beta)	t	Sig.
Case Sequence	414.55	7.98	.999	51.96	.000
(Constant)	3095.79	40.29		76.85	.000

[(a)] t=1 in 1998

Figure 8.2: 'Number of record companies' during the recession and its linear trend [(a)]



[(a)] t=1 in 1998

Table 8.2: Results of a test for non-randomness based on the C statistic for 'number of record companies' during the recession period

Year	Number of record companies (y)	
1999	61.904	$D^2 = 1{,}226{,}426$
2000	72.657	
2001	79.262	$2SS_y = 14{,}467{,}455$
2002	72.507	($\bar{y}$ for the boom period is 4961.3)
2003	75.299	$C = 0.9152$
2004	79.603	
2005	81.396	$Sc = 0.3086$
2006	83.187	$Z = 2.9657$
		$p < .01$ [(a)]

[(a)] The critical value at 8 observations for the .05 level of significance is 1.6486 and for the .01 level it is 2.1664 (Young, 1941).

Has the rate of growth fallen during the recession period?

That said, the recession might nevertheless have had the more limited effect of diminishing the speed of the expansion in the number of suppliers. Assessing the validity of this claim is more difficult, because the trend in GVL memberships during the boom period is difficult to specify.

The intervention analysis conducted in this chapter applies the same method as that described in chapter 3. The underlying idea is first to establish a suitable model of the behaviour of the time series during the boom period. This model is then used to extrapolate values for the following recession period that would have been expected if the behaviour of the time series would exhibit no change. Finally, these extrapolated values are compared to the observed post-period behaviour to check for significant differences. The first step is to remove any trend in the boom period by an appropriate data transformation.

One type of transformation is to fit an OLS regression model of the boom period that results in stationary residuals. Table 8.3 documents the results for a number of standard OLS regression models for the boom period.[148] A cubic model resulted in the best fit as indicated by the highest coefficient of determination and F ratio (R^2 = .998; F = 1,975). See table 8.4 for a formal assessment concerning the 'best fit'. A visual inspection of the residual plots for various regression models supports a preference for the cubic model, since it contains the least obvious pattern – see figures 8.3. However, a test for non-randomness of the cubic model's residuals during the boom period finds that the residuals are not distributed randomly around their mean. The result for the boom period residual of the cubic model is significant at

[148] Results depend on the specification of the pre-period, which is used to determine the slope of the upward trend prior to the recession. Both comparisons of the post-period with long as well as short pre-periods suggest no downward or even a modest upward shift during recession. Comparison with some boom periods of intermediate duration would suggest a slowing of the upward trend. This might be due to the unusually low values around German unification in the early 1990s. In this study, the time period covered simply reflects the period for which data was available.

the .05 level (Z=2.226). The same test brought up significant results for all other regression models estimated in table 8.3 (not reported in detail). That is, none of the standard OLS regression models captures the pre-period trend closely enough to provide a suitable reference for an intervention analysis.

The interpretation of this time series based on regression models is complicated, because the pattern in the time series remains ambiguous. The boom period data can be modelled well both in terms of a cubic growth pattern as well as in terms of a linear growth pattern that shifts in slope around the year 1993.

As discussed above, a cubic model for the boom period does not produce randomly distributed residuals. That said, a cubic model for boom period observations predicts a greater expansion in the number of firms than observed during the recession – see figures 8.4. This would be consistent with diminished growth in the number of GVL registrations due to the recession.

On the other hand, a visual inspection of the entire time series suggests that it contains two different, rather precisely linear growth patterns and a shift around the year 1993. A linear regression of the period scores during 1994 and 2006 results in a R^2 of 0.996 and an F ratio 2,791, which implies a stable, linear growth pattern throughout the recession and the five boom years immediately preceding the recession.[149] For the period between 1984 and 1992, the time series also followed a stable, linear pattern of growth (R^2=0.994; F ratio=1,467).[150] It is unlikely that these precise patterns would have come about by chance or as the expression of a single cubic growth pattern during the boom period that was interrupted with the beginning of the recession. One explanation for the change in the slope of the time series in the early 1990s may be German unification formalised in 1990.[151] The available documentation of the data, including that brought up in conversations with GVL staff and management, uncovered no change in the assembly of the data that could explain a permanent change in slope after the year 1992. In this second interpretation of the time series – it following two different linear growth patterns separated by 1993 as a transition year – there would be no recognisable change in the behaviour of the time series during the recession period in comparison to its previous trend.

[149] A cubic regression even results in an R^2 >.999, but the difference in predicted values between the linear and cubic regression model is negligible over the time period covered.

[150] The fit derived from linear OLS regression models is considerably lower without separating the apparent break around the year 1993. For the entire time series (1982 to 2006), fitting a linear model results in an R^2 of .931 and an F ratio of 312. For the entire boom period (1982 to 1998), the result is an R^2 of .948 and an F ratio of 255.

[151] This would hold if unification affected the number of GVL registrations with a lag of circa three years. The period between 1989 and 1992, during which German unification took shape, coincides with an unusually low growth in the number of GVL members.

There are no compelling theoretical reasons to prefer either of these two interpretations.[152] Because of this difficulty in identifying a unique, superior model for the growth pattern of the time series on the number of record companies, an analysis on the basis of OLS regression remains inconclusive. It does not support firm conclusions on whether the rate of growth in record companies registered with the GVL has diminished during the recession period.

The second type of data transformation conducted is differencing and the analysis of the resulting series may lead to a more conclusive results. Figures 8.5 illustrate the first difference scores. A visual inspection suggests that this time series contains an upward trend during the boom period. The results of an intervention analysis as presented in table 8.6 confirm the interpretation that the series is not stationary. The Z statistic for the first difference scores of the boom period is 3.622, which is significant at the .001 level. Accordingly, this series is not suitable for an intervention analysis.

The second difference scores of the boom period data, on the other hand, are randomly distributed around there mean (Z=-1.891; see figures 8.6 and table 8.7). This makes the second difference scores an appropriate comparison series for the analysis of the entire time series. The subsequent test for the entire time series also brings up an insignificant result (Z=-2.091). This implies that there is no significant change in the growth pattern or mean of the time series during the recession period in comparison to the boom period.

Table 8.3: OLS regression of 'number of record companies' during the boom period – model summary and parameter estimates

	Model Summary					Parameter Estimates			
Equation	R^2	F	df_1	df_2	Sig.	Constant	β_1	β_2	β_3
Linear	.941	240.397	1	15	.000	-48.338	161.868		
Logarithmic	.715	37.625	1	15	.000	-355.928	895.231		
Inverse	.376	9.028	1	15	.009	1851.024	-2187.324		
Quadratic	.992	894.805	2	14	.000	444.221	6.323	8.641	
Cubic	.998	1975.186	3	13	.000	213.882	141.023	-9.543	.674
Compound	.992	1795.580	1	15	.000	376.732	1.135		
Power	.915	162.474	1	15	.000	257.301	.771		
S	.598	22.346	1	15	.000	7.494	-2.100		
Growth	.992	1795.580	1	15	.000	5.932	.126		
Exponential	.992	1795.580	1	15	.000	376.732	.126		
Logistic	.992	1795.580	1	15	.000	.003	.881		

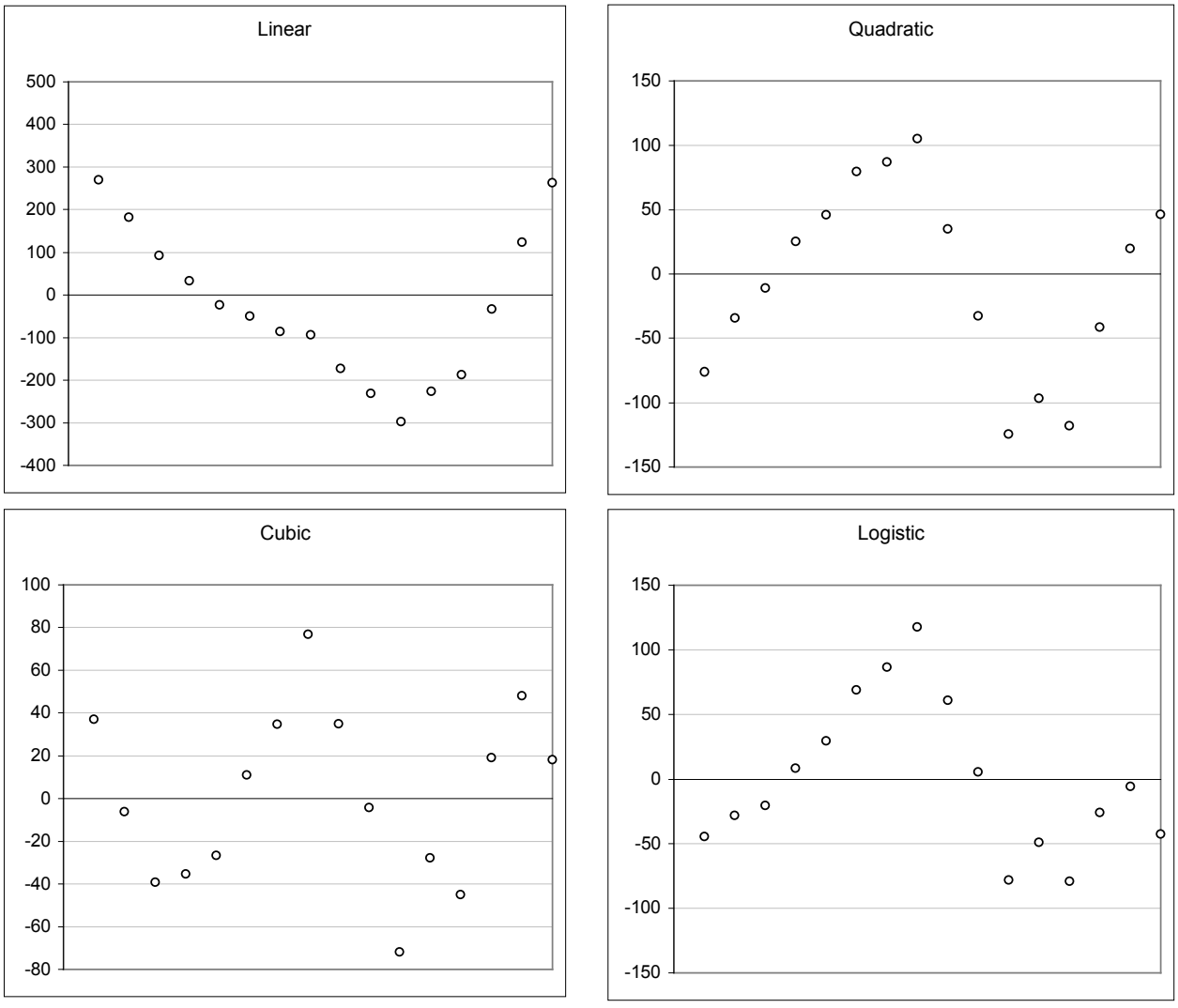
[152] The cubic model does not result in stationary residuals for the boom period, which raises doubts whether it is suitable for a proper intervention analysis. The cubic model further predicts a perpetually increasing rate of growth, which seems unlikely in a confined market. Unsustainably high predictions of growth are a less immediate problem in the model combining two different linear growth patterns before and after 1993. The latter model also has the advantage that it relates well to a slightly delayed effect of German unification. However, it is based on a kind of cheating for the purpose of an intervention analysis, since the model estimation draws on post-period observations – not enough data points being available between the transition year 1993 and the beginning of the recession period. (For the sake of simplicity, we ignore the fact that a cubic model fits the period from 1994 to 2006 even better than the linear model reported on, since there is hardly any practical difference in the predicted values).

Table 8.4: F test to compare the fit of the models of 'new titles'

	df	SS(X)	F ratio	p
Linear	15	667,025	*Linear-quadratic*	
			91.93	<.0001
Quadratic	14	88,156	*Quadratic-cubic*	
			33.10	<.0001
Cubic	13	24,862	*Cubic-logistic* [(a)]	
			9.031	<.001
Logistic	15	59,405		

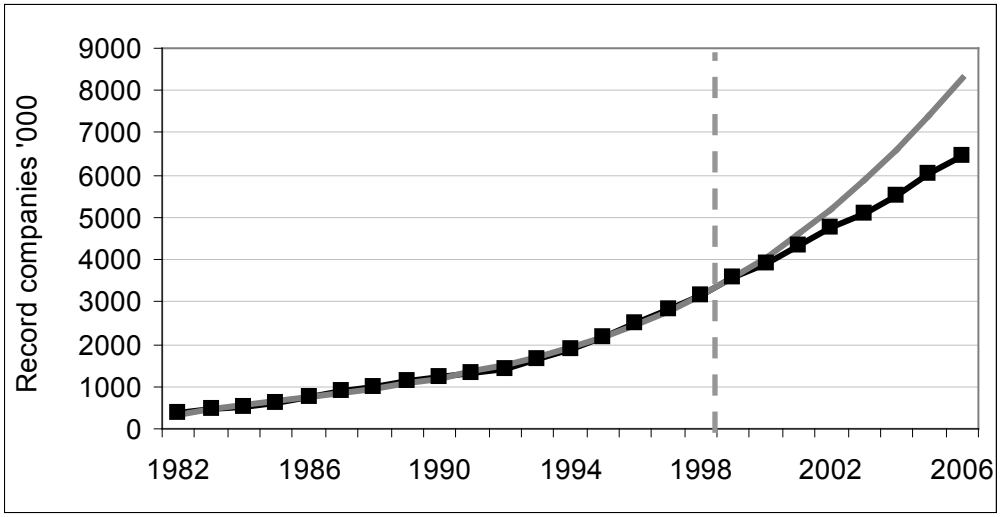
[(a)] The comparison between the cubic regression and the logistic model (which results in identical fits to the growth, exponential and compound regression models) is not strictly appropriate, since the equations are not nested.

Figures 8.3: Residual plots for selected regression models of the boom period



Figures 8.4: Documentation of the cubic model for the 'number of record companies'

a) Observations and cubic model predictions



b) Residuals for the cubic model

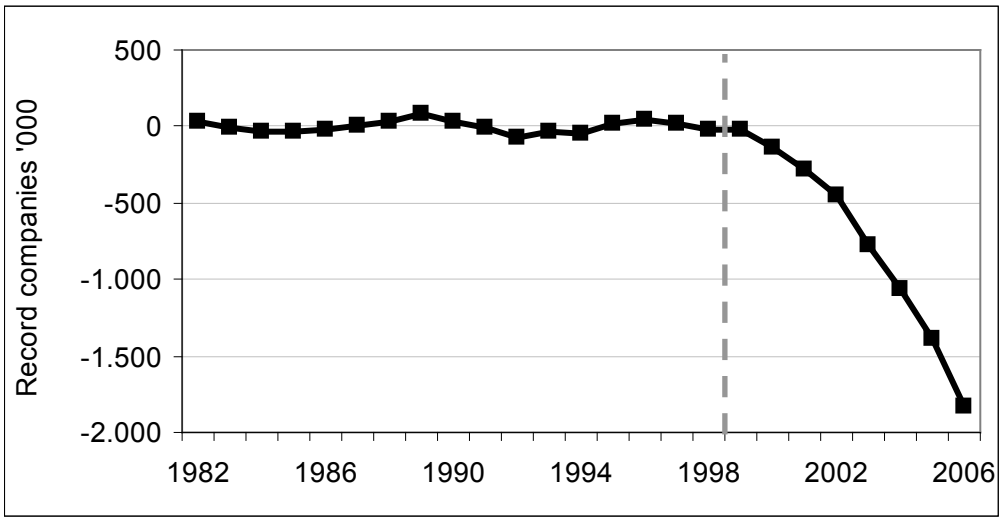


Table 8.5: Intervention analysis for 'number of record companies' – basis: cubic OLS regression for the boom period

	Year	Score *Y*	Model prediction *e* [(a)]	$\hat{\varepsilon} = y_t - e_t$		
Boom (pre-period)	1982	383	346	37	**Boom period:**	**Boom period and recession period:**
	1983	457	463	-6		
	1984	530	518	12	$D^2 = 24{,}459.6$	
	1985	633	647	-15		
	1986	738	764	-27	$2SS(\hat{\varepsilon}) = 49{,}723.2$	
	1987	873	874	-2	($\bar{\varepsilon}$ for the boom	
	1988	999	982	17	period is 0)	
	1989	1,153	1,093	59		$D^2 = 572{,}333$
	1990	1,236	1,214	21	$C = 0.5081$	
	1991	1,339	1,350	-11		$2SS(\hat{\varepsilon}) = 11{,}830{,}382$
	1992	1,435	1,506	-71	$Sc = 0.2282$	
	1993	1,668	1,688	-20		($\bar{\varepsilon}$ for the recession
	1994	1,869	1,901	-32	$Z = 2.2263$	period is -238)
	1995	2,185	2,151	33		
	1996	2,503	2,444	59	$p<.05$ [(b)]	$C = 0{,}9516$
	1997	2,804	2,785	19		
	1998	3,139	3,179	-41		$Sc = 0{,}1920$
Recession (post-period)	1999	3,562	3,633	-71		$Z = 4.9567$
	2000	3,927	4,151	-224		
	2001	4,329	4,739	-411		$p<.001$ [(c)]
	2002	4,751	5,404	-653		
	2003	5,087	6,149	-1,063		
	2004	5,536	6,981	-1,446		
	2005	6,026	7,906	-1,881		
	2006	6,472	8,929	-2,457		

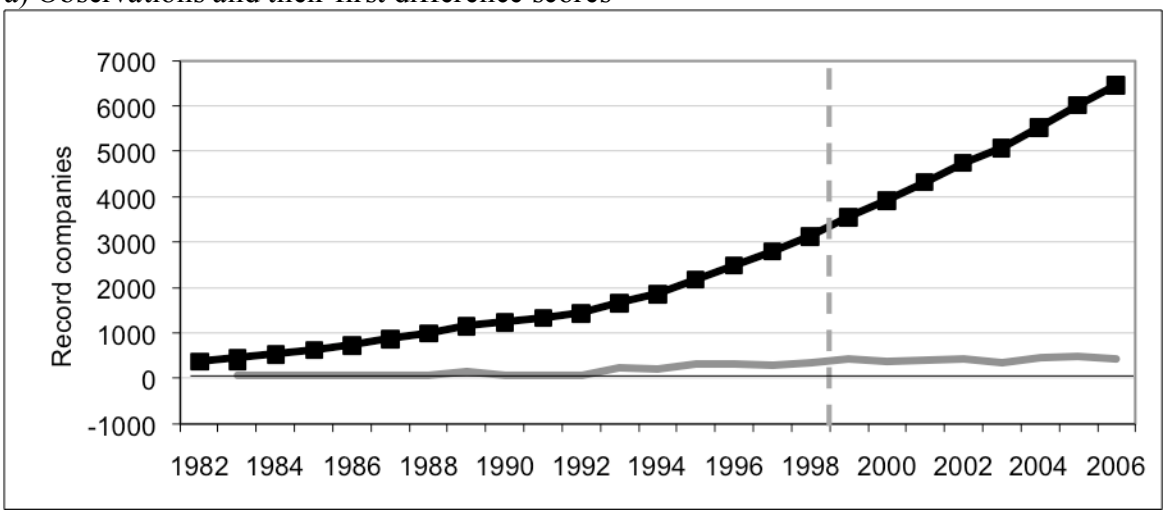
[(a)] Values predicted in the cubic OLS regression model for the pre-period (t=1 in 1982): $y=213.882+141.023t+-9.543t^2+.674t^3$

[(b)] The critical value at 17 observations for the .05 level of significance is 1.6492, and for the .01 level of significance is 2.2470(Young, 1941).

[(c)] The critical value at 25 observations for the .05 level of significance is 1.6484, and for the .01 level of significance is 2.2717 (Young, 1941).

Figures 8.5: Documentation of the first difference scores for the 'number of record companies'

a) Observations and their first difference scores



b) First difference scores enlarged

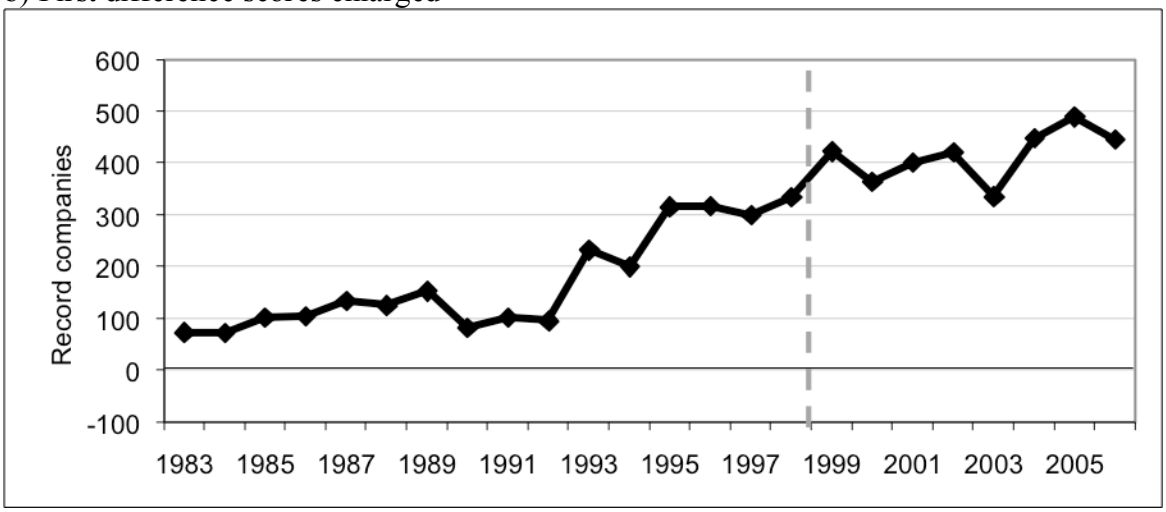


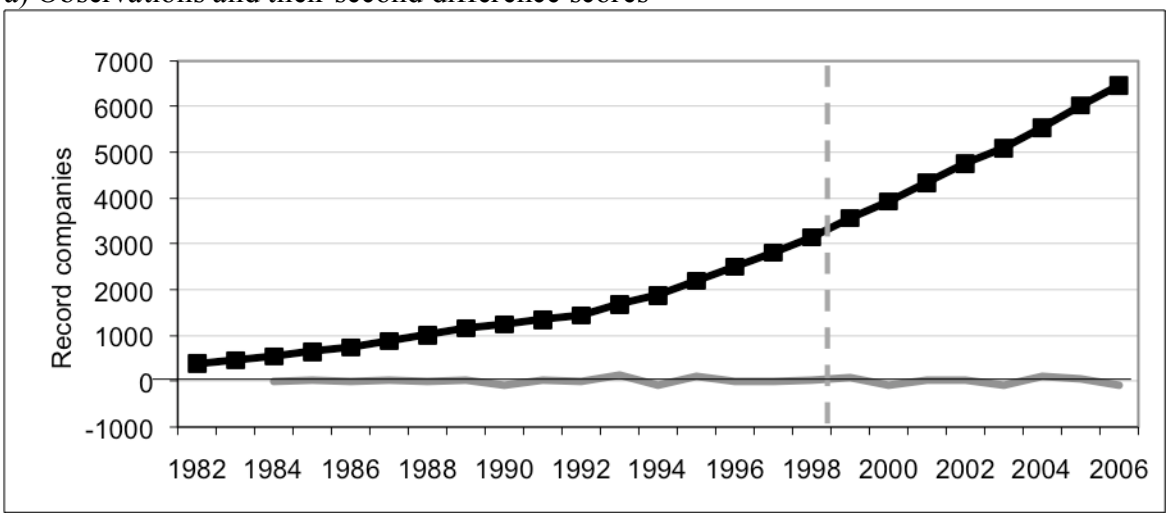
Table 8.6: Intervention analysis for the 'number of record companies' – basis: first difference

	Year	Score Y	1st difference $\Delta^1 y$		
Boom (pre-period)	1982	383	--		
	1983	457	74	**Boom period:**	
	1984	530	73		
	1985	633	103	$D^2 = 42{,}627$	
	1986	738	105		
	1987	873	135	$2SS(\Delta^1 y) = 281{,}490$	**Boom period and recession period:**
	1988	999	126	(mean for $\Delta^1 y$ during	
	1989	1.153	154	the boom period is	$D^2 = 79{,}286$
	1990	1.236	83	172.3)	
	1991	1.339	103		$2SS(\Delta^1 y) = 951{,}982$
	1992	1.435	96	$C = 0.8486$	(mean for $\Delta^1 y$ during for the
	1993	1.668	233		recession period is 253.7)
	1994	1.869	201	$Sc = 0.2343$	
	1995	2.185	316		$C = 0.9167$
	1996	2.503	318	$Z = 3.6215$	
	1997	2.804	301	$p<.001$ [(a)]	$Sc = 0.1956$
	1998	3.139	335		
Recession (post-period)	1999	3.562	423		$Z = 4.6866$
	2000	3.927	365		$p<.001$ [(b)]
	2001	4.329	402		
	2002	4.751	422		
	2003	5.087	336		
	2004	5.536	449		
	2005	6.026	490		
	2006	6.472	446		

[(a)] The critical value at 16 observations for the .05 level of significance is 1.6492, and for the .01 level of significance is 2.2423 (Young, 1941).
[(b)] The critical value at 24 observations for the .05 level of significance is 1.6484, and for the .01 level of significance is 2.2700 (Young, 1941).

Figures 8.6: Documentation of the second difference scores for the 'number of record companies'

a) Observations and their second difference scores



b) Second difference scores enlarged

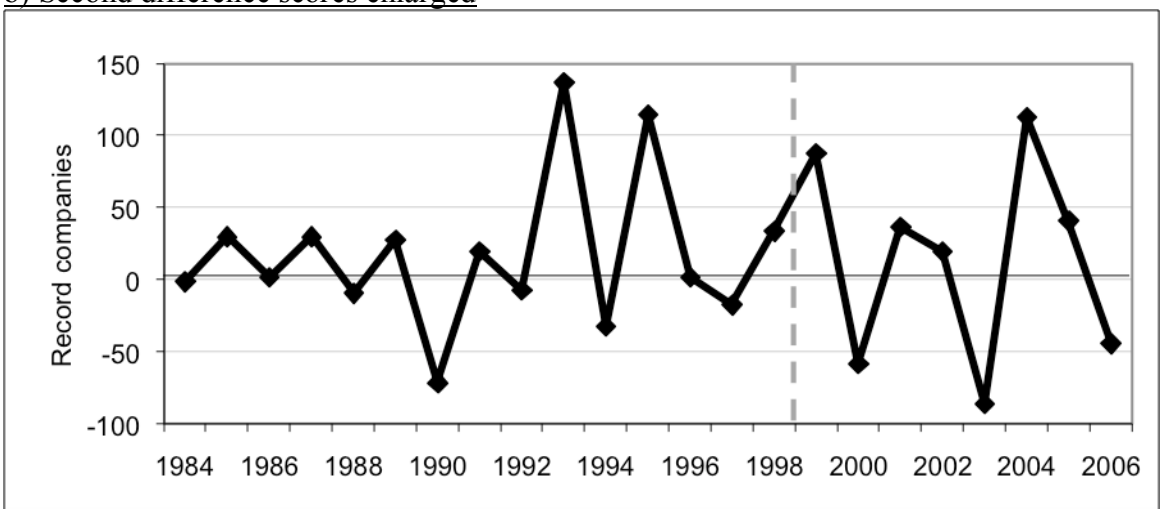


Table 8.7: Intervention analysis for 'number of record companies' – basis: second difference

	Year	Score Y	2nd difference $\Delta^2 y$		
Boom (pre-period)	1982	383	--	**Boom period:**	
	1983	457	--		
	1984	530	-1	D^2 = 110,867	
	1985	633	30		
	1986	738	2		
	1987	873	30	$2SS(\Delta^2 y)$ = 76,171.2 (mean for $\Delta^2 y$ during the boom period is 17.4)	**Boom period and recession period:**
	1988	999	-9		
	1989	1.153	28		D^2 = 207,659
	1990	1.236	-71		
	1991	1.339	20		
	1992	1.435	-7	C = -0.4555	$2SS(\Delta^2 y)$ = 146,539 (mean for $\Delta^2 y$ during for the recession period is 16.2)
	1993	1.668	137		
	1994	1.869	-32	Sc = 0.2409	
	1995	2.185	115		
	1996	2.503	2		C = -0.4171
	1997	2.804	-17	Z = -1.8908 not significant [a]	
	1998	3.139	34		Sc = 0.1994
Recession (post-period)	1999	3.562	88		
	2000	3.927	-58		Z = -2.0914 [b] not significant
	2001	4.329	37		
	2002	4.751	20		
	2003	5.087	-86		
	2004	5.536	113		
	2005	6.026	41		
	2006	6.472	-44		

[a] The critical value at 15 observations for the .05 level of significance is 1.6493, and for the .01 level of significance is 2.2369 (Young, 1941).
[b] The critical value at 23 observations for the .05 level of significance is 1.6485, and for the .01 level of significance is 2.2676 (Young, 1941).

Summary and interpretations of findings on the number of record companies registered with the GVL

This section tests two related hypothesis regarding changes in the number of record companies in the presence of digital copying. First, over time, the number of record companies registered with the GVL will decrease in absolute terms during the recession. This hypothesis can be rejected quite easily. The number of record companies registered with the GVL has not fallen during the recession period. Instead, it has expanded consistently and significantly during the recession.

Second, during the recession period, the time series will almost immediately exhibit a gradual downward shift in relation to the trend prevalent during the preceding boom period. Testing this second hypothesis requires a comparison between the time series' behaviour during the boom period and the recession period. The trend during the boom period is difficult to capture in a single and reasonably simple regression model, which complicates the analysis. An intervention analysis based on the second difference scores of the time series appears to be most suitable. It implies that the rate of growth in the number of GVL registrations has not changed significantly during the recession period.

In summary, the evidence is more consistent with a process of creative destruction rather than a process of plain destruction. At least parts of the industry seem to adapt successfully to changes in the market.

Considerations concerning research methods

Section 3.5 discussed the limitations of a similar investigation of the supply of sound recordings in the presence of digital copying. These limitations apply to the investigation presented in this section. On the one hand, the analysis is based on a relatively small number of data points that stretch over a long period of time. On the other, there is no control group or second baseline and it is not clear whether roughly simultaneous recessions in other national markets coincide with similar changes in the industry structure.

That said, considerable confidence in the general direction of empirical results derives from the severity and duration of the recession. Again, in the eight recession years covered, industry revenues from the primary market for sound recordings have fallen by 41%. The expectation would be that the number of suppliers would have diminished substantially under such circumstances unless there are strong countervailing factors.

It needs to be clear that the analysis above does not include any systematic attempt to control for specific intervening variables. Potential factors that would explain growth in the number of firms in spite of a recession – such as cost reductions in the context of radical technological change – will be addressed in later sections.

Problems with GVL data

There are three further, potential problems in inferring the number of record companies in Germany from the number of record companies registered with the GVL.

First, GVL data provides no separate information on exits and entries, and due to the low fixed costs of membership, it is reasonable to assume that the number of GVL registrations does not fully reflect the number of firm exits. For example, firms that discontinue all other business activity and do not sell their rights in the process can still continue to remain registered with the GVL at close to zero costs until their rights expire (currently that period usually lasts for 50 years). Therefore, it is not clear to what extent this data supports valid inferences concerning the number of record companies or whether it is more indicative of the number of firm entries. In the extreme, the figures would be cumulative and just show how many record companies have ever had a registration with the GVL, rather than how many firms operate at present. For the purpose at hand, this problem is of limited concern, since both net growth in the number of record companies as well as a high number of market entries during the recession are more consistent with a process of creative destruction than with a process of plain destruction.

A second problem concerns multiple registrations of single firms. Record companies frequently register several subsidiaries, e.g. to facilitate separate accounting for semiautonomous business units. In fact, the net growth of GVL registrations consistently exceeds growth in the number of record companies as indicated by industry lead body membership (see table 8.7 above). That is, GVL data does not measure the number of record companies directly. Ceteris paribus, changes in the number of GVL members should reflect proportional changes in the number of firms that register them. Any shift in the ratio between record labels and registering firms would bias the result.

The third problem is cross border registrations. The GVL is legally obliged to register record companies based in other territories than Germany, if these request membership. In practice, the first foreign firms have registered with GVL in the mid-1990s. After what staff describe as “gradual growth”, foreign record companies accounted for approximately 400 label codes in November 2004, ca. 8% of the total. No estimates are available on how many German firms have registered (only) abroad.

Discussions with GVL staff on the matter did not produce any evidence of substantial changes to record companies’ behaviour regarding multiple registrations with the GVL or cross-border registrations that would explain much of the extraordinarily strong growth in label code registrations. Nevertheless, on the basis of the available information they cannot be dismissed comprehensively. That insight calls for caution with detailed interpretations of the data. To validate results, membership in relevant industry lead bodies can be analysed as an alternative, independent measure of the number of record companies in Germany.

8.3 INDUSTRY LEAD BODY MEMBERSHIP

To complement the analysis of GVL data on the number of record companies, this paper investigates membership in two industry lead bodies. The first is the German chapter of the 'International Federation of the Phonographic Industry' (IFPI Germany), which caters for larger record companies. Second, many smaller intermediaries in the music industry have coalesced in the '*German Association of Independent Labels, Publishers and Producers*' (VUT). One intention is to verify whether during the recession period, the number of record companies has increased. As will become apparent below, the data does not support inferences on whether the number of record companies increased at roughly the same rate as during the boom period.

The IFPI Germany caters predominantly for larger, well-established firms and the VUT focuses on smaller firms, fringe suppliers and newcomers. This makes it possible to elaborate on another aspect of creative destruction during a process of radical, cost-reducing technological change. In a typical case, more flexible newcomers and fringe suppliers would be more competitive during an early stage of radical technological change. Concerning the number of members in the IFPI Germany and the VUT, this would show up in proportionately greater growth in the membership of the VUT.

Membership in industry lead bodies as a measure of the number of record companies

Together, IFPI Germany and VUT are particularly suitable because there are important financial incentives for record companies to become members in one of these two organisations. Record companies are obliged to pay a fee to composers and authors in a specific way. They pay so-called mechanical royalties – fixed fees for each reproduction of a sound recording on a sound-carrier – to the authors' collecting society '*Gesellschaft für musikalische Aufführungs- und mechanische Vervielfältigungsrechte*' (GEMA). In practice, this GEMA fee is estimated to account for roughly 7% of the net retail price (excluding VAT) for full-price albums. Both IFPI Germany and VUT have negotiated a non-cumulative 20% rebate on these fees with GEMA. Given the GEMA rebate, the combined number of members in these two industry lead bodies should be another, reasonably comprehensive measure of the population of record companies in Germany. (The choice for record companies between joining either IFPI Germany or the VUT will be addressed below.)

Industry lead body membership thus provides an opportunity to verify findings from GVL data on changes in the population of record companies. Here, multiple registrations of single firms should not be a major problem. As a rule, the IFPI Germany and VUT charge a fixed annual fee per organisational unit registered as member (see below). Where this applies – i.e. for all of the VUT members and the vast majority of (associated) members of IFPI

Germany – multiple registrations should be rare.[153] However, some minor overlap between the two industry lead bodies probably does exist: of 925 VUT members at the end of 2004, 52 (5.6%) reported they were IFPI Germany members at the time of applying for VUT membership (VUT database).

The IFPI Germany

IFPI Germany caters for larger record companies. All four 'major' multinational record companies[154] – that by themselves account for around three quarters of the market – play a strong role in IFPI Germany. In November 2004, IFPI Germany had 14 full members and 332 associated members. IFPI Germany exclusively accepts firms as members that operate as record companies in order to reduce conflicts of interest within the organisation.

Associated members pay an annual membership fee of €875 (November 2004). Full members make a larger contribution to the remaining budget needs depending on an assessment of their market share. Market share also determines the weight of votes in the general meeting. In IFPI Germany, control over lobbying activities and networking opportunities for associated members are quite limited. Associated members generally cannot participate in the general meeting, the main decision making body of IFPI Germany. They elect a representative whose vote is given the same weight as that of the single most significant full member. Associated members play a similarly subordinate role in specialised committees formed within IFPI Germany. According to IFPI Germany management, associated membership is attractive mainly due to the aforementioned 20% rebate with GEMA. On the basis of this, there are direct economic incentives for membership to all record companies who can expect to save more from a reduced GEMA fee than they have to pay in IFPI membership fees. A simplified example would be a record company that would have to fully pay a 9% GEMA fee on the net retail price of full-length CDs sold at €12.50. A rebate of 20% on this GEMA fee would then recover the annual IFPI Germany membership fee of €875 for any firm that manages to sell more than 3,889 such CDs during the year in question. There is a range of further, minor economic benefits of IFPI Germany membership. These include the automatic right to receive a limited rebate of GEMA fees when unsold copies are taken off the market.

The 'German Association of Independent Labels' (VUT)

Second, many smaller intermediaries in the music industry have coalesced in the 'German Association of Independent Labels, Publishers and Producers' (VUT). At 925 paying members in November 2004, the number of member organisations in the VUT far exceeds those of IFPI Germany, while the IFPI Germany members account for the bulk of turnover

[153] This does not hold only for the relatively small number of full members in IFPI Germany, where membership fees and voting rights are determined by the size of the organisational unit registering as member.

[154] Universal Music, SonyBMG, Warner Music, and EMI.

generated by record companies in Germany. The vast majority of VUT members – more than 89% – operate as record companies (see chapter 9). The VUT's management is not aware of any substantial changes to the share of record companies among their members over the last years.

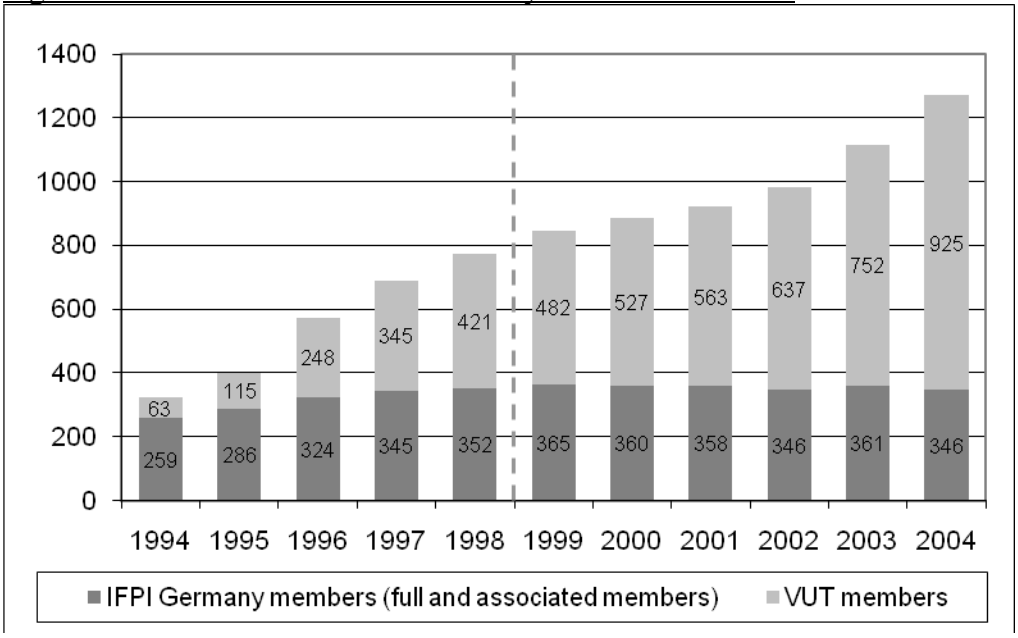
The regular annual membership fee of the VUT is €275. Firms that claim to generate an annual turnover below €50,000 with their combined activity as record labels and music publishers can request a reduction to €150. According to the VUT's managing director, about 2/3 of all members pay the reduced membership fee. In October 1995, a 20% rebate with GEMA for VUT members – equivalent to that granted to IFPI Germany members – came into force. This means in our simplified example that record companies of very modest size can expect to gain financially from VUT membership. That holds even if consultancy services and networking opportunities available to members, the value of which is hard to gauge, are ignored. The following calculation illustrates this point. If an imaginary record company had to fully pay a 9% GEMA fee on the €12.50 net retail price of full-length CDs, it would benefit from membership as long as it sells more than 667 such CDs annually at a VUT fee of €150 or 1,222 such CDs at a VUT fee of €250. While reality can be a lot more complex than this example, membership seems to be worthwhile for record companies of very modest size.

Has the number of record companies expanded during the recession?

The total of VUT and IFPI Germany membership should capture a very large proportion of record companies operating in Germany. Table 2 presents the available data on the number of IFPI and VUT members between 1993 and 2004, the sum of members in these two industry lead bodies and the net increase in members for each year. Figure 8.7 provides a pictorial representation. The total number of lead body members has expanded throughout the period under investigation but the number of members in IFPI Germany and VUT developed quite differently.

During the five boom period years for which data was available, IFPI Germany membership expanded from 259 members in 1994 to 352 in 1998. During the recession period thereafter, membership fluctuated without consistent pattern around an average of ca. 356 firms and stood at 346 members in 2004, six firms less than in 1998. IFPI Germany membership thus does not exhibit a falling number of firms usually associated with an industry in demise. Nevertheless, the data would be consistent with a reversed trend in IFPI Germany membership. A period of relatively rapid expansion came to an end during the recession.

Figure 8.7: The Number of IFPI Germany and VUT members



VUT membership, on the other hand, has expanded throughout the period under investigation. To make sense of data on VUT membership, some peculiarities need to be addressed, however. First, the VUT was founded in 1993. In particular during the first years of its existence, the expansion of its membership cannot provide a trustworthy indication of a growing number of eligible firms in the market. During these years, most of the growth should rather be the result of an increasing share of already existing firms joining up. Second, only by October 1995 did the GEMA rebate for VUT members come into force. Apparently, existing firms were responsive to the economic incentives for membership provided by the GEMA rebate. A great number of firms joined the VUT the following year so that the number of members more than doubled in twelve months. After the GEMA rebate had become common knowledge, perhaps from 1998 onwards but at the latest after a temporary slump in the growth of membership in the years 2000 and 2001, it would appear that changes in the number of VUT members provide for a decent indication of changes in the number of eligible firms.

During the recession, membership in the VUT grew consistently. Initially, the net increase slowed, falling to just 36 additional members in 2001. During the last three years covered, net increase picked up again. In 2004, it was higher even than in 1996, the year after the GEMA rebate had been introduced. There are no apparent internal factors – such as sudden, additional benefits of membership or reduced membership fees – to explain the recent strong growth in the number of VUT members. It seems this net increase would be due to an increase in the number of eligible firms.

This interpretation can be verified by studying the foundation years of VUT members as established in a survey in the summer of 2005 (for details on this survey, see chapter 9). As will be illustrated in chapter 9, more recent years exhibit higher, and more variable, numbers

of firm foundations during the recession. Altogether, more than 55% of all responding member firms reported to have been founded during the recession period between 1999 and July 2005. This corroborates the finding of a high number of market entries during the recession period.[155]

These observations confirm the main finding from the analysis of GVL data: an expansion in the number of record companies has occurred during the recession period. Data on record companies' membership in main industry lead bodies does not allow for valid inferences on the number of market entries during the boom period. Yet, for the recession period it indicates that the number of market entries has picked up substantially after the year 2002 in spite of a severe falls in industry revenues from the primary market for sound recordings.

Table 8.8: The Number of IFPI Germany and VUT members

	Year	IFPI Germany		VUT		Total	
		Members	Net annual increase	Members	Net annual increase	Sum IFPI and VUT	Net annual increase
Boom	1993	--	--	30	30	--	--
	1994	259	--	63	33	322	--
	1995	286	27	115	52	401	79
	1996	324	38	248	133	572	171
	1997	345	21	345	97	664	92
	1998	352	7	421	76	773	109
Recession	1999	365	7	482	61	847	74
	2000	360	-5	527	45	887	40
	2001	358	-2	563	36	921	34
	2002	346	-12	637	74	983	62
	2003	361	15	752	115	1113	130
	2004	346	-15	925	173	1271	158

Sources: BV Phono (various issues); VUT database

Has the number of small, independent record companies expanded proportionally faster than that of larger firms?

The data on the number of members in the two industry lead bodies for record companies provides another insight, because the choice between IFPI Germany and VUT membership is related to firm size: the expansion in the number of such firms accrues mainly due to growth in the number of smaller firms.

All the major four record companies and some of their main subsidiaries are represented in IFPI Germany, none of them in the VUT. Amongst the vast range of minor record companies, the choice might not always be quite so obvious. Almost certainly, emotional factors occasionally play at least some role in the choice which industry lead body to join. For example, the status as an independent label – with no or minimal ties to the major

[155] Due to the considerable turbulence in the industry (see figure 8.7), market entries in the past will be underestimated somewhat in a survey of firms that operate at present, however.

record companies – is traditionally valued among many smaller record company. Such firms might find IFPI Germany membership unattractive to start with. The immediately financial aspect of the choice between IFPI Germany and VUT membership starts with the higher membership fee for IFPI Germany membership. (The 20% GEMA rebate applies to both IFPI members and VUT members equally.) IFPI Germany membership might still be attractive because it bestows some exclusive privileges on record companies. These include additional, more minor concessions from GEMA.[156] The value of these concessions regularly relates to the turnover of the firm in question and sometimes applies only to firms generating a certain minimum turnover.[157] Therefore, the greater expense of IFPI Germany membership is more likely to be beneficial for larger record companies. Comparing developments in the number of members in these two different industry lead bodies allows for a rough comparison between changes in the population of larger commercial record companies on the one hand and smaller, independent record companies on the other.

Has the record industry processed the external shock of digital copying and the recession?

There are two questions that need to be dealt with in order to infer from the population of member firms on the impact of the recession. First, has the record industry actually processed the external shock of a sudden surge in unauthorised copying and the recession that coincides with it? Second, are many of the new market entries sustainable?

Table 8.9: Entries and Exits of VUT Members 1997 to 2004

	Entries	Exits
1997	99	-2
1998	101	-25
1999	100	-39
2000	79	-34
2001	101	-65
2002	143	-69
2003	136	-21
2004	180	-7

Source: VUT database

[156] One illustrative example for such additional privileges is a (limited) rebate of the GEMA fee for larger record companies when these take unsold phonograms off the market. Smaller firms amongst IFPI Germany members are required to provide securities for the privilege. No such rebate scheme was available to VUT members in the time period investigated.

[157] For GEMA, this might reflect relatively lower costs and risks when co-operating with a few large partners than with a multitude of smaller firms. It might also reflect predominant interests within IFPI Germany when negotiating with GEMA.

Figure 8.8: Entries into and exits from the VUT 1997 to 2004

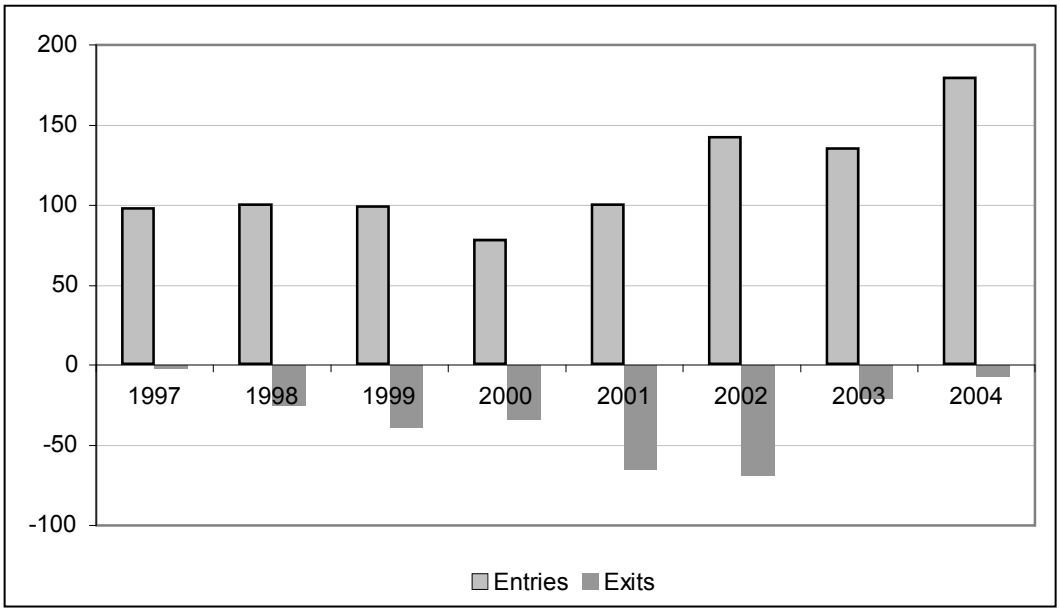


Figure 8.8 and table 8.9 exhibit exits from and entries to the VUT since 1997, which provides some relevant evidence regarding these two questions. As discussed above, during this period data on the number of members in the VUT begins to be useful for the purpose of identifying trends in the number of eligible firms. The first main observation is that the number of exits rose substantially from the beginning of the recession in 1998 until 2002. In the two most recent years covered, 2003 and 2004, exits declined sharply to just seven in 2004. Together with the high number of entries, it appears that the part of the industry reflected in VUT data has begun to process the recession quite early. It reacted with increasing turbulence, which – as far as the data from two years can tell – seems to have reverted into a more uniform growth pattern in the number of VUT members after 2002. It would seem that the more recent surge in market entries by small record companies could well be an adaptation to changes in the business environment during the recession. Chapter 10 will present further evidence on a boom among small, independent record companies during the recession period.

Summary of findings on industry lead body members

As illustrated above, IFPI Germany membership stopped growing with the beginning of the recession and has stagnated since. VUT membership continued growing throughout the recession and expanded rapidly after the year 2002. It appears that a disproportionate share of the market entries during recession was by so-called 'independent', usually very small, record companies.

Whereas the theoretical motivation is different, this chapter can be seen as a continuation of the discussion of supply variety started in section 3.5. This earlier empirical investigation addressed the impact of the ongoing recession in the record industry on the variety of titles supplied. The variety of ownership as addressed in this chapter is an additional dimension of supply diversity. It seems that copyright policy is mainly concerned with attaining a diverse supply of protected products that is responsive to user needs. Diversity of ownership may be a means to this end but it is hardly the direct concern of copyright policy.

There is a divisive debate among social scientists concerning the effects of ownership concentration in cultural industries on product diversity, or, more broadly, the extent to which these industries support a public discourse in pluralist societies. Often, a more diverse industry structure is simply equated with a more permissive environment concerning newcomers, fringe suppliers catering for minority interests as well as radical innovations. Diversity of ownership is thus sometimes seen to be an aspect of the concept of diversity that cultural policy should seek to attain. For the record industry, an influential study by Peterson and Berger (1975) found that a more concentrated industry structure coincided with less diversity of supply. Some later studies claim that any link between ownership concentration and diversity of supply has become weaker in the 1980s and 1990s, as large incumbent firms adopted more flexible management systems relating to the acquisition of creative content (Lopes, 1992; Dowd, 2004).

The economic argument for variety of ownership is similar to that for product variety, as discussed in section 3.5. The variety of suppliers is related to competition on the supply side. Faced with many competitors operating in the same market, suppliers will have the incentive to charge prices close to marginal costs and to be responsive to differentiated users' needs. Of course, there is the possibility that the mere threat of entry may ensure this type of behaviour and that under intense competition, innovation will be curtailed.

In any case, the observed rapid increase in the number of market entries implies that incumbents were not covering the market in an optimal manner and that the contestability of the market has increased. Assuming rational suppliers, a fragmentation of an industry should be welfare increasing in a market economy (Lancaster, 1990).

IO theory suggests a caveat. Greater variety of suppliers comes at the cost of repeated fixed costs incurred in the operation of each firm. In unregulated markets for reproducible cultural products, supplier variety may have a tendency to diverge from the social optimum. It seems unlikely, however, that supplier diversity in unregulated markets would overshoot by very much or that there would be better mechanisms to approximate an efficient solution other than the market mechanism in contestable markets.

Evolutionary economic theory – that emphasises differences between economic agents and developments over time – provides additional arguments in favour of greater diversity. In

this perspective, supplier diversity is not only beneficial because it may help to sustain competition. Supplier diversity also provides a safeguard against inertia and 'lock-in' into traded technological trajectories and the problem that under uncertainty, any single organisation may make mistakes. What is more, inter-organisational learning may be facilitated by supplier variety. As in the case for product diversity, supplier diversity is positively related to adaptability of an industry over time. It may also be positively related to long-term growth, depending on the scale required for effective innovation.

It needs to be clear that the empirical investigation above has discussed producer variety, i.e. the sheer number of different firms supplying the same category of differentiated products. Supplier variety is one aspect of supplier diversity but diversity is a broader concept. There remains scope for investigating the balance and disparity of suppliers to support stronger normative assessments. That said, variety will regularly be positively related to diversity and greater supplier diversity makes it more likely that an industry caters for the full range of differentiated preferences among users.

8.5 CONCLUSIONS

The motivation of this chapter has been to establish whether changes in the population of record companies in the presence of digital copying are more consistent with a process of plain destruction or with a process of creative destruction. To do so, this chapter studies several time series. The hypotheses are that in a period of rapidly falling sales and alleviated levels of unauthorised copying after 1998: (1) the number of record companies would fall in absolute terms after some lag, (2) the rate of growth in the number of record companies would fall almost immediately, and (3) that the population of relatively small record companies would grow disproportionately strongly at the beginning of the recession. Confirming the first two hypotheses would be evidence for plain destruction and rejecting them would be evidence for creative destruction. In the case of the third hypothesis, the reverse was the case.

Overall the result is reasonably clear: the findings on all measures are more consistent with a process of creative destruction.

According to the analysis of data from the collecting society GVL, the number of record companies operating in Germany expanded between 1999 and 2006, in spite of the recession. There is no conclusive evidence that the rate of growth would have changed in the presence of digital copying or the recession in the primary market for sound recordings that coincides with it. These findings suggest that the diffusion of digital copying technology coincided with a period of creative destruction. The latter finding also raises doubts whether the diffusion of digital copying technology exerts a strong influence on creative destruction in the record industry. A fragmentation of the record industry has set in considerably earlier than

1999. The empirical evidence thus conflicts with the notion that the record industry would have been in a reasonably stable state prior to the diffusion of digital copying technology.

According to data on the number of record companies that are members in relevant industry lead bodies, smaller 'independent' firms account for the entire net growth in the number of record companies operating in Germany. One interpretation of this finding is that the business environment shifts in favour of small firms and new market entries and against larger, incumbent firms.

This chapter concludes the analysis of secondary data in this dissertation. The remaining empirical contributions draw on a survey among 'independent' record companies conducted by this author in the summer of 2005. This type of suppliers in the market for sound recordings is of particular interest, since developments in this sub-group seem to deviate most markedly from common-sensical expectations during the recession.

The following chapters will continue to address the evidence for creative destruction and adaptation in the record industry during the recession period after 1998. Questions that directly concerns the interpretation of the empirical evidence presented in this chapter are, first, whether greater variety in the record industry appears to be sustainable for the time being, and second, how important a boom among 'indies' is for the record industry at large. Later on, in part III, the results of the survey will also be used to validate possible explanations for greater variety during the recession period. Before that, the survey itself needs to be introduced.

9. THE VUT SURVEY OF INDEPENDENT RECORD COMPANIES

So far, the empirical aspects of this dissertation dealt with secondary data on the record industry as a whole that is made available by industry lead-bodies and collecting societies. It turned out that a central prediction in much of the applied literature on the economics of digital copying did not hold: the ongoing recession that coincides with the diffusion of powerful copying technology did not have any apparent adverse effects on the variety of titles supplied. What is more, the variety of suppliers seems to have expanded throughout the recession period, continuing a trend that was apparent before the recession. The available data suggests that an influx of small, so-called independent record companies accounts for this expansion in the number firms during the recession. The findings of substantial market entry and net growth in the number of firms contrasts with common-sensical assumptions about the consequences of digital copying and falling industry revenues. These findings are inconsistent with a scenario of plain destruction and more consistent with a process of creative destruction, in which substantial parts of the record industry manage to adapt to changes in the market environment.

The following chapters will draw on primary data produced for this dissertation in a survey of 'independent' record companies in Germany. This online survey addressed the members of the German industry-lead body for independent record companies VUT. Hereby, the analysis zooms in on that part of the industry, for which observations have contrasted with conventional expectations.

Surprisingly little systematic evidence exists concerning the activities of 'indies' in the record industry, even though much of the specialised literature considers these firms to play an important role as breeding ground for new trends and innovation. The VUT survey goes some way to fill this gap.

Results of the survey will be used to address a number of different issues. Chapters 10 and 11 deal with a first set of questions, which continues the discussion of changes in the population of record companies in chapter 8. One question is how sustainable market entries during the recession appear to be. Another issue is how important any boom among 'independent' record companies in the bigger picture of the record industry. Chapter 12 addresses the results of a second set of questions in the VUT survey, which related to innovation intensity as an alternative indicator of creative destruction. As discussed in section 6, a process of creative destruction would entail that some innovative suppliers would outperform more conservative competitors and that in the process, the productivity of the entire industry would increase. In a case of intensive creative destruction due to radical technological change, the expectation would thus be to observe high innovation intensity especially among those types of firms that thrive in spite of the recession. It is challenging to establish whether this prediction holds, since innovation is a multifaceted concept that is hard to measure and there have been few systematic attempts to do so in the idiosyncratic case of

cultural industries. Chapter 12 thus includes a relatively extensive theoretical part next to the presentation of empirical findings from the VUT survey on innovation and the correlation of innovation and success. Finally, part III of this dissertation will discuss a number of possible explanations for a boom among small record companies after 1998 on the basis of VUT survey data.

9.1 BASIC INFORMATION ON THE SURVEY

The VUT survey ran in July and August 2005. It was motivated by the observation that a great number of small, independent record companies has entered the market after 1998 in spite of a severe recession in the market for sound recordings. The appendix contains a transcript of the VUT survey, which was conducted online. More concise documentation of specific variables is presented at the end of each chapter in which they appear – for this chapter see table 9.11.

As discussed in section 8.3, there are financial incentives for record companies to join the VUT because members enjoy a 20% rebate on obligatory payments to the authors' collecting society GEMA per reproduction of a copyrighted work. Some larger independent record companies are not captured in the VUT survey because they are only members of another industry-lead body – the IFPI Germany in which the major four record companies play a leading role – that offers further concessions with the GEMA for a higher annual membership fee.

The VUT survey addressed basic firm characteristics (e.g. turnover, employment, the range of activities conducted by the organisation). It also covered information on expenditure, output and revenues as well as a range of innovation indicators. Large parts of the VUT survey are modelled on the 'Oslo Manual' on guidelines for investigating technological innovation (OECD, 1992; 1997; see also 2001a; 2005) and on the major European survey of industrial innovation, the Community Innovation Survey (CIS) that runs regularly under the auspices of the EU and the OECD.

Five preparatory panel discussions were held in 2004 and the first half of 2005 with representatives of independent record companies and other record industry insiders. In June 2004, two test runs of an online questionnaire were held with 8 participants each. Testers' comments at this stage were particularly useful to improve the precise formulation of questions and explanatory texts in the survey so that they were understood easily and unequivocally in the way intended by the author.

The survey contained several filter questions that were designed to suppress questions not applicable to a specific respondent. For example, a large group of questions only came up for firms who reported to have had substantial revenues from their operations as a record

company. The ease with which even a complex dynamic questionnaire design can be conducted is one of the most outstanding advantages of online surveys.

For the survey, a list of 1,013 contact partners in as many member firms was available. Contact partners were owners and/or executives. They received emails with an introduction and a unique, personal access code to the online survey on firm characteristics and activities. The survey was online between 18 July and 22 August 2005. During this time, 585 (58.8%) of the contact persons logged into the website containing the survey and 418 (42.0%) electronic questionnaires were completed. There was little valid and recent information on the characteristics of independent record companies available prior to the survey, and previous surveys among this type of firms had resulted in low response rates. Therefore, no prior sampling was employed and the survey addressed all VUT members. The characteristics of respondents were checked against prior information on key characteristics. The share of corporations with a turnover over €500,000 and €1 million, the share of firms founded before 1999 or in the periods between 2000-2002 and 2002-2004, and the extrapolated turnover of 'indies' in comparison to estimates of IFPI Germany estimates all lay within the expected parameters.[158] Overall, respondents of the VUT survey are assumed to be a reasonable approximation of a representative sample of small, independent record companies in Germany.

As is to be expected with any survey, the VUT survey entails challenges with definition, measurement and inferences. One set of problems concerns the definition of categories in an industry that is characterised by fluid organisational and functional boundaries, informal forms of employment and technological change. Other challenges relate to the measurement of multifarious concepts such as innovation intensity or even firms' success. Regarding the interpretation of results, another issue is limited external comparability. Results are hard to compare, since this study deliberately goes beyond the scope of previous studies of record companies or of innovation and technological change in the cultural industries. Results are also hard to compare because equivalent information on larger record companies is often not available, including such elementary issues such as costs. What is more, a survey of a population of firms operating at present is limited in uncovering past developments, since firms that ceased to operate are not captured.

The most fundamental limitation concerns the uncertainty associated with technological change. As argued in chapter 7, technological change is a path-dependent and uncertain process. Uncertainty does not necessarily imply pure randomness, but models that would provide valid predictions on this type of process are hard to make by definition. This insight defines the scope of this dissertation. The aim is not to generate a comprehensive, multivariate model that would support precise predictions regarding the incentives to innovate

[158] Owners/executives of firms that commercialise media content are extremely likely to have functioning email accounts, so that problems with a bias towards technology-savvy respondents should be minimal. This is supported by the observation that 995 of the email addresses proved to be operational during the survey, while only 18 were not.

or the extent of creative destruction. Instead, the aim is to identify creative destruction and to determine whether a number of observations in the record industry are consistent with a typical process of radical technological change.

9.2 FUNDAMENTAL CHARACTERISTICS OF VUT-MEMBER FIRMS

As discussed in section 8, the number of VUT-members has risen consistently since the foundation of the organisation in 1993. This upward trend held throughout the current severe recession and provides evidence for a growing number of market entries by small and independent record companies in spite of falling revenues to the industry at large after 1997. See figure 9.1 and table 9.1 (all tables are attached at the end of this chapter).

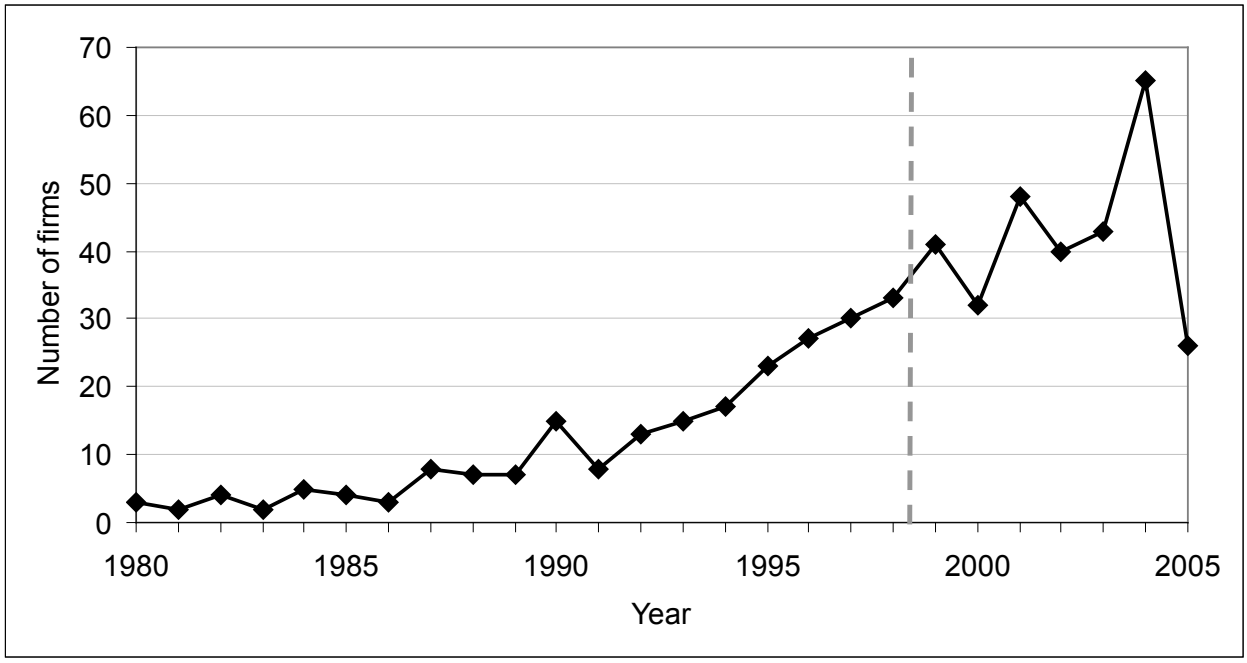
The majority of respondents – ca. 62% – reported that their enterprise had been founded in the year 1998 or later. That corresponds to around 625 enterprises that had been founded during the recession period and were still around to report in the summer 2005, while 390 VUT-member firms had been founded before 1998. After accounting for exits from the VUT, many of which may be due to firm closures, the VUT had 580 members more at the end of 2004 than at the beginning of the recession after 1997. More than 97% of the responding firms confirmed that they 'determined the use of their company's means autonomously'. In this sense, they are 'independent' enterprises.[159]

Activities of VUT members

Figure 9.2 and table 9.2 present an overview of the activities of VUT-member firms related to the record industry. The vast majority of member firms (more than 89% or an extrapolated 826 firms) actively reported the core activity of a record company had accounted for some revenues in 2004. That is, they had commercialised 'exploitation rights related to copyrights' they held in sound recordings. This figure includes non-responses, without which the share of firms reporting revenues as a record company in a narrow sense would be at 93.7%. Including non-responses into the estimation was necessary since these were numerous for the other types of activities as displayed in Figure 9.2 and excluding them could have substantially exaggerated the estimated share of firms active in this area.

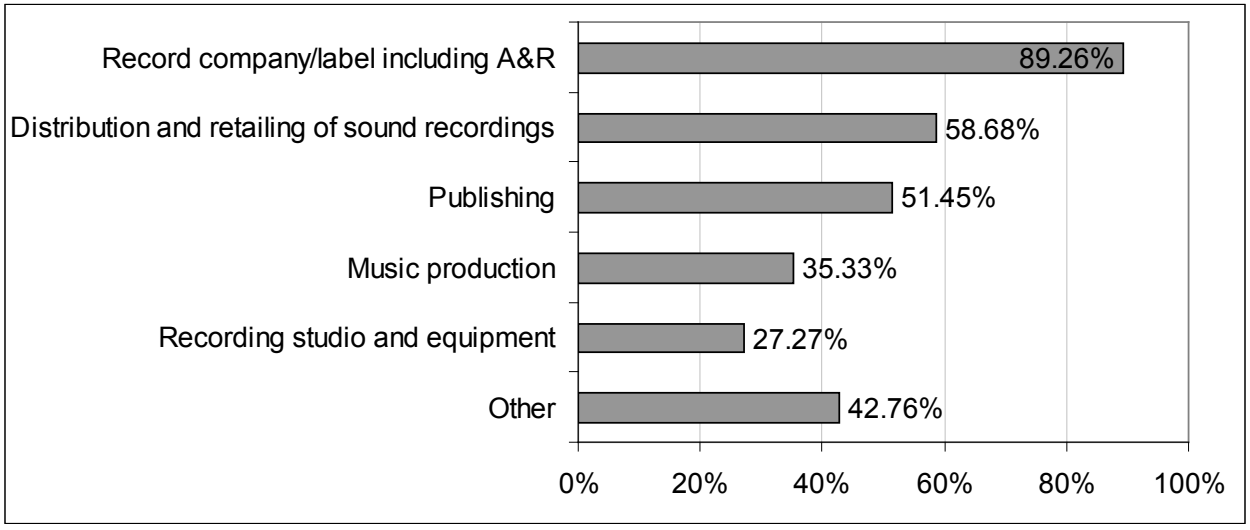
[159] Nearly 8% of respondents replied that their enterprise was a part of group of companies. There is probably a number of firms that consider themselves as independent in their budget decisions while they are formally dependent as part of a larger group of firms. This is consistent with the conventional understanding of the record industry as a complex network (Negus, 1996; Burnett, 1996). It is possible that many relationships and interactions between organisational units are not perceived in terms of a clear hierarchy; see section 5.4.

Figure 9.1: Years of foundation of VUT member firms active in the summer of 2005



Valid n=532; the score for the year 2005 covers only January to June; min.=1927 / max.=2005; mean=1997.45 (mean age in summer 2005 was ca. 8 years, ca. 7 excluding four outliers); standard deviation=7.743

Figure 9.2: The number of VUT member firms that generated revenues from activities in the record industry during 2004



Valid n=484; including non-responses as 'no revenues'

What is more, just over half of VUT members reported that the activities as a record company in a narrow sense had generated more than 50% of the firm's overall turnover. In some later chapters, subsidiaries and firms that did not report substantial revenues from this definitive activity of a record company will be excluded from the analysis.

Most VUT member firms also had generated some revenues by distributing and retailing sound recordings and from their activities as a publisher of compositions or lyrics.

Music production, defined in the survey as 'services concerning the production or editing of sound recordings with a substantial creative component', had accounted for some revenues for just over a third of member firms. Finally, a quarter had generated some revenues from making recording studios or recording equipment and related technical services available. That is, VUT-members do have a common denominator with the core activities of a record company and closely related activities in the record industry.

Furthermore, it is striking how many firms reported to have incurred revenues from several activities related to the production and commercialisation of sound recordings during the same year. On the one hand, most member firms conduct two or more of the traditional activities of the record industry. Even for the most important category of 'record company/label', the share of firms that had incurred all of their revenues for this type of services was below 10%. Respondents, who had reported that more than 5% of their firms' revenues had fallen into the category 'others', were asked to specify what they referred to in an open follow-up question. They reported on activities related to live performances and artists' management most frequently. Activities in other creative industries, such as advertising of various types and IT services were also often mentioned. Overall, responding firms reported on diverse and sometimes unexpected combinations of activities. On the other hand, hardly any VUT-member firm covered the entire range of production and marketing activities that accrue in the record industry. The vast majority concentrated on a few core activities. For these firms, it should be particularly important that there are suitable business partners in areas the firm does not conduct in-house.

The size of VUT-member firms

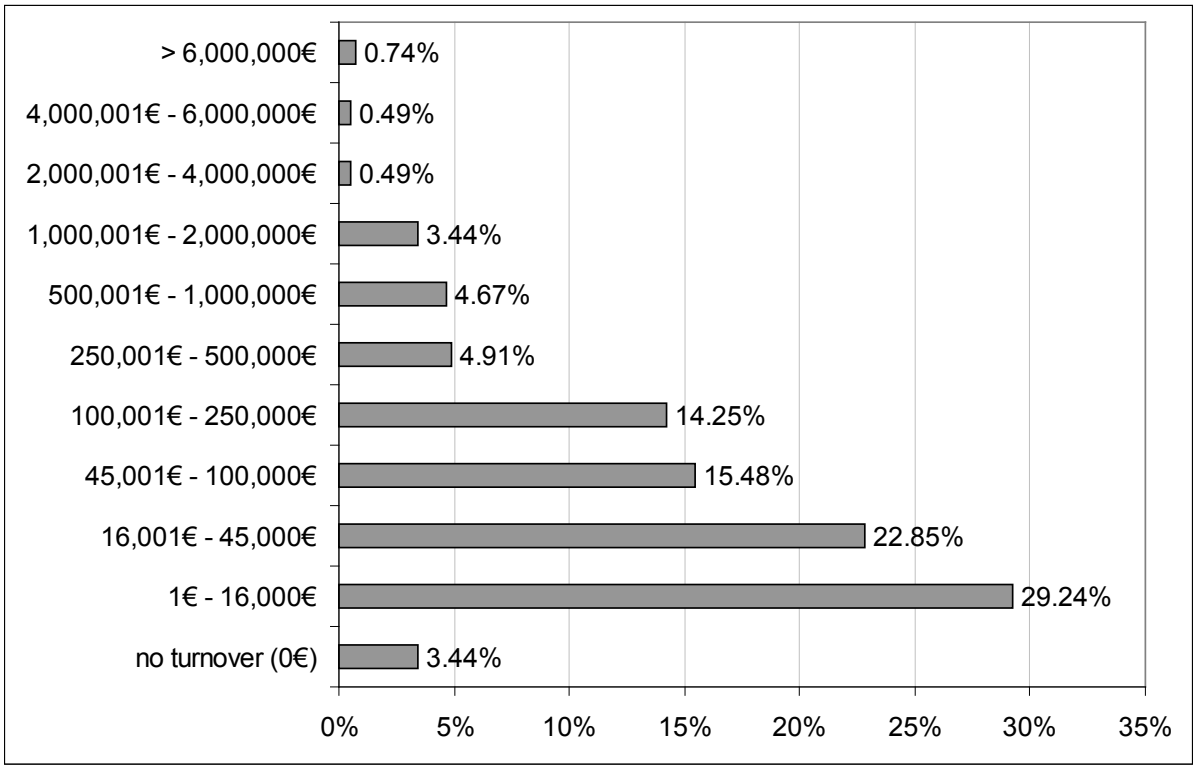
The VUT-survey covered two types of indicators of firm size, namely turnover and the number of staff. Regarding difficulties in previous surveys of similar firms and test-runs of early version of the questionnaire for the VUT-survey, the expectation was that many record companies would not be prepared to disclose precise turnover figures, let alone information on profits. Even worse, it seemed possible that such questions would compromise the response rate for the survey as a whole. Turnover figures of record companies are sensitive in the relationship with creators, since creators tend to receive only a small share in total revenues from the record business and a few successful creative projects tend to subsidise a majority of commercial flops. Turnover figures may also be precarious because of relatively frequent takeover bids for dynamic smaller record companies. Turnover was thus covered in a closed question, even though this limits the precision with which the accumulated turnover level can be estimated for the types of firms covered.[160] The number of staff seemed a less

[160] As it is, over 11% of firms did not reply to this question, which still makes it one of the least popular in the entire survey. Arguably, this illustrates the sensitivity of the topic covered and supports the assumption that an open question asking for a precise figure would have been problematic.

sensitive indicator of firm size and it was addressed in two open questions concerning the number of individuals in firms' staff and the number of positions in full-time equivalents.

Figure 9.3 and table 9.3 show the distribution of VUT-member firms according to their turnover. In 2004, micro-enterprises with less than €45,000 turnover accounted for more than half (56%) of all VUT-member firms.[161] Firms with revenues below €16,000 are certain not to feature in tax statistics and would not appear in official statistics, since this is threshold level of profits at which taxation of enterprises sets in. Another 30% had had revenues between €45,001 and 250,000 and 9% of up to €1,000,000. Just over 5% of VUT-member firms had achieved a turnover of more than €1,000,000 in 2004.[162] Since size was measured as an ordinal scale with the higher response categories covering a very large range, the small number of extreme values at the upper end of the scale should not seriously distort statistical analyses of this data.

Figure 9.3: Turnover of VUT member firms in 2004

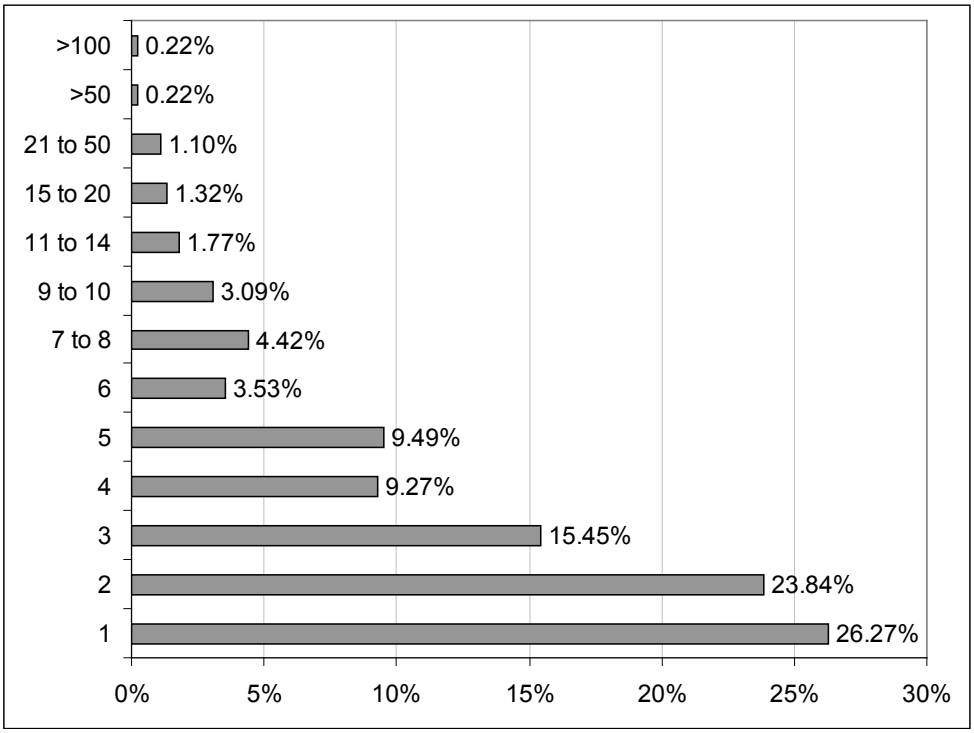


Valid n=407

[161] The category boundary of €45,000 was chosen deliberately to avoid a possible distortion. Firms may have an incentive to understate their turnover-levels in order to be eligible for the reduced VUT-membership fee for firms with an annual turnover below €50,000. (Of course, responses were treated confidentially and not used for the purpose of checking for unjustified fee reductions in practice.) The response category between 45,001 and €100,000 should allow firms with a turnover just above €50,000 to report unbiased results.

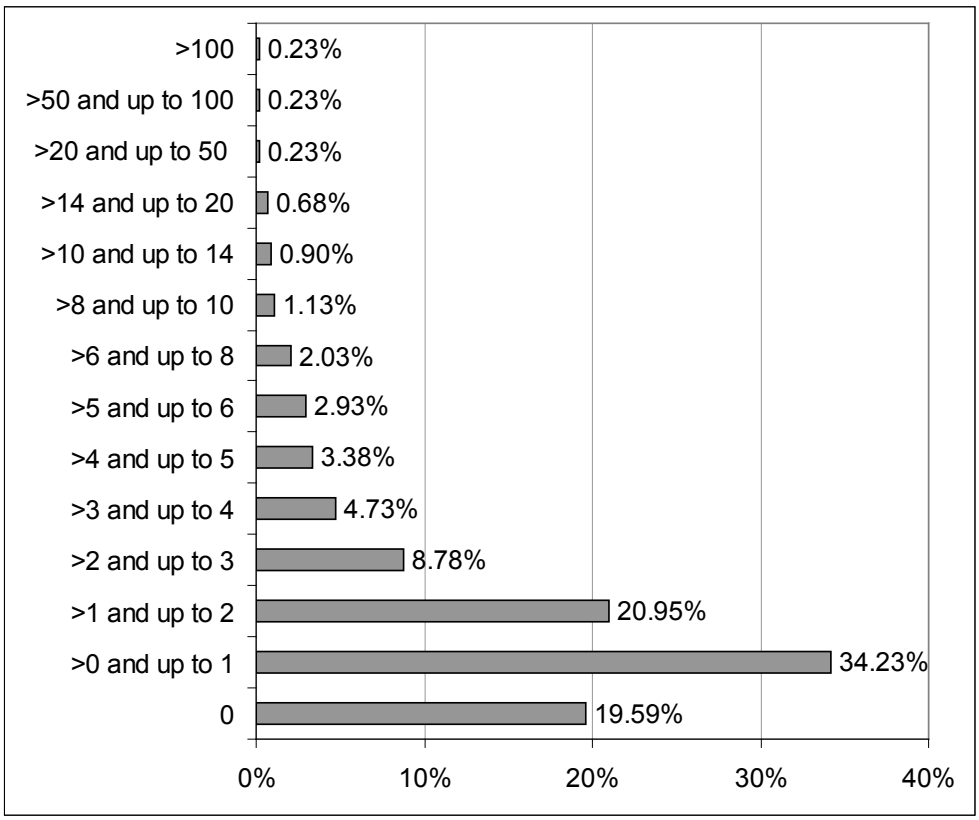
[162] The expectation had been that no firm would have a turnover of more than €6,000,000, which turned out to be false. This results in a downward bias for the estimation of accumulated turnover for VUT-members, since the largest firms are calculated to have a turnover of €6,000,000 only.

Figure 9.4: The number of individuals in the staff of VUT member firms in 2004 (annual average)



Valid n=454; min.=0 / max.=156; mean=4.12; standard deviation=8.71

Figure 9.5: Number of staff of VUT member firms in 2004 and in full time equivalents (annual average)



Valid n=444; min.=.00 / max.=134.00; mean=2.41; standard deviation=7.16

Figure 9.4 and table 9.4 exhibit results on the number of staff in terms of individuals. Respondents were instructed to include themselves and part-time employees, while excluding external service providers and in particular creators under temporary contracts. In line with the content of the question, only whole numbers were accepted as responses. Nearly exactly half (50%) of the VUT-member firms had up to two members of staff on average during the year 2004. Another third of all VUT-member firms (34%) had between 3 and 5 members of staff. The staff of just over 9% consisted of 6 to 9 individuals. Ca. 6% of respondents reported their staff comprised of 10 individuals or more.[163]

Figure 9.5 and table 9.5 illustrate the results on employment with the same specifications as above but measured in full-time equivalents (fte). For this question, respondents could report fraction numbers. As is to be expected, the reported figures for fte are consistently lower than for the number of staff in terms of individuals. Nearly one in five firms reported on no paid position at all, which implies that the enterprise was entirely run by amateurs who receive virtually no direct pecuniary rewards for their contribution. More than half of all firms (55%) had some paid staff but no more than two fte. Another 17% reported on up to five fte and little more than 8% had more than that.[164]

That is, the vast majority of VUT-member firms are 'micro enterprises' with up to €2 million turnover and up to 9 members of staff or small enterprises with a turnover of up to €10 million and a staff of 10 to 49 individuals according Eurostat categorisation of small and medium sized companies (SME). According to the definition of the *Institut for Mittelstandsforschung* (2005), VUT-members are mainly small enterprises with less than €1 million in revenues and a staff of up to 9, or medium enterprises with 10 to 499 members of staff and up to €50 million in turnover. The degree of fragmentation into miniscule formal organisational units at this lower end of the record industry is extreme. It needs to be clear, however, that these organisational units tend to entertain numerous co-operations with other firms in the record industry in a complex and mutable network (see also chapter 5). Few small, independent record companies could conduct all production and marketing steps in-house and the record industry should provide ample scope to study untraded interdependencies. The precise nature of the interaction between different firms remains largely beyond the scope of this study, however.

[163] For this question, the small number of high responses could result in outlier problems for statistical analysis, even though the great number of overall responses should mitigate this issue. (Throughout the survey, a very small number of cases were removed as not credible or erroneous, when very high responses for some topics related to firm size coincided with low values reported on other indicators.) In order to control for an effect of outliers on results, all tests and correlations run on the basis of numerical scales were also run without firms that reported extreme values – in the case of the number of staff more than 30 employees. The results calculated in this manner did not deviate substantially from results for all respondents so that problems with outliers do not seem to matter in practice for this data.

[164] For the treatment of outliers see the previous footnote.

The sub-sample of specialised record companies

On some topics particular to record companies, only those VUT member firms are included into the analysis that report that their record company division has had a substantial share (>20%) in their overall turnover. This seemed necessary where very specific aspects of the activities of record companies were addressed, to avoid distortions from firms with only a negligible stake in the relevant activities.

The reported characteristics of the sub-sample of 'specialised record companies' are illustrated in tables 9.6 to 9.11. Results for this sub-sample were quite similar to the entire sample of VUT-member firms in terms of firm size and age. There are two main differences. First, the sub-sample exhibits much lower maximum values on the size and age of firms. Second, the mean number of individuals in the staff of firms is considerably lower (3.6 against 4.1) but there is no substantial difference for the number of staff in terms of full time equivalents.

Tables 9.1 to 9.5: Basic characteristic of the entire sample

Table 9.1: Years of foundation of VUT member firms active in the summer of 2005 [(a)]

	Frequency	Valid %	Cumulative %
2005 (before July)	26	4.9	100
2004	65	12.2	95.1
2003	43	8.1	82.9
2002	40	7.5	74.8
2001	48	9.0	67.3
2000	32	6.0	58.3
1999	41	7.7	52.3
1998	33	6.2	44.5
1997	30	5.6	38.3
1996	27	5.1	32.7
1995	23	4.3	27.6
1994	17	3.2	23.3
1993	15	2.8	20.1
1992	13	2.4	17.3
1991	8	1.5	14.8
1990	15	2.8	13.3
1989	7	1.3	10.5
1988	7	1.3	9.2
1987	8	1.5	7.9
1986	3	0.6	6.4
1985	4	0.8	5.8
before 1985	27	5.3	5.3
Valid N		532	
Minimum		1927	
Maximum		2005	
Mean		1997.45	
		(without four outliers 1997.84) [(b)]	
Std. Dev.		7.743	
		(without four outliers 6.182) [(b)]	

[(a)] Based on 585 member firms responding to the VUT survey; missing=53.
[(b)] Excluding four firms founded before 1970.

Table 9.2: The share in total VUT-members' turnover generated by various music-related activities – excluding non-responses [(a)]

	Record company / label		Publishing		Recording		Music Production		Distribution and Retailing		Others	
Share in turnover	Valid %	Cumula-tive %	Valid %	Cumula-tive %	Valid %	Cumula-tive %	Valid %	Cumula-tive %	Valid %	Cumula-tive %	Valid %	Cumula-tive %
0%	6.3	6.3	32.2	32.2	55.7	55.7	45.5	45.5	21.8	21.8	30.3	30.3
0.1-5%	8.2	14.5	16.3	48.5	7.0	62.8	11.1	56.7	14.0	35.8	14.1	44.4
5.1-10%	9.1	23.6	18.0	66.5	9.7	72.5	11.1	67.8	12.9	48.8	15.5	59.9
10.1-20%	11.1	34.7	9.3	75.7	8.7	81.2	13.1	80.9	15.2	63.9	8.8	68.7
20.1-30%	8.9	43.6	9.3	85.0	7.4	88.6	8.0	88.9	7.7	71.6	10.1	78.8
30.1-40%	7.2	50.8	4.9	89.9	4.4	93.0	2.9	91.7	4.4	76.0	4.4	83.2
40.1-50%	5.4	56.2	2.2	92.1	2.7	95.6	2.5	94.3	4.1	80.2	5.7	88.9
50.1-60%	6.5	62.7	1.4	93.5	2.0	97.7	2.5	96.8	1.9	82.1	3.0	91.9
60.1-70%	5.6	68.3	1.4	94.8	.3	98.0	.6	97.5	4.7	86.8	1.7	93.6
70.1-80%	6.3	74.6	.8	95.6	1.0	99.0	1.0	98.4	3.9	90.6	1.3	94.9
80.1-90%	8.0	82.6	1.1	96.7	.7	99.7	.3	98.7	5.2	95.9	2.0	97.0
90.1-99.9%	7.2	89.8	1.9	98.6	0	100.0	.6	99.4	1.7	97.5	1.3	98.3
100%	10.2	100	1.4	100.0	.3	55.7	.6	100.0	2.5	100.0	1.7	100.0
Absolutes												
Non-responses	23		121		186		170		117		187	
Valid N	461		363		298		314		367		297	

[(a)] Based on 585 member firms responding to this question VUT survey; missing=101.

Table 9.3: Turnover of VUT-member firms in 2004[(a)]

€	Valid %	Cumulative %
No Turnover / 0	3.44	3.44
1 – 16,000	29.24	32.68
16,001 – 45,000	22.85	55.53
45,001 – 100,000	15.48	71.01
100,001 – 250,000	14.25	85.26
250,001 – 500,000	4.91	90.17
500,001 – 1,000,000	4.67	94.84
1,000,001 – 2,000,000	3.44	98.28
2,000,001 – 4,000,000	.49	98.77
4,000,001 – 6,000,000	.49	99.26
> 6,000,000	.74	100
Valid N	407	

[(a)] Based on 585 member firms responding to the VUT survey; missing=127; no response=51.

Table 9.4: Number of staff of VUT member firms in 2004 – individuals including respondent (annual average) [(a)]

	Valid %	Cumulative %
> 100	0.2	100
> 50 and up to 100	0.2	99.8
> 20 and up to 50	1.1	99.6
> 14 and up to 20	1.4	98.5
> 10 and up to 14	1.7	97.1
> 8 and up to 10	3.1	95.4
> 6 and up to 8	4.4	92.3
> 5 and up to 6	3.8	87.9
> 4 and up to 5	9.3	84.1
> 3 and up to 4	9.7	74.8
> 2 and up to 3	15.2	65.1
> 1 and up to 2	24.5	49.9
> 0.5 and up to 1	22.5	25.4
> 0 and up to 0.5	0	2.9
0	2.9	2.9
Valid N	453	
Minimum	0	
Maximum	156	
Mean	4.117	
Std. Dev.	8.7146	

[(a)] Based on 585 member firms responding to the VUT survey; missing=132.

Table 9.5: Number of staff of VUT member firms in 2004 – full time equivalents (annual average) [(a)]

	Valid %	Cumulative %
> 100	0.2	100
> 50 and up to 100	0.3	99.8
> 20 and up to 50	0	99.5
> 14 and up to 20	0.6	99.5
> 10 and up to 14	1.2	98.9
> 8 and up to 10	1.1	97.7
> 6 and up to 8	2.0	96.6
> 5 and up to 6	3.0	94.6
> 4 and up to 5	3.1	91.6
> 3 and up to 4	4.5	88.5
> 2 and up to 3	8.8	84.0
> 1 and up to 2	20.8	75.2
> 0.5 and up to 1	32.3	54.4
> 0 and up to 0.5	2.5	22.1
0	19.6	19.6
Valid N	443	
Minimum	0.00	
Maximum	134.00	
Mean	2.412	
Std. Dev.	7.1706	

[(a)] Based on 585 member firms responding to the VUT survey; missing=142.

Tables 9.6 to 9.10: Basic characteristic of the sub-sample of 'specialised record companies'
(firms reporting a share of more than 20% of turnover generated by their record company division)

Table 9.6: The share in total VUT-members' turnover generated by various music-related activities - excluding non-responses [(a)]

	Record company / label		Publishing		Recording		Music Production		Distribution and Retailing		Others	
Share in turnover	Valid %	Cumula-tive %	Valid %	Cumula-tive %	Valid %	Cumula-tive %	Valid %	Cumula-tive %	Valid %	Cumula-tive %	Valid %	Cumula-tive %
0%	--	--	32.1	32.1	66.5	66.5	51.6	51.6	26.9	26.9	35.2	35.2
0.1-5%	--	--	15.8	47.9	7.1	73.5	11.3	62.9	13.9	40.9	13.7	48.9
5.1-10%	--	--	17.2	65.1	10.0	83.5	10.2	73.1	13.5	54.3	17.0	65.9
10.1-20%	--	--	10.7	75.8	8.2	91.8	13.4	86.6	19.2	73.6	7.1	73.1
20.1-30%	13.9	13.9	12.1	87.9	5.3	97.1	6.5	93.0	8.7	82.2	12.1	85.2
30.1-40%	11.2	25.2	7.9	95.8	.6	97.6	1.6	94.6	4.3	86.5	3.8	89.0
40.1-50%	8.5	33.7	1.9	97.7	1.8	99.4	2.7	97.3	4.8	91.3	6.6	95.6
50.1-60%	9.9	43.5	1.4	99.1	0	99.4	1.6	98.9	2.4	93.8	2.2	97.8
60.1-70%	8.8	52.4	0	99.1	0	99.4	.0	98.9	5.3	99.0	1.1	98.9
70.1-80%	8.8	61.2	.5	99.5	.6	100	.5	99.5	.5	99.5	1.1	100.0
80.1-90%	12.2	73.5	.5	100.0	0	100	.0	99.5	0	99.5	2.0	100.0
90.1-99.9%	11.2	84.7	0	100.0	0	100	0	99.5	0	99.5	1.3	100.0
100%	15.3	100.0	0	100.0	0	100	.5	100.0	.5	100.0	1.7	100.0
Absolutes												
Non-responses		--		79		124		108		86		112
Valid N		294		215		170		186		208		182

[(a)] Based on 294 member firms responding to this question in the VUT survey and reporting more than 20% for 'record company / label'.

Table 9.7: Years of foundation of VUT member firms active in the summer of 2005 [(a)]

	Frequency	Valid %	Cumulative %
2004	43	14.6	100.0
2003	24	8.2	85.4
2002	28	9.5	77.2
2001	28	9.5	67.7
2000	22	7.5	58.2
1999	24	8.2	50.7
1998	19	6.5	42.5
1997	18	6.1	36.1
1996	12	4.1	29.9
1995	12	4.1	25.9
1994	12	4.1	21.8
1993	9	3.1	17.7
1992	6	2.0	14.6
1991	4	1.4	12.6
1990	6	2.0	11.2
1989	2	0.7	9.2
1988	4	1.4	8.5
1987	4	1.4	7.1
1986	1	0.3	5.8
1985	4	1.4	5.4
before 1985	12	4.1	4.1
Valid N		294	
Minimum		1962	
Maximum		2004	
Mean		1997.84	
Std. Dev.		6.2378	

[(a)] Based on 294 member firms reporting more than 20% for 'record company / label' in 2004; missing=0.

Table 9.8: Turnover of VUT-member firms in 2004 [(a)]

€	Valid %	Cumulative %
No Turnover / 0	3.2	3.2
1 – 16,000	30.7	33.9
16,001 – 45,000	22.7	56.6
45,001 – 100,000	17.1	73.7
100,001 – 250,000	11.6	85.3
250,001 – 500,000	4.4	89.6
500,001 – 1,000,000	5.2	94.8
1,000,001 – 2,000,000	4.0	98.8
2,000,001 – 4,000,000	.4	99.2
4,000,001 – 6,000,000	0	99.2
> 6,000,000	.8	100.0
Valid N	251	

[(a)] Based on 294 member firms reporting more than 20% for 'record company / label'; missing=17; no response=26.

Table 9.9: Number of staff of VUT member firms in 2004 – full time equivalents (annual average) [a]

	Valid %	Cumulative %
> 100	0	100
> 50 and up to 100	0.5	100
> 20 and up to 50	0	99.5
> 14 and up to 20	0.5	99.5
> 10 and up to 14	1.4	99.1
> 8 and up to 10	2.4	97.6
> 6 and up to 8	1.4	95.3
> 5 and up to 6	1.9	93.8
> 4 and up to 5	3.3	91.9
> 3 and up to 4	3.3	88.6
> 2 and up to 3	9.0	85.3
> 1 and up to 2	19.0	76.3
> 0.5 and up to 1	33.2	57.3
> 0 and up to 0.5	4.3	24.2
0	19.9	19.9
Valid N	211	
Minimum	0.00	
Maximum	55.00	
Mean	2.228	
Std. Dev.	4.4358	

[a] Based on 294 member firms reporting more than 20% for 'record company / label'; missing=83.

Table 9.10: Number of staff of VUT member firms in 2004 – individuals including respondent (annual average) [a]

	Valid %	Cumulative %
> 100	0	100
> 50 and up to 100	0.4	100
> 20 and up to 50	0.4	99.6
> 14 and up to 20	1.5	99.3
> 10 and up to 14	2.6	97.8
> 8 and up to 10	2.8	95.3
> 6 and up to 8	1.8	92.4
> 5 and up to 6	3.6	90.6
> 4 and up to 5	11.6	87.0
> 3 and up to 4	9.7	75.5
> 2 and up to 3	13.4	65.7
> 1 and up to 2	25.6	52.3
> 0.5 and up to 1	23.1	26.7
> 0 and up to 0.5	0	0
0	3.6	3.6
Valid N	277	
Minimum	0	
Maximum	60	
Mean	3.664	
Std. Dev.	5.3042	

[a] Based on 294 member firms reporting more than 20% for 'record company / label'; missing=17.

Table 9.11: List of variables used in chapter 9

Concept	Variables	Operationalisation	Response Categories
Firm's activities in the record industry	Record company / label Publishing Distribution and Retailing Recording Music production Others	Share of activity in firm's total turnover. (Questions 11. a to f)	13 categories between '0%' (1) and '100%' (13)
Firm Size	Turnover	Turnover of firm (Question 23)	11 categories between '€0' (1) and 'more than €6,000,000' (11)
	No. of staff – individuals	Number of individuals working in the firm; *including* respondent, part-timers and unpaid workers; *excluding* musicians under record deals (Question 19)	Open question; only whole numbers accepted
	No. of staff – fte	Number of jobs in firm in full time equivalents; *including* respondent, part-timers and unpaid workers; *excluding* musicians under record deals (Question 21)	Open question; whole numbers and fraction numbers accepted
Year of foundation	=	= (Question 2)	Open question; only the whole numbers from 1800 to 2005 were accepted

10. ARE MANY OF THE NEW MARKET ENTRIES SUSTAINABLE?

So far, a growing number of small, independent record companies has been interpreted as an indication of changes in the business environment that shift competitiveness in favour of such firms. This short chapter deals with a main objection to this interpretation.

Some record industry insiders suggest that a high level of market entries could be a short-lived anomaly as staff made redundant by incumbent firms try to apply their industry-specific skills by founding new, smaller record companies. The argument is that a mere fragmentation of existing capacity might occur as generations of firms fail. It is imaginable that this process would show up in an increasing number of market entries if some laid-off staff start up new, smaller record companies (which may be similarly shaky).[165] In this interpretation, few smaller firms would turn out to be sustainable unless the causes of the recession in the market at large are mitigated. Until then, a growing number of firms would merely create a temporary illusion of resilience.

The VUT survey provides evidence that some new firms are actually created as spin-offs of older enterprises. The 91 responding VUT-member firms that had been founded in the years 2004 and 2005 were asked whether their enterprise had 'originated primarily as a spin-off from another firm that operated in the record industry' (see question 9 in the appendix).[166] Exactly 20% (18 out of 90 valid responses) confirmed this, which seems to be a high figure considering that this question may not capture start-ups founded by former staff of more than one firm from the record industry.

The issue whether fragmentation is best interpreted as a sign of creative destruction or as a temporary aberration in a process of plain destruction boils down to the question whether market entries represent viable, economically sustainable enterprises. This chapter discusses empirical evidence on the matter. The VUT survey included a range of questions that addressed the way small, independent record companies perceive: (1) the general state of their firm at the time of the survey; (2) changes in the state of their firm during the recession period; (3) the prospects of the firm in general; (4) expected future developments for their firm in more specific terms. Tables 10.1 to 10.4 document the results for each question in detail and table 10.5 presents a test whether any tendency in the means of responses is statistically significant.

It would be evidence for creative destruction if a large share of small, independent record companies would perceive the state of their enterprise in a positive manner in spite of the recession in the industry at large. If many responding firms reported problems, this would

[165] This is the view taken by some industry insiders with affiliations to major record companies. Many of those more directly involved with independent record companies frequently perceived there to be a boom of this part of the German record industry in spite of a challenging business environment.

[166] The German '*Abspaltung*' does not have the positive connotation that 'spin-off' may entail so that this question should cover involuntary secessions.

be more consistent with a process of plain destruction, perhaps even of the hypothetical type described above.

Furthermore, the assumption is that firm age is inversely related to flexibility and incentives to initiate radical innovation. This may be the case in particular for firms founded before and after the 'digital challenge' transpired around the year 1998. It would thus be consistent with a process of creative destruction if younger firms were to report more positive responses.

10.1 THE STATE OF VUT MEMBER FIRMS AT PRESENT

A question on the current, general state of the VUT-member firm initiated the survey, before other features of the survey should have biased responses. Attitudes were captured in a five-point scale emulating the German school grading system that will be well familiar to the vast majority of respondents.[167] The distribution of responses is illustrated in table 10.1. On average, respondents perceived the situation of their enterprise to be satisfactory, an intermediate value. With nearly 35%, more firms reported the two positive values than the two negative, which were reported by just over 29%. The mean value is exactly 3.00 so that there is no statistically significant tendency in responses (see table 10.5).

10.2 CHANGES DURING THE RECESSION PERIOD

Two further questions asked for the change in the firms' general state – see table 10.2. Firms that had been founded before 1998 were asked to report changes between 1998 and the time of the survey, the summer of 2005. Firms founded since 1998 were asked to report on changes in comparison to the first full calendar of operation (that is the year of foundation plus one). Results on both these questions were similar in one respect: responses were polarised with relatively few firms reporting the neutral value that implies no change. Results did differ in one important respect: firms that had operated before the current period of recession were less likely to report on a positive change in the state of their enterprise than younger firms.

Among older firms that had operated before the recession period, nearly 44% report on an improvement in their enterprises state since 1998 and nearly 47% report on negative changes. The mean value for this question is 3.10, which is not significantly different from the neutral value. In the case of younger firms, nearly 62% consider their enterprises' state to have improved, while 28% report deterioration. The mean is at 2.54, which significantly lower – i.e. more positive – than the neutral value at the .001 level. The difference in mean

[167] The data is treated as a continuous variable analogous to what is common practice for data produced in Likert scales.

responses for older and younger firms is also significantly different at the .001 level; see table 10.6.

That is, on average younger firms reported on an improvement of their general state during the recession period covered. Older firms were more evenly split between firms that experienced a positive or a negative development during the recession period. This finding is consistent with a period of radical technological change in which younger firms with less sunk costs in traded technologies would be more competitive.[168]

10.3 EXPECTED FUTURE DEVELOPMENTS

Furthermore, a set of questions addressed the expectations regarding the future of all VUT-member enterprise reported on. Here, the majority of firms were optimistic.

A first question that tried to capture the expectations in a general sense is illustrated in table 10.3. In order to incorporate all possible responses about the future of firms, seven response categories were offered, only two of which were positive. The greater number of negative response categories may generate a bias towards negative responses (especially since a takeover of the firm is classified as a negative development for the purpose of this question). Nevertheless, nearly 60% of respondents reported they expected their enterprise to grow, while only 17% expected negative growth or a termination of the enterprise. To mitigate the aspect of the problem that relates to the calculation of the mean, the two categories 'will be taken over by another firm' and 'will be terminated' are collapsed into the category 'shrinks strongly'. Calculated as such, the mean response to this question is 2.50, which is significantly lower than the neutral value at the .001 level. Firms were more likely to report positive expectations.

More specific questions on expectations about the enterprises' future addressed prospective changes in turnover and employment for the next two years.[169] More than 56% of respondents expected increasing turnover against 13% who foresaw a decline; the mean for this question was 2.47. Nearly 38% predict that the number of individuals in staff will increase, while 6% expect to reduce the number of staff, with a mean of 2.67. Measured in full-time equivalents positions, 33% anticipated an expansion against 6% who foresaw a reduction of employment in their firm, the mean being 2.73. For all three questions, the mean values of responses are significantly lower from the neutral value at the .001 level of confidence. That is, expectations of positive growth prevail among VUT member for the

[168] An alternative explanation would be that record companies were generally more likely to improve their performance shortly after foundation. Furthermore, young firms are smaller on average (see section 9) and since the data discussed here is ordinal, it does not support a statistical specification of the extent to which firm age (i.e. little sunk costs in traded business models) or firm size (i.e. flexibility) have an effect on the perception of the general development of the firm during the recession period.

[169] For details on the measurement of employment and turnover as indicators of firm size, see Chapter 11.

foreseeable future and in the specific dimensions covered by these three questions.

10.4 REPORTS ON THE STATE OF RECORD COMPANIES AND BASIC FIRM CHARACTERISTICS

Finally, table 10.7 presents bivariate correlations between results on the firms' state and basic firm characteristics – firm age, firm size and the extent to which firms are specialised in the core activities of a record company. These correlations help to discern some systematic differences.

First, firm age correlates with more negative reports. For questions on the current state of the firm and the evaluation of the firm's development in the recent past, this correlation is not statistically significant. However, the younger a firm, the more likely it was that positive expectations about their future were reported, and these correlations are significant at the .001 level. This would be the expected result in a process of cost-reducing, radical technological change that renders young, flexible firms with few investments in traded infrastructure more competitive. Perhaps, founders of new record companies also nurture exaggerated expectations similar to young creators (see section 4.4).

Second, among the small, independent firms covered, indications of firm size – whether measured by the number of staff, fte or by turnover – frequently correlate significantly with a more positive perception of the current state of the firm and its development through the crisis. Concerning future prospects, the correlation with firm size is often weaker but of the same sign. Of course, past growth can be expected to positively affect the way a firms' state and prospects are perceived. In addition, this finding indicates that it is not mainly extremely small firms, say with just one full time position or less, who have performed well in the current business environment and who expect to do so in the future.

Third, the extent to which a firm is specialised on the activities of a record company in a narrow sense – the commercialisation of exploitation rights in sound recordings owned by the firm – does not correlate significantly with the perception of the current state or the past development of the firm. An exception is the expected growth in the number of individual staff, where firms less specialised on these activities seem somewhat more optimistic. This effect is not supported by the three other measures of future prospects, however.

10.5 SUMMARY AND INTERPRETATIONS

Overall, these measures of the state of VUT-member firms document a predominantly positive mood among small, independent record companies. Considering that the survey was held during a severe recession, this is certainly a surprising result. At the time of the survey,

reports of massive cut-backs by the major record companies made the round. Major industry representatives campaigned heavily for public measures against unauthorised, digital copying that would otherwise cause the demise of the record industry. Reports on the state of small, independent record companies contrast with this account. It seems that many VUT members have found a sustainable mode of operation in spite of severe falls in accumulated sales in the German market for phonograms and high levels of unauthorised copying.

The main finding of chapter 8 was that the sheer number of small record companies has expanded rapidly during the current recession period. The findings presented in this chapter confirm that this development reflects a boom in this part of the record industry. The observations are inconsistent with the notion that a growing number of firms would be a temporary phenomenon in the context of a general demise of the industry. In other words, findings are consistent with a process of creative destruction rather than one of plain destruction.

To be sure, on the basis of the data presented here it is not possible to determine whether the high number of market entries documents the build-up of new capacity within the realm of small, independent record companies or just the fragmentation of incumbent 'indies'. The discussion of the market share of VUT member firms in the following chapter goes some way to address this issue.

Table 10.1: The perceived state of VUT-member firms in the summer of 2005

		Response categories						
	N	Very good (1)	Good (2)	Satisfactory (3)	Sufficient (4)	Insufficient (5)	Mean	Std. Deviation
State of the firm	497	5.84%	30.78%	32.19%	19.72%	11.47%	3.00	1.10

Table 10.2: Perceived changes in the state of VUT-member firms during the recession period up to the summer of 2005

		Response categories						
	N	Improved strongly (1)	Improved somewhat (2)	Neither improved nor deteriorated (3)	Deteriorated somewhat (4)	Deteriorated strongly (5)	Mean	Std. Deviation
Since 1998 (firms founded before 1998)	228	14.47%	29.39%	9.21%	25.44%	21.49%	3.10	1.41
Since year of foundation + 1 (firms founded since 1998)	198	23.23%	38.38%	10.61%	16.67%	11.11%	2.54	1.31

Table 10.3: Prospects of VUT-member firms up to the summer of 2005

		Response categories							
	N	Grows strongly (1)	Grows somewhat (2)	Stays the same (3)	Shrinks somewhat (4)	Shrinks strongly (5)	Will be taken over by another firm / Will be terminated (5)	Mean	Std. Deviation
Prospects	502	14.45%	46.02%	21.31%	10.96%	4.78%	2.39%	2.50	1.09

Table 10.4: Expected changes in VUT-member firms for the next two years up to the summer of 2005

		Response categories						
	N	Grows strongly (1)	Grows somewhat (2)	Stays the same (3)	Shrinks somewhat (4)	Shrinks strongly (5)	Mean	Std. Deviation
No. of staff – individuals	450	2.00%	37.78%	53.78%	4.22%	2.22%	2.67	.69
No. of staff – fte	443	1.81%	32.73%	58.69%	3.84%	2.93%	2.73	.70
Turnover	434	11.29%	48.62%	26.04%	9.91%	4.15%	2.47	.96

Table 10.5: One sample t-test for a deviation between the actual mean of responses and the neutral value

		Test Value = 3							
		Mean	Std. Deviation	t	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
								Lower	Upper
State of the firm		3.00	1.10	.041	496	.967	.002	-.09	.10
Change in state of the firm	Since 1998 [a]	3.10	1.41	1.081	227	.281	.101	-.08	.28
	Since year of foundation + 1 [b]	2.54	1.31	-4.929	197	.000	-.460	-.64	-.28
Prospects		2.50	1.09	-10.217	501	.000	-.498	-.59	-.40
Expected changes for next two years	No. of staff – individuals	2.67	.69	-10.135	449	.000	-.331	-.40	-.27
	No. of staff – fte	2.73	.70	-8.047	442	.000	-.266	-.33	-.20
	Turnover	2.47	.96	-11.485	433	.000	-.530	-.62	-.44

[a] Firms founded before 1998.
[b] Firms founded since 1998.

Table 10.6: One Sample t-test for a deviation between the mean of 'Change in the state of the firm' as reported by firms founded before 1998 and since 1998

	Test Value = 2.54 (mean result for firms founded since 1998)					
	t	Df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
Development since 1998 (firms founded before 1998)	6.011	227	.000	.561	.38	.74

Table 10.7: Bivariate correlations of measures of the perceived current state, recent development and future prospects of VUT-member firms with basic firm characteristics (Spearman's rho)

			State of firm	Change in state of the firm		Prospects	Expected changes for next two years		
				Since 1998 [a]	Since year of foundation + 1 [b]		No. of staff – individuals	No. of staff – fte	Turnover
Age of firm (2005 – year of foundation)		Corr. Coeff.	.062	.118	.059	.304(**)	.248(**)	.258(**)	.343(**)
		Sig. (2-tailed)	.167	.076	.408	.000	.000	.000	.000
		N	497	228	198	502	450	443	434
Firm Size	No. of staff – fte	Corr. Coeff.	-.145(**)	-.133	-.165(*)	-.118(*)	-.115(*)	-.109(*)	-.092
		Sig. (2-tailed)	.003	.056	.030	.015	.018	.026	.067
		N	422	207	172	426	418	415	397
	No. of staff – individuals	Corr. Coeff.	-.177(**)	-.253(**)	-.271(**)	-.154(**)	-.119(*)	-.156(**)	-.087
		Sig. (2-tailed)	.000	.000	.000	.001	.014	.001	.079
		N	430	210	175	435	426	422	407
	Turnover	Corr. Coeff.	-.270(**)	-.276(**)	-.281(**)	-.085	-.101	-.112(*)	-.084
		Sig. (2-tailed)	.000	.000	.000	.121	.068	.042	.130
		N	333	190	154	332	329	328	326
Share of activities as record company in total turnover of firm		Corr. Coeff.	.067	.078	.030	.044	.119(*)	.056	.035
		Sig. (2-tailed)	.152	.247	.683	.349	.014	.247	.479
		N	457	220	191	462	428	423	412

[a] Firms founded before 1998.
[b] Firms founded after 1997.
** Correlation is significant at the .01 level.
* Correlation is significant at the .05 level.

Table 10.8: Variables used in chapter 10

Concept	Variables	Operationalisation	Response Categories (Code)
State of the firm in general	State of firm	Perceived state of the firm in general at time of survey (Question 1)	Five-point Likert scale; between 'very good' (1) and 'insufficient' (5)
Changes in the state of the firm over recession period	… – Since 1998	Changes in state of the firm between 1998 and time of the survey; firms founded before 1998 (Questions 6. i)	Five-point Likert scale; between 'improved strongly' (1) and 'deteriorated strongly' (5)
	… – Since year of foundation+1	Changes in state of the firm first full calendar year of operation and time of the survey: firms founded after 1997 (Questions 6. ii to iix.)	=
Prospects of the firm in general	Prospects	Expectations about the future of the firm in general at time of survey (Question 3)	☐ grows strongly (1) ☐ grows somewhat (2) ☐ stays the same (3) ☐ shrinks somewhat (4) ☐ shrinks strongly (5) ☐ will be taken over by another firm (5) ☐ will be terminated (5)
Expected changes for the next two years	… – No. of staff, individuals	Expected changes in the number of individuals working in the firm during the next two years (Question 20)	Five-point Likert scale; between 'improved strongly' (1) and 'deteriorated strongly' (5)
	… – No. of staff, fte	Expected changes in the number of staff in the firm during the next two years, full-time equivalents (Question 22)	=
	… – Turnover	Expected changes in firm's turnover during the next two years (Question 24)	=
Firm Age	=	Year of firm foundation subtracted from 2005 (Question 2)	Open question; only the whole numbers from 1800 to 2005 were accepted

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Concept	Variables	Operationalisation	Response Categories (Code)
Firm's activities in the record industry	a) Record company / label b) Publishing c) Distribution and/or Retailing d) Recording studio, sound engineering and related equipment e) Music production f) Others	Share of activity in firm's total turnover. (Questions 11. a to f)	13 categories between '0%' (1) and '100%' (13)
Firm Size	Turnover	Turnover of firm (Question 23)	11 categories between '€0' (1) and 'more than €6,000,000' (11)
	No. of staff – individuals	Number of individuals working in the firm; *including* respondent, part-timers and unpaid workers; *excluding* musicians under record deals (Question 19)	Open question; only whole numbers accepted
	No. of staff – fte	Number of jobs in firm in full time equivalents; *including* respondent, part-timers and unpaid workers; *excluding* musicians under record deals (Question 21)	Open question; whole numbers and fraction numbers accepted

11. DOES THE BOOM AMONG SMALL, INDEPENDENT RECORD COMPANIES MATTER IN THE BIGGER PICTURE? THE MARKET SHARE OF INDIES

Chapters 8 and 10 provide evidence for resilience among small, independent record companies during the current recession in the record industry at large. Such observations raise the question to what extent this boom matters in the bigger picture of the record industry as a whole. Does it reflect substantial changes in the industry or is it just a storm in a teacup? This question concerns the market share of 'indies' and the purpose of this section is to estimate the market share of small, independent record companies that are VUT-members.

BV Phono statistics provide a first indication of developments in the market share of smaller, independent record companies. In the BV Phono, the major record companies play a predominant role. This industry lead-body used to publish the turnover figures based on their members' reports separately from an estimate for the rest of the market. According to this data, the market share not captured in BV Phono statistics has increased consistently between the years 2000 and 2005 from 5.3% to 14.1% (BV Phono, 2005). BV Phono does not provide separate turnover figures after 2005. According to BV Phono management, the main sources of this data are the majors' distribution divisions who also deal with a great number of titles released by independent record companies. These figures are thus likely to underestimate the market share of 'indies'; they do provide some indication, however, that the market share of smaller record companies has expanded considerably during much of the recession period.

In the academic literature, the market split between majors and indies has often been gauged by analysing charts (say the US Billboard top 100). However, charts never captured the lower end of the market or sales of the back-catalogue. Today, charts have lost some of their use for comparing the market share of majors and independent firms because they reflect a much smaller share of overall sales as music sales diversified and sales of the back-catalogue have become more important. In the VUT-survey, only 17.70% of the responding firms reported they had ever commissioned Media Control (the enterprise that assembles the German charts) to monitor the sales of one of their releases. That said, the top five firms alone accounted for over 92% of all titles listed in the German album charts in 2007 (Scholz, 2008), which is not a valid indicator of the overall market share of 'indies'.

This chapter will draw on results of the VUT survey as another indicator of the market share of 'indies' in the German record industry. Extrapolations of VUT survey results are used to estimate the accumulated economic size of the VUT-members. These figures are then compared to estimates of the overall size of the industry in order to develop a crude indication of the market share of the small, independent firms surveyed.

See table 11.1 for an overview of key figures on employment and turnover of VUT-member firms. While data on accumulated record industry turnover (or revenues) is readily available, data on costs and thus on value added or profits is not. Without information on the costs of inputs, turnover figures are of limited value to establish a firms' size. They are

complemented by employment figures. Especially when denominated in full-time equivalents (fte), figures on employment should provide a relatively accurate indication of firm size.

Table 11.1: Key figures on the accumulated economic size of VUT-members [(a)]

Number of staff (paid fte)	2,180
Number of staff (individuals)	3,800
Turnover (€ million)	216

[(a)] Extrapolated to 925 members at the end of 2004.

In addition to employment and turnover figures, this section also addresses measures of output. It turns out that the market share of VUT-members diverges considerably according to different measures used. Table 11.4 at the end of this chapter provides a summary and compares results for small, independent record companies with figures for the market at large.

For a number of reasons, there are considerable problems with any comparison between results of the VUT survey and the available figures on the German market as a whole. A few of these problems are the following.

First, the VUT does not capture all record companies that operate independently of the majors. A number of independent firms are only members of IFPI Germany. The average size of these firms should be larger than that of the VUT-members (see chapter 8). Thus, the comparisons do not establish the market share of 'indies' versus 'majors' but of the smaller independent firms in the VUT that have increased in number during the recession and the rest of the industry.

Second, there are substantial problems with the comparability of data.[170] The BV Phono publishes the most widely used figures for the German market for sound recordings in conjunction with the IFPI Germany. The underlying methods are not documented in detail. BV Phono staff was not in a position to disclose detailed documentation to this author, since much of the data is proprietary and bought by record industry lead-bodies from market research firms.

Specific problems in the comparison between VUT survey results and BV Phono data are discussed below. Estimates of the market shares of VUT members developed in this chapter are no more than educated guesswork. Nevertheless, they constitute an improvement in comparison to the prior state of information on the market share of 'indies'.

Two points come out clearly in this chapter. First, the market share of small, independent firms is large enough to take the boom among small, independent record

[170] Official statistics are particularly problematic. For several reasons, they were not drawn on for comparisons with VUT data. On the one hand, the categorisation of activities in official (tax based) statistics do not make it possible to capture record companies separately and comprehensively. On the other, official statistics group firms strictly into one category according to one predominant activity. This may lead to substantial fluctuations and seems to be particularly problematic since record companies tend to conduct several activities simultaneously. Furthermore, micro-enterprises make up a large share of record companies and they often fall below the threshold level for taxation and are thus not covered in official statistics at all. For an overview of data on the German music sector based on official statistics see Söndermann (2004).

companies seriously especially where measures of content output are concerned. Second, the market share of 'indies' is still too modest to support ambitious claims about an imminent demise of current market leaders in the context of radical technological change.

11.1 THE MARKET SHARE OF VUT-MEMBERS

Employment

Over the year 2004, the average for VUT member firms' accumulated number of staff (excluding creators under temporary contracts) was at ca. 3,800 individuals, extrapolated from the figures reported by 453 member firms to 925 member firms at the end of 2004. The value in full time equivalents as determined in a separate question was at ca. 2,180.[171] The difference between the value of individual members of staff and full-time equivalents illustrates that part-time work – perhaps complemented by unpaid contributions through internships or similar arrangements – is widespread in the surveyed firms.

An additional set of question addressed employment figures for previous years, which provides some evidence of changes during the recession period. Altogether, 840 enterprises joined the VUT between 1998 and 2004, while 260 firms resigned. The number of member firms has increased more than 2.5 times from 345 in 1997 to 925 at the end of 2004. For the firms responding to the VUT survey in 2005, which had operated before the recession, the number of individual staff has expanded by more than 17% from an extrapolated 1,550 positions to 1,800. Measured in fte, the number of positions rose by 9% from 1,150 to 1,250 during the same period. At the same time, member firms that have been founded after 1998 – that is during the recession – account for 2,000 new positions or 950 fte.

Because the VUT survey can only capture current members, its results cannot be used to gauge the losses in terms of employment due to the exit and possible demise of 260 former members between 1998 and 2004. That is, the net development during the recession cannot be determined with any certainty, even though the number of individual organisations has grown rapidly for much of the period covered. What can be said is that within the segment of the record industry covered, there is ample evidence for positive developments among many firms. On the one hand, the older firms that do still operate have extended employment. What is more, during the recession employment in newly founded record companies grew so rapidly that by 2004, a very large share of jobs in small, independent record companies was in young firms that were founded during the recession.

For the market as a whole, the BV Phono (2005) calculates that the German record industry had 9,800 staff, excluding distributors/wholesalers and retailers. This value is hard to

[171] As for all the following extrapolations, a very small number of high responses that did not coincide with corresponding reports on other indicators of firm size (in this case high turnover levels and the number of publications) were classified as invalid and not included into the extrapolations.

compare to results on the VUT-members for at least two reasons. First, BV Phono statistics do not distinguish between the number of staff in terms of individuals and in terms of fte. Second, it is hardly possible to exclude positions concerned with distribution and retailing from individual VUT-members. Instead, for the purpose of a comparison, the entire staff of VUT-member firms that make most of their revenues with distribution or retailing can be excluded. These firms accounted for 13% of individual staff and the 19% of fte. The corrected values for the purpose of comparison with BV Phono statistics would thus be 3,306 for individual staff and 1,766 for fte.

With that, the share of VUT-members in employment throughout the German record industry would be between 18% and 34%, depending on whether the number of staff in terms of fte or of individuals is drawn on for the small, independent record companies. It seems probable that unpaid work and informal employment would be somewhat less common in larger firms. Accordingly, VUT-members should account for more than a fifth but considerably less than a third of employment in the German record industry.

Turnover

The accumulated turnover of 925 VUT-members at the end of the year 2004 can be estimated at €216 million. This figure needs to be understood as a rough approximation, though. It is an extrapolation on the basis of 407 valid responses and of closed question response categories (in contrast to the values on employment, where respondents could enter numerical values). To translate these responses into a single figure, the middle value for each the various response categories was multiplied with the number of responses. For three firms in the highest category of 'more than €6 million', this lower bound was calculated, which should create a modest downward bias.

The BV Phono (2005) estimates the total turnover in the German market for sound recordings in 2004 (including downloads) at €1.754 billion. At face value, this implies that VUT-members account for just over 12% of total revenues. That value is roughly congruent with the 10.5% market share that the BV Phono estimates for suppliers that are not directly covered in their statistics in 2004, say because this part of the market does not go through the large distributors that report to BV Phono.

However, any comparison of VUT survey results on turnover with BV Phono statistics is particularly questionable. On the one hand, many firms in the record industry operate in other parts of the music industry so that it is very hard to establish how much of their turnover should count towards the record industry. It is unclear whether the BV Phono statistic sums up the score for any of its members or how it discounts for multi-service firms. What is more, BV Phono statistics report retail prices including VAT (16% in 2004), whereas the VUT survey largely captured record companies' revenues. In this way, the margins of distributors and retailers are included by the BV Phono statistics, which are not captured to the same extent by VUT-survey results. Distribution is the most concentrated aspect of the record

industry, and particularly much of this function is run by the four majors that conduct this type of services also for many smaller firms. In addition, few record companies run much of retailing in-house and the margins for retailers alone account for around a quarter of end-consumer prices. In short, the market share of VUT members is very hard to specify on the basis of the available data and the estimate reported here come with an especially strong note of caution.

Output

Comparisons of output are less problematic. One straightforward set of measures of record companies' output is the number of different sound-recordings / titles that they market in a given year. On the one hand, the number of different titles indicates the VUT-member firms' contribution to the variety of supply. On the other, unit sales provide a reasonable estimate of the market value of publications, since retail prices in the primary market for sound recordings are relatively homogenous.[172]

A set of questions dealt with the catalogue of sound recordings published and marketed by VUT-member firms. These questions only addressed the majority of VUT-member firms who reported to have been active as record companies in 2004. Table 11.2 presents the results extrapolated to 826 record companies. These are conservative estimates, since firms who did not mark a response to the question on revenues as a record company are assumed to have had no publications. To avoid double-counting of the same content, respondents were instructed to report only those sound recordings where the firm was the primary right holder. In this way, publications involving several VUT-member firms (say one as record company and one as publisher or several record companies entertaining license agreements) should only be counted once.

In 2004, VUT-members released around 8,000 new titles on physical sound carriers, of which 4,800 were long-plays with a playing time of over 25 minutes. This amounts to 43% of the 18,445 new releases that the BV Phono estimates for the market at large.[173] The overall supply of different titles marketed by VUT-members in 2004 – that is new publications and older publications from the so-called back catalogue – amounted to 32,700. This comprises 21,800 long-plays and 10,900 shorter recordings. In comparison to the total catalogue of titles supplied according to BV Phono, the VUT-members market share would thus be around 39% (but just 27% in terms of long-plays). In addition, VUT-members made nearly 60,000

[172] It is possible that smaller record companies receive a more modest share of the retail prices, since they cannot exploit economies of scale and negotiate as favourable conditions as firms marketing a very large and valuable repertoire.

[173] According to the organisation's executive management, BV Phono figures on the catalogue of sound recordings marketed in Germany are the result of surveys among distributors. Since these usually deal with publications by other firms, including smaller 'indies', it is not possible to determine with any certainty how many of the releases by VUT-members are covered in the BV Phono statistics. The BV Phono's Annual Report (2005) states: "the complete number [of new releases] is estimated to be twice as high, since some suppliers of phonograms do not partake in the statistics and imports are not accounted for".

recordings publicly available as downloads or streams in 2004. The bulk of these were single tracks but bundles were common, too.

Table 11.2: The number of publications in 2004 by VUT-members that operate as record companies [(a) (b)]

	Physical sound carriers		Internet downloads
	New titles	Overall supply	
Long-play (playing time > 25 min.)	4,800	21,800	5,100
EP / Single / bundle (playing time < 25 min.)	3,200	10,900	5,400
Single tracks	--	--	49,000
Total	8,000	32,700	59,500

[(a)] Valid N between 214 and 259.
[(b)] Values extrapolated to 826 members in 2004 that had reported revenues as record companies in 2004.

Table 11.3: Unit sales of VUT-members in 2004 that operate as record companies [(a) (b)]

	Physical sound carriers	Digital (Streams, downloads or ringtones)
Long-play (playing time > 25 min.)	30.70 million	57,100
EP / Single / bundle (playing time < 25 min.)	8.85 million	84,600
Single tracks	--	340,000
Total	39.55 million	481,700

[(a)] Valid N between 170 and 201.
[(b)] Values extrapolated to 826 members in 2004 that had reported revenues as record companies in 2004.

Unit sales of physical sound carriers by VUT-members in 2004 can be estimated at 39.55 million, of which 30.70 million were long-plays. Compared with BV Phono figures on the market at large, VUT members would account for 19% of long-play unit sales and for 38% for shorter recordings. Note however that VUT figures include exports, which BV Phono estimates do not. The result should be an upward bias in this estimate VUT-members' market share. This may be mitigated somewhat by another consideration. Major record companies probably run a greater share of their business in Germany on international repertoire produced abroad – say publications by US-based international superstars. That is relatively more of the majors' domestic unit sales will be due to sales of imported content and majors export relatively little content from Germany.

Finally, in the case of 'digital' unit sales – downloads and streams delivered via the Internet or mobile telephony networks – VUT-members sold 340,000 single tracks and 141,700 bundles of tracks in 2004. According to this result, there is a great discrepancy between VUT-members market share in terms of single tracks (around 5%) and in terms of

bundles (35%). In 2004, iTunes was setting up business in Germany, striking an agreement with all majors to include their repertoire. At the time, smaller firms were complaining about difficulties to get their repertoire included into iTunes.

11.2 SUMMARY AND INTERPRETATION

Table 11.4 provides an overview of the accumulated size of VUT-members, the size of the entire German market and likely market share as implied by comparing these two figures. A first point of interest is that the market share of VUT-member firms varies substantially according to different indicators.

Table 11.4: A rough estimation of VUT-members' market share in 2004

			VUT-members	Total market (BV Phono, 2005)	Estimated share of VUT members
Turnover			€216 million	€1,754 million	12% [a]
Employment (excluding musicians)			3,800 individuals 2,180 fte	9,800 [b]	18-34% [c]
Physical sound carriers	New titles		8,000	18,445	43%
	Overall supply		32,700	84,799	39%
	Unit sales	Long-play:	30.70 million	159.80 million [d]	19% [e]
		EP/Singles:	8.85 million	23.30 million [f]	38% [e]
Internet downloads	Sum of titles		51,700	--	--
	of which single tracks		43,600	--	--
'Digital' unit sales	Single tracks:		340,000 [g]	7,500,000 [h]	5%
	Bundles:		141,700 [g]	400,000 [h]	35%

[a] BV Phono estimates are at retail prices, while data on VUT-members concern record company revenues.
[b] Excluding distributors and retailers.
[c] Presented as a range since the IFPI does not specify fte; in this estimate, an approximated share of employment in distribution and retailing were deducted from VUT figures.
[d] Excluding DVDs and VHS.
[e] VUT figures do include exports, which BV Phono estimates do not. Major record companies reporting to BV Phono probably run a greater share of their business in Germany on repertoire produced abroad.
[f] BV Phono scores are denominated as 'Singles' only.
[g] Via the Internet and mobile telephony networks.
[h] Figures for 'mobile' are not available.

The VUT-members' market share in terms of turnover appears modest in comparison to the results for other indicators. For instance, it is considerably higher in terms of employment. This is an intuitive result since larger market participants (in particular the majors who operate as multinational enterprises) tend to run a larger share of content creation in other countries (say the USA as the main net exporter of media content) than smaller independent firms based in Germany do. Enterprises that run labour intensive stages of production abroad are likely to generate a relatively high turnover in relation to the size of their staff.

The market share of VUT-members seems larger still in terms of the sheer number of new publications and the overall repertoire marketed. This is also an intuitive result because larger firms invest relatively large amounts in the production and, in particular, in the marketing of sound recordings by well-established superstars.

VUT-members' market share for unit sales lies between their market share as estimated on the basis of turnover and the size of the repertoire. Again, this seems intuitive. On the one hand, smaller record companies are likely to sell less units per recording. According to the estimates for the year 2004 presented above, VUT members sold on average around 1,210 physical copies of every title marketed. The average number of physical copies sold according to BV Phono estimates in the market at large is around 2,160. On the other, smaller firms are likely to obtain less of the market value from sales of recordings to which they control the exploitation rights. They will tend to conduct fewer stages of production and marketing in-house and they may not be able to negotiate the same conditions from business partners as those for rights holders of larger repertoires.

Finally, so-called 'digital' sales remained very modest in 2004. They made up only 1.6% of unit sales for VUT-members and even these were mostly single tracks. Small firms seem to have trailed in the development of 'digital' sales at the time studied, as suggested by a market share of just 5% in 2004 in terms of single tracks, which are much more important than 'bundles' (say entire albums) in this market segment. That implies that the emergence of new, digital retail outlets cannot provide an explanation for the boom of small, independent record companies in the period studied.

Altogether, it is hardly possible to develop a reasonably accurate estimation of the market share of 'indies' in the German market for sound recordings. Evaluations of official tax statistics as begun by Söndermann (2004; 2008) may provide a valuable complement in the future.

Concerning the question whether the boom among 'indies' as illustrated in the previous chapter matters in the bigger picture, the findings presented in this chapter are ambiguous. On the one hand, the small, independent firms covered in the VUT-survey account for a minor part of the market in terms of turnover. On the other, VUT-members seem to have a much greater market share in terms of employment and the repertoire supplied.

Drawing parallels to previous periods of radical technological change in the record industry, it has been predicted that the diffusion of digital ICT and in particular the emergence

of digital channels of distribution will be associated with far-reaching changes to the industry structure; in particular, this concerns the demise of the current majors as innovative smaller firms extend their market share (e.g. Alexander, 1994; Tschmuck, 2003). The empirical evidence presented here does not support such ambitious predictions. A boom among ‚indies' that coincides with falling sales of market leaders is consistent with a process of creative destruction. However, this phenomenon is not at a scale that would constitute an immediate challenge to the predominant position of the major firms by itself.

The impression is that the industry hierarchy shows signs of destabilisation but that it is too early to tell with any confidence whether a revolutionary change in the record industry's structure – similar to those in the 1920s and 1950s – will take place. As a rule, public innovation policy is most effective in such an unstable state where a new equilibrium (if we want to call it that) has not yet taken shape and it will be argued below that copyright policy may be a case in point. The most interesting question is arguably whether under current arrangements, the copyright system is conducive to a rapid and comprehensive exploitation of new technologies' potential to increase the efficiency of cultural industries such as the record industry.

Table 11.5: Variables used in chapter 11 [(a)]

Concepts		Variable	Question
Number of titles supplied	New publications on physical sound carriers	Long-play (playing time > 25 min.)	26.a
		EP / Single / bundle (playing time < 25 min.)	26.b
	Sum of all titles marketed on physical sound carriers	Long-play (playing time > 25 min.)	29.a
		EP / Single / bundle (playing time < 25 min.)	29.b
	Recordings made available online	Long-play (playing time > 25 min.)	31.a
		EP / Single / bundle (playing time < 25 min.)	31.b
		Single tracks	31.c
Unit sales	Physical sound carriers	Long-play (playing time > 25 min.)	32.a
		EP / Single / bundle (playing time < 25 min.)	32.b
	Streams, downloads or ringtones	Long-play (playing time > 25 min.)	34.a
		EP / Single / bundle (playing time < 25 min.)	34.b
		Single tracks	34.c
Turnover			23
Employment excluding musicians		Individuals	19
		Fte	21

[(a)] Detailed documentation of variables reported by BV Phono (2005) is not available.

12. INNOVATION IN THE RECORD INDUSTRY DURING THE RECESSION PERIOD

A boom among small, independent record companies in the recession period provides some indication of creative destruction. As discussed in chapter 6, there are two further, definitive aspects of a process of creative destruction. First, the industry exhibits high innovation intensity, which would be inconsistent with a process of plain destruction. Second, assuming that innovative capacities differ, a process of creative destruction implies that more innovative suppliers are more competitive.

This chapter sets out to measure innovation among small, independent record companies in order to validate these two statements. It assesses innovation intensity and its consequences. The specifics of the intra-firm organisation of innovation processes, inter-firm co-operations or user-producer interaction are only touched upon. With market entries and other changes to the industry structure, organisational changes are addressed in other sections.

'Innovation' and firms' 'success' are multifarious concepts. In order to arrive at a reasonably rounded assessment, a number of indicators for both concepts are addressed. For each innovation indicator, evidence is presented that bears on the two hypotheses formulated above. Depending on the quality of data available, the investigation varies between simple statistical analyses and the purely descriptive.

12.1 SURVEYS AND THE CONCEPT OF INNOVATION

Innovation is a complex and fragmented concept that largely escapes comprehensive direct measurement (Hansen, 2001). This section deals with theoretical and methodological considerations concerning innovation measurement in cultural industries. It also develops specific innovation indicators for the cultural industries.

Surveys are the main way of producing firm-level innovation data and to expand the scope of empirical analysis (Kleinknecht, 2000). The major European effort is the Community Innovation Survey (CIS) under the auspices of the EU and the OECD. Over the years, considerable efforts have gone into improving methods and survey designs through several runs of the CIS and surveys inspired by it. Quite specific guidelines for the design and execution of innovation surveys are available in the OECD's (1992; 1997) 'Oslo Manual'.

Innovation surveys provided evidence on a number of contentious issues. Results confirmed that technological innovation has a substantial effect on "the performance of firms in terms of profitability, productivity and employment generation" (OECD, 2001). Innovation is not restricted to high-tech manufacturing industries and separate, science-based R&D departments (OECD, 2001a). Within specific industries, much of the innovative output tends to come from a small proportion of firms and collaborations with other organisations are a

characteristic of particularly innovative firms (Smith, 2003). What is more, "innovation policies are concerned with large firms more than small ones", which may not always be efficient (OECD, 2001).

Broadening the concept of innovation to capture innovation in the cultural industries

The specialised academic literature usually defines innovation broadly as "new creations of economic significance of either a tangible or intangible nature" (Edquist, 1997:1) and the searching activities, the development and imitation that lead to the adoption of "new products, new production processes and new organisational set ups" (Dosi, 1988). In contrast to these broad definitions, innovation research has long focused on the manufacturing sector and 'technological' innovation. The focus was on research and development (R&D) in specialised departments, on new tangible artefacts and patents (e.g. Tether et al., 2001).

Work on technological innovation in this narrow sense does not fully capture aspects of innovation that are of particular importance in service aspects of production. In services, new creations of economic significance are frequently not technological but cover 'organisational changes', 'marketing related changes' (OECD, 2001b) or 'design and development' (Djellal et al., 2003). Innovation is also often of a 'composite nature' (Djellal et al., 2003), which raises the question how technical innovation and service innovation interrelate (OECD, 2001b; Hansen, 2001; van Ark et al., 2003).[174]

For the purpose of investigating innovation in cultural industries, technological definitions of innovation are problematic, too. Suppliers of reproducible cultural products deal in information services via technological systems that allow the recording, storage, transmission, copying, reproduction and manipulation of codifiable information (cf. Neumann-Braun, 2000). By definition, activities tend to span over tangible ICT hardware as well as intangible information services or 'media content'. The traditional record industry, for example, sells the elusive service of mainly musical performances on tangible sound carriers such as CDs or vinyl records. In this way, it stands with one leg in a high-tech manufacturing industry and with another in a peculiar sub-set of the service sector.

In the unique case of the cultural industries, it is particularly important to incorporate aesthetic changes in order to come to an adequate assessment of innovation as determinant of competitiveness. For suppliers of reproducible cultural industries, both aesthetic and technical innovation matters in order to sustain competitiveness. A supplier who would produce only traded creative genres (say Dixieland Jazz) and a supplier that makes only use of traded carrier-formats (say vinyl records) would soon fare similarly. The reluctance to adopt innovations on either of these levels would see conservative suppliers relegated to a niche

[174] A further problem is that in many service industries, products and processes are hard if not impossible to distinguish. In fact, when the second CIS expanded to cover selected service industries, the questionnaire addressed to service firms differed from that for manufacturing firms in two ways. First, there were no separate questions for process and product innovation. Second, service firms were not asked what the percentage of sales due to new products had been (Hansen, 2001).

market as preferences change. In the cultural industries, aesthetic innovation should be even more important than technical innovation most of the time, since demand for cultural content continuously waxes and wanes in fads and fashions, whereas media techniques tend to develop relatively stable standards.

In empirical research on innovation, aesthetic innovation is often deliberately ignored. The definition of innovation applied in the second CIS, conducted in 1996, illustrates this well. This survey addressed 'technological innovation' defined as "an objective improvement in the performance of a product or in the way in which it is produced or delivered". Alterations that only make the product "more attractive to the purchaser without changing their 'technological' characteristics" or changes to products' or processes' "aesthetic or subjective qualities" are explicitly excluded from the definition of innovation in CIS. There are some general difficulties with this definition. On the one hand, any distinction between 'objective' and 'subjective qualities' of products and processes is intellectually challenging. What is more, it seems unsatisfactory to ignore 'aesthetic or subjective' qualities when consumers spend a substantial share of their budgets on cultural products (not to mention the aesthetic value of many products such as cars, consumer electronics or clothes).

In the cultural sector, where the quality of products is largely aesthetic and subjective (e.g. Hirsch, 1972; Throsby, 2001), this problem is particularly pronounced. In the cultural industries, which supply reproducible cultural products that can be delivered as mass media content, a technology-centred approach would be certain to underestimate the overall scale and scope of innovation. It would only address for the means of delivery, not the symbolic content that accounts for most of the value of cultural products. Therefore, it is desirable to grasp 'humdrum innovation' that regards media technologies and the marketing of cultural products as well as the creation of new media content, or 'content creation'.

The distinction between 'content creation' and 'humdrum innovation'

What is more, in order to elaborate on any differences between 'content creation' and 'humdrum innovation', these two types of innovation in the cultural industries need to be measured separately. Separate results might also retain some external comparability between indicators of 'humdrum innovation' with results from other innovation surveys that do not include 'content creation' or any type of aesthetic changes. This approach implies greater complexity in studies of innovation because an additional category of 'content creation' is introduced.

To measure content creation and humdrum innovation separately, a workable, meaningful and clear-cut distinction between creative and humdrum aspects of the cultural industries needs to be attempted. The solution for the record industry suggested here is the following: the creative process is understood to consist in the production of a single and unique unit of informational content, the first fixation of a work referred to in copyright

legislation.[175] Drawing an analogy from the manufacturing sector, those involved in the creative process produce prototypes and invent new products similar to the functions fulfilled by an R&D department (Lash and Urry, 1994:122-3). The humdrum aspect can be understood to encompass the entire range of administrative, organisational and material tasks entailed in the reproduction and dissemination of existing media content. The demarcation line between creative and humdrum aspects of the media industries is the first fixation of the original informational content in its final form. In the record or film industry that would be the master copy.

The distinction between content creation and humdrum innovation is no mere re-labelling of the distinction between technical innovation and service innovation. Content creation might have technical aspects such as the creation and diffusion of new instruments or recording devices. As a rule, the predominant input will be the expertise of creators – authors/composers and performers and a range of further creative contributors in the case of more complex cultural products such as feature films. Humdrum innovation in the cultural industries includes technical innovations concerning media techniques that are the means of reproducing and distributing cultural products. Humdrum innovation also includes organisational changes within intermediaries. New advertising and promotion tools require particular attention due to the cumulative nature of demand.

Relating the distinction between content creation and humdrum innovation with established notions of product and process innovation is even more challenging.[176] It could be argued that new content resembles a new product and that the humdrum inputs mainly concern the means of delivery and other aspects of marketing that are usually classified as processes. This is the distinction applied in this paper.[177]

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[175] As argued in section 4.1, secondary creative aspects such as cover and booklet design are not addressed for the sake of simplicity.

[176] Problems with applying the product-process dichotomy to services in general have not been resolved. When the second CIS expanded to cover selected service industries, for example, the questionnaire addressed to service firms differed from that for manufacturing firms in two ways. First, there were no separate questions for process and product innovation. Second, service firms were not asked what the percentage of sales due to new products had been (Hansen, 2001). This dissertation follows this example and largely sidesteps the issue, since the distinction between products and processes is not essential to the arguments developed in this paper.

[177] On the other hand, processes and products could be distinguished within each of the two aspects of the cultural industries distinguished here. Process innovation regarding content creation could refer to the development of new recording techniques, instruments as well as new styles that provide guidelines for a great number of derivative works. Product innovation would be the creation of any specific work. Regarding humdrum innovation, it has been argued that new carrier formats resemble product innovations (Tschmuck, 2003a), while a range of administrative, organisational and technological innovations aimed at optimising the reproduction and marketing of existing carrier formats might best be classified as process innovations. The distinction between products and processes in cultural industries inevitably runs into two problems. First, the boundaries between markets are blurred since cultural products are highly differentiated. Where there is a great number of imperfect substitutes, the distinction between different products looses some of its meaning. Second, some cultural products work as templates for derivative works (e.g. Landes and Posner, 1989; Tschmuck, 2003b) so that they attain characteristics of a process innovation that increases the productivity of follow-up creators.

Innovation indicators for the cultural industries

A range of innovation indicators has been used to measure aspects of innovation (Djellal and Gallouj, 1999; Kleinknecht, 2000; Hansen, 2001; Smith, 2003). This chapter addresses the basic issue how innovative record companies have been in the context of broader changes affecting the market for sound recordings. Innovation intensity has been measured via 'input indicators' that measure the investment in innovations and related processes, as well as 'output indicators' that measure the results of innovation.

Input indicators

A widely used input indicator is 'formal' research and development (R&D) expenditure that occurs in specialised departments. R&D expenditure are the means dedicated to activities that have the explicit and primary purpose to develop new or improved products, processes or services (cf. OECD, 2002), which is often measured as a ratio of a firm's total expenditure or sales. The conventional understanding of formal R&D was that of scientific efforts to improve the technical function of materials and tangible artefacts, taking place in specialised departments. The literature on service innovation often observes that this conventional conception of R&D is ill suited outside of the manufacturing industries (Guellec and Pattinson, 2001; Djellal et al., 2003).

Alternative and broader input indicators strive to assess 'total innovation expenditure'. It is difficult to isolate innovation expenditure, however, since as a rule firms do not keep records according to the distinction between innovative and non-innovative activity. In practice, investment in "product design, trial production, market analysis, training of employees or investment in fixed assets related to product innovation" has been studied as aspects of innovation expenditure (Kleinknecht, 2000; cf. Djellal et al., 2003).

Output indicators

Patent statistics provide traditional output indicators of innovation. However, patents apply only to a limited range of mainly technological innovations. Even where patent law could apply, innovators sometimes prefer not to patent and rely on secrecy or first mover advantages instead. Other forms of intellectual property such as trademarks (Mendonça et al., 2004) and copyrights have rarely been considered as indicators of innovation. One general problem with innovation indicators based on intellectual property is that innovation intensity is hardly the only factor determining the number of intellectual property entitlements. The number of patents, for example, might fluctuate independently of the underlying innovation intensity with relevant changes to the law, industry structure and other market conditions (Scherer, 1983).

Alternative output indicators are the 'introduction of innovative products and processes to the market' or 'sales of innovative products'. Sometimes incremental changes, radical changes or entirely new products and processes are distinguished. Such indicators are a more direct measure of innovation than patent statistics (Kleinknecht 2000). Given an

adequate definition of innovation in the questionnaire, they also can be applied to services in contrast to patent statistics. However, as with 'total innovation expenditure', data on the output of innovative products and processes is difficult to come by. Response rates to related survey questions tend to be low and riddled by inaccuracies (Kleinknecht, 2000; Hansen, 2001).

A typology of innovation in the cultural industries

Input and output indicators of innovation tend to be complementary (Kleinknecht, 2000). Innovation entails uncertainty (Rosenberg, 1996; Lipsey et al., 2006). That is, the link between innovation input and output may vary and it may be unpredictable in particular on the micro-level. Input indicators alone may be mute as to the effects of innovation. Output indicators may alone say little about the investments into innovation processes. Accordingly, it makes sense to address both 'input indicators' and 'output indicators' where the efficiency of innovation is of interest.

Table 12.1: Four basic aspects of innovation in the cultural industries and underlying concepts

	Input	**Output**
Content creation	1) Investment in the production of new creative products	2) Number and/or sales of new publications
Humdrum innovation	3) Innovation expenditure (excluding content creation)	4) Introduction and sales of innovative products and processes (excluding new creative content)

As argued above, it is also desirable to measure content creation and humdrum innovation separately. That leaves four initial levels to be covered in innovation surveys for the cultural industries: (1) input indicators of content creation, (2) output indicators of content creation, (3) input indicators of humdrum innovation, and (4) output indicators of humdrum innovation. Table 12.1 provides an overview of these four levels and the underlying concepts that specific innovation indicators should measure.

12.2 THE APPLICATION IN THE VUT SURVEY

The typology introduced above provides a guideline for the issues to be covered in studies of innovation intensity in the cultural industries. The following section outlines the operationalisation of these concepts in the VUT survey of independent record companies.

Content creation

Input

Based on the distinction between content creation and humdrum innovation introduced above, any expenditure by a record company related to the production of new media content counts as innovation input of the content creation type. See table 12.2 for an overview that categorises the types of activities in the record industry into content creation and humdrum activities. It builds upon the conventional classification of activities in the record industry and would require adaptations when applied to other cultural industries.

Table 12.2: A classification of record companies' expenditure into content creation and humdrum activities

Content creation	Content creation in a narrow sense	Composers and lyricists Expenditure on services of composers and lyricists and payments as well as payments to publishers and authors' collecting societies for the use of copyrighted compositions and lyrics in sound recordings.
		Performing artists Expenditure on musicians or other performing artists for recordable performances.
		Recording Expenditure on the upkeep and use of recording facilities including services by sound technicians and music producers
	Content related expenditure	Artists & Repertoire Costs of research on, selection of and managing relations to creators.
		Licenses of copyrighted material in foreign ownership Expenditure on (sub-)licences to commercialise sound recordings owned by other record companies (e.g. where a record company acts as a representative of another firm in a specific territory).
Humdrum activities		Manufacturing of physical sound carriers The complete production costs of physical sound carriers (e.g. pre-recorded CDs) including packaging and booklets.
		Distribution and retailing Expenditure on the delivery of final products to paying users and running retail outlets.
		Advertising and promotion Expenditure on paid communication (advertising) or unpaid dissemination of information on sound recordings, creators, record companies and brands with the aim of attaining a favourable perception by potential consumers.

Content creation in a narrow sense includes three areas: record companies need to procure the services of composers and lyricists (including payments to publishers and collecting societies), performing artists and suppliers of recording equipment and related services. Where the creation of finished cultural products is concerned, the costs of sound recording equipment and specialised personnel count towards content creation.

Artist & repertoire activities are ambiguous since they aim to establish the cooperation of creators and intermediaries. A further creative expenditure is that on copyrighted material in foreign ownership, e.g. when a record company acquires a sub-license to commercialise a cultural product owned by another organisation. The latter way of payments to creators/right

holders played a relatively minor role for the record companies investigated (see section 13.3) and is not addressed in the following.

Due to the characteristics of reproducible cultural products as durable and highly differentiated products, a distinction between innovative aspects of content creation and non-innovative aspects is difficult to make. Any new creation is by definition different from all others – even though some may be radically different while others may just be variations of familiar formats. That is, all expenditure on content creation can be regarded as innovation input. For humdrum activities the situation is more conventional in the sense that there are highly routinised aspects of production on the one hand that can be distinguished from the search for, the development of and the commercialisation of novel products and processes so that it makes sense to distinguish expenditure on humdrum innovation and on other types of humdrum activities.

Output

Innovation output regarding content creation can be measured via the number of first publications of new media content. Copyright as the applicable form of intellectual property applies automatically to most new publications, entails no costs (unless conflicting claims lead to legal disputes) and practically no *a priori* test of a publication's qualities. Data on publications as a type of product innovation, and output indicators on the basis of copyrighted works should not diverge extensively under the current copyright system in most major markets.

Where the number of new publications is an intermediate indicator of content creation output – it does not measure the *ex post* economic significance of new publications – 'sales of innovative products' measures the economic significance of such innovation outputs more directly. Unit sales, revenues or profits on the basis of recently published works are relevant indicators where content creation is to be investigated.

In the record industry, retail prices for different creations – say different recordings of comparable playing time delivered on CDs – diverge much less than for example in the arts market (cf. Throsby, 2006 JCE). Thus, unit sales within one format provide a relatively good measure of the market value of this type of cultural products.[178]

Humdrum innovation

Humdrum innovation spans the entire range of technological and service innovations that concern the general tasks of administration and organisation in the cultural industries as well as the reproduction, distribution and promotion of finished cultural products. Essential humdrum activities include: (1) the reproduction of cultural products, applying mass media technology; (2) the distribution and retailing of copies; and (3) advertising and promotion. See

[178] Many cultural economists emphasise that the market value of cultural products diverges considerably from their cultural value or overall social value, however (see section 4.6).

table 12.2 for an overview. Other categorisations of humdrum activities are imaginable, say separating legal services or general back-office tasks, but for the sake of generating a taxonomy that can serve as the basis of a questionnaire, such activities are subsumed under the three key activities. The diffusion of digital ICT has brought radical innovations concerning all three aspects of humdrum activities distinguished in this study.

Input

Input into humdrum innovation is probably the most challenging category of innovation to measure. One standard indicator is 'durable investments'. The VUT survey asked for the share of this type of expenditure – illustrated by the examples of technique acquisition or staff training – in overall expenditure of the firm.

Output

Humdrum innovation output was measured mainly via variations on 'introduction and sales of innovative products and processes' in the VUT survey. Respondents were asked, for example, when they had first introduced specific novel services or what the share of sales of downloads and streams in overall revenues had been.

Object approaches vs. subject approaches in innovation surveys for cultural industries

Adapting innovation surveys to the cultural industries relates to a continuity/specificity trade-off. On the one hand, it would be desirable to emulate the terminology and methods applied in established innovation surveys; the main advantages being the external comparability of results and possibility to benefit fully from the advances achieved over the years. On the other, some adaptations are inevitable, e.g. because traded innovation surveys exclude aesthetic innovations that are essential aspects of innovation in the cultural industries.

A further way in which the VUT survey deviates from mainstream innovation surveys is that it adopted an 'object approach' rather than the 'subject approach' that is the current standard in major innovation surveys such as the CIS (OECD, 1997). In a subject approach, the survey introduces a precise definition of what is meant with innovation/innovative activity in general terms. The task of the respondent is to identify specific activities within the organisation that fall under this definition and provide information on such activity. The main problem with subject-based approaches concerns the definition of innovation. Such definitions tend to be rather complex and taxing for the respondents. Laying some of the burden of identifying innovations on the respondents might result in errors and/or adversely affect response rates. An object approach, on the other hand, identifies specific innovation processes of interest in advance. This is frequently done through expert panels or literature reviews. The main drawback of an object approach is that innovative activity not anticipated by the authors of the survey will not be captured.

An object approach seemed more appropriate for the VUT survey. The drawbacks of a subject approach would have been particularly pronounced. For the moment there is no generally applicable and comprehensive definition of innovation in cultural industries that a subject approach would have required. This problem applies to any innovation survey in the cultural industries. Furthermore, the VUT survey addressed small and medium sized firms. Respondents could not always be expected to have the training or the interest to apply lengthy and abstract economic definitions of innovation, which a subject approach would have required them to do. During preparatory panels with industry insiders, the term 'innovation' had actually had negative connotations for some discussants. To many, it appeared overused to the point of being meaningless. Others saw it as "management-speak" and something that "larger corporations applied to themselves" and not something that referred to the exploration efforts that were the pride of many representatives of smaller record companies.

Furthermore, due to the specific focus of the VUT survey on small and medium sized record companies, it was relatively easy to cope with the challenges of an object approach. Within a comparatively homogenous group of firms, it is easier to identify the most significant recent innovations.[179] Reviews of the academic literature, industry statistics and the relevant trade journals provided basic information. The perceived significance of new, digital methods of distribution and new carrier formats was hard to overlook. In Germany, downloads via the Internet and onto mobile phones as well as sales of (music) DVDs began to feature in sales charts in 2004. They were also included into the more recent industry statistics (BV Phono, 2005). Other topics were not quite as prominent but still came up both in the literature and preparatory panel discussions with a range of industry insiders.

12.3 HOW INNOVATIVE ARE SMALL INDEPENDENT RECORD COMPANIES?

The first issue to be addressed on the basis of data from the VUT survey is how innovative the small, independent record companies covered are during the current period of recession. There are two main conceptual problems with this type of question. On the one hand, it is difficult to measure a fragmented concept such as innovation. On the other, the question has no absolute answer. Instead, it invokes three comparisons: first, between the record industry and other industries; second, between VUT-members and larger market participants; third, between the recession period and the preceding boom period. In a typical process of creative destruction in the context of cost-reducing, radical technological change, some newcomers and fringe suppliers would be more innovative than larger incumbents and the current period of recession in the record industry would coincide with high innovation intensity relative to the boom period.

[179] To study probably very rare 'world-first' technological innovation among small and medium size record companies, large sample size surveys seem less appropriate than case studies.

Due to a lack of comparable measures from the past or from other types of firms, it is hard to determine with any precision whether innovation intensity among independent record companies is relatively high. Comparisons in this chapter develop a rough sense of proportion.

How innovative are independent record companies in comparison to suppliers in other industries?

The simplest indication of innovation intensity for an industry is the share of firms that introduced products or adopted processes that were new to the firm over a given time period. The fourth CIS found that 65% of the German firms covered had been 'innovation active' in this sense during the three-year period from 2002 to 2004, which far exceeds the EU average of around 40% (European Commission, 2007). Within Germany, 'computer related business' was the most innovative sector covered in CIS-4, with 94% of firms having adopted some type of product, process or organisational innovation.

The results of the VUT survey illustrate how continuous and dispersed content creation – as a special type of product innovation – is among record companies. In contrast to the situation in manufacturing industries, where product innovation is often concentrated in a minority of firms, virtually all record companies had released new titles during the single year 2004. Only 0.5% of all record companies reported they had not published any new recordings during that year. The comparison suggests that a measure of one type of innovation during one year already exceeds more comprehensive measures of innovation for a three-year period in all other industries included into the CIS.[180] Of course, great innovation intensity regarding content creation output is to be expected. The costs of generating product variants in the record industry can be very low and product life cycles of many recordings are short. What is more, there is no threshold regarding originality or economic significance that would apply to content creation measured by the number of titles released.

More surprising, perhaps, is the relative innovation intensity of small record companies concerning humdrum innovation. The VUT addressed the adoption of a set of specific technical innovations. As exhibited in table 12.3b, in the two and a half year period between the beginning of 2003 and the July 2005, the share of firms retailing physical sound-carriers via online-shops has increased from 53% to nearly 86% and the share of firms commercialising downloads has risen from 4% to 57%. This concise measure already far exceeds the average for process innovation in the larger German firms covered by the CIS.

The innovation intensity of VUT-members relative to larger firms

For this study, a substantial amount of data on innovation by small, independent record companies was collected. Regarding larger record companies, the available data is a lot more

[180] What is more, the record companies addressed in the VUT are much smaller than the average firm surveyed in the CIS.

restricted, which limits the comparison between the innovation intensity of VUT-members and larger firms to some basic points.

Chapter 11 introduced evidence on output indicators of innovation intensity for VUT-members in comparison to larger competitors. Concerning content creation, VUT-members publish a greater number of new sound-recordings than larger record companies relative to their means as indicated by turnover and staff. As is to be expected, under current market conditions, they sell considerably less units per publication, however. That is, findings on two innovation indicators – the 'market introduction of new products' and 'sales of new products' – diverge substantially in the case of content creation.

It is an important issue for the contestability of the record industry, how the lead of larger record companies in terms of generating high sales per publication will be affected by technological change. Many authors expect that the traditional advantages of larger incumbent firms in the cultural industries due to control of distribution, greater presence in traditional retail outlets and the mass-media will not be replicated immediately online (e.g. Alexander, 1994; Anderson, 2004). However, findings from the VUT survey suggest that the boom among independent firms does not yet reflect any substantial changes in distribution and retailing. Chapter 11 presented some data on 'digital sales' as an output indicator of humdrum innovation. Up to 2004, independent record companies trailed behind larger suppliers of sound-recordings in the development of commercial 'digital' supply. The emergence of digital distribution channels does not explain growth among 'indies' for the period studied.[181]

That said, due to a lack of data, the comparison between larger firms and VUT-members remains limited and will not be the focus of this chapter. There simply is no comparable data on innovation input for larger market participants, for example. What this chapter does offer is a more comprehensive discussion of developments within the group of firms covered by the VUT survey in order to determine whether these developments are consistent with a process of creative destruction in the record industry.

Is there a recognisable effect of the post-1998 recession on humdrum innovation?

The empirical results of chapters 3 and 8 imply that there is no significant impact of the recession on content creation output and market entry in the German record industry at large. These findings are consistent with a process of creative destruction and conflict with the notion that the diffusion of digital copying technology would diminish the commercial supply of reproducible cultural products.

This section discusses basic empirical evidence from the VUT survey concerning any impact of the recession on another aspect of innovation: the adoption rate of technical innovations with an emphasis on digital ICT applications in the distribution and delivery of

[181] More recent data indicates that after 2006, the market share of the major record companies has been considerably lower for 'downloads' than in the offline market in some countries (NVPI, 2008).

sound recordings. In the taxonomy introduced above, this is a measure of humdrum innovation output.

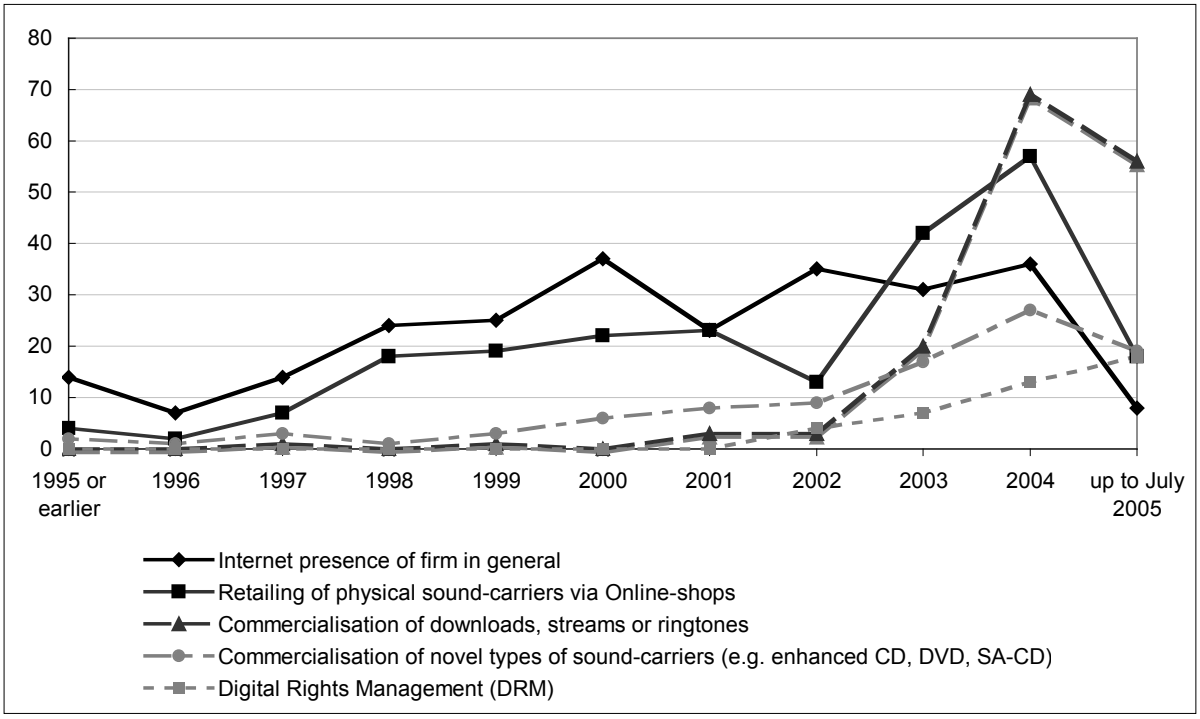
In all instances, it would be consistent with a scenario of 'plain destruction' if innovation intensity diminished during the recession period. On the other hand, it would be consistent with a process of creative destruction if innovation intensity increased during the recession.

The VUT survey contained a set of questions on the adoption of key technical innovations concerning the adoption of digital ICT by record companies – see question 14 in Appendix I. Respondents were asked when their firm had first supplied services of several types. The results are presented in tables 12.3 and figures 12.1. This type of retrograde question is not without its methodological difficulties but in order to elaborate on changes in the adoption of techniques during the recession, it was without a viable alternative.

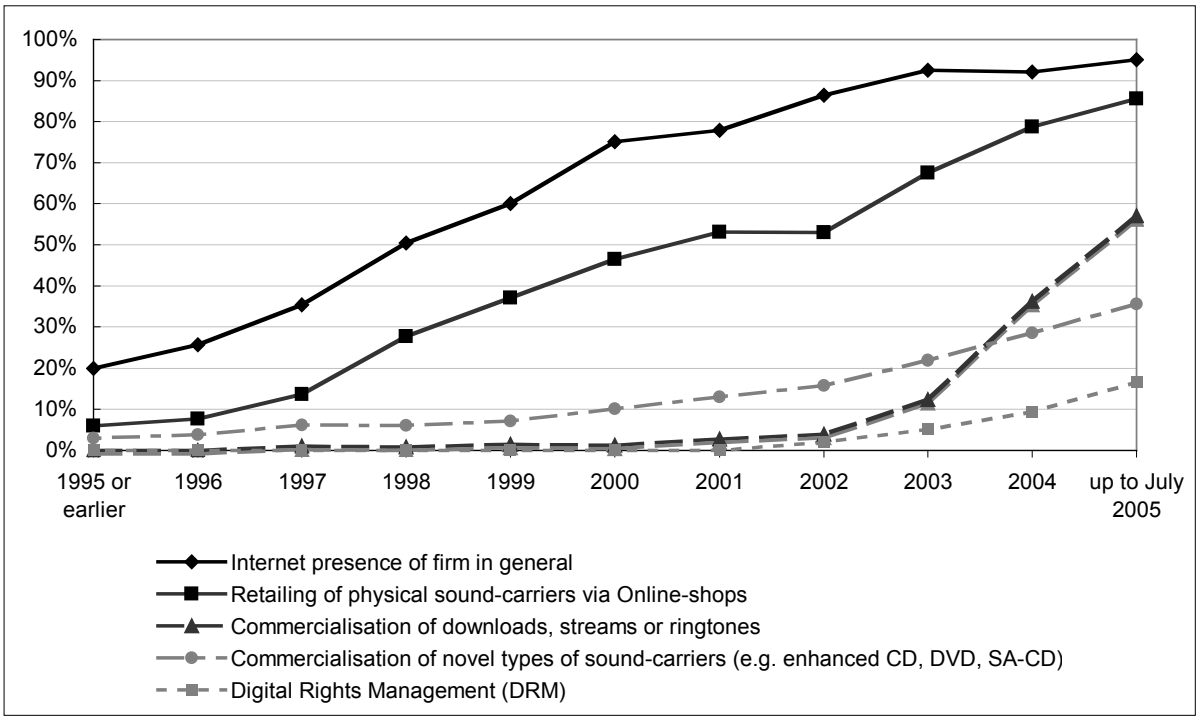
The analysis in this chapter only includes firms who reported that substantial part of their revenues (more than 20%) was generated from the core functions of a record company. That is necessary because questions on technical innovation were designed to capture specific innovations typically concerning record companies. A questionnaire focused on firms more specialised on running recording studios or on publishing would have had to address different techniques. Descriptive statistics for this sub-sample of specialised record companies are found in tables 9.6 to 9.10.

Figures 12.1: Adoption of technical innovations in specialised record companies by year

a) No. of firms adopting



b) Share of firms operating in 2004 that had adopted technical innovation by year – excluding non-responses



For each year, figure 12.1a presents the absolute number of firms, which had first introduced types of ICT-based services to the market. This data contains two problems for the purpose of comparing adoption rates during and before the recession period. First, the number of adoptions is bound to tail off for techniques that are already widely adopted. Second, since the number of firms responding to the VUT-survey is greater for more recent years, this data exaggerates adoption rates for later years. To control for this bias, Figure 12.1b displays the share of firms, which had adopted by the year in question relative to the total number of firms that had operated in that year. There could still be a bias for adoption rates in earlier years, if the technical innovation covered is associated with increased firm survival.

The data supports a casual comparison of adoption in the recession period starting in 1999 and the years immediately preceding it. As presented in Figure 12.1b, the data on adoption of ICT-related techniques resemble typical s-shaped adoption curves reasonably well (Everett, 1962; Jovanovich and Lach, 1994), with the obvious caveat that for those techniques that have not yet widely diffused, no turning point in the acceleration of growth can be made out.

For three categories there had been non-negligible adoptions before 1999 – the 'Internet presence of firm in general', 'retailing of physical sound-carriers via online-shops' and 'commercialisation of novel types of sound-carriers' – growth may have slowed somewhat in comparison to a perfect adoption curve around the years 1998 and 2001. However, any apparent slump was short-lived and followed by relatively high adoption rates in the subsequent years.

What is more, there had been virtually no firms that had supplied downloads or ringtones prior to the emergence of file-sharing in 1999. These authorised, commercial services only started to take hold by 2003, four years after Napster Inc. had demonstrated the technical feasibility and popular demand for online delivery of sound recordings. The uptake of DRM measures started around the same year but such techniques were not widely adopted. With hindsight, even the majors, who had championed and employed DRM at least since the emergence of file-sharing, have retracted from many DRM measures between 2006 and 2008.

The timing for digital delivery implies that record companies started to supply downloads after the most severe falls in accumulated industry revenues in 2001. It thus seems unlikely that a lack of income would to have been a decisive factor holding back adoption in this area. Other inhibiting factors may have been concerns with 'piracy' or difficulties with micro-payments. Furthermore, administrative problems with digital exploitation rights may have been a problem, especially if incumbent rights holders resisted innovation for fear of cannibalising older business models (Einhorn, 2001; Alderman, 2001; Kim, 2007).

To be sure, it is not possible to specify a reasonably precise growth pattern for the period preceding the recession. It thus is not possible to determine with any statistical probability whether adoption decelerated at all with the beginning of the recession in 1998 or during the period after the year 2000, when accumulated record industry revenues fell particularly steeply (see chapter 3).

In summary, according to the available data it seems unlikely that the ICT adoption by small and independent record companies during the recession period decelerated substantially. While it cannot be excluded that some slow-down did occur, it would appear to be modest in relation to the severity of the recession. To the contrary, all key technical innovations studied diffused rapidly for much of the recession period.[182]

A related issue is the importance of various types of humdrum innovation related to the dissemination of sound recordings and content creation. Table 12.4 exhibits the results of a question on how important several types of innovations were considered to be by the VUT members with considerable turnover from the activities of a record company. For four types of innovation, the majority of firms reported a 'high' or 'intermediate' importance. As may be expected, the catch-all category of 'Internet presence in general' received relatively many responses of 'high' or 'intermediate' importance (88.1% of all valid responses fell into these two response categories). Concerning other aspects of humdrum innovation, retailing sound-carriers via online shops (75.9%) and sales of downloads and streams via the Internet (58.1%) were also important for a majority of firms. Furthermore, sales of 'new, artistic sound-recordings' as an indicator of content creation were reported to be of 'high' or 'intermediate' importance for a majority (62.5%) of VUT-member firms. A comparison between results on 'artistic ambition' in content creation and humdrum innovation is of particular interest. It

[182] It is imaginable that some new techniques were not developed at all due to the impact of the recession. The quantitative methods employed in this dissertation are not suitable to address this issue.

seems that at least at the time of the survey, humdrum innovation has played a relatively important role.

By contrast, the majority of firms reported a 'low' importance or 'no importance at all' for three aspects of technical, humdrum innovation. These were: 'sales of novel sound-carriers' with 62.1% reporting 'low' or 'no importance'; 'sales of ringtones' with 78.3%; and 'DRM' with 76.7%. It seems that these three types of innovation were less important at least for 'indies'. The limited appreciation of DRM techniques is of interest in chapter 14, which addresses the costs and benefits of the copyright system for 'indies'.

Tables 12.3: Adoption of technical innovations in specialised record companies by year

a) No. of adoptions [a] [b] [c]

	Internet presence of firm in general	Retailing of physical sound-carriers via Online-shops	Commercialisation of downloads, streams or ringtones	Commercialisation of novel types of sound-carriers [d]	Digital Rights Management (DRM)
Up to July 2005	8	18	56	19	18
2004 [c]	36	57	69	27	13
2003	31	42	20	17	7
2002	35	13	3	9	4
2001	23	23	3	8	0
2000	37	22	0	6	0
1999	25	19	1	3	0
1998	24	18	0	1	0
1997	14	7	1	3	0
1996	7	2	0	1	0
1995 or earlier	14	4	0	2	0
Not adopted	13	38	115	174	212
No response	13	17	12	10	26

[a] Based on 294 firms who reported that their record company division has had a substantial share in total turnover (>20%); excluding firms founded in 2005.
[b] Missing=14.
[c] The value for 2004 is lowered by a relatively large number of firms that reported adoption rates before the year of foundation, who were calculated as 'invalid'.
[d] E.g. enhanced CD, DVD, SA-CD.

b) Share of firms operating in 2004 that had adopted technical innovation by year – excluding non-responses [a] [b] [c]

Valid %	Internet presence of firm in general	Retailing of physical sound-carriers via Online-shops	Commercialisation of downloads, streams or ringtones	Commercialisation of novel types of sound-carriers [d]	Digital Rights Management (DRM)
Up to July 2005	95.1	85.6	57.1	35.6	16.5
2004 [c]	92.1	78.7	36.2	28.5	9.5
2003	92.5	67.6	12.4	21.9	5.2
2002	86.5	52.9	3.9	15.8	2.1
2001	77.8	53.1	2.8	13.0	0.0
2000	75.2	46.5	1.3	10.1	0.0
1999	60.0	37.0	1.5	7.2	0.0
1998	50.4	27.7	0.9	6.1	0.0
1997	35.4	13.7	1.1	6.2	0.0
1996	25.6	7.7	0.0	3.8	0.0
1995 or earlier	20.0	6.0	0.0	3.0	0.0
Not adopted	4.9	4.4	42.9	64.4	83.5

[a] Based on 294 firms who reported that their record company division has had a substantial share in total turnover (>20%); excluding firms founded in 2005.
[b] Missing=14.
[c] The value for 2004 is lowered by a relatively large number of firms that reported adoption rates before the year of foundation, who were calculated as 'invalid'.
[d] E.g. enhanced CD, DVD, SA-CD.

Table 12.4: The importance of various types of innovation for VUT-member firms [(a) (b)]

Valid %	Internet presence in general	Sound-carriers, online retailing	Sales of new, artistic sound-recordings	Sales of Internet Downloads or Streams	Sales of novel sound-carriers	Sales of Ringtones	Digital Rights Management / DRM
High (1)	57.3	44.8	42.1	32.9	13.9	8.5	8.9
Intermediate (2)	30.8	31.1	20.4	25.2	24.1	13.3	14.4
Low (3)	9.7	17.4	15.7	22.9	24.5	21.8	17.3
Not important at all (4)	2.2	6.7	21.7	19.0	37.6	56.5	59.4
Valid N	279	270	235	258	245	248	202
Mean	1.57	1.86	2.17	2.28	2.86	3.26	3.27
Std. Deviation	.755	.934	1.193	1.116	1.075	.986	1.012

[(a)] Based on 294 firms who reported that their record company division has had a substantial share in total turnover (>20%).
[(b)] Ranked by mean.

12.4 DOES INNOVATION CORRELATE WITH SUCCESS?

A definitive aspect of creative destruction is that innovative firms are more successful than more conservative market participants. During a period of radical technological change, creative destruction gains momentum because of the great potential for productivity increases from a new technological trajectory. Where process innovation diminishes the fixed costs of production or other barriers to entry, the number of market entries will usually increase. Earlier chapters in this dissertation documented a boom among small, independent record companies over recent years. This section discusses the evidence for a correlation of various firm-level measures of innovativeness and market success within this population of small record companies as covered in the VUT-survey.

As argued above, both innovation and success are multifarious concepts, and they are operationalised in the following by a number of indicators to capture different aspects and diversity of objectives among suppliers. Significant correlations between innovation intensity and market success would be evidence for creative destruction. If there were no evidence supporting this hypothesis, it would raise serious doubts that this concept would support a valid model for developments in the record industry.

There are some caveats, however, because this study addresses a hypothetical process of creative destruction as it unfolds and not with historical hindsight. First and foremost, incentives to innovate should be greatest for firms who do not perform well to start with. This 'adverse selection' of innovators could counteract any positive effect of innovation on firm success. Second, even though radical technological change would typically be associated with pervasive changes in the industry, not all aspects of the industry need to be affected simultaneously or equally strongly. That is, it may be too early to pick up a correlation between innovation and market success in some parts of the record industry or some aspects of it may exhibit little successful innovation throughout. Third, innovation is typically associated with considerable uncertainty. Many innovative projects will fail even when conducted by skilled agents with above average foresight, especially during an initial period of diverse experimentation before a 'dominant design' has emerged.

Therefore, correlations of innovation and success are problematic as a test for creative destruction, in contrast to the central role that the link between innovation and competitiveness plays in the theoretical concept. As a rule, a positive correlation between innovation intensity and market success of specific firms should be present during a reasonably pronounced process of creative destruction. This correlation may not be particularly strong or observable throughout an industry at any given point in time as a period of radical technological change plays out.

Studying the correlation between different types of innovation intensity and market success may support conclusions on two further issues. On the one hand, it may help to

identify the precise types of innovation that coincide with greater success. This is probably the greatest use of this kind of analysis.

On the other, a strong correlation between innovativeness and market success would be expected in particular at a relatively advanced stage of radical technological change, where quite stable standards and routines have taken shape around new technologies but adoption is still far from complete. In an initial, 'fluid' period, the innovation intensity of an industry undergoing a period of radical technological change would be high but many innovative projects would fail commercially.[183] In such an early phase of radical technological change, the relationship between innovativeness of suppliers and market success might not be as clear-cut as during later stages. That is, the correlation between individual firms' innovativeness and their success might help to determine how advanced that process appears to be. The obvious problem is that it may be hard to distinguish between the early stages of radical technological change and the absence of such a process according to the relative success of more innovative firms alone.

Innovation input and success

Table 12.5 displays bivariate correlation results for indicators of record companies' success and their innovation inputs. (All variables are documented in tabe 12.9 at the end of this chapter.) Scaling of indicators varies, so that statistical results do not support firm conclusions regarding relative strength of correlations.

Success is measured by four indicators concerning growth in turnover, the reported state of the firm in general terms, changes in the state of the firm over the recession period, and the prospects of the firm according to managers/owners.

Humdrum innovation inputs are hard to measure in great detail. For the purpose of this study, the share of 'durable investments' in total expenditure serves as a proxy for the innovativeness of a firm in terms of humdrum innovation inputs. This variable correlates significantly with all measures of technical innovation output but the correlation coefficients are quite modest (<.3).[184] It seems that 'durable investments' may be a reasonable indicator for humdrum innovation inputs but it is certainly limited.

Content creation inputs ('creative input') are measured by the following types of expenditure: on compositions and lyrics including payments to publishers or authors' collecting societies for the use of copyrighted compositions and lyrics; on services of performers; on sound recording. The 'index of creative input' consists of the sum of scale values for all three aspects of content creation input. Expenditure on Artists & Repertoire (A&R) falls between content creation and humdrum activities (see section 12.2) and is presented separately.

[183] That would be the case because innovators have few guidelines to direct their innovation efforts and have to advance under extreme uncertainty.

[184] The results are not reported in detail.

While it was measured in relatively crude terms of a three-point scale, the change in turnover ('Δ Turnover') has the advantage that it refers to a specific development and employs a clear definition of success in financial terms. There should be few variations in the interpretation by different respondents of the related questions. The index value of creative input correlates significantly with a change in turnover (at the .01 level). That is, firms with greater turnover growth tend to spend a smaller share of their means on creative inputs. The correlation between creative input and change in turnover seems entirely due to the aspect of creative input that is expenditure on recording. There is no significant effect between changes in turnover and present expenditure on performing artists or compositions. A probable explanation for these findings is that there are possibilities to reduce the costs of recording, which are not adopted equally across all firms.[185] One possible source of cost reductions in this area may be the application of personal computer based sound recording equipment. A gradual reduction of recording costs and thus the fixed costs of record companies would also help to explain the longstanding boom of small firms. There is no systematic evidence on the matter, though.

By contrast, there is a correlation of the opposite sign between firms' expenditure on 'A&R' and 'change in turnover' (significant at the .1 level – not flagged). That is, firms with greater turnover growth tend to spend relatively more on A&R. This finding would be consistent with a situation, in which record companies who take great care in research on and the selection of creators while limiting their investments in the recording process are more likely to expand their turnover.

There are some issues with causality. For example, it is not clear whether firms that limit recording expenditure perform better or whether less successful firms react by increasing their recording expenditure. Another set of questions helps to elaborate on the likely direction of causality. For the share of each type of creative input in 2004, firms were asked whether it had (1) 'risen particularly strongly', (2) 'not changed strongly', or (3) 'fallen particularly strongly'. The reference year was either the year 1998 (for firms founded in 1997 or before) or the first full calendar year of operation (for firms founded in 1998 or after). Table 12.6 shows the bivariate correlation results (Spearman's rho, 2-tailed) between the change in the share that aspects of content creation input made up in total expenditure and four indicators of firm success. It goes to show that reports of a positive change in the performance of the firm are significantly and positively correlated with a rising share in expenditure on recording. This observation conflicts with the idea that many firms would react to falling turnover by expanding their share in expenditure on recording. It is more likely that a higher relative expenditure on recording – or a failure to reduce these costs by conducting process innovation – seems to lead to a worse performance of the firm (with the possibility that there are intermediate factors).

[185] Another would be that musical genres that require little investment in recording were commercially more successful in the period covered.

To complete the discussion of the results presented in table 12.5, neither reports on the present state of the firm, nor on the development of the firm over recent years correlate significantly with expenditure on content creation. Firms that reported their firm to have better prospects to thrive in the future were significantly more likely to spend more on A&R (significant at the .001-level) and durable investments (significant at the .1 level – not flagged) but not on creative input. That is, optimistic firms do invest relatively more in innovation – clearly an intuitive result. Where content creation is concerned, the emphasis is on discovering adequate creators rather than investing relatively much in creators' services. Recording costs is an area where some firms may be more efficient. This observation is consistent with a period of continuous process innovation concerning recording, as suggested above.

Table 12.5: Bivariate correlation between record companies' innovation inputs and success (Spearman's rho)

					Δ State of firm		
			Δ Turnover	State of firm	Since 1998	Since foundation+1	Prospects
Durable Investments		Corr. Coeff.	-.052	-.092	-.056	-.082	-.136
		Sig.	.372	.204	.603	.471	.060
		N	296	193	88	79	193
Index Creative Input		Corr. Coeff.	.183(**)	-.011	-.058	-.054	.031
		Sig.	.002	.880	.605	.655	.684
		N	276	177	83	71	177
Creative Input	Compo-sitions	Corr. Coeff.	.119	-.033	-.015	-.058	.049
		Sig.	.152	.651	.893	.606	.499
		N	147	193	88	81	194
	Performers	Corr. Coeff.	.002	-.094	-.151	-.042	-.053
		Sig.	.979	.198	.161	.717	.469
		N	146	188	88	76	189
	Recording	Corr. Coeff.	.221(**)	-.002	-.028	.015	.086
		Sig.	.006	.978	.790	.892	.225
		N	151	200	91	80	200
Artists & Repertoire / A&R		Corr. Coeff.	-.142	-.091	-.092	-.165	-.251(**)
		Sig.	.083	.202	.390	.137	.000
		N	149	199	89	82	200

** Correlation is significant at the .01 level (2-tailed).
* Correlation is significant at the .05 level (2-tailed).

Table 12.6: Change in expenditure on content creation input and firm success (Spearman's rho)

				Δ State of firm	
		Δ Turnover	State of firm	Since 1998	Since foundation+1
Δ Compositions	Corr. Coeff.	.278(**)	.192(**)	.370(**)	.160
	Sig.	.001	.022	.001	.221
	N	136	142	83	60
Δ Performers	Corr. Coeff.	.270(**)	.218(**)	.325(**)	.394(**)
	Sig.	.001	.008	.002	.002
	N	142	147	87	62
Δ Recording	Corr. Coeff.	.226(**)	.159	.318(*)	.477(**)
	Sig.	.007	.055	.003	.000
	N	141	146	86	62

** Correlation is significant at the .01 level (2-tailed).
* Correlation is significant at the .05 level (2-tailed).

Innovation output and success

Humdrum innovation output

Table 12.7 presents the results of bivariate correlations between indicators of ICT-based innovation and indicators of firm success. Success is measured by the same four indicators as in the previous section. Correlations with four output indicators of humdrum innovation are calculated. First, the 'technical innovation' reflects how many of the five technical innovations as displayed in tables 12.3 the firm had introduced by 2004. The index value for technical innovation accounts for the time of adoption, while taking measures to reduce bias due to the different age of firms. Table 12.9 documents how this index was calculated. Promotion tools that apply digital ICT were addressed in different set of questions in the VUT survey. The number of 'novel promotion' tools indicates how many of nine specific web-based promotion activities a firm has employed.[186] Responses for individual types of innovation did not result in significant results. It seems that there is no single 'killer application' that would reliably have a strong effect on the performance of firms adopting it.

Neither the sheer number of 'technical innovations' nor the 'index technical innovations' correlate significantly with reports on growth in turnover, the present state of the firm or the development of older firms during the recession period. By contrast, younger firms that have adopted more technical innovations report significantly more often that their firm has developed positively over recent years. The correlation is significant at the .01 level for 'technical innovation' and at the .05 level for the 'index technical innovation'. Technical innovation may be more important for the success of recent market entries than for incumbent firms. Firms that have adopted a greater number of technical innovations are more likely to report better prospects (significant at the .05 level for both 'technical innovation' and the 'index technical innovation').

In contrast to indicators of technical innovation, the number of 'novel promotion' tools adopted seems to correlate with changes in turnover (at the .1 level of confidence – not flagged). Firms who employ more promotion tools based on digital ICT are somewhat more likely to have expanded their turnover. Firms conducting more novel types of promotion are significantly more likely to be optimistic about the future of their enterprise (at the .05 level). There is no effect between 'novel promotion' and reports on the current state or the recent development of the firm.

That is, the VUT survey results do not provide evidence that technical innovations concerning novel types of delivering sound recordings would have had an effect on firm success at present for older firms. Two explanations for this result seem relatively probable. On the one hand, the types of innovation covered may not provide a reliable means to improve firm performance. On the other, struggling firms may have a greater propensity to conduct innovation, which could conceal any positive effect of innovation. For younger firms

[186] Questions on promotion in the VUT survey were authored by Simon Peter Ziesch, Universtät Leipzig.

– founded in 1998 or later – technical innovation correlates with a positive development of the enterprise over recent years, however, and more technically innovative firms are significantly more optimistic. The same holds for firms that have adopted relatively many novel types of promotion. The latter indicator of humdrum innovation output is also weakly correlated with turnover growth. These findings are consistent with an early stage of radical technological change, in which innovation is considered to be an important determinant of firm competitiveness by many industry insiders but it has not (yet) had a very substantial impact on firm performance in the recent past.

Table 12.7: Bivariate correlation between record companies' humdrum innovation output and success (Spearman's rho)

				Δ State of firm		
		Δ Turnover	State of firm	Since 1998	Since foundation+1	Prospects
Technical innovations	Corr. Coeff.	.000	-.061	-.033	-.281(**)	-.147(*)
	Sig. (2-tailed)	.999	.315	.722	.002	.015
	N	191	272	118	119	275
Index technical innovations	Corr. Coeff.	-.001	-.082	-.052	-.214(*)	-.137(*)
	Sig. (2-tailed)	.988	.178	.573	.019	.023
	N	191	272	118	119	275
Novel promotion	Corr. Coeff.	-.111	.000	.049	-.093	-.145(*)
	Sig. (2-tailed)	.080	.999	.625	.377	.028
	N	163	226	102	93	227

** Correlation is significant at the .01 level (2-tailed).
* Correlation is significant at the .05 level (2-tailed).

Content creation output

Table 12.8 exhibits bivariate correlations between indicators of firm success and content creation output, relative to firm size. The sheer number of new publications of any type per member of full time staff does not correlate significantly with record companies' success (this holds also for 'online publications' that are not reported in table 12.8). It does not seem that either record companies that deal with particularly many different publications, or firms that focus their efforts narrowly, would be more likely to report success.

By contrast, the 'share of novelties in physical sales' is significantly correlated with growth in turnover (at the .01 level), with the development of firms founded after 1997 (at the 0.1 level – not flagged) and with the prospects of firms (at the .001 level). That is, firms that generate a greater share of their sales with novelties are more likely to have expanded their output over recent years and to be optimistic about the future of their enterprise. It is hardly surprising, of course, that firms which manage to put out attractive content at present (rather than relying on the commercialisation of older repertoire) are more likely to have expanded their turnover and to be optimistic about the future.

Table 12.8: Bivariate correlation between record companies' content creation output and success (Spearman's rho)

				Δ State of firm		
		Δ Turnover	State of firm	Since 1998	Since foundation+1	Prospects
New physical publications per staff[(a)], playing time > 25 min.	Corr. Coeff.	-.028	-.072	-.087	-.087	-.060
	Sig. (2-tailed)	.592	.312	.348	.412	.397
	N	368	202	117	91	204
New physical publications per staff[(a)], playing time < 25 min.	Corr. Coeff.	-.029	-.072	-.087	-.087	-.060
	Sig. (2-tailed)	.594	.312	.348	.412	.397
	N	351	202	117	91	204
Titles marketed on physical sound carriers per staff[(a)], playing time > 25 min	Corr. Coeff.	-.014	-.072	-.087	-.087	-.060
	Sig. (2-tailed)	.796	.312	.348	.412	.397
	N	364	202	117	91	204
Titles marketed on physical sound carriers per staff[(a)], playing time < 25 min.	Corr. Coeff.	-.060	-.072	-.087	-.087	-.060
	Sig. (2-tailed)	.264	.312	.348	.412	.397
	N	350	202	117	91	204
Share of novelties[(b)] in physical sales	Corr. Coeff.	-.172(**)	-.055	-.012	-.208	-.235(**)
	Sig. (2-tailed)	.003	.440	.909	.064	.001
	N	306	203	94	80	204

** Correlation is significant at the .01 level (2-tailed).
* Correlation is significant at the .05 level (2-tailed).
[(a)] Full time equivalents.
[(b)] Released less than 18 months ago at time of sale.

12.6 SUMMARY

This chapter studies the evidence for two phenomena related to a process of creative destruction in the record industry over recent years: first, high innovation intensity among small, independent record companies during the recession period; second, a correlation between firm-level innovation intensity with firms' success.

In order to produce some empirical evidence related to these hypotheses, this chapter developed classifications and methods to survey innovation in cultural industries. The application of these methods in the VUT survey was partially successful. A main problem with the interpretation of findings concerns the comparability of results.

The question whether any type of firm is innovation intensive has no absolute answer but requires a suitable comparison. Rough comparisons with the results of other innovation surveys suggest that small, independent record companies exhibit high innovation intensity during the recession period. This applies to content creation if the release of new titles is accepted as a type of product innovation. It also applies to technical innovations and new promotion tools (as a type of process innovation). Concerning content creation, small record companies also tend to generate a greater number of product variants relative to firm size than their larger competitors, while the market value for each publication is lower (see section

11.2). Furthermore, there is some evidence that several technical innovations related to the dissemination of sound recordings diffused rapidly during the recession period, while it cannot be ruled out that the recession delayed adoption somewhat. These observations are consistent with a process of creative destruction and they corroborate findings on the variety of supply and the number of market entries presented in earlier chapters.

With regard to the second hypothesis, key measures of humdrum innovation outputs and content creation output correlate significantly with some measures of firms' success. This is not a universal finding across all indicators, however, and correlation coefficients are quite low where there appears to be a positive link. Due to the potential for intervening variables, it is particularly hard to interpret these findings and it seems questionable whether this type of analysis could provide a valid test for creative destruction by itself.

That said, observations are consistent with a process of creative destruction in the early phases of radical technological change, which is typically associated with diverse experimentation and great uncertainty for all market participants. The findings suggest that cost-saving process innovation in sound recording may be of particular significance. The application of digital technology for the dissemination and sales promotion of music appear most important for recent market entries. These points require more detailed attention.

This chapter concludes the part of this dissertation that drew on survey results in order to verify a process of creative destruction in the contemporary record industry. Going through a number of measures, the picture that emerges is clearly that of creative destruction. This view is supported by growth in the variety of supply and the number of record companies. Survey findings on smaller record companies imply a boom in this segment of the industry and innovation intensity seems much higher than would be the case in a pure case of plain destruction. So far, any boom in the 'independent' segment of the record industry is certainly not strong enough to compensate for falling revenues to the record industry at large, however.

Table 12.9: Variables used in chapter 12

Variable		Concept	Operationalisation (Question)	Response Categories (Code)
Δ Turnover		Change in firm's turnover during recession period	Difference between reports on turnover in 2004 and: a) 1998 – for firms founded before 1998, b) year of firm foundation plus 1 – for firms founded in 1998 or later (Questions 23. a and b)	Recoded to 'turnover has expanded since earlier year' (1), 'turnover fell into the same response category' (2), and 'turnover has fallen since earlier year' (3)
State of firm		State of the firm in general	Perceived state of the firm in general at time of survey (Question 1)	Five-point scale; between 'very good' (1) and 'insufficient' (5)
Δ State	**Since 1998**	Changes in the state of the firm over recession period	Changes in state of the firm between 1998 and time of the survey; firms founded before 1998 (Questions 6. i)	Five-point Likert scale; between 'improved strongly' (1) and 'deteriorated strongly' (5)
	Since foundation +1		Changes in state of the firm between first full calendar year of operation and time of the survey: firms founded after 1997 (Questions 6. ii to iix.)	
Prospects		Prospects of the firm in general	Expectations about the future of the firm in general at time of survey (Question 3)	☐ grows strongly (1) ☐ grows somewhat (2) ☐ stays the same (3) ☐ shrinks somewhat (4) ☐ shrinks strongly (5) ☐ will taken over by another firm (5) ☐ will be terminated (5)

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Variable	Concept	Operationalisation (Question)	Response Categories (Code)
Technical innovations, adoption (not used in correlations)	Time at which specific technical innovations were adopted by the firm	Year in which the following technical innovations were adopted by the firm: (1) Internet presence; (2) Retailing of physical sound-carriers via Online-shops; (3) Commercialisation of Downloads, Streams and Ringtones; (4) Commercialisation of novel types of sound-carriers (5) Digital Rights Management (Questions 14 a – e)	12 response categories between 'Never' (1), '2005' (2), and all years up to '1995 or earlier' (12)
Technical innovations	Technical innovativeness of firm	Number of different technical innovations adopted by firm. (Questions 14 a – e)	Year of adoption; Recoded to 'Adopted' (1) and 'Not adopted' (2); then added up
Index technical innovations	=	Technical innovations adopted by firm, taking account of adoption date (Questions 14 a – e)	Year of adoption; Recoded: - firm was among first 25% to adopt or adopted during year of foundation (3) - firm was among the first half to adopt or adopted during first year after foundation (2) - all other adoptions (1); then added up

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Variable		Concept		Operationalisation (Question)	Response Categories (Code)
Novel promotion		Innovation by firm concerning sales promotion via the Internet		Number of different, novel innovation tools adopted by the firm, including: (1) free downloads of songs or snipets (2) downloads of videoclips (3) press material online (4) online guestbook or forum (5) evaluation of logfiles (6) email newsletter (7) digital samples for journalists/multipliers (8) Artists' websites (9) Online communities (Questions 45 – 53)	'Yes' (1) and 'No' (2); Recoded, where more response categories were given; then added up
Durable investments		Humdrum Innovation input		Share of durable investments in total expenditure of firm, in particular expenditure on technical equipment and training (Question 40. i)	13 response categories between 0% (1) and 100% (13)
Creative Input	**Composition**	Content Creation Input	Expenditure on composition and lyrics	Share of expenditure on 'creative' services of the specified type in firm's total expenditure (Questions 40. b – d)	13 response categories between 0% (1) and 100% (13)
	Performers		Expenditure on Performers		
	Recording		Expenditure on Sound Recording		

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Variable	Concept	Operationalisation (Question)	Response Categories (Code)
Creative Input, total	Content Creation Input, total	Share of expenditure on 'creative' services as specified above in firm's total expenditure; sum of scale value for each question (Questions 40.b – d)	13 response categories between 0% (1) and 100% (13); Results for three questions added up
A&R	Expenditure on Artists & Repertoire	Share of expenditure on 'artists & repertoire' services in firm's total expenditure (Questions 40.a)	13 response categories between 0% (1) and 100% (13)
Δ Composition **Δ Performers** **Δ Recording**	Change in expenditure on the specified type of content creation input during recession period	Substantial change in expenditure on 'creative' services relative to total expenditure between 2004 and: a) 1998 – for firms founded before 1998, b) year of firm foundation plus 1 – for firms founded in 1998 or later (Questions 41.b – d)	☐ grew particularly strongly since [*reference year*] (1) ☐ no strong change (2) ☐ fell particularly strongly since [*reference year*] (3)
Novelties per staff, > 25min	Content creation output relative to firm size, new Long-plays	Number of new, long-play titles (playing time >25 min.) released on physical sound carriers divided by number of staff in fte (Questions 26.a and 21.a)	Open questions accepting numerical values only; Releases divided by number of staff (fte)
Novelties per staff, <25min	Content creation output relative to firm size, new Singles and EPs	Number of new, shorter titles (playing time <25 min.) released on physical sound carriers divided by number of staff in fte (Questions 26.b and 21.a)	Open questions accepting numerical values only; Releases divided by number of staff (fte)

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Variable	Concept	Operationalisation (Question)	Response Categories (Code)
Titles per staff, > 25min	Content creation output relative to firm size, all Long-plays	Number of different, long-play titles (playing time >25 min.) marketed on physical sound carriers divided by number of staff in fte (Questions 29.a and 21.a)	Open questions accepting numerical values only; Titles divided by number of staff (fte)
Titles per staff, <25min	Content creation output relative to firm size, all Singles and EPs	Number of different, shorter titles (playing time <25 min.) marketed on physical sound carriers divided by number of staff in fte (Questions 29.b and 21. a)	Open questions accepting numerical values only; Titles divided by number of staff (fte)
Share of novelties in sales	Content creation output in terms of sales	The share of novelties – released less than 18 months ago at time of sale – in total unit sales (Question 33.a)	13 response categories between 0% (1) and 100% (13)
(Importance of innovations)	Perceived importance of various types of innovation	Perceived importance of various types of technical innovation and content creation for the VUT-member firm, including: (1) Internet presence in general (2) Sound-carriers, online retailing (3) Sales of new, artistic sound-recordings (4) Sales of Internet Downloads or Streams (5) Sales of novel sound-carriers (e.g. enhanced CD, DVD, SA-CD) (6) Sales of Ringtones (7) Digital Rights Management / DRM (Questions 16 a to e)	☐ high (1) ☐ intermediate (2) ☐ low (3) ☐ not important at all (4)

PART III.
WHAT EXPLAINS THE BOOM OF SMALL, INDEPENDENT RECORD COMPANIES?

Overview. The third part of this dissertation addresses explanations for the apparent boom among small, independent record companies in spite of a severe recession in the record industry at large. That is, it deals with causes for the creative aspect of creative destruction in the record industry. Chapter 13 discusses evidence on changes in alternative types of income from the commercialisation of sound recordings and changes in costs. It also discusses the role that deliberate use of the Internet as a promotion tool might have played in explaining the competitiveness of 'indies'. In addition, this chapter addresses the evidence for two phenomena that might relate to the intrinsic motivation of some suppliers of cultural products: amateurisation and disintermediation. Finally, chapter 14 rounds off the empirical investigation by studying the role of the copyright system more directly.

13. ADDITIONAL INCOME, COSTS, ONLINE PROMOTION, AND INTRINSIC MOTIVATION

13.1 INTRODUCTION

The preceding section concluded the discussion of the general evidence for creative destruction in the record industry. This section deals with a number of hypothetical explanations for the creative element in the process of creative destruction. In other words, what explains the apparent boom among small, independent record companies in spite of a deep recession and alleviated levels of unauthorised copying?

Much of the economic literature on unauthorised, digital copying is based on strong assumptions regarding competition, stable costs that are virtually identical for all suppliers, and the pre-eminence of pecuniary incentives for suppliers. On the basis of these assumptions, it seems impossible to explain a boom among small, independent record companies during a severe recession in the record industry at large.

Once these assumptions are released, on the other hand, there is a plethora of possible explanations for the resilience of parts of the record industry in spite of unauthorised copying and a severe recession that coincides with it.

One possible explanation of a boom at the lower end of the market concerns the net effects of unauthorised copying. As argued in chapter 2, an effective copyright system entails costs and benefits to suppliers and the relative weight of costs and benefits may differ between well-established incumbents on the one hand and fringe suppliers or newcomers on the other. That said, it is imaginable that the net effect of more extensive unauthorised copying is less harmful at the lower end of the market. Copyright is of central interest in this study and with chapter 14, a separate section of this dissertation is reserved to discussing changes to the copyright system as a possible explanation of the boom.

Beforehand, this chapter focuses on four phenomena less directly linked to the strength of the copyright system, which might provide explanations for the apparent boom among ‘indies’. These hypothetical explanations are: (1) rising income for record companies from beyond the primary market for sound recordings; (2) falling production costs; (3) new ways in which signals of quality on sound recordings reach potential consumers that foster the competitiveness of indies; and (4) non-pecuniary incentives as exemplified by amateurisation and disintermediation.

Based on these four issues, the structure of the empirical investigation is reasonably straightforward. The underlying theoretical reasoning is somewhat more complex and draws on the conventional economic theory of market entry, theories of technological change and specific aspects of cultural economics as well as the economic literature on copyright.

The conventional economic theory of market entry

The mainstream IO literature identifies factors that promote market entry. It seems reasonable to assume that the competitiveness of fringe suppliers can be discussed in very similar terms to the prospects of rational newcomers.

According to standard IO theory (e.g. Orr, 1974; Geroski, 1991), rates of entry are positively related to the size of the industry, profits and growth. During the recession after 1998, record industry growth is negative and industry size in terms of turnover is shrinking by definition, both of which should be associated with lower rates of entry. Profits should also be lower even though they need not be negative. Record companies may cut back on variable costs, say by laying off staff, focusing promotion on a smaller number of titles or by not renewing record deals that are running out. Dominant firms may also melt off super-normal profits.

Rates of entry are inversely related to measures of economies of scale, of capital requirements, advertising intensity, R&D intensity, business risk, and high industry concentration. Industry concentration in the record industry continues to be great with the top four firms accounting for roughly 75% of the global market and about the same degree of concentration in Germany. It is difficult to imagine that business risk would be anything but higher as accumulated industry revenues fall and product differentiation increases.

This leaves four factors in mainstream economic theories of market entry that might provide an explanation for relatively high levels of market entry in spite of a recession: advertising intensity, R&D intensity, economies of scale or diseconomies of scale.

All of these factors relate to costs in the record industry on which there is very little decent data. More fundamentally, these issues relate to *changes* in costs and these cost reductions would have to be very substantial if they were to explain numerous market entries during a severe recession. In principle, two types of developments in costs could explain this counter-intuitive observation: first, changes in cost structure that would permanently reduce minimum efficient scales; second, substantial differences in the capabilities of newcomers and incumbents to cope with technological change, which would result in temporary advantages for smaller firms during a transitional period. The latter development would give way to (re-)integration after a stabilisation of new technologies and general adoption.

Empirical evidence on several types of costs incurred by record companies will be used below to infer on changes regarding advertising, R&D, economies of scale and diseconomies of scale during the recession period. Advertising, or rather the broader concept of sales promotion, will receive particular attention, as costs seem to have changed for particular many firms in this area.

Technological change and the boom among 'indies'

The main weakness of the standard economic literature is that it has little to say about how changes in costs or in the productivity of various inputs come about. It tends to abstract from the most important source of cost reductions and productivity increases over time, namely technological change. In the case of the record industry, it seems extremely improbable that market entry in the record industry could be explained by sudden productivity increases that are somehow restricted to newcomers at a stable state of technology. Structuralist-evolutionary theories of economic development provide a theoretical framework that incorporates technological change and its consequences for productivity, competition and industry structure.

A relatively good performance of many small record companies and numerous market entries may be explained by more successful innovation among fringe suppliers and newcomers in comparison to larger incumbents. Inertia of market leaders and deficient incentives to conduct radical innovation are an important source of diseconomies of scale (Scherer and Ross, 1990). Chapter 12 has already discussed aspects of innovation intensity in the record industry over recent years. This chapter continues this discussion of innovation by 'indies' and its consequences.

In principle, innovation by record companies may have two consequences. First, product innovation may establish new markets (say use of sound recordings in novel multi-media applications) that provide additional income to suppliers of sound recordings. Product innovation should show up in rising, additional sources of revenues to record companies. On the other, falling costs due to process innovation could boost the productivity and thus the competitiveness of the more innovative firms, which will extend their market share in the process. One way in which process innovation should show up is by falling costs. Productivity increases that concern higher quality of output at constant costs are trickier to identify.

Intrinsic motivation in the cultural sector

A very different, hypothetical explanation of the resilience of 'indies' during the recession refers to the idiosyncratic incentive structure of suppliers in cultural industries. As discussed in chapter 4, a main theme in the cultural economics literature is non-pecuniary incentives to create. If work relating to cultural creativity has a positive value (or is less distasteful than alternatives), pecuniary revenues may not be as important to explain record industry output as a heedless application of standard economic theory would imply. Section 13.5 discusses the extent to which self-motivated amateurs and creators that act as self-issuers account for the resilience of 'indies' during the recession.

This section uses empirical evidence to discuss the importance of these different explanations for a boom among small, independent record companies. It does not develop a precise, quantitative comparison of factors nor does it offer a comprehensive theoretical model that would pretend to offer detailed, deductive predictions. This reflects the lack of information in particular on the precise level of costs and profits as discussed in section 13.3 below. More profoundly, it reflects the notion that a process of radical technological change is extremely hard to model due to its complexity and the uncertainty involved. One aspect of this complexity is that radical innovations may alter costs substantially. Another is the potential for feedback between different factors. For instance, falling fixed costs could be a factor in a process of amateurisation and disintermediation. Increased contestability might even perpetuate cost reductions as incentives to innovate are fostered throughout the industry and the diversity of suppliers increases. At the same time, related markets are also affected by the diffusion of digital ICT and new related markets may emerge. Within these limits, the analysis should considerably extend the understanding of developments in the contemporary record industry that play such an important role in the debate on reforms of the copyright system.

As mentioned above, the discussion is structured according to different types of data. First, revenues to record companies beyond the primary market for sound recordings are discussed. A second section addresses changes in record companies' costs. A third set of data concerns technological change and the way record companies can draw attention to their repertoire. Finally, evidence for amateurisation and disintermediation during the recession is covered.

13.2 ADDITIONAL SOURCES OF INCOME

Studies of the recession in the record industry tend to focus on the primary market in which copies are sold to end-consumers. IFPI statistics for example do not cover all sources of income to suppliers of sound recordings. Most importantly, they omit income from the secondary market for commercial use and merchandising.

Thus, an immediate explanation for the resilience of small, independent record companies in spite of a recession in the primary market for sound recordings would be additional sources of income from marketing (rights to) sound recordings or related products. What is more, many firms conducting the functions of a record company are multi-product firms in the sense that they also sell other services related to the music industry. Within a multi-product firm, a record company division may be continued even if it is not profitable by itself because sound-recordings may be complementary to other music-related services supplied by the firm and boost the entire firm's profitability. Growth in these alternative

sources of revenues might have compensated for falling revenues from the primary market for sound recordings to some extent. This issue puts the extent of the recession into question.

The income of VUT-member firms was covered by a set of questions. Alternative income would be more likely to compensate for any adverse changes in the primary market, the greater its share in total revenues and more quickly it would have grown during the recession.

This produces two questions regarding a number of revenues to VUT-members beyond the primary market for sound recordings: (1) how high is the share of alternative revenues in the total? (2) How quickly have alternative revenues (or profits from alternative revenues[187]) grown during the recession? These questions are discussed below both for revenues from the activities of a record company in a narrow sense as well as for other types of music related services that many VUT-members conduct and that may be complementary to sound-recordings.

Revenues for record company divisions

The part of the VUT-survey that focused explicitly on the record company division of responding firms contained a question on the share of various types of income from activities as a record company in 2004. Table 13.1 displays the results. In order to avoid distortions from respondents for which the commercialisation of sound recordings were not a main source of income, only firms with substantial income from their activities as record companies are included. The cut-off was the same as in the questions concerning innovation: only those firms were included that reported to have incurred over 20% of their income from the commercialisation of 'exploitation rights related to copyrights' they held in sound recordings.

The traditional market for physical sound carriers, in which CDs or other physical sound-carriers are sold in bricks-and-mortar retail outlets, remained by far the largest source of income for record company divisions. The mode for this type of revenues is the category of '70.1-80%' of the total and the majority of firms (59.3%) report more than 60%. The mode for sales of physical sound-carriers via online shops is at '0.1-5%' and about a quarter of respondents had incurred more than 20% from this type of revenues. Together, the commercialisation of physical sound carriers makes up the vast majority of revenues.

So-called 'digital' sales of downloads, streams or ringtones are also covered in the BV Phono statistics on record industry sales. According to estimations in section 11, digital sales of downloads, streams and ringtones accounted for only 1.6% of unit sales by VUT-members in 2004 and the market share small, independent record companies in this segment was relatively low at the time. The results presented in table 11.4 confirm the narrow limits of the digital market in 2004. Even if digital sales were more profitable per unit sold for record

[187] For the sake of simplicity, the focus remains on revenues rather than profits in this section.

companies, this new distribution channel does not provide an explanation for a boom among 'indies' up to that year.

Income to suppliers of sound recordings from the secondary market and from merchandising is of particular interest because it is not covered in the widely used BV Phono / IFPI statistics. This applies to payments from the relevant collecting society GVL, licensing of synchronisation rights outside the collective administration of rights, and merchandising. For VUT-members, revenues from these sources are all modest with the vast majority of firms reporting no more than 5%.[188] In short, income from the secondary market for sound recordings and from merchandising accounts only for a miniscule share in the income of VUT-members' record company divisions.

It would have taken a very rapid expansion in these revenues to compensate for any losses in the primary market during the recession. A set of questions in the VUT-survey addressed changes in the relative importance of revenues for record company divisions during the recession. The reference year was 1998 for firms founded before 1998 and the first year after foundation for firms founded in 1998 or later. Responses were recorded in a three-point scale. Tables 13.2 a and b display the results and the outcome of a one sample t-test for a significant deviation of the mean of responses from the neutral value of 2 ('no strong change').

For all types of revenues, more firms reported increases than decreases and the mode was 'no strong change'. Concerning the primary market, relatively many firms reported substantial change in their revenues from physical sound carriers that were sold via traditional retailers. Yet, reports of positive and negative growth are almost evenly distributed and the mean does not deviate significantly from the neutral value. The greatest number of firms reported strong growth for 'sales of physical sound-carriers marketed via online-shops' (83 firms or 38.7% of all valid responses). The mean response of 1.69 is the lowest for all categories and significantly lower than the neutral value at the .001 level. The mean response for digital sales ('downloads, streams, ringtones') is also significantly lower than 2 at the .001 level. Here 28.9% of respondents reported on an expansion of this type of income but this area accounted for a very modest share in overall revenues at the time.

Concerning alternatives sources of revenues not typically covered in record industry statistics, significantly more firms reported growth rather than falls for 'synchronisation rights' and for 'merchandising' (significant at the .01 level). However, the vast majority reported no strong change during the recession.

Interpretations of these results have their limits due to the crude scale in which results were recorded. Nevertheless, they entail two points. First, in the secondary market for sound recordings and merchandising, the available evidence does not identify a source of income

[188] These findings are consistent with the observation that revenues to all record companies from secondary use administered by the GVL (2000; 2003) have expanded only modestly from ca. €40 million in 1997 (for the accounting years 1996) to ca. €53 million in 2002 (for the year 2001) in nominal terms.

that would have grown strongly for so many firms that it would provide a probable explanation for more than a miniscule part of the boom among independent firms. Second, in spite of the recession in the primary market, more 'indies' report growth in some types of income in this area than from the secondary market or merchandising.

Other music-related sources of revenues for VUT-members

It is also possible that record companies increased their income from activities beyond the market for sound recordings, say by being involved in publishing, the live business, or other activities even further removed from the market for sound recordings itself. A broader scope of products supplied may sustain firms involved with the record industry in spite of a recession in the primary market for sound recordings. If sound-recordings are complements to other, music-related services, even record company divisions in deficit may be retained by multi-product firms in the music industry.

As observed in chapter 9, a complete specialisation on the activities of record companies in a narrow sense was the exception for VUT-members. It has even been suggested that a broader shift is occurring in the record industry, in which the primary market of recordings is losing its role as the main source of revenues for the music industry (e.g. Tschmuck, 2003). Revenues in the live business are reported to have risen substantially during the recession in the market for recordings. At least some major firms in the music industry are testing '360-degree models' in which a single intermediary participates in all sources of revenues from the commercialisation of a performer's music and image.

The discussion is analogous to that in the preceding section. In order to determine whether the commercialisation of related goods and services explain an explanation of record companies' resilience during the recession, the questions are: first, how large is the share of revenues from the wider music industry in the total? Second, how quickly have these revenues (or profits from these revenues[189]) grown during the recession?

Table 13.3 exhibits the share in total turnover that various types of activities have had for VUT-members in 2004. The responses of all VUT-member firms are reported who are independent enterprises, since for this type of question, firms not highly specialised on the recording business are of interest. The activities of a record company in a narrow sense are the 'acquisition and commercialisation of exploitation rights in sound recordings' (see chapter 12). Three other categories – the 'distribution and retailing of sound recordings', running a 'record studio' and 'music production' – refer to other activities in the record industry that record companies may or may not produce in-house. Of particular interest for this section are 'publishing' and 'other' income.

Responses on 'record company' are quite evenly distributed across all response categories. Nearly half of all VUT-member firms (49.2%) report that turnover generated by

[189] For the sake of simplicity, the focus remains on revenues rather than profits in this section.

their record company division in a narrow sense accounts for more than 40% of the firm's total. Among the further activities in the record industry – 'distribution and retailing', 'recording' and 'music production' – the vast majority of firms reports no more than 20% with a mode of 0%.

Beyond the record industry proper, a third (33.5%) of all firms reported more than 10% of their turnover being in 'publishing' and 14.9% reported more than 30%. For 'other' activities not covered in one of the sub-questions, 40.1% of respondents reported a share of more than 10% and 21.2% reported more than 30% in total turnover.

To specify 'other' activities further, the 55.6% of firms reporting more than 5% turnover from 'other' activities were asked to report what these other activities were. Table 13.5 presents the results. For the 'live business' and 'artist management', a sizable minority of this subgroup confirmed some activities (42.1% and 41.0% respectively) – see chapter 9 on 'other' activities. Due to the substantial number of non-responses on the question concerning 'other activities' and because these types of activities were only addressed in a follow-up question for a filtered group of respondents, the exact proportion of all firms in the VUT that generated some revenues with 'other activities' cannot be specified. Nevertheless, the live business and artist management seem to be important alternative sources of revenues for some record companies, while only a minority of VUT-member firms conducted these types of activities at all.

Finally, tables 13.5 a and b address the reports on changes in the overall turnover of VUT-members. Again, the reference year is 1998 for firms founded in 1997 or earlier, and the year after the foundation of the firm for firms that started to operate in 1998 or later. Relatively few firms report strong changes, and on most sub-questions there was no clear tendency in the results. For 'publishing' and for 'other' activities, the mean of responses deviates most significantly from the neutral value of 2 (significant at the .001 level). Relatively many firms reported an increase in the share of these activities in total turnover during the recession.

Overall, music-related activities beyond the record industry proper are of intermediate importance for VUT-members and they seem to have grown among many firms over recent years. On the other, the majority of firms generated no or a miniscule share in overall turnover with these activities. Revenues from supplying other music-related goods and services related to sound-recordings may contribute to the resilience of small, independent record companies during the recession but they offer at most a partial explanation for it.

Summary

In summary, additional revenues to record company divisions from activities beyond the primary market for sound recordings cannot explain the resilience of small, independent record companies in the time under investigation. Furthermore, a substantial number of VUT-member firms report turnover from activities beyond the record industry, many of which are

music-related, such as publishing, the live business and artists' management. Increased income from such activities might provide a partial explanation for the boom among 'indies'. It seems improbable that this explains more than a small part of the boom among small, independent record companies, since only a minority of respondents report on extensive activities beyond the record industry. It seems that much of the resilience among 'indies' is simply sustained by stable income from the primary market in which copies are sold to end-consumers.

Table 13.1: Revenues of VUT-members' record company division from various sources (% share in total revenues) [a] [b]

	% Share in valid responses						
Share in total revenues	Sound-carriers, trad. retailing	Sound-carriers, online retailing	Downloads, Streams, Ringtones	Collecting society GVL	Synchroni-sation rights	Merchan-dising	Others
0%	5.6	16.6	58.6	30.6	66.7	54.5	46.6
0.1-5%	2.8	21.5	23.2	48.3	18.5	23.8	31.4
5.1-10%	1.4	19.0	8.9	13.9	8.2	9.9	11.0
10.1-20%	4.6	17.6	5.9	4.8	5.1	6.4	5.8
20.1-30%	4.6	9.8	1.0	1.4	0.5	2.0	1.0
30.1-40%	3.2	2.9	0.5	0.5	0.5	2.0	1.0
40.1-50%	6.5	3.9	0.5	0.5	0.5	0.5	1.0
50.1-60%	12.0	3.4	1.0	0	0	0.5	0.5
60.1-70%	10.2	1.0	0.5	0	0	0.5	0.5
70.1-80%	17.6	2.0	0	0	0	0	0.5
80.1-90%	17.1	0.5	0	0	0	0	0.5
90.1-99.9%	8.8	0.5	0	0	0	0	0
100%	5.6	1.5	0	0	0	0	0
Valid N	216	205	203	209	195	202	191

[a] Based on 294 firms for which the activities of a record company accounted for more than 20% of the total.
[b] See survey questions 38.a-e.

Tables 13.2: Change in revenues of VUT-members' record company division from various sources [a] [b]

a) Descriptives

Valid %	Δ Sound-carriers, trad. retailing	Δ Sound-carriers, online retailing	Δ Downloads, Streams, Ringtones	Δ Collecting society GVL	Δ Synchroni-sation rights	Δ Merchan-dising	Δ Others
Grew particularly strongly since [year] [c] (1)	28.2	38.7	28.9	13.9	12.1	14.6	10.2
No strong change since [year] [c] (2)	45.3	53.4	69.5	77.8	86.3	80.6	85.2
Fell particularly strongly since [year] [c] (3)	26.5	8.0	1.6	8.2	1.6	4.9	4.7
Valid N	181	163	128	158	124	144	128
Mean	1.98	1.69	1.73	1.94	1.90	1.90	1.95
Std. Deviation	.741	.612	.481	.469	.357	.432	.383

[a] Based on 294 firms for which the activities of a record company accounted for more than 20% of the total.
[b] See survey questions 39.a-e.
[c] 1998 for firms founded before 1998; year of firm foundation plus 1 for firms founded since 1998.

b) One Sample T-test

	Test Value = 2					
					95% Confidence Interval of the Difference	
	T	df	Sig. (2-tailed)	Mean Difference	Lower	Upper
Δ Sound-carriers, trad. retailing	-.301	180	.764	-.017	-.13	.09
Δ Sound-carriers, online retailing	-6.400	162	.000	-.307	-.40	-.21
Δ Downloads, Streams, Ringtones	-6.426	127	.000	-.273	-.36	-.19
Δ Collecting society GVL	-1.528	157	.129	-.057	-.13	.02
Δ Synchronisation rights	-3.274	123	.001	-.105	-.17	-.04
Δ Merchandising	-2.703	143	.008	-.097	-.17	-.03
Δ Others	-1.616	127	.109	-.055	-.12	.01

Table 13.3: The share in total VUT-members' turnover generated by various music-related activities [(a) (b)]

Valid %	Record company / label	Distribution and Retailing	Recording	Music Production	Publishing	Others
0%	6.3	21.8	55.7	45.5	32.2	30.3
0.1-5%	8.2	14.0	7.0	11.1	16.3	14.1
5.1-10%	9.1	12.9	9.7	11.1	18.0	15.5
10.1-20%	11.1	15.2	8.7	13.1	9.3	8.8
20.1-30%	8.9	7.7	7.4	8.0	9.3	10.1
30.1-40%	7.2	4.4	4.4	2.9	4.9	4.4
40.1-50%	5.4	4.1	2.7	2.5	2.2	5.7
50.1-60%	6.5	1.9	2.0	2.5	1.4	3.0
60.1-70%	5.6	4.7	.3	.6	1.4	1.7
70.1-80%	6.3	3.9	1.0	1.0	.8	1.3
80.1-90%	8.0	5.2	.7	.3	1.1	2.0
90.1-99.9%	7.2	1.7	0	.6	1.9	1.3
100%	10.2	2.5	.3	.6	1.4	1.7
Valid N	461	363	298	314	367	297

[(a)] Based on 508 member firms responding to the VUT survey.
[(b)] See survey questions 11.a-f.

Table 13.4: Results of a follow-up question specifying 'Other' activities with which VUT-members generated turnover in 2004 [(a) (b)]

Valid %	Live-business	Artist management	A&R for other music enterprises	Promotion and marketing for other music enterprises	Others
No (0)	57.9	59.0	84.1	76.8	53.7
Yes (1)	42.1	41.0	15.9	23.2	46.3
Valid N	164	161	164	164	164
Mean	.42	.41	.16	.23	.46
Std. Deviation	.495	.493	.366	.423	.500

[(a)] Based on 164 VUT-member firms that reported more than 5% of total firm turnover form 'other' activities.
[(b)] See survey questions 6 a-e.

Tables 13.5: Changes in the turnover of VUT-members during the recession period up to 2004 [(a) (b)]

a) Descriptives

Valid %	Δ Record company / label	Δ Distribution and Retailing	Δ Recording	Δ Music Production	Δ Publi-shing	Δ Others
Grew particularly strongly since [year] [(c)] (1)	29.8	29.4	15.5	21.7	24.1	30.0
No strong change since [year] [(c)] (2)	50.6	48.6	71.5	66.5	66.7	63.0
Fell particularly strongly since [year] [(c)] (3)	19.6	22.0	13.0	11.7	9.2	7.0
Valid N	362	282	207	230	282	200
Mean	1.90	1.93	1.98	1.90	1.85	1.77
Std. Deviation	.697	.714	.535	.571	.559	.565

[(a)] Based on 585 member firms responding to the VUT survey; missing=77.
[(b)] See survey questions 12.a-f.
[(c)] 1998 for firms founded before 1998; year of firm foundation plus 1 for firms founded in 1998 or later.

b) One Sample T-test

	Test Value = 2					
	t	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference Lower	Upper
Record Company	-2.791	361	.006	-.102	-.17	-.03
Distribution and Retailing	-1.750	281	.081	-.074	-.16	.01
Recording Studio	-.650	206	.516	-.024	-.10	.05
Music Production	-2.655	229	.008	-.100	-.17	-.03
Publisher	-4.476	281	.000	-.149	-.21	-.08
Others	-5.762	199	.000	-.230	-.31	-.15

13.3 COSTS

There are at best very rough estimates on total production costs in the record industry (cf. Peitz and Waelbroeck, 2005). Regulators' ignorance about costs is a reasonably well-familiar problem in the economic literature on public regulation of markets (Weitzman, 1974; Baron and Myerson, 1982). According to Caves (2003), ignorance about costs in the cultural industries even applies to industry insiders. He argues that profit sharing between collaborators is often not an option because each side of the contract is ill informed about the other sides' costs, the solution being revenue sharing agreements.

There are several reasons why costs may be particularly intransparent in the contemporary record industry. One is that sound-recordings are highly differentiated and suppliers may opt for very different levels of initial investments when producing and marketing a record. Second, due to the hifilova cost structure, marginal costs pricing is rarely an option and retail prices may not reflect changes in costs reliably. Third, the record industry is highly integrated with four major record companies accounting for roughly three quarters of the global market. An oligopolistic market structure would be another reason why retail prices would not reflect costs reliably. Fourth, firms may have incentives to actively obscure their costs. This would apply to firms in a collusive oligopoly that wish to conceal super-normal profits. More generally, it would apply to any market participant that can hope to enjoy bargaining advantages from asymmetric information. Fifth, ex ante there are few quantifiable measures of the efficiency of important investment decisions. This applies in particular where creative/artistic choices are concerned (Caves, 2000). It may also be the case regarding sales promotion as another key aspect of production in cultural industries. Fifth, in an uncertain market, record companies will typically need to cross-subsidise a majority of loss making investments with a minority of 'hits', which complicates the estimation of total costs as it includes strategic decisions about risk reduction through diversification. Finally, costs may change substantially over time especially with the application of digital ICT on various aspects of production.

Incomplete information on costs obstructs the application of standard economic theory of production in order to explain changes in the record industry with the diffusion of digital ICT. This chapter will deal with evidence on costs, which will mostly be confined to crude measures regarding the relative import of different types of production activities and changes over time. Over time, changes in costs may also be reflected in the survival rate of different types of firms and the changes to the industry structure that result from it (Stigler, 1958), as discussed in particular in chapter 8.

Falling costs could be a second, immediate explanation for the resilience of small record companies, say due to successful process innovation by record companies or their suppliers and thus lower prices for inputs. In order to determine whether cost reductions may contribute to the resilience of 'indies' during the recession, the question is whether costs have

fallen rapidly for any type of service related to the production and marketing of sound recordings.

Due to the crude scale in which changes in costs were measured, reports on costs at present are of interest to contextualise changes in costs. In contrast to the discussion of revenues in the preceding section, types of costs that account for a low share in total costs at present are still of interest, however. That is because it is possible that low costs at present are the result of substantial falls in costs in the recent past.

For the purpose of this section, expenditure is used as a measure of cost. This abstracts from the possibility that during the recession, record companies would have accepted low-quality inputs that compromise the quality of outputs. Given the evidence for rising demand for independent record companies' output over recent years, this seems a reasonable assumption.

See tables 13.6 a and b for descriptive statistics on the share of different types of expenditure for the record company division of VUT-member firms. Only firms with a substantial share of revenues from their activities as record companies in total revenues are included (>20%), in order to avoid distortions from firms for which the commercialisation of sound recordings is of minor concern. A relatively large number of VUT-members' report that a substantial share of the total expenditure of their record company division goes to the 'reproduction' of physical sound carriers. The vast majority (83.6%) reported on a share of more than 10% and more than a third (36%) reported on more than 30% for this type of expenditure. This seems surprising, since most sources estimate these costs at well below 1US$ per copy for larger record companies (e.g. Vogel, 2004). Because reproduction costs are negligible where sound recordings are marketed as downloads, this illustrates some of the cost reductions feasible for smaller firms in the 'digital' market.

Two further, relatively important positions are 'sales promotion' and 'performers'. Both account for more than 10% in total expenditure for the majority of record company divisions. All other types of expenditure made up no more than 10% for the majority of record company divisions.

Tables 13.7 a and b present the results on changes in the expenditure of the record company during the recession. Respondents were significantly more likely to report increases in the share of expenditure than decreases for six out of ten types of expenditure covered. This applied to 'sales promotion', 'reproduction' and 'distribution and retailing'. It also applied to expenditure on 'performers', 'compositions', and 'A&R'. There is no significant difference in the number of firms reporting expenditure increases or decreases for the 'recording' process.

The latter four variables concern content creation, which fulfils a function that is roughly analogous to R&D concerning product innovation in manufacturing firms. There is no evidence that a decreasing R&D intensity – due to falling costs in developing new product variants – would explain a boom among 'indies' during the recession period.

For ‘sales promotion’, the greatest share of respondents (38.6%) reports on strong expenditure increases. The mean of responses (1.75) is significantly lower than the neutral value of 2 at the .001 level. That many firms would increase their promotion expenditure seems intuitive in a market characterised by increasing product differentiation, demand uncertainty and a rapidly increasing number of suppliers. However, oversupply and quality uncertainty are general characteristic of markets for reproducible cultural products so that the need to promote effectively are hardly new. If many record companies expand their expenditure on sales promotion, one explanation is that the marginal benefit of investments in this area has increased in comparison to investments in other aspects of the production and commercialisation of sound recordings.

Finally, for ‘durable investments’ including expenditure on technical equipment and training, a majority of firms (68.2%) reported strong falls. This is the only type of expenditure for which more firms reported substantial decreases than increases (significant at the .05 level) and few firms reported no change. In combination with a reasonable performance of firms (see chapter 10), strong decreases in durable investments are consistent with a process of cost-reducing, radical technological change.[190] The result on durable investments is of particular interest because this variable provides a reasonable indication of fixed costs. Much of the technical equipment and the specialised skills acquired in training should be specific to the record industry and many durable investments will be sunk. Falling fixed costs are associated with lower barriers to entry and reduced economies of scale. They may provide an explanation for the greater resilience of ‘indies’ during the recession in comparison to larger incumbents.

[190] It seems possible that much of this result would be due to the relatively young age of firms. Like for most newly founded enterprises, durable investments should make up a much greater share in total expenditure during the first years of operation than later on. However, a correlation of firm age and change in durable investments produces no significant results (correlation coefficient=-.118; sig. (two-tailed)=.150; Spearman’s rho). This supports the view that younger firms are not significantly more likely to have experienced substantial falls in expenditure on ‘durable investments’ and this type of expenditure seems to have fallen for relatively many firms in general.

Tables 13.6: Expenditure of VUT-members' record company division on various services (% share of total expenditure)

a) Complete results[a] [b]

	% Share in valid responses									
Share in total expenditure	A&R	Compositions	Performers	Recording	Sales promotion	Re-production	Distribution and Retailing	Licenses	Durable investments	Others
0%	19.5	24.1	13.9	19.9	4.4	1.4	14.9	59.4	17.7	30.2
0.1-5%	35.6	13.1	9.8	21.4	13.1	4.2	24.6	16.6	31.8	44.0
5.1-10%	21.0	19.6	19.1	18.9	20.4	10.8	19.5	9.1	22.7	10.7
10.1-20%	9.3	30.2	28.4	22.3	28.2	27.8	25.1	8.6	18.2	10.1
20.1-30%	6.3	9.0	18.0	8.7	17.0	19.8	7.2	3.2	5.1	3.8
30.1-40%	2.9	3.0	5.2	4.9	9.2	16.0	5.1	1.6	2.0	0
40.1-50%	2.0	0	2.1	2.4	3.9	6.1	1.0	.5	0	1.3
50.1-60%	1.5	.5	1.5	1.0	1.5	6.1	.5	0	1.5	0
60.1-70%	.5	0	1.5	0	1.5	2.4	.5	0	0	0
70.1-80%	.5	0	.5	.5	.5	1.9	0	.5	.5	0
80.1-90%	.5	.5	0	0	.5	.9	0	0	0	0
90.1-99,9%	.5	0	0	0	0	0	0	.5	.5	0
100%	0	0	0	0	0	2.4	1.5	0	0	0
Valid N	205	199	194	206	206	212	195	187	198	159

[a] Based on 294 firms for which the activities of a record company accounted for more than 20% of the total.
[b] See survey questions 40.a-j.

b) The share of firms reporting a share in total expenditure of more than 10% and of more than 30% for various services [a]

Valid %, cumulative	A&R	Compositions	Performers	Recording	Sales promotion	Re-production	Distribution and Retailing	Licenses	Durable investments	Others
> 10%	23.9	43.2	57.2	39.8	62.1	83.6	41.0	14.9	27.8	5.1
> 30%	8.3	4.0	10.8	8.8	16.9	36.0	8.7	3.1	4.5	1.2
Valid N	205	199	194	206	206	212	195	187	198	159

[a] Based on 294 firms for which the activities of a record company accounted for more than 20% of the total.

Tables 13.7: Changes in the expenditure of VUT-members' record company divisions on various services

a) Descriptives [(a) (b)]

Valid %	Δ A&R	Δ Compositions	Δ Performers	Δ Recording	Δ Sales promotion	Δ Re-production	Δ Distribution and Retailing	Δ Licenses	Δ Durable investments	Δ Others
Grew particularly strongly since [year] [(c)] (1)	15.2	14.6	19.2	15.3	38.6	25.2	20.9	8.9	21.2	5.0
No strong change since [year] [(c)] (2)	77.5	80.6	75.5	70.7	48.1	63.2	70.9	87.4	10.6	91.0
Fell particularly strongly since [year] [(c)] (3)	7.3	4.9	5.3	14.0	13.3	11.6	8.1	3.7	68.2	4.0
Valid N	151	144	151	150	158	155	148	135	151	100
Mean	1.92	1.90	1.86	1.99	1.75	1.86	1.87	1.95	2.47	1.99
Std. Deviation	.469	.432	.477	.543	.677	.593	.525	.352	.823	.301

[(a)] Based on 294 firms for which the activities of a record company accounted for more than 20% of the total.
[(b)] See survey questions 41.a-j.
[(c)] 1998 for firms founded before 1998; year of firm foundation plus 1 for firms founded in 1998 or later.

b) One Sample T-test

	Test Value = 2					
			Sig.	Mean	95% Confidence Interval of the Difference	
	t	df	(2-tailed)	Difference	Lower	Upper
A&R	-2.081	150	.039	-.079	-.15	.00
Composition	-2.703	143	.008	-.097	-.17	-.03
Performers	-3.585	150	.000	-.139	-.22	-.06
Recording	-.301	149	.764	-.013	-.10	.07
Sales Promotion	-4.703	157	.000	-.253	-.36	-.15
Reproduction	-2.844	154	.005	-.135	-.23	-.04
Distribution and Retailing	-2.973	147	.003	-.128	-.21	-.04
Licenses	-1.710	134	.090	-.052	-.11	.01
Durable Investments	-2.343	150	.020	-.106	-.20	-.02
Others	-.332	99	.741	-.010	-.07	.05

13.4 THE INTERNET AS A MEANS TO SPREAD SIGNALS OF QUALITY

While a relatively large number of firms report falling expenditure on 'durable investments', relatively many report rising expenditure on 'sales promotion' during the recession period. This section focuses on new opportunities to conduct sales promotion via the Internet and how they may have affected the competitiveness of 'indies' in the record industry.

Sales promotion in the record industry

According to the standard IO literature, the advertising intensity of an industry – that is the share of advertising expenditure in total industry expenditure – depends on the following factors: firms' objectives, say whether firms seek to maximise market share or profits in the short run; the type of industry structure; the age of products; the types of products supplied, say whether they are experience or search goods; and the extent of product differentiation. Assuming no substantial changes in the first four factors, the main driver behind rising expenditure on sales promotion should be increasing product differentiation as documented in chapter 3. Where the number of product variants increases rapidly, firms may find that it becomes more efficient to divert a greater share of their means to sales promotion. At the same time, falling costs in generating competitive levels of quality in other aspects of production and marketing will boost the relative share on expenditure on sales promotion.

Advertising, where suppliers pay for displays of information on their products, is probably not the most important aspect of sales promotion in the record industry. Certifiers such as music journalists, DJs and music editors play an important role. Music features frequently in the editorial content of the mass media. Media coverage plays an important role in determining the demand for specific titles. For instance, most consumers restrict their product searches to titles that are featured in the mass media. Furthermore, musical sound recordings are experience goods and reviews and programming decisions by music editors help to mitigate quality uncertainty. Often, some critical level of media coverage other than advertising is seen as a necessary precondition for the emergence of a hit record. Networking with 'multipliers of attention' is therefore a central element in the business model of most record companies. Larger record companies tend to employ specialised workers – so called 'pluggers' – to maximise media coverage.

There is a longstanding debate in the IO literature on the extent to which advertising intensity (as the type of sales promotion that has received most attention) is associated with barriers to entry and economies of scale. If such an association existed in the record industry, an increasing need to invest in sales promotion throughout the record industry would be associated with greater concentration of suppliers. The observations on the population of record companies over recent years conflict with this theoretical prediction. However, advertising intensity may also be associated with greater competition, so that firm hierarchies may be less stable where advertising is more important (Das, Chappell and Shughart, 1993).

Arguably, in the record industry it is not so much the intensity of sales promotion in terms of its share in expenditure but changes in the way signals of quality reach consumers that constitute the most important development over recent years. As argued in chapters 4 and 5, an important strength of major record companies is their ability to exploit economies of scale in sales of promotion, distribution and retailing. This includes their ability to secure a presence of their publications in the traditional mass media. Media presence is usually seen as a strong factor in the commercial success of any title. An important point about traditional media coverage is that mass media tend to feature only a small fraction of all sound recordings supplied. There are indivisibilities in this aspect of sales promotion and due to bandwagons or network effects in the market for sound recordings, media coverage for a minority of titles will not only boost demand for these titles but crowd-out signals of quality for other titles.

The potential impact of the Internet

The Internet, on the other hand, can provide users with a much greater diversity and variety of information than broadcasters or the press do, which may increase the contestability of the market for sound-recordings (or any other experience good). The fixed costs of presenting and disseminating information online are much lower than in traditional media. It may be worthwhile to feature more of the fringe suppliers and even complete newcomers online and the technical reach of online content is not limited among Internet users. What is more, the Internet often allows consumers to sample (aspects) of musical recordings way beyond the repertoire featured by broadcasters, which makes recordings adopt greater search good attributes. The emergence of the Internet should thus undermine some of the barriers to entry in the traditional market for sound recordings.

The argument is roughly analogous to Anderson's (2004) prediction that the market share the top hits will decrease in digital markets for reproducible cultural products. To be sure, a market for downloads, streams or ringtones was not yet a major factor in the period covered in this dissertation (see section 13.2). Yet, the way that the Internet allows for more exhaustive and diverse product searches might already play an important role for competition in the record industry. Of course, the Internet may increase network effects and concentration in the market shares of hits. However, a decisive question is to what extent major incumbents enjoy a greater probability that the hits that do emerge are among the publications in which they have a stake. Here, the lack of centralised control and the diversity of the Internet may erode the advantages of major record companies.

The capacity of the Internet to carry signals of quality on sound-recordings has several aspects. Suppliers may deliberately use the Internet to spread signals of quality. Record companies can try to hook up with consumers directly and set up sophisticated websites that allow for extensive sampling and background information on creators. Most of the time, the initial impulse to access a record company's website will be generated by features on

intermediary websites or in other media over which the record company exerts no editorial control. Advertising is a costly alternative to 'voluntary' media coverage and a favourable mention by music critique will often be a stronger signal of quality than an advertisement.

What is more, unauthorised copying – in particular via file-sharing networks – may allow for sampling with little control by rights holders. It has been argued that unauthorised copying and delivery via file-sharing networks has two opposing effects on demand for authorised copies: first, a substitution effect as unauthorised copies displace demand for authorised copies; second, an 'exposure effect' fostering the demand for authorised copies (Blackburn, 2006), which would be particularly strong for initially less well-known products of competitive intrinsic quality.[191] In a survey of suppliers, the promotion effects of unauthorised copying are particularly hard to grasp. Due to the clandestine nature of unauthorised copying, rights holders such as record companies will usually be ill informed about the extent of unauthorised copying of their sound-recordings. Chapter 14 discusses empirical evidence on the related issue whether small, independent record companies perceive insufficient copyright protection to generate obstacles to their innovation efforts.

This section focuses on deliberate efforts by suppliers to disseminate signals of quality. The importance of deliberate, Internet based promotion for 'indies' can be investigated in several ways. Three hypotheses are addressed in the following: (1) indies adopt many Internet based promotion tools; (2) the repertoire of 'indies' is featured more frequently online than in other mass media; (3) there is a relatively strong correlation between firms' success in having their repertoire featured online and firm performance. Another hypothesis concerns any relative advantage of larger firms in sales promotion: (4) there is a weak correlation between firm size and media coverage online compared to other media.

The adoption of Internet based promotion tools[192]

A vast majority of small, independent record companies employed novel types of ICT-based promotion tools at the time of the VUT survey. See table 13.8 for an overview.

More than 95% of the VUT members confirmed that their enterprise had their own website in the summer of 2005. Over 79% reported that at least three quarters of the creative projects under contract had their own website. A share of over 80% record companies sent email newsletters to end-consumers or journalists and other multipliers.

Of the record companies that had their own website, nearly 73% analysed logfiles, i.e. statistics on visits that websites concerning the record company are receiving. Over 66% reported their website featured a separate press area, access to which was restricted with a

[191] The latter argument is compatible with the idea that on the Internet, musical recordings have search good attributes. The net results on suppliers' revenues depend on the extent to which unauthorised and authorised copies are substitutes among other things. Consumer valuation studies of concur that the willingness to pay for unauthorised digital downloads is considerably lower than that for either authorised physical copies or for authorised downloads (e.g. Holm, 2001; Gosh et al., 2005; Rochelandet and Guel, 2005).

[192] Questions on promotion in the VUT survey were authored by Simon Peter Ziesch, Universtät Leipzig.

password for about 15% of firms. More than half (ca. 51%) of respondents confirmed they offered free downloads of sound-files on their own websites, with about 20% making complete tracks available and ca. 31% offering only snippets. Nearly 23% made video-clips available on their website. Another sizable minority of 41.5% ran a guest book or forum on their website.

These results support the notion that the Internet provides a relatively important means for smaller suppliers of sound recordings to disseminate signals of quality regarding their output. However, it should not be taken for granted that these measures are generally very effective. None of the specific aspects of Internet based promotion correlated significantly with indicators of firm success (not reported in detail). The total number of different novel promotion tools adopted was only associated with more optimistic expectations about the future of the firm but not with other measures of firm success (see table 12.7). On the other hand, it is possible that less successful firms are more likely to innovate, which may conceal any positive effects of innovation in the area of sales promotion (see chapter 12). What is more, wide adoption of Internet based sales promotion in a group of competing firms will almost certainly mean that any effect of such measures on market shares will cancel each other out to some extent.

Media coverage

Another set of questions addressed the frequency with which record companies' sales promotion activities had lead to airplay or reports in different media over the last 12 months (excluding advertising). Tables 13.9 a and b exhibit the results. As is to be expected, small independent record companies rarely manage to have their publications featured in television programs. Only 5.8% report they had managed to do so 'often' or 'very often'. The radio is perceived to be more penetrable with 40.3% of indies being featured often or very often. The majority of firms get their output featured 'often' or 'very often' in the print media (61.8%) and on the Internet excluding websites over which the record company exerts any editorial control (66.4%). By this measure, the Internet had already turned into the most important medium for 'indies' to showcase their output in the year 2005.

For a number of reasons, there is a risk of overstating the point. First, the difference between the mean response for print media and the Internet is not significant (see table 13.9 b). In the summer of 2005 – before the web 2.0 hype surrounding an even greater diversification of Internet content with the growth of social networking sites such as Myspace of Facebook – the Internet was not yet clearly ahead of the press and not yet far ahead of the radio in the crude measure used in this study. Second, other communication channels than the traditional mass media and the Internet may play a substantial role in sales promotion. Live appearances will almost certainly be an important factor for record sales and so may be advertising. Third, the question did not address media coverage that had no apparent

connection with deliberate efforts by record companies. For instance, any exposure effect of file-sharing is not included into this measure.

The following sections address data that relates to two further caveats concerning the effects that media coverage on the Internet may have on the competitiveness of 'indies'. On the one hand, the intuition is that an instance of appearing on a website will typically affect record sales (or any other aspect of the performance of the firm) less than an appearance in the more concentrated, traditional media. This would be the case because the content of websites is accessed by fewer individuals on average, or because Internet users may get to sample a greater number of different titles without necessarily purchasing proportionally more than those informing themselves elsewhere. On the other hand, while the Internet may contain information on a greater number of different titles, large firms could still enjoy a lead in the attention they receive similar to the situation offline.

Media coverage and firm success

Table 13.10 illustrates bivariate correlations between the frequency in which firms managed to have their output featured in different types of mass media and various measures of firm success. Results for different media diverge substantially. The frequency with which radio airplay could be generated correlates positively with all indicators of economic success except for 'prospects'. For coverage on the Internet, on television or in the press, correlations with indicators of success are not consistently significant. Exceptions are the 'development of firms founded before 1998 during the recession' and 'press' coverage (at the .05 level) and perhaps 'Internet' coverage (at the .1 level).

These results would be consistent with a relatively great importance of record companies' ability to motivate radio airplay in determining firm success. Other media, including the Internet, might not be as important as factors in determining how a record company fares. To be sure, it is also possible that DJs/music editors in radio stations are more prone to play titles of successful firms than editors in other media. In any case, a record companies' ability to generate media coverage on the Internet does not seem to be of central importance in determining firm success. This relativises the observation that the Internet is the medium where 'indies' manage to generate coverage most frequently. The frequency of coverage online may be higher but the effects of radio airplay may be much greater.

Media coverage and firm size

Table 13.10 also presents the results of bivariate correlations between the frequency in which firms managed to have their output featured in the mass media and indicators of firm size. As is to be expected, firm size is consistently correlated with the frequency of coverage generated in the mass media; large firms report more frequent coverage.

As argued earlier, the number of full time positions is probably the most adequate measure of firm size produced in the VUT survey. Here, the correlation is least pronounced

for the Internet, which would support the view that this medium is somewhat more penetrable for smaller record companies than more traditional media.

Summary

By and large, these results support the view that the Internet is an important means to disseminate signals of quality for 'indies'. The evidence provided here is particularly sketchy, however, and the issue requires further attention.

At the time of the VUT survey, a vast majority of responding record companies was conducting a variety of Internet based sales promotion, which should illustrate the perceived importance of such activities.

On the other hand, concerning media coverage beyond the editorial control of record companies, the Internet may not be the most important way to conduct deliberate sales promotion. The effect of coverage on the radio may be more important and the press was perceived to be about as permeable for small, independent firms.

According to these observations, the rising importance of the Internet should have fostered the competitiveness of small, independent record companies. Yet, the importance of the Internet for deliberate sales promotion appears to have been quite modest up to the summer of 2005. It does not seem to offer more than a partial explanation for a boom among 'indies'.

Considering the 'web 2.0'-hype over more recent years, the potential of the Internet to host very diverse exchanges regarding cultural products may have become considerably greater after 2005. It seems feasible that developments after that year will have made the Internet even more important. This could continue to foster the contestability of the record industry and sustain a boom among small record companies over and above what has been observed for the time period covered in this study.

13.8 VUT-members' adoption of specific Internet based promotion tools by the summer of 2005 (ordered by mean) [a] [b]

Valid %	Firm website	Email Newsletters [c]	Artists' websites	Log files [c]	Press area [c]	Free downloads	Guest book / forum	Video clips
Adoption (1)	95.2	80.8	79.3	72.7	66.5	50.9	41.5	22.5
No adoption (2)	4.8	19.2	20.7	27.3	33.5	49.1	58.5	77.5
Valid N	229	229	222	216	218	212	212	209
Mean	1.05	1.19	1.21	1.27	1.33	1.49	1.58	1.78
Std. Deviation	.214	.395	.406	.447	.473	.501	.494	.419

[a] Based on 294 firms for which the activities of a record company accounted for more than 20% of the total.
[b] See survey questions 14.a-e.
[c] Results for this question were recoded from a three-point scale to a dichotomous scale.

Tables 13.9: Media coverage – How often do VUT-members manage to achieve coverage in various types of mass media [a]

a) Descriptives

Valid %	Internet	Press	Radio	TV
Very often (1)	23.3	20.9	8.4	1.8
Often (2)	43.0	40.9	31.9	4.0
Rarely (3)	22.9	24.9	35.0	23.8
Very rarely (4)	6.7	8.9	16.4	27.4
Never (5)	4.0	4.4	8.4	43.0
Valid N	223	225	226	223
Mean	2.25	2.35	2.85	4.06
Std. Deviation	1.018	1.046	1.066	.996

[a] See survey questions 44.a-d.

b) Non-parametric test for a significant difference in means between responses for different types of media [a]

	Internet - Press	Press - Radio	Radio - Television
Z	-1.421 [b]	-5.901 [b]	-10.749 [b]
Asymp. Sig. (2-tailed)	.155	.000	.000

[a] Wilcoxon Signed Ranks Test.
[b] Based on negative ranks.

Table 13.10: Coverage in different types of mass media, firm success and firm size (Spearman's rho) [a]

			Internet	Press	Radio	Television
Change in turnover		Corr. Coeff.	.068	.094	.165(*)	-.083
		Sig. (2-tailed)	.398	.239	.038	.301
		N	156	158	159	157
State of the firm		Corr. Coeff.	.112	.087	.206(**)	.051
		Sig. (2-tailed)	.102	.200	.002	.455
		N	216	218	219	216
Development during recession	since 1998 [b]	Corr. Coeff.	.199	.218(*)	.306(**)	-.017
		Sig. (2-tailed)	.051	.031	.002	.867
		N	97	98	99	98
	since year of foundation + 1 [c]	Corr. Coeff.	-.039	.060	.233(*)	.141
		Sig. (2-tailed)	.718	.577	.029	.195
		N	87	88	88	86
Prospects		Corr. Coeff.	.087	.062	.131	-.005
		Sig. (2-tailed)	.200	.364	.053	.938
		N	217	219	220	217
Firm size	No. of staff in 2004 – fte	Corr. Coeff.	-.146(*)	-.273(**)	-.185(**)	-.283(**)
		Sig. (2-tailed)	.033	.000	.006	.000
		N	213	215	216	213
	No. of staff in 2004 – individuals	Corr. Coeff.	-.277(**)	-.266(**)	-.158(*)	-.276(**)
		Sig. (2-tailed)	.000	.000	.018	.000
		N	221	223	224	221
	Turnover in 2004	Corr. Coeff.	-.183(**)	-.286(**)	-.239(**)	-.308(**)
		Sig. (2-tailed)	.009	.000	.000	.000
		N	206	208	209	207

[a] For documentation of the variables on the left, see chapters 9 and 10.
[b] Firms founded before 1998.
[c] Firms founded since 1998.

13.5 AMATEURISATION AND DISINTERMEDIATION

Another possible explanation for the resilience of small, independent record companies concerns the peculiar incentive structure of some workers in the cultural industries. On the one hand, if many contributors in the record industry are amateurs in the sense that – similar to many creators – they are not rational maximisers of pecuniary rewards, the impact of a recession on the number of suppliers might be much more moderate than expected for more conventional industries. On the other hand, where creators run record companies themselves as self-issuers, the same argument will apply. What is more, record companies that are run by creators will usually be less dependent on the market for sound-recordings since creators virtually always partake in revenues from complementary markets such as live-performances or merchandising. A situation akin to the '360-degree deals' (that some larger, conventional record companies seek to establish) should be common for self-issuers. This implies for example that self-issuers will be more likely to benefit directly than conventional record companies, where the massive consumption of a sound-recording as a cheap download boosts the demand for complementary services.

In order to establish whether there is any evidence that amateurisation or disintermediation may explain a boom among 'indies', three hypotheses are addressed: (1) a large share of record companies operating in Germany are 'amateur enterprises' or self-issuers; (2) the share of amateur enterprises and self-issuers in the total number of record companies increased during the recession period; and (3) amateur enterprises and self-issuers report relatively high levels of success in the current business environment.

Amateurisation

The idea that amateurisation may explain the resilience of small record companies during the recession roots in the literature on cultural economics. Many studies of creators' behaviour observed that it cannot be explained by the rational maximisation of pecuniary income (with some concern for working conditions) and that many creators generate valuable products as unpaid amateurs (see chapter 4). These observations have been explained either by systematically exaggerated expectations of future rewards (Towse, 2001), by 'intrinsic motivation' (Frey, 2000) or 'cultural incentives' (Throsby, 2001).

The assumption is that some workers in record companies are amateurs, who similar to many creators, are either irrational or do not maximise their pecuniary income only. Instead they have a preference for work in the cultural industries and seek to maximise cultural value of their output (cf. Throsby, 2001), which may be a function of the size of the audience reached. In particular in the latter case, the population of amateur enterprises is likely to be less sensitive to falling pecuniary revenues in the record industry. To the contrary, they may be compensated for reduced financial incentives by opportunities to reach a greater audience,

as commercially oriented suppliers respond to a recession by withdrawing from parts of the market.

This author is not aware of any attempts to explore whether the peculiar behaviour as observed for creators extends into humdrum activities in the cultural industries. It will almost certainly apply to some of the 'self-issuing' creators that are frequently seen behind a considerable number of new record companies (see below). The presence of many 'amateur enterprises could explain the resilience of small, independent record companies during the recession if the market share of such enterprises were high. This would be the case in particular, if the share of amateur enterprises in all firms would have increased over time, say because they account for a greater share of market entries during the recession period.

In this section, the term 'amateurs' refers to members of staff in record companies who do not at least have half a paid full-time equivalent position within that enterprise. VUT-member firms are classified as 'amateur enterprises' if the ratio between the accumulated fte positions and the number of individual members of staff is lower than 0.5. A plausibility check was added, according to which firms were also classified as 'amateur enterprises' if the reports from that firm suggested a firm had a turnover of less than €16,000 per fte.[193]

According to this threshold for distinguishing 'amateur enterprises', 31.8% of all VUT-member firms that generate more than a fifth of their overall turnover from their activities as a record company fall into that category. Table 13.11 presents bivariate correlations between a dummy variable for the status of the firm as an 'amateur enterprise', the age of the firm and indicators of firm size as well as of firm success. The results indicate whether any difference between amateur enterprises and other respondents is statistically significant.

Amateur enterprises are smaller in terms of their turnover and the number of fte (significant at the .001 level). The difference between amateur enterprises and other respondents in terms of the number of individuals in their staff is not significant. That the latter correlation is weaker than for fte is to be expected, of course, since amateurism is defined as the ratio between fte and the number of individuals in the staff of firms. These results imply that the market share of amateur enterprises in terms of turnover and fte is much lower than their share in the sheer number of enterprises. Based on the extrapolations of mean responses, amateur enterprises would account for around 38% in terms of individual members of staff but just 12% in terms of the fte positions among record companies in the VUT.

A problem in determining whether a process of amateurisation occurs in the record industry is that there are no previous assessments of amateurs in the record industry so that changes over time cannot be observed directly. Two more indirect indications can be

[193] Another plausibility check classified seven firms that had reported '0' fte and one or two individual members of staff but turnover of more than €45,000 as 'non-amateurs', assuming that they had misunderstood the question and reported only employees of the enterprise rather than owners/executives and employees. For many firms, the ratio between turnover and members of staff is very low, which implies that the pecuniary compensation of staff should be modest on average.

assessed, however. The first is to determine whether amateur enterprises among the small, independent record companies were performing relatively well during the recession. As seen in table 13.11, amateur enterprises show no significant differences in terms of success indicators referring to the present state of the firm or its recent development. The respondents for many amateur enterprises seem about as satisfied or dissatisfied with the state and development of their enterprise as their colleagues from more professional firms.[194] It appears that many amateur enterprises are content with their status as such. Concerning their 'prospects', amateur enterprises are more pessimistic, however (significant at the .05 level). One possible explanation for this finding is that amateur enterprises find the current business environment worse than other respondents. Another is that amateur firms are on average more temporary forms of organisation for which the individuals involved expect a relatively short life-span, which would be reflected in worse prospects.

Amateur enterprises are significantly younger (at the .01 level) than other respondents. This would be consistent with three developments. First, relatively many amateur enterprises have entered the market over recent years. Second, amateur enterprises were somewhat more likely to cease their VUT-membership relatively soon after firm foundation, say because they exit the market again. Third, more of the older amateur enterprises developed into professional firms than the other way around.

In order to draw in more evidence on the relative growth in the number of amateur enterprises during the recession period, table 13.12 and figures 13.1 and 13.2 present the number of firms classified as 'amateur enterprises' in 2004 in relation to the number of firms founded during the same year.[195] At face value, there seems to be a modest upward trend in the share of amateur enterprises between 1994 and 2004, which almost entirely due to a high level for the year 2004, however. The grey line shows the trend line from a linear regression.[196] There is no indication that the recession period starting with the year 1998 would have had a strong impact. Furthermore, the intuition is that many small, independent record companies are founded as 'amateur enterprises' but that they would be likely over time to either mature into more conventional firms (with more of the members of staff holding fte positions) or cease to operate. A systematically higher share of amateur enterprises among younger record companies would thus be expected. Considering this, the relatively large share of amateur enterprises during the year 2004 does not seem to imply a rapid amateurisation of the record industry.

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[194] The results on amateur enterprises' success may be biased downward since on the basis of the available data, it is not possible to completely distinguish amateur enterprises from profit-oriented firms that are going through a rough patch. The assumption is that this problem is of a modest scale since predominantly profit-oriented enterprises that achieve extremely low revenues and falling short of providing at least 0.5 paid fte positions for the average members of staff would soon cease operations or lay-off staff.

[195] Note that this is not a time series and that due to the limited number of observations, only a strong trend would show up clearly in this data-set.

[196] The simple, bivariate linear regression result is $y = 0.0177x + 0.227$ ($R^2 = 0.2926$). That implies the share of amateurs increases by 1.77% per year, but with a high error.

Figure 13.1: The number of firms classified as 'amateur enterprises' and of other respondents in 2004 by year of foundation

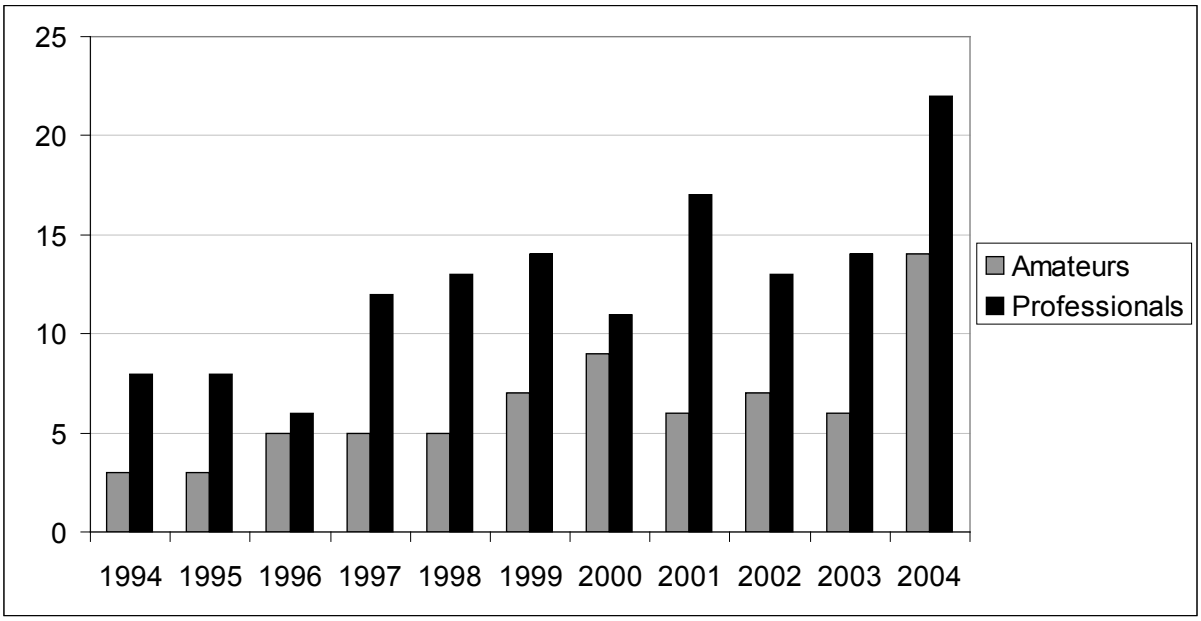
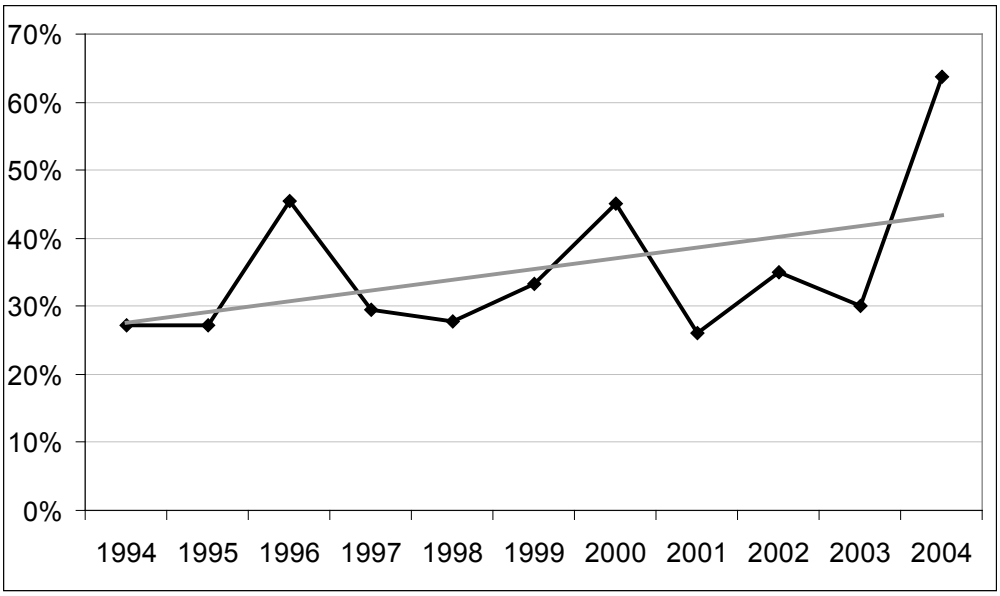


Figure 13.2: The share of firms classified as 'amateur enterprises' in total record companies in 2004 by year of foundation



In summary, amateur enterprises make up a substantial minority of small, independent record companies in the VUT. On a more general level, this is a remarkable result, since so far the cultural economics literature discusses irrational behaviour, intrinsic motivation and amateurism mainly for creators rather than for workers in the cultural industries at large. Regarding the specific question at hand, amateurism seems likely to provide a partial explanation why the elasticity of the number of record companies (and perhaps of the number of publications) would be low in the current period of recession. However, there is no

indication that the number of amateur enterprises would have increased enough during the recession period that it would explain much of the observed growth among small, independent firms over recent years. Neither do amateurs report a better performance of their firm on average so that a rapid amateurisation of the record industry seems unlikely under the current market conditions.

Table 13.11: The correlation between the status as an amateur enterprise, firm size, age and success (Spearman's rho) [a] [b]

		Firm Size				Firm success				
								Δ State of firm		
		No. of staff – fte	No. of staff – individuals	Turnover	Age of firm	Δ Turnover	State of firm	Since 1998	Since foundation+1	Prospects
Amateur	Corr. Coeff.	.590(**)	.080	.428(**)	.151(**)	.032	-.073	-.146	-.008	-.150(*)
	Sig. (2-tailed)	.000	.171	.000	.010	.656	.226	.106	.930	.012
	N	294	294	251	294	191	279	123	124	284

[a] Based on 294 firms for which the activities of a record company accounted for more than 20% of the total.
[b] For documentation of the variables measuring firm size, age and success, see chapters 9 and 10.
** Correlation is significant at the .01 level.
* Correlation is significant at the .05 level.

Table 13.12: The number of firms classified as 'amateur enterprises' and of other respondents in 2004 by year of foundation

	Amateurs [b]	Professionals [b]	Valid N	Share of amateurs in valid N
<1990	3	8	11	
1990	2	4	6	
1991	0	3	3	Earlier than 1994:
1992	1	5	6	20.59%
1993	1	7	8	
1994	3	8	11	27.27%
1995	3	8	11	27.27%
1996	5	6	11	45.45%
1997	5	12	17	29.41%
1998	5	13	18	27.78%
1999	7	14	21	33.33%
2000	9	11	20	45.00%
2001	6	17	23	26.09%
2002	7	13	20	35.00%
2003	6	14	20	30.00%
2004	14	22	36	63.63%
Total	77	165	242	31.81%

[a] Based on 294 firms for which the activities of a record company accounted for more than 20% of the total.
[b] Classified according to the ratio between the accumulated fte positions and the number of individual members of staff. If this ratio was <0.5, firms were classified as 'amateur enterprises'.

Disintermediation

Another explanation for a growing number of record companies during the recession period would be a process of disintermediation as creators cut out the middlemen and to go it alone as 'self-issuers'. Disintermediation is discussed as one possible consequence of the diffusion of ICT in the cultural industries (see section 13.5), since it appears likely that the application of digital ICT leads to falling fixed costs in the production and commercialisation of sound recordings. Disintermediation as a type of organisational innovation would imply a growing number of small, independent record companies – one for each creative project in an extreme case.

Self-issuers were identified in a specific question. The VUT-members that operated record company divisions were asked whether their record company was a self-issuer, i.e. 'predominantly commercialises sound recordings by composers or performers who also work in another function in the firm or who own the firm at least in part'. The discussion of the import of disintermediation as an explanation for a growing number of small and independent record companies during the recession period is largely analogous to the previous section on amateurisation. The presence of many self-issuers could explain the resilience of small, independent record companies during the recession if the market share of such enterprises were high. This would be the case in particular, if the share of self-issuers in all firms would have increased over time, say because they account for a greater share of market entries during the recession period.

Of the VUT-member firms that generated more than a fifth of their turnover with their record company division, exactly a third (33.3%) confirmed that they were self-issuers as defined above. Table 13.13 displays the results of a bivariate correlation between a dummy variable for self-issuers, the age of the firm and indicators of firm size as well as firm success.

Self-issuers are significantly smaller in terms of their turnover (at the .001 level of significance). They appear to be somewhat smaller than other respondents in terms of the number of individuals in their staff (significant at the .1 level – not flagged) and there is no significant difference between self-issuers and other respondents in terms of the number of fte. That is, the market share of self-issuers in terms of turnover and members of staff is lower than their share in the number of enterprises. For fte positions this is not certain. Based on the extrapolations of the means, self-issuers account for around 26% in terms of individual members of staff and 25% in terms of the fte positions among record companies in the VUT.

Self-issuing firms are also somewhat younger than other record companies (but just at the .1 level of significance – not flagged) than other respondents. The share of self-issuers in total market entries may have risen somewhat over recent years. It is also possible that the time that self-issuers remain members of the VUT is a bit shorter, say because the average life-span of this type of firm is shorter than for other VUT-members. Furthermore, relatively

many of the older self-issuers may develop into more conventional firms, say by contracting performers who fulfil no other function in the enterprise.

Since there is no data on self-issuers in the German record industry from earlier years, the same types of indirect measures for the relative growth of self-issuers are discussed as in the section on amateur enterprises. The reports of self-issuers on indicators of firm success at present or in the recent past are not significantly different from those of other respondents (see table 13.14). Self-issuers do not seem to have enjoyed systematic advantages in the current business environment. In contrast to what was the case for amateur enterprises, self-issuers are somewhat more likely to expect their firm to grow in the near future than other respondents (significant at the .1 level – not flagged). This observation may indicate that self-issuers' competitiveness is increasing or it may be due to an instance of exaggerated expectations among creators as discussed by Towse (2001).

In order to provide some evidence on changes in the share self-issuers in the total number of firms over time, figures 13.3 and 13.4 exhibit the number of firms who were self-issuers in 2004 in relation to the total number of firms founded during the same year.[197] In comparison to findings on amateur enterprises, there seems to be a more sustained upward trend in the share of self-issuers between 1994 and 2004. The grey line marks the trend line based on a linear regression.[198] There might even be an upward shift in the mean that coincides with the beginning of the recession period.[199] In any case, the data supports no confident inferences.

Any growth in the number of self-issuers would probably be of greater import for the market at large than an increasing share of amateur enterprises. On the one hand, that is because self-issuers tend to be larger in terms of their turnover and fte positions than amateur enterprises. On the other, the intuition is that an initial stint at amateurism is a frequent phenomenon for newly founded record companies but that sustainable firms would soon mature into more conventional record companies. That is, a relatively great share of amateur enterprises in recent years would be expected even without a growing share of this type firms in the number of record companies. This would not be the expectation for self-issuers so that any upward trend in the share of self-issuers among younger firms seems more likely to adequately reflect a growing number of these types of firms over time.

[197] Note that this is not a time series and that due to the limited number of observations, only a strong trend would show up clearly in this data-set.

[198] A simple, bivariate linear regression results in $y = 0.0156x + 0.2193$ ($R^2 = 0.4425$). That implies the share of amateurs increases by 1.56% per year with a considerable error.

[199] In the graphs, the value for 1994 is the lowest value for any year, which may create an inflated impression of growth at first sight.

Figure 13.3: The number of self-issuers and of other record companies in 2004 by firm age (year of foundation)

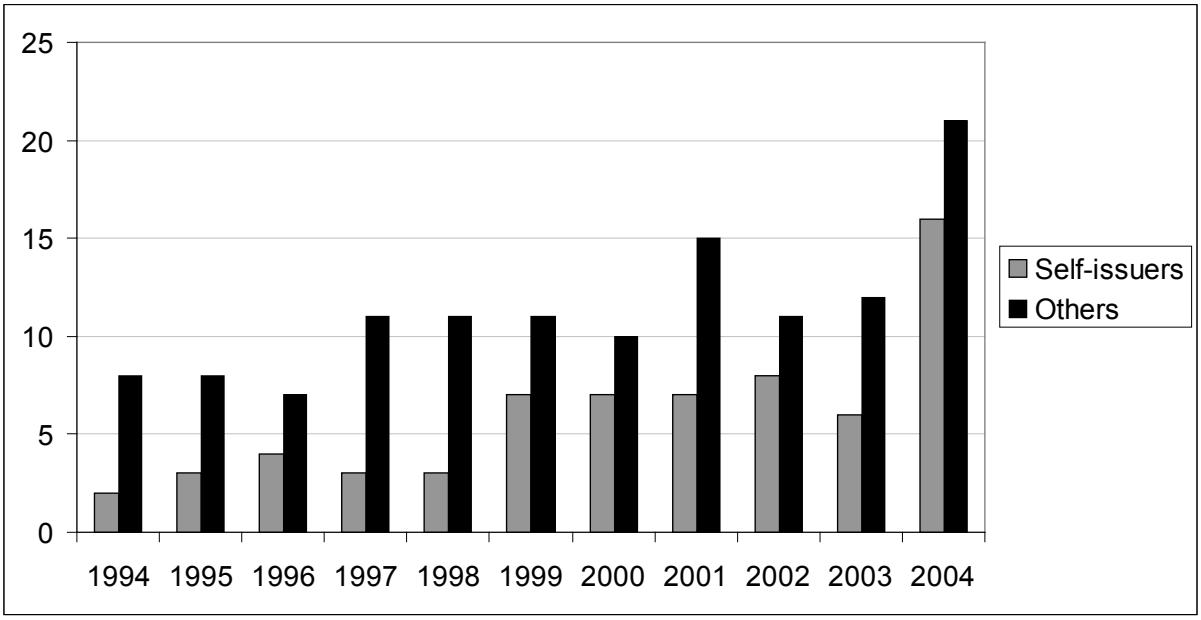
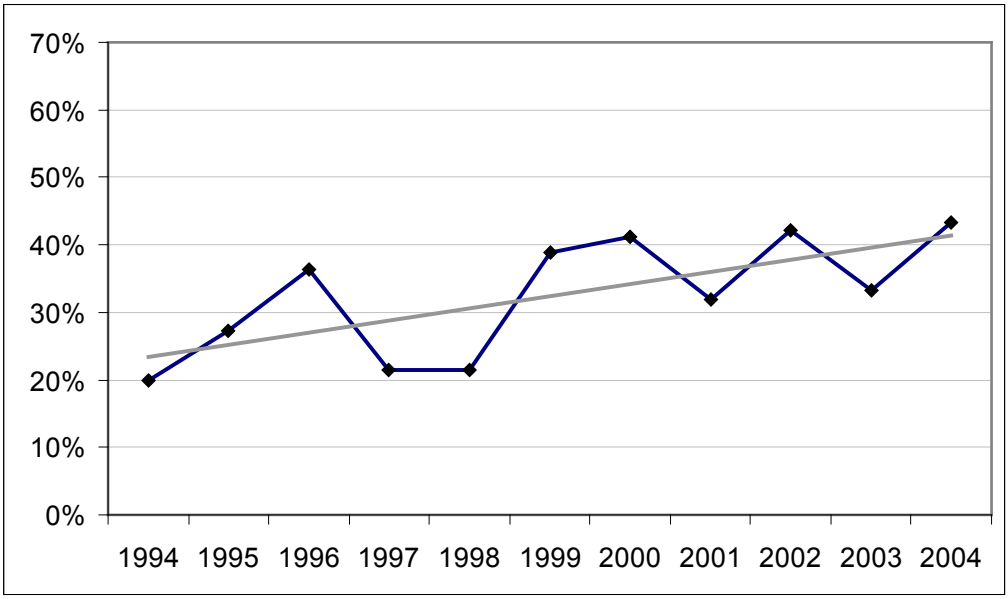


Figure 13.4: The share of self-issuers in total record companies in 2004 by firm age (year of foundation)



In summary, self-issuers make up an even more substantial minority of small, independent record companies in the VUT than amateur enterprises as defined in this study. The type of disintermediation in which creators conduct the marketing of the cultural products they generate seems to contribute to the boom of market entries by small, independent record companies. There seems to be a trend that more creators set up record companies rather than record companies picking creators to cooperate with. However, self-issuers make up a sizable share of firms founded before the recession period, too, and the majority of 'indies' entering the market continues to be more conventional record companies for which creators are

external contracting partners. What is more, self-issuers do not report a better performance of their firm on average. That is, firms with this type of organisational arrangement are not more competitive than other record companies and it seems unlikely that it would diffuse much more rapidly in the near future than it has in the recent past.

Summary

Altogether, about half (52.6%) of the record companies that gave valid responses to the relevant questions were either amateur enterprises or self-issuers or both. The share of these types of firms in the total number of small, independent record companies may have expanded somewhat during the recession period.

The presence of amateur enterprises and self-issuers may explain some of the resilience of small, independent record companies during the recession. Similar to what has been documented for creators, self-motivated amateurs running record companies may be less sensitive to pecuniary incentives in their production decisions than more clearly commercially oriented suppliers. Of course, this should also hold for self-issuers, i.e. record companies run by the creators of the cultural products supplied. Self-issuers will also be less dependent on the primary market for sound-recordings than conventional record companies, since creators benefit directly from complementary markets such as that for live performances.

Yet, more conventional record companies account for about half the small, independent record companies. The number of conventional firms has also increased during the recession period and their market share is considerably larger than that of amateurs and self-publishers. The presence of amateur enterprises and self-issuers seems to play a substantial role in the boom among small, independent record companies. The boom cannot be reduced to a process of amateurisation and disintermediation.

Furthermore, amateurs and self-issuers have been a component of the record industry for decades. Assuming no substantial changes in the preferences of individuals involved, any expansion of this segment at the expense of more conventional organisational forms should reflect falling costs and a changing cost structure favouring smaller organisational units.

Table 13.13: The correlation between the status as self-issuer, firm size, age and success (Spearman's rho)

		Firm Size				Firm success				
								Δ State of firm		
		No. of staff – fte	No. of staff – individuals	Turnover	Age of firm	Δ Turnover	State of firm	Since 1998	Since foundation+1	Prospects
Self-issuer	Corr. Coeff.	.098	.117	.261(**)	.123	-.014	.043	-.067	.125	.120
	Sig.	.137	.076	.000	.061	.859	.524	.506	.233	.071
	N	234	232	215	234	162	225	101	93	227

** Correlation is significant at the .01 level (2-tailed).

* Correlation is significant at the .05 level (2-tailed).

Table 13.14: The number of self-issuers and of other record companies in 2004 by firm age (year of foundation)

	Self-issuer		Sum valid N	Share of self-issuers in valid N
	Yes (1)	No (2)		
<1990	4	20	24	
1990	2	4	6	
1991	1	1	2	Earlier than 1994: 27.91%
1992	2	2	4	
1993	3	4	7	
1994	2	8	10	20.00%
1995	3	8	11	27.27%
1996	4	7	11	36.36%
1997	3	11	14	21.43%
1998	3	11	14	21.43%
1999	7	11	18	38.89%
2000	7	10	17	41.18%
2001	7	15	22	31.82%
2002	8	11	19	42.11%
2003	6	12	18	33.33%
2004	16	21	37	43.24%
Total	78	156	234	33.3%
Mean			1.67	
Std. Deviation			.472	

[(a)] Based on 294 firms who reported that their record company division has had a substantial share in total turnover (>20%).

13.6 CONCLUSIONS

This chapter addressed a number of hypothetical explanations for a boom among small, independent record companies in spite of a recession in the primary market for sound recordings at large.

Rising income for record companies from beyond the primary market for sound recordings seems to play a minor role. In the period under investigation, the boom seems to be sustained by stable average income to 'indies' from the primary market of physical sound carriers, fluctuations for individual firms notwithstanding. It seems that additional income to record companies from beyond the primary market for sound recordings is only a minor factor in the boom. What is more, product innovation that would generate new related markets – say for 'digital' copies or other services offered via digital ICT networks – does not seem to play a great role in the period studied either, other than perhaps in the area of content creation.

Somewhat greater shifts seem to have occurred regarding the costs of record companies. The relative importance of expenditure related to content creation has remained stable for the vast majority of firms. There is no evidence that the R&D intensity of the industry would have fallen in this sense. Many firms report strong falls in durable investments, which should account for a large part of fixed costs. If that is the case, falling fixed costs would provide an explanation for the resilience of 'indies' relative to the larger incumbents. Cost reductions should be indicative of process innovation.[200] The measure of durable investments is quite unspecific, however. For future efforts, it seems desirable to study where exactly fixed costs have fallen.

Relatively many record companies increased their expenditure on sales promotion during the recession period. Arguably, changes in the way in which signals of quality reach consumers are central to understanding the competitiveness of 'indies'. Barriers to entry and economies of scale in spreading signals of quality may be considerably lower on the Internet than in more centralised mass media and greater contestable market for attention should bode on the actual market for sound recordings. Some findings on deliberate sales promotion presented in this chapter support this idea. A vast majority of small, independent record companies conduct Internet based promotion and relatively many of these firms report that they manage to instigate media coverage on the Internet relatively frequently. There is little evidence for strong effects of deliberate, Internet based promotion on many record companies' success, however.

[200] The extent to which falling costs would be reflected in a changing industry structure and a destabilisation of the industry hierarchy depends on various factors, e.g.: the scale and scope of costs changes; the relative effects on fixed and variable costs; whether incumbent firms control key assets necessary for the establishment of new services such as online delivery; the relative speed with which large incumbents and smaller competitors are able to conduct process innovation; and whether large incumbents have any advantage in product innovation.

Amateurs and self-issuers account for about half of all small, independent firms covered in the VUT survey. If these types of enterprises are less sensitive to changes in pecuniary revenues from the primary market for sound recordings, the population of these firms should be less affected by the recession. However, there is little evidence for a growing share of amateurs and self-issuers among in the population of 'indies' during the recession. The boom is not explained by rapid processes of amateurisation and disintermediation. More conventional, small record companies are thriving, too.

In summary, this chapter did not produce any sweeping explanation for the boom among 'indies' over recent years. Among several factors that might play a role, productivity increases in two areas seem particularly important: first, reduced need for durable investments; second, more effective sales promotion. It is not entirely clear to what extent these developments are the result of deliberate actions by record companies and where they reflect exogenous developments. In any case, productivity increases could provide an explanation for the greater resilience of 'indies' during the recession if these newcomers and fringe suppliers benefitted disproportionately from them.

Growth among indies and numerous market entries would not be as surprising if the record industry at large were not caught up in a severe recession. What makes this observation so interesting is the apparent difference in the development for larger incumbents on the one hand and fringe suppliers and newcomers on the other. In as far as neo-classical economic theory is concerned with productivity increases over time and their effects on firm size, it offers the following explanation: changes in cost structure – a lower ratio of fixed to variable costs – that would permanently reduce minimum efficient scales. Mainstream economics has relatively little to say about when and how productivity increases and substantial shifts in cost structure come about. Structuralist-evolutionary theories predict a process of creative destruction where a new, general purpose technology offers numerous possibilities for radical, cost-reducing innovations. The idea is that newcomers enjoy a temporary advantage over larger incumbents in initiating, adapting to and perpetuating radical technological change.[201] Historical examples suggest that at some point, this type of development is likely to give way to (re-)integration after a stabilisation of new technologies and general adoption.

This chapter has sidelined changes to the copyright system that may explain a boom among 'indies'. The following chapter addresses the role that copyright and unauthorised copying may play in a process of creative destruction in the record industry.

[201] In neo-classical theory, inertia and how they slow innovation in large corporations are considered to be an important diseconomy of scale.

14. COPYRIGHT AND INNOVATION IN SMALL RECORD COMPANIES

14.1. INTRODUCTION

This chapter rounds off the empirical aspect of this dissertation by investigating the role of unauthorised copying/copyright protection during the upheaval in the record industry over recent years. It addresses rights holders' perception of copyright as an innovation incentive. The focus is on technological innovation and a particular type of rights holders – small, independent record companies that acquire and commercialise 'rights related to copyrights' for sound recordings.

Complementing the preceding chapter 13, the initial question is whether unauthorised copying contributes to the boom among indies and thus provides some explanation for creative destruction in the record industry. For unauthorised copying to contribute to a boom among indies, the net result of the various effects of unauthorised copying would have to be more beneficial (or less harmful) for fringe suppliers and newcomers than for larger incumbents.

On a more general level, the evidence presented in this chapter relates to an argument developed in chapter 2: it addresses the evidence for the innovation costs of copyright concerning humdrum innovation that are sidelined in much of the economic literature on copyright.

The central data are the results of a matrix question on eleven factors inhibiting innovation. Two of these 'innovation obstacles' concerned copyright. One question addressed difficulties with enforcing the firms' own copyrights as an indicator of the potential innovation benefits of invigorating copyrights enforcement. The other addressed difficulties with clearing rights for innovative projects as an indicator for one aspect of the innovation costs of the copyright system. The data allows for a comparison of the perceived significance of unauthorised use and the problems that the copyright system entails for innovative projects. It also allows for a comparison between copyright related obstacles to innovation and other factors hampering innovation.

14.2. COSTS AND BENEFITS OF COPYRIGHT FOR SUPPLIERS

An official objective of the copyright system is to promote "innovation and creativity" in the regulated sector (EU, 2001).[202] Empirical studies of the effects of copyright – or its counterpart unauthorised copying – tend to focus on the relationship between the level of copyright protection and rights holders' revenues. The transmission mechanism between additional revenues due to copyright protection and innovation has received little attention. It is often taken for granted that there is a strong positive relationship between industry revenues and innovation intensity. The findings presented in chapters 3, 8 and 12 challenge this common-sensical assumption.

By contrast, this chapter focuses on the effect of copyright on innovation and creativity itself. Some authors have suggested that aspects of the current copyright system can hold back technological innovation (Merges, 1996; Boldrin and Levine, 2002; 2005; Depoorter and Parisi, 2002), and this issue will receive particular attention.

The ambiguous effects of copyright

As discussed in chapter 2, copyright is a costly institution that relates to an underproduction-underutilisation trade-off. Copyright is ambiguous even if the focus is entirely on the welfare of suppliers, all of which are assumed to be rights holders here for the sake of clarity. One reason is that suppliers in the cultural industries will often play a dual role. They are simultaneously rights holders and users of copyrighted works owned by others, subject to the types of products supplied and specific copyright arrangements. Record companies are a case in point. They are usually primary rights holders to aspects of the recordings they market. At the same time, record companies also need to 'clear' copyrights held by others – say authors/publishers and performing artists – in order to commercialise sound recordings, or they need to work their way around existing copyright claims.

That is, copyright protection drives up rights holders' revenues and costs. Too much copyright protection could diminish suppliers' welfare by inhibiting innovation. Landes and Posner (1989; 2003) identified such a constellation clearly with regards to derivative creations. A central challenge in studies of the net effect of unauthorised copying on suppliers of copyrightable works is thus to identify the proportion of costs and benefits entailed by the existing copyright arrangements.

[202] In contrast to the EU Directive, the WIPO Copyright Treaty (WIPO, 1996) emphasises the role of copyright in 'development' and as an incentive for 'literary and artistic creation' and does not explicitly refer to investments in technical innovation concerning the dissemination of creative works.

The innovation costs of copyright including humdrum innovation

One related problem is that most of the literature on the economics of copyright focuses on incentives to supply new copyright works. However, there are two levels on which suppliers of cultural products may innovate in order to improve their competitiveness (cf. section 2.7). First, suppliers can introduce new cultural creations (or content) to the market. Second, suppliers can introduce new ways of delivering, presenting or using existing creations.

This chapter incorporates the latter type of advances – humdrum innovation in particular concerning media technology – in contrast to much of the economic literature on copyright. As discussed in section 2.7, a number of authors have argued that the statutory monopoly and transaction costs that copyright entails could hold back new types of use. Where this is the case, copyright would entail dynamic costs over and beyond what is acknowledged in much of the literature.

14.3 WHY WOULD COPYRIGHT PROTECTION HAVE ASYMMETRIC EFFECTS?

A few recent empirical studies of the market for sound recordings suggest that digital copying has asymmetric effects for large incumbents and fringe suppliers/newcomers. Blackburn (2006) finds that, while sales of publications by previously well-known artists are diminished as file-sharers substitute purchased copies for downloads, file-sharing appears to boost record sales of as-yet-unknown artists. Bhattacharjee et al. (2007) find that releases by smaller record companies exhibit longer survival times in the charts after the emergence of file-sharing networks. This dissertation reports on a boom of market entries by smaller record companies that coincides with widespread digital copying (see also Handke, 2006).

Such findings are consistent with the observation that few small, independent record companies adopted DRM measures or reported that such measures were of considerable importance for their enterprise (see section 12.3). Such findings are also consistent with the casual observation that some well-established superstar creators and the major intermediary firms that own and commercialise copyrights are the most vociferous campaigners for increasing copyright protection, while many newcomers and fringe suppliers seem less bothered by unauthorised copying.

Three possible reasons for divergent interests in copyright protection are the following. First, there are economies of scale in the administration of rights so that smaller rights holders have a lower net benefit from participation in the copyright

system.[203] A second reason relates to the experience goods attributes of cultural products (see sections 4.2 and 4.3). Unauthorised copying could diminish consumers' search costs and the risk of buying cultural products for which little pre-purchase information is available in the traditional mass media (cf. Kretschmer et al., 1999; Bhattacharjee et al., 2007; and on the 'exposure effect' of file-sharing Liebowitz, 2005). Sampling via file-sharing may thus boost demand for releases by fringe suppliers and newcomers, if unauthorised downloads are imperfect substitutes for authorised copies. Record companies may even find it rational to actively make free samples available, which a majority of VUT member firms did in 2004 (see chapter 13.4). Third, the diffusion of digital copying technology may require technological innovation including the adaptation of business models (see section 2.6) and small, more flexible suppliers of sound recordings may have a temporary advantage during periods of swift and radical technological change (see section 7.1).

The problem that this chapter is concerned with is to establish whether the diffusion of digital copying technology – and the de facto reduction of copyright protection it entails – merely coincides with a boom among indies or whether it may even be a driving force behind it. For unauthorised copying to contribute to the boom among indies, the net result of unauthorised copying would have to be more beneficial for fringe suppliers and newcomers than for larger incumbents.

14.4 METHOD

The diffusion of digital copying technology after 1998 coincides with a boom among indies, whereas larger, more established market participants seem to have suffered in the sense that annual revenues and market shares fell. It is tricky to devise a more credible empirical test for a causal link between unauthorised copying and the competitiveness of fringe suppliers in the record industry. On the one hand, there is little data on major market participants for comparison with the results of the VUT survey. On the other, a process of swift technological change entails a strong element of uncertainty so that it is hard to isolate the effects of changes in the levels of copyright protection.

One way of testing whether the diffusion of digital copying technology affected indies is the following. For the sake of argument, the assumption is that the state of the copyright system prior to the diffusion of digital copying technology

[203] Collective administration of rights in collecting societies such as GEMA or the GVL is one way to exploit these economies of scale in the administration of copyrights. Smaller rights holders should benefit particularly much from collective administration with one important reservation: collecting societies often create a single price for all works so that they inhibit price competition and thus the contestability of the market.

closely resembled an efficient trade-off for the record industry at large. This is the implicit notion in most empirical studies on the impact of file-sharing (see section 2.8). Under a socially efficient system, rights holders should perceive their benefits from copyright – inhibiting the displacement of demand from so-called 'piracy' – to exceed their costs of the copyright system, since they are the direct beneficiaries of copyright protection.[204] Digital copying should have veered the market away from an efficient level of copyright protection and thus an efficient level of investments in innovation. After 1998, rights holders should then report that their private problems with insufficient copyright protection exceed their costs of compliance by far. Considering the intensity of digital copying and the alleged causal link with a severe recession in the market for authorised copies, copyright protection should be a prime concern for suppliers of protected works.[205]

According to this analysis, this chapter sets out to test two related hypotheses for the population of small, independent record companies addressed in the VUT survey: (1) Record companies report that problems with the enforcement of their own copyright are among the main factors that inhibit innovation within their firm. (2) Record companies report that problems with the enforcement of their own copyrights have a stronger adverse impact on innovation than their costs of compliance.

If these two hypotheses hold this would support the view that unauthorised copying adversely affects indies' innovation incentives. If they do not hold it would seem more likely that indies are not harmed by unauthorised, digital copying and/or that the 'one size fits all' copyright system was excessively strong for indies prior to the diffusion of digital copying technology.

14.5 COPYRIGHT AND FACTORS HAMPERING INNOVATION

The main data discussed in this chapter were produced in a matrix of questions on the significance of eleven factors hampering innovation (also referred to as 'innovation obstacles' or 'factors' in the following). Respondents were asked to 'rate how important the following factors are in hampering or preventing innovation activities in your enterprise' – see the appendix, question 18. The method is adopted from the latest Community Innovation Survey (CIS) (see OECD, 1997; 2001; Eurostat, 2008). Respondents could mark one of five options to signal the perceived importance of

[204] For the argument developed here, it would suffice if the costs of copyright to rights holders were equal to its benefits in an efficient equilibrium.

[205] Another assumption underlying this analysis is that any adverse effects of unauthorised, digital copying have not been overcome by reforms of the copyright system prior to 2005.

factors: 'high', 'medium', 'low', 'not experienced', or 'don't know'. The eleven factors were programmed to appear in random sequence to reduce order bias.

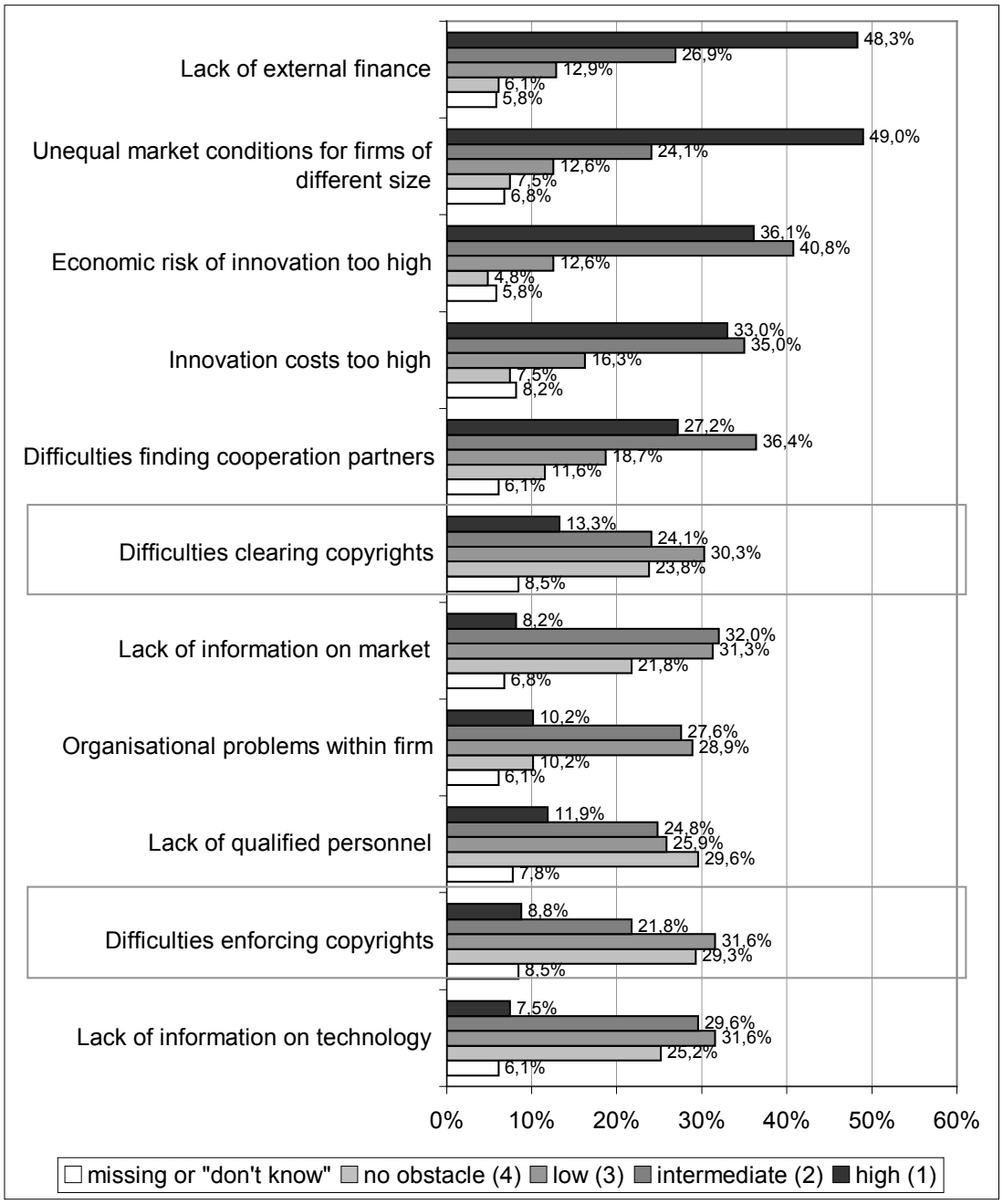
This question on 'innovation obstacles' was immediately preceded by questions on the innovation activities of the firm. This included technical innovation such as (1) internet presence of the firm generally, (2) sales of physical sound-carriers through online-shops, (3) downloads or ringtones introduced to the market, (4) novel physical sound-carriers introduced to the market (e.g. enhanced CD, DVD, SA-CD), (5) digital rights management (DRM). It also included the 'commercialisation of new, stylistically novel or artistically ambitious recordings' as a narrow concept of content creation (see questions 16.f). Respondents thus had a guideline on what the concept of 'innovation' referred to for the purpose of the questions on factors hampering innovations.[206]

Table 14.1 provides an overview of the results for the eleven 'factors hampering or preventing innovation' addressed in the VUT survey. Figure 14.1 visualises the outcome. The results come in two clusters. A first cluster consists of five factors with a mean value between 1.75 and 2.16, indicating that this innovation obstacle was perceived to be of 'intermediate' importance on average. The mean values for the remaining six factors fall between 2.71 and 2.92. In this second cluster, the respondents regarded the importance of the innovation obstacle to be 'low' on average. A non-parametric test for significant differences between the means of neighbouring factors shows that the difference between the lowest ranking factor in the upper cluster and the highest ranking factor in the lower cluster is significant at the .001 level. Not all ranks within the two clusters are significant – see table 14.2.

A central challenge in discussing the innovation effect of a copyright system is to distinguish the innovation costs and benefits of copyright protection. In order to do so, the VUT survey introduced two innovation obstacles related to copyright, which are framed by grey rectangles in figure 14.1 and table 14.1. The rating of the 'difficulties clearing copyrights or related rights for innovative projects' provides an indication of the perceived innovation costs of the copyright system. The rating for 'difficulties with enforcing [the firms'] own copyrights and related rights' provides an indication of the innovation cost of unauthorised copying and thus, by implication, the potential benefits of strengthening copyright enforcement.

[206] By providing such a guideline, the VUT survey adopted an 'object approach' and diverged from the CIS. For a discussion of 'object' versus 'subject approaches' for innovation surveys in the cultural industries see Handke (2008). For a general discussion see OECD (1997; 2001).

Figure 14.1: The significance of 'factors hampering innovation' according to small and medium sized record companies (ranked by mean of valid responses)



Both copyright related obstacles are in the lower cluster. That is, the independent record companies surveyed regarded several innovation obstacles to be of significantly greater importance than either of the two copyright related factors.[207] The more important factors are: a 'lack of external finance', 'unequal market

[207] Two categories referred two copyrights, so that it is possible that a single question on the innovation costs of copyrights would have been ranked higher among the factors hampering innovation. Dealing with copyrights in a single category would have obscured the essential difference between the innovation costs of copyrights and the innovation costs of unauthorised copying, i.e. insufficient copyrights enforcement.

conditions for firms of different size', 'the economic risk of innovation' and 'innovation costs', as well as 'difficulties finding suitable cooperation partners'. These findings imply that among small, independent record companies, difficulties with the copyright system are relatively unimportant as an obstacle to innovation.

Table 14.3 exhibits the result of a non-parametric test for a difference in means between the two factors relating to copyright. The mean response concerning 'difficulties clearing copyrights' is significantly lower than the mean for 'difficulties enforcing copyrights' at the .01 level. That is, on average the independent record companies surveyed perceive the clearance of rights to entail greater obstacles to innovation than the possibility of unauthorised copying due to a lack of copyright enforcement.

The first main finding from this analysis is that small, independent record companies regard the innovation obstacles associated with the copyright system to be of minor importance. The second main result is that respondents consider difficulties with clearing copyrights to be a greater obstacle to innovative projects than problems with enforcing their own copyrights. The innovation costs of copyright exceed their benefits by a statistically significant margin.

14.6 FIRM CHARACTERISTICS AND THE IMPORTANCE OF COPYRIGHT RELATED INNOVATION OBSTACLES

In order to interpret the results presented in section 14.3, this section discusses the correlation of basic firm characteristics and the perceived importance of copyright related innovation obstacles. (For the descriptive results on firm characteristics, see chapter 9.) Table 14.4 presents the results of bivariate, non-parametric correlations (Spearman's rho) that provide some basic insight into four issues.

First, there are reasons to believe that for fringe suppliers the innovation costs of copyright are probably more important and the innovation costs of unauthorised copying less important than for major rights holders (see section 14.3). If that is the case, the proportion between the innovation costs and benefits of copyright established here cannot be generalised for all record companies. This raises the question whether there is any recognizable split between firms above and below a certain size. Within the independent firms covered by the VUT survey, there are no significant correlations between two indicators of firm size – the number of staff in full time equivalents and firm turnover in 2004 – and the reported importance of copyright related innovation obstacles. (The correlation coefficient between the number of staff and the enforcement of copyrights even brings up the wrong sign, implying that small firms are more likely to report on difficulties with incomplete

enforcement.) If there is a threshold of firm size above which record companies would experience greater difficulties with incomplete enforcement than with clearing rights, it lies beyond the small 'indies' covered in the VUT survey.

A similar question arises concerning firm age. Many younger firms have been founded after the rapid diffusion of relevant digital copying technology among end-consumers began in the late 1990s. Such firms might cope better with digital copying, which should show up in less concern with copyright enforcement. However, there is no significant correlation between firm age and the importance of copyright related innovation obstacles. It seems that younger firms experience very similar copyright related innovation obstacles as the older 'indies' that continue to operate.

Third, more innovative and more conservative firms may make different experiences with copyright related innovation obstacles. To shed some light on this issue, a variable reflecting the number of 'technical innovations' adopted by the firm is correlated with results on the two copyright related innovation obstacles. There is no apparent effect between technical innovativeness and difficulties with the enforcement of copyrights. Yet, more innovative firms are somewhat more likely to report on difficulties with clearing rights for innovative projects. The correlation between the number of technical innovations introduced and difficulties with clearing copyrights is weak (Spearman's rho=-.105) and only significant at the .1 level, however.[208] This is consistent with a situation in which firms experience difficulties with clearing rights when they innovate. The correlation results may underestimate the total innovation costs of copyright. On the one hand, the costs of copyright could contribute to preventing the adoption of some of the technical innovations covered altogether. Only firms that managed to overcome any innovation obstacles – including those related to copyright – were classified as innovative. This should bias the correlation results between reports on the innovation costs of copyright and firm's innovativeness downward. On the other, innovation costs of copyright may also concern other types of innovative projects than those measured in the variable used here.

Finally, the correlation between difficulties with the clearance of copyrights and with the enforcement of copyrights provides some evidence whether these two opposing effects of copyright on innovation are experienced simultaneously. The correlation is strong (Spearman's rho=.503) and significant at the .001 level. It is imaginable that much of this correlation would be due to different interpretations of the scale between respondents. However, the correlation coefficients between all but

[208] This result is particularly noteworthy because the indicator of innovativeness includes the adoption of DRM measures, a main point of which is to administer and enforce copyrights.

two other pairs of 'factors hampering innovation' were considerably lower.[209] That is, those firms that do experience copyright related innovation costs often experience difficulties with clearing rights and difficulties with enforcing their own rights at the same time.

14.7 CONCLUSIONS

The net effect of the copyright system on innovation is not trivial, since effective copyright protection raises both the pecuniary rewards as well as the costs of innovation. This chapter compares the importance of the innovation costs of unauthorised copying on the one hand, and the innovation costs that the copyright system entails on the other. To do so, it discusses measures of the extent to which difficulties with enforcing copyrights and difficulties with clearing copyrights hamper technical innovation in independent record companies.

There are two main findings. First, small independent record companies report copyright related innovation obstacles to be significantly less important than several other factors hampering innovation, such as lack of external finance, excessive costs and risks associated with innovation or difficulties with finding suitable cooperation partners. That is, copyright may not be a particularly effective lever for policy makers to foster innovation among the types of firms surveyed in this study.

Second, of the two opposing innovation obstacles related to copyrights, difficulties with clearing rights are experienced to be significantly more important than problems with incomplete enforcement of their own rights. That is, the copyright system as it is may be inefficient as a means to promote innovation among small, independent record companies because it is too strong or otherwise fails to cater for the types of firms surveyed.

There is no significant correlation between firm size or firm age and the difficulties with copyrights reported. The main results appear to hold throughout the population of firms covered, even though it seems likely that the experience of major firms, which were not covered in the survey, would be more favourable concerning a high level of copyright protection. Innovative firms are more likely to experience

[209] These correlations are not fully reported here. The correlation coefficients (2-tailed, Spearman's rho) between responses for 'innovation costs too high' and 'economic risk of innovation too high' is .571 and that for 'lack of market information' and 'lack of information on technology' is .543 (both significant at the .001 level). For all other 52 possible pairs of factors hampering innovation, the correlation coefficients were lower than that for the two copyright related factors, ranging from .467 (significant at the .001 level) for 'lack of qualified personnel' with 'lack of information on technology' and .017 (not significant; p=.780) between 'copyright enforcement' and 'economic risk of innovation too high'.

difficulties with clearing rights as innovation obstacles. There is also considerable evidence that the two copyright related innovation obstacles are experienced simultaneously.

In any case, where innovation is concerned, independent record companies do not seem to enjoy a clear net benefit from the existing copyright system. In the perception of managers/owners of small record companies, the innovation costs of copyright seem to exceed any problems with 'piracy' that relate to innovation and creativity.

These findings challenge the notion that digital, unauthorised copying wreaks havoc on the record industry at large. Inhibiting digital copying does not seem to be of central import to incentivise innovation in the small, independent record companies surveyed.

These findings also provide some evidence that the existing copyright system entails substantial innovation costs. These 'innovation costs' should be particularly visible among fringe suppliers, where the countervailing benefits of the copyright system are probably less pronounced. This does not imply that any innovation costs of copyright would not accrue to larger firms but the countervailing benefits might be larger for established suppliers.

Finally, these findings are also consistent with a situation in which the partial erosion of the copyright system beginning in the late 1990s does not only coincide with a boom among 'indies' by chance. Instead, it seems likely that unauthorised, digital copying renders the market for sound recordings more contestable, which will probably benefit fringe suppliers and newcomers as well as consumers (subject to various other effects of copying).

In short, this chapter provides evidence that the innovation costs of the existing copyright system require much more attention than they have received in the economic literature so far.

Table 14.1: The significance of 'factors hampering innovation' according to small and medium sized record companies (ranked by mean of valid responses) [(a)]

	Frequencies %					Descriptives			
	High (1)	Intermediate (2)	Low (3)	No obstacle (4)	Missing or 'Don't Know'	Valid n	Mean valid n	Std. Dev.	
Lack of external finance	48.3	26.9	12.9	6.1	5.8	277	1.75	.923	*Cluster 1*
Unequal market conditions for firms of different size	49.0	24.1	12.6	7.5	6.8	274	1.77	.966	
Economic risk of innovation too high	36.1	40.8	12.6	4.8	5.8	277	1.85	.836	
Innovation costs too high	33.0	35.0	16.3	7.5	8.2	270	1.98	.930	
Difficulties finding cooperation partners	27.2	36.4	18.7	11.6	6.1	276	2.16	.980	
Difficulties clearing copyrights	13.3	24.1	30.3	23.8	8.5	269	2.71	1.011	*Cluster 2*
Lack of information on market	8.2	32.0	31.3	21.8	6.8	274	2.72	.921	
Organisational problems within firm	10.2	27.6	28.9	10.2	6.1	276	2.78	.986	
Lack of qualified personnel	11.9	24.8	25.9	29.6	7.8	271	2.79	1.034	
Difficulties enforcing copyrights	8.8	21.8	31.6	29.3	8.5	269	2.89	.967	
Lack of information on technology	7.5	29.6	31.6	25.2	6.1	272	2.92	.923	

[(a)] See survey question 18.

Table 14.2: Test statistics for differences in the means of neighbouring 'factors hampering innovations' (Wilcoxon Signed Ranks Test) [a]

Factors (rank according to mean)	Z [b]	Asymp. Sig. (2-tailed)	
Lack of external finance (1) – Unequal market conditions (2)	-.354	.723	
Unequal market conditions (2) – Economic risk (3)	-1.235	.217	
Economic risk (3) – Costs of innovation (4)	-2.330	.020	*Cluster 1*
Costs of innovation (4) – Cooperation partners (5)	-2.694	.007	
Cooperation partners (5) – Clearance of copyrights (6)	-6.608	.000	
Clearance of copyrights (6) – Market information (7)	-.086	.932	
Market information (7) – Organisational problems (8)	-.902	.367	
Organisational problems (8) – Lack of personnel (9)	-.355	.722	*Cluster 2*
Lack of personnel (9) – Enforcement of copyrights (10)	-1.156	.248	
Enforcement of copyrights (10) – Technological information (11)	-.248	.804	

[a] For the full title of factors, see table 1. The numbers in brackets refer to the rank of the factor according to the mean of valid n as reported in table 1.
[b] Based on positive ranks.

Table 14.3: Test for a difference between the importance of 'clearance of copyrights' and 'enforcement of copyrights' as factors hampering innovation

		Ranks			Test Statistic[d]	
		N	Mean Rank	Sum of Ranks	Z	Asymp. Sig. (2-tailed)
Clearance of copyrights – Enforcement of copyrights	Negative Ranks	79[a]	65.03	5137.50	-2.911[e]	.004
	Positive Ranks	47[b]	60.93	2863.50		
	Ties	138[c]				
	Total	264				

[a] Clearance of copyrights < Enforcement of copyrights
[b] Clearance of copyrights > Enforcement of copyrights
[c] Clearance of copyrights = Enforcement of copyrights
[d] Wilcoxon Signed Ranks Test.
[e] Based on positive ranks.

Table 14.4: Bivariate correlations between several firm characteristics and the reported importance of copyright related innovation obstacles (Spearman's rho) [a]

			Clearance of copyrights[b]	Enforcement of copyrights[c]
Firm size	No. of staff – fte[d]	Corr. Coeff.	.082	.061
		Sig. (2-tailed)	.243	.386
		N	203	204
	Turnover	Corr. Coeff.	.009	-.008
		Sig. (2-tailed)	.891	.904
		N	240	240
Firm age		Corr. Coeff.	.083	.050
		Sig. (2-tailed)	.176	.415
		N	269	269
Technical innovations		Corr. Coeff.	-.105	-.008
		Sig. (2-tailed)	.087*	.902
		N	268	268
Clearance of copyrights[b]		Corr. Coeff.	1.000	.503**
		Sig. (2-tailed)	--	.000
		N	269	264
Enforcement of copyrights[c]		Corr. Coeff.	.503**	1.000
		Sig. (2-tailed)	.000	--
		N	264	269

[a] For documentation of variables in the first column see table 12.9.
[b] Abbreviation of 'difficulties with clearing copyrights and related rights for innovative projects'.
[c] Abbreviation of 'difficulties with enforcing own copyrights and related rights for innovative projects'.
[d] Full time equivalents.
* Correlation is significant at the .10 level (2-tailed).
** Correlation is significant at the .01 level (2-tailed).

15. CONCLUSIONS

A central concern with digitisation in the cultural industries is that unauthorised, digital copying – which erodes copyright protection – will disrupt cultural supply. The empirical findings of this dissertation suggest that this concern is not justified.

In the German market for sound recordings, the supply of different titles on physical sound-carrier formats has expanded in the presence of digital copying and there is little evidence that the rate of growth would have been adversely affected. What is more, small, independent record companies seem to thrive in the current business environment. The resilience of supply and a boom among fringe suppliers in spite of falling industry revenues is consistent with a process of creative destruction in the context of radical technological change. It even seems likely that unauthorised, digital copying benefits fringe suppliers and consumers by making the market for sound recordings more contestable.

These findings highlight limitations in the conventional economic analysis of digital copying. They also deflate the case for additional public expenditure on copyright enforcement. Such measures should be complemented or even be replaced by a policy aimed at facilitating technological transition.

15.1 THE IMPACT OF UNAUTHORISED, DIGITAL COPYING

The economic rationale for copyright is that this institution raises the supply of protected works where it would otherwise fall below its socially desirable level. This dissertation addresses the impact of unauthorised, digital copying on a market for copyright works. So far, the economic literature on digital copying has focused on the consequences for rights holder revenues. Such studies are not sufficient to make the case for public investments in copyright protection, however, because they say little about the effect on user welfare.

It is often taken for granted that unauthorised copying and decreasing rights holder revenue have an adverse effect on creative supply. This is the logical conclusion if the effects of digital copying are studied in terms of an external shock on a statically efficient industry. A central finding in this dissertation conflicts with this assumption, however. There is no evidence that creative supply would have decreased with the diffusion of digital copying technology and severe falls in rights holder revenues from the primary market for sound recordings after 1998.

In order to explain this counter-intuitive finding, this dissertation emphasises two extensions on the more conventional economic analysis. Drawing on the economic literature on innovation as well as the specialised literature on cultural industries, this dissertation develops an

alternative account that allows for broader technological change (beyond the diffusion of new copying technology), as well as for differences between suppliers and incomplete competition.

Why a recession in the record industry in the presence of digital copying is not associated with a diminution of creative supply could then be explained in a number of ways. First, unauthorised copying may not inhibit content creation, for example because content creation is intrinsically motivated, or because business models are adapted successfully. Second, any adverse effect of unauthorised copying on content creation could be offset by countervailing benefits of unauthorised copying, for example because network effects raise the income to rights holders from subsidiary markets, or because unauthorised copying increases the contestability of markets and erodes x-inefficiencies. Third, there may be other intervening factors, such as productivity increases due to technological change that occur independent of unauthorised copying.

Creative destruction

The approach in this dissertation is to first establish empirically whether the record industry goes through relatively swift technological change in the period under investigation. For this purpose, part II of this dissertation conducts a test for Schumpeterian creative destruction, which provides an early indication for a typical period of radical technological change as described in the structuralist-evolutionary economic literature.

There is ample evidence for creative destruction in the German record industry after 1998. During the recession period, there has been a boom among smaller, independent record companies, and innovation intensity was high in spite of falling revenues to the industry at large. This process of industry fragmentation and broader technological change needs to be accounted for in order to grasp the impact of digital copying and to establish the desirable level of copyright protection. It is not entirely clear, however, whether creative destruction just coincides with the diffusion of digital copying technology or whether unauthorised copying has caused it.

The innovation costs of copyright and competition

It is not easy to isolate the influence that changes in the level of copyright protection have on competition and innovation in the record industry. Part III of this dissertation discusses a number of hypothetical reasons for a boom among small, independent record companies in spite of a recession in the primary market for sound recordings. According to the results of a survey among German ‘indies’ conducted in preparation of this dissertation, neither income from related markets (say publishing, the live business or merchandising) nor digital retailing would have made a substantial contribution to the boom among ‘indies’ during the period studied. There is limited evidence for falling fixed costs over the recession period, and new opportunities to promote sound recordings online may mitigate the lead that larger incumbents enjoy in the

traditional media somewhat. Furthermore, half of the 'indies' surveyed are run as amateur enterprises or by self-issuers. Such suppliers may be less sensitive to pecuniary incentives than more conventional firms and their presence may explain some resilience of 'indies' during the recession. There is little evidence that a rapid process of further amateurisation or disintermediation would be ongoing, however. None of these phenomena seems to provide more than a partial explanation for a boom among small, independent record companies during the recession.

Chapter 14 provides some evidence that the copyright system does restrict innovation by smaller record companies: 'indies' even reported significantly greater innovation costs of compliance to the copyright system than due to incomplete copyright enforcement. These reports contrast with the position of larger incumbent record companies – as formulated by the IFPI for example – which argue that weak copyright protection constitutes a serious threat to the record industry. It thus seems likely that any harm of unauthorised, digital copying is less severe for 'indies' than for larger suppliers. It is even probable that less copyright protection is better for 'indies'. In either case, these findings are consistent with a situation in which the partial erosion of the copyright system does not merely coincide with broader technological change. The copyright system prior to the late 1990s may have been a cause for barriers to entry in the market for sound recordings, so that it inhibited competition and incentives for radical innovation.

This idea is consistent with Landes and Posner's (1989) more general insight that each copyrighted work has its own optimal level of copyright protection. Kim (2007) develops a theoretical argument on the related idea that fringe suppliers may prefer lower copyright protection and argues that at the extreme, it could be rational for smaller suppliers to opt out of the copyright system altogether. Chapter 4 in this dissertation discusses how online sampling – including through file-sharing networks – may make the market for sound-recordings more contestable (cf. Klein, 1998; Peitz and Waelbroeck, 2006). Extending on these theoretical arguments, there are a number of hypothetical reasons why a reduction in de facto copyright protection within an inflexible, 'one size fits all' copyright system may stir competition.

First, small firms and newcomers might regularly enjoy a comparative advantage in adapting to a changing business environment. Then it could simply be the extent of change rather than the type of change that would favour 'indies' and their advantages would be temporary.

The market for sound recordings might also have become more contestable because some beneficial 'exposure effect' of unauthorised, digital copying may exceed the detrimental 'substitution effect' associated with digital copying at least where newcomers and fringe suppliers are concerned (Blackburn, 2004). Unauthorised copying may allow for more extensive product searches by consumers and undermine some of the advantages of established suppliers who can market their output under strong brands. Where this is the case, smaller suppliers may stay relatively competitive more permanently – for as long as lower search costs facilitate more

extensive product searches.

An extension to the latter argument is that an inflexible copyright system inhibits promotional sampling and price competition that fringe suppliers and newcomers may be keener to conduct than well-established incumbents. Since copyrights apply automatically, it requires an explicit contract that deviates from routines to allow for 'free use'. Many users may be put off by any transaction costs or potential for legal uncertainty. Rights holders who wish to price discriminate by encouraging 'free' copying to some users, while insisting on payments from others, cannot do so easily within existing copyright arrangements.[210] In addition, collecting societies set a single price for their repertoire, which will rarely be high enough for established stars and low enough for newcomers at the same time.

Finally, any market power of dominant rights holders is likely to include some control over innovative use that requires licenses (Boldrin and Levine, 2002; 2005). Many innovative users may focus on arrangements with major rights holders in order to establish their services with a broad range of customers. The exclusion of 'indie' repertoire was an initial complaint about iTunes, for example. Fringe suppliers did trail behind majors regarding 'digital' sales at the time of the VUT survey (see chapter 11), which qualifies the popular expectation that smaller firms should benefit disproportionately from unrestricted shelf-space online (Anderson, 2004; cf. Alexander 1994). Due to the costs of multiple transactions, it will remain less cost effective even for online retailers to include the repertoire of a great number of fringe suppliers into their range of products on offer. Collective administration of rights may provide some improvement. Furthermore, unauthorised copying that keeps fringe suppliers visible may mitigate any tendency for further integration where innovative users develop their services mainly in cooperation with major incumbents. In short, weaker copyright protection (or lower prices for licenses) may be associated with greater contestability of the market, which adds an important dimension to the cost-benefit analysis that underlies copyright policy.

[210] An extreme example is that payments to the composers' collecting society GEMA used to be due for each download or stream regardless of whether the supplier did hold the rights to the composition. That is, rights holders offering free downloads on their own website could end up paying considerable amounts to the collecting society where demand proves to be high. These royalties for their own rights would flow back to them later subject to administrative deductions and the distribution key of the collecting society.

15.2 IMPLICATIONS FOR THE ECONOMICS OF COPYRIGHT

The diffusion of digital copying technology is one of the most profound changes in the de facto level of copyright protection over the last decades. If this partial erosion of copyright protection has no discernable adverse impact on supply, it is unlikely that existing copyright arrangements are an efficient means to promote supply, and it seems necessary to better understand the unintended consequences of copyright protection.

This dissertation suggests that in order to do so, the conventional analysis of the economic effects of copyright needs to be extended to allow for broader technological change and gradual changes to competition. This is certainly the case in a context of radical technological change associated with digitisation. The need to assess unintended consequences of copyright may not be restricted to exceptional periods of technological discontinuity, however. All previous studies of changes in copyright strength, which covered other time periods, brought about the same basic result of 'no significant effect' on the variety of supply (see section 2.8). It thus seems likely that our general understanding of the economics of copyright could be improved by studying unintended consequences concerning the interaction of copyright with broader technological change and competition.

Broader technological change

The economics of copyright has a tradition to address advances in copying technology by means of comparative statics. Economic studies are typically restricted to situations where the content supplied changes due to changes in copyright strength but production processes (technology) remain constant.

Arguably, advances in the economic literature on copyright may be had from a more comprehensive analysis of the types of innovation that occur in markets for copyright works on the one hand, and the sources of innovation on the other.

Regarding types of innovation, the economics of copyright usually focuses on content creation. However, humdrum innovation that concerns the reproduction, making available to the public, distribution, or modification of copyrighted material is likely to affect the supply of copyright works. Since humdrum innovation typically requires the clearing of rights, it is very probable that copyright systems affect humdrum innovation and this effect requires greater attention. The literature has only begun to address situations where changes in copyright strength and broader technological change occur simultaneously.

Regarding the sources of innovation, the economic literature on copyright tends to allow only for innovation by copyrights holders (or those who will attain copyrights in the process of content creation). However, copyright users may innovate as well. On the one hand, creators are in most cases also users in the sense that they draw on copyrighted material held by others. On

the other, there is little reason to believe that only rights holders are drivers of humdrum innovation in the markets for copyright works and historical accounts of the record industry suggest otherwise (see section 5.2).

Copyright may generate even greater obstacles to user innovation concerning humdrum activities rather than to follow-up content creation. That is because humdrum innovation requires the clearing of rights, but in contrast to follow-up creativity, humdrum innovation does not result in copyright claims for the innovator.[211] An additional, equally fundamental challenge is that technological change may be endogenous. An important contribution to the economics of copyright is the notion that industries may adapt to changing market conditions such as greater unauthorised copying, which could mitigate the long-term costs of unauthorised copying and fan further innovation, see sections 2.4 and 2.6.

Copyright, innovation and competition

A more general issue that a debate on industry adaptation touches upon is the relationship between innovation and competition. In essence, the economic literature on copyright discusses whether unrestricted competition between two specific types of suppliers (creators and free-riders) obstructs a specific type of innovation (content creation) and whether copyright could improve the situation. In short, copyright is rationalised as a means to promote innovation by *restricting* competition.

Yet, the relationship between innovation and competition in markets regulated by copyright has been raised with opposite signs: a number of authors writing on the record industry, for example, worry that insufficient competition would stifle innovation.[212]

To appreciate the differences between various arguments on innovation and competition, one needs to take note of different taxonomies of suppliers. Much of the economics of copyright adopts an abstract analysis that distinguishes only between suppliers/rights holders and consumers. In this analysis, the possibility of either changes in the competitive pressure between different types of suppliers or the possibility of user innovation is excluded by definition.

Additional taxonomies of suppliers are found in the literature on cultural industries and the record industry in particular. Some authors distinguish between creators in a narrow sense, such as authors and recording artists, and intermediary firms, such as publishers and record companies

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[211] Of course, it is possible that humdrum innovation results in other forms of IP rights such as patents. This could alleviate the asymmetry between copyright holders and humdrum innovators in markets for copyright works but at the costs of additional expenditure for the administration costs of a further layer of IP and probably additional access costs.

[212] This position is particularly prominent in a substantial literature on business cycles in the record industry. An influential paper by Peterson and Berger (1975:159) concludes, for example, that "only when the market is characterised by competition between a large number of firms is there incentive to innovate". See section 5.2.

(e.g. Hurt and Schuchman, 1966; Caves, 2000; Towse, 2001). Others distinguish between incumbents who own valuable copyrights and newcomers/fringe suppliers who are the copyright have-nots (e.g. Gillet, 1970; Peterson and Berger, 1971). Recurrent criticisms of copyright are that existing copyright systems would favour intermediaries over creators, or incumbents over fringe suppliers and newcomers.

Furthermore, the rigour with which the distinction between suppliers and users is applied may be questioned. Copyright may restrict user innovation and market entry because it hinders copyright 'have-nots' by giving the copyright 'haves' some control over follow-up creativity, or because there are substantial fixed costs in dealing with a copyright system.

Whether suppliers are studied as a homogenous group or whether they are distinguished according to their position in the market thus raises quite different issues regarding the details of copyright systems, and they are likely to produce different results regarding the desirable level of copyright protection. The same applies if user innovation is allowed for. The underlying question is whether the existing copyright system has unintended, dynamic costs by restricting competition between different types of suppliers and by inhibiting market entry by new suppliers (user innovation).

The structuralist-evolutionary economic literature on technological change contains a relatively advanced and empirically based debate on competition and innovation. This literature suggests that there is no monotonic relationship between innovation and competition. That is consistent with the economic literature on copyright, which addresses copyright as a trade-off that has no desirable solution at the extremes of zero protection or of perfect protection. Structuralist-evolutionary theories of technological change also address interdependence and feed-back between innovation, competition and long-term growth. The economics of copyright has yet to react to related 'stylised facts' about the relationship between innovation and competition.

A particularly relevant insight may be had by distinguishing between radical and incremental innovation (see section 7.1). It is generally acknowledged in the relevant literature that there are systematic differences between incumbents and newcomers concerning their incentives to conduct radical innovation. The underlying reasons are that: first, incumbents may be subject to sunk costs associated with an established infrastructure that would be devalued in the course of radical technological change; second, incumbents and/or larger firms typically enjoy some market power in mature industries due to economies of scale and scope; third, larger firms may find it more difficult to instigate substantial changes in their operations than smaller firms.

It seems that these fundamental insights in the literature on innovation could be fruitfully applied to systematise and more thoroughly develop the fledgling debate in the economics of copyright on the relationship between copyright, competition within the copyright industries

(rather than competition between creators and free-riding outsiders) and innovation. The general theory on innovation provides a link between these three concepts, which many sceptics of copyright seem to be concerned with. This literature does provide a concept how copyright may affect the speed and direction of technological change and inhibit radical innovation by restricting user innovation and putting smaller suppliers at a disadvantage.

Of course, this remains to be a complex argument that would hold little sway without empirical evidence supporting it. This dissertation provides such evidence by documenting that the diffusion of digital copying technology coincides with lower industry revenues, greater variety of supply, and a boom among smaller, independent record companies. This awkward result is consistent with a situation in which any adverse impact from unauthorised copying and a recession on incentives to supply is more than offset by productivity increases in the record industry. These productivity increases may derive from broader technological change or the erosion of market power, which may be related according to the line of argument presented above.

Further research

There is a plethora of open questions concerning the economic case for copyright. For a systematic overview, see Handke (2010). Concerning the results of this dissertation, an obvious question is whether the pattern of creative destruction in the presence of digital copying holds in other markets or over different periods of time. Where this pattern holds, it would be desirable to establish with greater precision what the net effect on social welfare has been, and in how far changes to the copyright system have caused creative destruction.

Based on the results presented in this dissertation, it seems reasonable to focus future research on two issues. First, if we take the economic rationale for copyright seriously, the most relevant dependent variable in research on copyright is either the diversity (or quality) of supply, or innovation as the process through which supply improves over time. Studying the impact of unauthorised copying/copyright on supply could provide a decent indication of the net result of all the costs and benefits associated with copyright and unauthorised copying. Results will give an indication of how consumer interests are affected. Results will also reflect the net effect on incentives to suppliers. A fundamental problem is that the economics of copyright has not developed methods of measuring the diversity of supply or of measuring innovation in the regulated industries. This is a profound gap in the repertoire of economists working on copyright. Chapter 12 of this dissertation addresses the issue of innovation measurement.

The second central issue for future research is the relationship between technological change and copyright. This relationship may go both ways, with technological change affecting copyright and vice versa. On the one hand, applied research on copyright needs to take account of broader technological change in the regulated market (say changing production costs) and how its

consequences affect the case for copyright. On the other hand, applied research on copyright that seeks to establish the net welfare effect of copyright over time needs to address the effect of the copyright system on user innovation and humdrum innovation, not just on content creation by rights holders. Next to the conventional concern for promoting the supply of copyright works, it may be worthwhile seeking out where there are obstacles to swift technological change due to the copyright system, for example because transaction costs associated with copyright inhibit experimentation and the adoption of new business models and generate barriers to competitive entry by innovators.

On a more general level, if copyright is a means to promote innovation it seems promising to develop greater links between the economic literature on copyright and the general economic literature on innovation. This would require greater attention for differences between suppliers, endogenous technological change and the dynamic costs of copyright. The conventional economic case for copyright hinges on the dynamic benefits of this institution, where it increases the future supply of creative works. Some concern for the long run is thus central to the economics of copyright.[213] If the case for copyright depends on developments over time, the economics of copyright gives rise to some complex issues associated with dynamic economic analyses.[214] It seems that the economic literature on copyright has not risen to the challenge.

What is more, the cultural economics literature, as well as the specialised literature on the record industry, describes markets that deviate from standard market models in a number of ways. Besides the public goods characteristics of reproducible creations that the economics of copyright is concerned with, these 'complications' include product differentiation, quality uncertainty, experience good attributes and bandwagon effects, as well as intrinsic motivation of creators, the need to co-ordinate diverse inputs under incomplete information and a complex and 'polarised' industry structure in which a handful of dominant firms co-operate and compete with many smaller suppliers in volatile constellations.

In order to develop what may be called applied research on copyright, there is extensive scope for theoretical work on the implications for the desirable level of copyright, especially when studying the combined effect of different complications. Given the complexity of markets and the range of imaginable costs and benefits of copyright, there is also a great need for

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[213] The 'long run' refers to a time period that is long enough for suppliers to be able to alter the characteristics of the goods and services they supply and where these alterations unfold their consequences to stakeholders.

[214] This includes the need to define the set of relevant direct and indirect effects of copyright over time. The potential for knock-on effects, spillovers and feedback but also for unforeseen 'effects of history' as time passes make it hard to develop valid dynamic models, and it is challenging to define the appropriate time-frame in which the full consequences will have transpired. The most straightforward challenge for empirical research on the economic effects of unauthorised copying is perhaps that costs of production will change over time, which is likely to affect the socially desirable level of copyright protection (see section 2.4). The literature has little to offer in this respect (see section 13.3).

empirical research. Without empirical confirmation of hypotheses, there is any number of logically valid explanations of the effects of copyright, which may produce conflicting results depending on the assumed market conditions and thus the selection of imaginable effects of copyright included into the model as well as the supposed weight of the costs and benefits.

15.3 POLICY IMPLICATIONS

The empirical findings of this dissertation also have implications for copyright policy. First, if the variety of copyright works supplied increases in the presence of digital copying, it is probable that the copyright system prior to the diffusion of digital copying technology was inefficient or that the desirable level of copyright protection has fallen due to technological change. The aim of copyright policy should thus not be to preserve or reinstitute levels of protection that existed in the past – say immediately before the diffusion of copying technology – even if a specific constellation of the copyright system have been efficient in history.

Second, stakeholders' interests may not be aligned. Some of the recent, economic literature on unauthorised copying is based on the assumption that stakeholders' interests are aligned at least in the long run over a range of reasonably efficient levels of copyright protection similar to that prior to digital copying. The empirical findings in this dissertation challenge this notion. On the one hand, if supply is not diminished due to unauthorised copying, greater accessibility will create an unambiguous welfare gain to users.[215] On the other hand, even rights holders' interests in the level and type of copyright protection may diverge. The major record companies have been working at strengthening the copyright system through lobbying, public relations, judicial means and DRM. By contrast, few of the fringe suppliers surveyed in this dissertation have taken an interest in DRM measures at a time when such technical solutions were widely adopted by majors (see section 12.3). What is more, results of a survey of small, independent record companies imply that the innovation costs of the existing copyright system may often exceed the innovation costs of unauthorised copying for this type of rights holders (see chapter 14). One way to improve copyright policy in this context could be to increase the flexibility of copyright arrangements available to rights holders.

Third, in a context of swift technological change, great long-run productivity increases may be achieved at the cost of adaptation at present. Where a swift process of creative destruction (that is adaptation with some obsoleteness) associated with cost-reducing, radical technological change does take place, an efficient copyright policy is likely to have very different specifications

[215] The available data does not allow for firm conclusions, however, not least because the variety of supply is no complete indicator of diversity or quality.

than suggested in conventional studies of the effects of copyright on statically efficient markets. In a scenario of radical technological change, public policy might focus on speeding up the transition process and avoid obstacles to innovation, rather than on preserving historical levels of industry revenues. The point is not necessarily that new intervention is required. Technology policy may simply be about revising existing regulation with a view to remove institutional obstacles to radical innovation and transition in order to ensure that the full benefits of new technologies transpire at a desirable speed. A number of authors have expressed concerns that the copyright system may inhibit technological innovation (see section 2.6). Especially during a period of swift technological change, the innovation effects of copyright may become more important and copyright policy will raise similar issues to more conventional innovation policy.

Fourth, the literature on innovation and technological change usually emphasises the uncertainty and open-endedness of the process (see section 7.2). To deal with a short horizon for predictions, regular monitoring and a continuous feedback between observations and policy revisions may be necessary.

15.4 FINAL REMARKS

It is a recurrent and divisive issue whether IP systems such as the copyright system are appropriate means to foster innovation. The discussion of this issue has flared up repeatedly in different contexts for at least 200 years (Machlup and Penrose, 1950; Towse and Holzhauer, 2002; Pugatch, 2006). The current discourse on reforming copyright to regulate the use of digital ICT can be seen as a continuation of these inconclusive debates. If the historic precedence is anything to go by, there are no simple answers.

On the one hand, it goes to show that the diffusion of digital copying technology and recession after 1998 coincide with a period of creative destruction. There are grounds for guarded optimism about the ability of creators and cultural entrepreneurs to organise their activities in a way that will sustain a diverse supply.[216] At the same time, access is very substantially facilitated with online distribution of various types, which should benefit consumers. From the observations presented in this dissertation, the preservation of cultural diversity does not provide a strong case for strengthening statutory control of information exchanges online. Furthermore, the results of this dissertation suggest that the existing copyright system is likely to inhibit competition and diminish incentives for radical technological change, which could turn out to delay the desirable

[216] Two more recent developments that are not covered in much of the time period under investigation may come to invigorate the market for musical sound recordings further. On the one hand, for much of the period covered, there still was hardly any retailing of authorised music downloads in Germany. The period studied also precedes the hype around user-generated content.

aspects of digitisation and reduce the competitiveness of 'high-protection' economies.[217] The costs of copyright concerning user innovation need to be weighed against its benefits in terms of incentivising rights holders.

On the other hand, the copyright system is a cornerstone of the cultural industries as we know them, and large alterations to the copyright system may entail substantial adaptation costs. Whether copyright achieves a positive net effect on innovation and creativity in practice and under changing market conditions is a different question, however, and it seems problematic that the debate on copyright reforms frequently pays no heed to broader implications of digitisation.

Regarding the challenges that economists face in explaining the effects of copyright, this thesis began with an epigraph in which Coase (1960:44) summarises his criticism of principled debates surrounding welfare economics for their impracticality. The heedless application of standard economic theory to study the effects of copyright seems to be a case in point. Where the case for innovation-enhancement through IP is studied in terms of comparative statics between statically efficient markets with more or less unauthorised use, results are likely to be imbalanced, mute about important broader consequences and in all probability irrelevant or even misleading. Such research provides rigorous conclusions about the consequences of copyright under highly improbable market conditions. In order to arrive at more relevant and valid results, it may be more promising to "start our analysis with a situation approximating that which really exists, [and] to examine the effects of a proposed policy change", as Coase had it. The specialised literature on the cultural industries should thus provide a more important point of reference for applied research on copyright. What is more, since copyright is justified by its long-run benefits, it may be necessary to allow for endogenous technological change in the analysis. Most importantly, empirics are an essential complement to theory in useful research on complex and uncertain phenomena such as innovation (e.g. Lipsey et al., 2005; cf. Png, 2006). The counter-intuitive results presented in this dissertation highlight the need for empirical research in order to generate more valid predictions and to enable theoretical progress.

In the course of digitisation, the vague promise of an unprecedented wealth of access may conflict with concerns for sustaining intellectual property as well as the interests of the established copyright industries. The results of this dissertation challenge the notion that more extensive public intervention would be necessary. They also illustrate that any policy aiming to preserve the status quo prior to the diffusion of digital copying technology is certainly misguided. To establish an adequate solution remains challenging, and the related decision-making process provides a fascinating example of how societies deal with change. For academic researchers, who

[217] There may also be trade-offs between copyright protection and other values such as the privacy of information exchanges or the freedom of expression that remain beyond the scope of this research.

are usually creators and voracious users of copyright works, this process is also about keeping our own house in order.

Appendix 1: The VUT survey
(translated from German)

Symbols used
☐ = closed question response category; single choice
(☐) = closed question response category; single choice; drop-down menu
○ = closed question response category; multiple choice
_ _ = open question; numerical value
_ _ _ _ = open question; text

Technical information
This overview does not fully emulate the screen layout. The online questionnaire highlighted key words in longer questions. Screen names, code numbers and question numbers were not a visible part of the questionnaire. Several questions contained info-boxes with definitions and instructions that respondents could open if they felt unclear about the meaning of terms; these are not reported on below.

For matrix questions where sub-questions had no clear logical order, sub-questions were programmed to rotate so as to eliminate order bias. That is, sub-questions appeared in a random order that differed between respondents.

All questions that referred to the year 2004 were contingency questions that only appeared if firms had been founded before 2005. If firms were founded in 2005, another contingency question appeared instead, referring to the year 2005 up to June 30. In order to simplify this overview, question 10 is the only question that documents the procedure.

Screen 1 – Reception

The first screen contained basic information and instructions related to the survey, as well as a link to a site giving information on confidentiality and contact details for queries related to the survey.

Screen 2 – Basic firm characteristics 1

1. All in all, how would you describe the present state of the VUT-member firm, for which you are responding?
☐ very good (1)
☐ good (2)
☐ satisfactory (3)
☐ sufficient (4)
☐ insufficient (5)
☐ don't know

2. In what year has the firm been founded, with which you are a member of the VUT?
Please report the year in four digits (e.g. 1995)

_ _

Screen 3 – Basic firm characteristics 2

3. Which of the following statements best describes your expectation regarding the future of your VUT-member firm?
☐ grows strongly (1)
☐ grows somewhat (2)
☐ stays the same (3)
☐ shrinks somewhat (4)
☐ shrinks strongly (5)
☐ will taken over by another firm (5)
☐ will be terminated (5)
☐ don't know

4. Is the firm with which you are member in the VUT a self-governing enterprise, i.e. do you determine the use of your company's means autonomously?
☐ Yes (1)
☐ No (2)
☐ Don't know

5. Is your firm part of a group of companies?
☐ Yes (1)
☐ No (2)
☐ Don't know

Screen 3.a – National or multinational group

5.a Is the group of companies, of which your firm is a part, a ...
☐ national group of firms (1)
☐ multinational group of firms (2)
☐ Don't know
[*Contingency question; appeared only if response to question 5 was ‚Yes'.*]

Screen 3.b – Seat of the mother

5.b Please report the country where the group of companies, of which your firm is a part, has its headquarter.

_ _ _ _
[*Contingency question; appeared only if response to question 5 was ‚Yes'.*]

Screen 4 – Basic firm characteristics 3

6. i to iix. How has the general state of your firm changed since [*'1998' for firms founded before the year 1998 and the ‚year of foundation +1' for firms founded in 1998 or later / the year always appeared as a number*]?
☐ improved strongly (1)
☐ improved somewhat (2)
☐ neither improved or deteriorated (3)
☐ deteriorated somewhat (4)
☐ deteriorated strongly (5)
☐ don't know

7. In the three years from 2002 to 2004, has your firm gained more than 10% in turnover through one or several mergers?
☐ Yes (1)
☐ No (2)
☐ Don't know
[*Contingency question; appeared only if response to question 2 was < 2002*.]

8. In the three years from 2002 to 2004, has your firm lost more than 10% in turnover due to one or several spin-offs?
☐ Yes (1)
☐ No (2)
☐ Don't know
[*Contingency question; appeared only if response to question 2 was < 2002*.]

9. Was your VUT-member firm mainly created as a spin-off from another firm that operates in the record industry?
☐ Yes (1)
☐ No (2)
☐ Don't know
[*Contingency question; appeared only if response to question 2 was ‚2004' or ‚2005'*.]

Screen 5 – Main outlet market

10. a Was the outlet market of your firm in 2004 predominantly ...
☐ local / regional (limited to a circumference of 100 kilometres and mainly within Germany) (1)
☐ national (within Germany and in an area with a greater circumference than 100 kilometres) (2)
☐ international (outside of Germany) (3)
☐ Don't know
[*Contingency question; appeared only if response to question 2 was <2005*.]

10. b Is the outlet market of your firm predominantly ...
☐ local / regional (limited to a circumference of 100 kilometres and mainly within Germany) (1)
☐ national (within Germany and in an area with a greater circumference of 100 kilometres) (2)
☐ international (outside of Germany) (3)
☐ Don't know
[*Contingency question; appeared only if response to question 2 was 2005*.]

Screen 6 – Firm activities

11. Please consider the entire turnover of your VUT-member firm in 2004. What is your estimate of the percentage share that the following activities conducted by your firm have had in total turnover?
When you click on the response boxes, the response categories will be displayed.
Your responses should add up to roughly 100%.

		Share in total turnover 2004	Response categories (code) – same for all sub-questions
a.	Record company / label Acquisition and commercialisation of rights related to copyrights (*Verwertungsrechte*) to sound recordings as *Tonträgerhersteller*, record company or label	(☐)	Please mark the appropriate 0% (1) 0.1 to 5% (2) 5.1 – 10% (3) 10.1 – 20% (4) 20.1 – 30% (5) 30.1 – 40% (6) 40.1 – 50% (7) 50.1 – 60% (8) 60.1 – 70% (9) 70.1 – 80% (10) 80.1 – 90% (11) 90.1 – 99.9% (12) 100% (13)
b.	Publishing Acquisition and commercialisation of copyrights (*Nutzungsrechte*) to compositions and lyrics as publisher	(☐)	
c.	Distribution and/or Retailing ... … of any type of sound recording, on a physical sound-carrier or otherwise	(☐)	
d.	Recording studio, sound engineering and related equipment Providing others with the venue, equipment and technical services concerning the recording of performances or the manipulation of such recordings	(☐)	
e.	Music production Services concerning the recording of performances or the manipulation of such recordings with a constitutive, creative component	(☐)	
f.	Others		

12. i to iix. The share of which of your firms' activities in the total turnover of your VUT-member firm has changed particularly since [*'1998' for firms founded before the year 1998 and the 'year of foundation +1' for firms founded in 1998 or later / the year always appeared as a number*]?
Please mark all appropriate statements.
Definitions of activities are given in the preceding question.

		Response categories (code) – same for all sub-questions
a.	Record company / label	☐ increased particularly strongly or was newly taken up since [*reference year as defined in the question*] (1) ☐ decreased particularly strongly or was discontinued since [*reference year*] (3) ☐ no strong change (2) ☐ don't know
b.	Publishing	
c.	Distribution and/or Retailing	
d.	Recording studio, sound engineering and related equipment	
e.	Music production	
f.	Others	

Screen 6a – Other activities

12. ix. You reported that 'other' activities accounted for a considerable share of the total turnover of your VUT-member firm. What did these other activities consist of?

☐ Sales promotion and/or marketing for products of other firms in the record industry (1)
☐ Live business (e.g. booking or acting as host at a live venue) (2)
☐ Artist management (3)
☐ Others (4) ⇒ Please explain in a few words: _ _ _ _

Screen 7 – Innovative supply

13. When did your firm first seriously consider pursuing the following activities?
Please consider activities conducted within your firms as well as possible commissions to external service providers.

	First considered in ...	Response categories (code) – same for all sub-questions
a. Internet presence of your firm	(☐)	Please mark the appropriate Never (1)
b. Selling physical sound-carriers via Online-retailers	(☐)	2005 (2) 2004 (3) 2003 (4)
c. Commercialisation of Downloads or Ringtones	(☐)	2002 (5) 2001 (6) 2000 (7)
d. Commercialisation of novel types of physical sound-carriers (e.g. enhanced CD, DVD, SA-CD)	(☐)	1999 (8) 1998 (9) 1997 (10) 1996 (11)
e. Digital Rights Management (DRM)	(☐)	1995 or earlier (12) Don't know

14. When did your firm first supply services of the following type?
Please consider activities conducted within your firms as well as commissions to external service providers.

	First supplied in ...	Response categories (code) – same for all sub-questions
a. Internet presence of your firm	(☐)	Please mark the appropriate Never (1)
b. Selling physical sound-carriers via Online-retailers	(☐)	2005 (2) 2004 (3) 2003 (4)
c. Commercialisation of Downloads or Ringtones	(☐)	2002 (5) 2001 (6) 2000 (7)
d. Commercialisation of novel types of physical sound-carriers (e.g. enhanced CD, DVD, SA-CD)	(☐)	1999 (8) 1998 (9) 1997 (10) 1996 (11)

e.	Digital Rights Management (DRM)	(☐)	1995 or earlier (12) Don't know

15. If your firm stopped supplying any the following services that it had supplied at some time in the past, when were services ceased?
Please consider activities conducted within your firms as well as commissions to external service providers.

		First supplied in ...	Response categories (code) – same for all sub-questions
a.	Internet presence of your firm	(☐)	Please mark the appropriate Never (1)
b.	Selling physical sound-carriers via Online-retailers	(☐)	2005 (2) 2004 (3) 2003 (4)
c.	Commercialisation of Downloads or Ringtones	(☐)	2002 (5) 2001 (6) 2000 (7)
d.	Commercialisation of novel types of physical sound-carriers (e.g. enhanced CD, DVD, SA-CD)	(☐)	1999 (8) 1998 (9) 1997 (10) 1996 (11)
e.	Digital Rights Management (DRM)	(☐)	1995 or earlier (12) Don't know

Screen 8 – Appraisal of innovations and innovation obstacles

16. Please rate the importance of the following innovative activities for your enterprise.

		Response categories (code) – same for all sub-questions
a.	Internet presence of your firm	☐ high (1) ☐ intermediate (2)
b.	Selling physical sound-carriers via Online-retailers	☐ low (3) ☐ not important at all (4)
c.	Commercialisation of Downloads or Ringtones	☐ don't know
d.	Commercialisation of novel types of physical sound-carriers (e.g. enhanced CD, DVD, SA-CD)	
e.	Digital Rights Management (DRM)	
f.	Commercialisation of new, stylistically novel or artistically ambitious recordings	

17. Which other, important innovations did your firm introduce over the last years?
Please limit your response to one or two most important examples.
Keywords are sufficient.

_ _ _ _

18. Please rate how important the following factors are in hampering or preventing innovation activities in your enterprise.

	Response categories (code) – same for all sub-questions
a. Lack of external sources of finance	☐ high (1) ☐ intermediate (2) ☐ low (3) ☐ no obstacle at all (4) ☐ don't know
b. Economic risk	
c. Unequal market conditions for firms of different size	
d. Lack of information on technology	
e. Organisational problems within the enterprise	
f. Lack of information on markets	
g. Difficulties clearing copyrights or related rights for innovative projects	
h. Difficulties finding suitable co-operation partners	
i. Difficulties enforcing own copyrights and related rights	
j. Lack of qualified personnel	
k. Innovation costs too high	

Screen 9 - Jobs

19. How many persons – including yourself – worked on average within your firm in the following years?
Please *include* persons that worked in part time or unpaid.
Please *exclude* performing artists and composers/lyricists, if their relationship with your firm consisted exclusively in a record deal (*Bandübernahme- oder Künstlervertrag, bzw. einen Autorenexklusivvertrag oder Musikverlagsvertrag*).

a. Number of staff 2004	_ _
b. Number of staff [*'1998' for firms founded before the year 1998 and the ‚year of foundation +1' for firms founded in 1998 or later / the year always appeared as a number*]	_ _

20. In the next two years, the number of staff working in your firm will prospectively ...
☐ increase strongly (1)
☐ increase somewhat (2)
☐ stay the same (3)
☐ decrease somewhat (4)
☐ decrease strongly (5)
☐ don't know

21. How many paid, full-time positions – including yourself – existed in your firm on average in the following years, if you add up part-time and temporary contracts to full time equivalents?
You can enter *fraction numbers* (e.g. 1.5).
Please *exclude* performing artists and composers/lyricists, if their relationship with your firm consisted exclusively in a record deal (*Bandübernahme- oder Künstlervertrag, bzw. einen Autorenexklusivvertrag oder Musikverlagsvertrag*).

a.	Number of full time positions 2004	_ _
b.	Number of full time positions [*'1998' for firms founded before the year 1998 and the 'year of foundation +1' for firms founded in 1998 or later / the year always appeared as a number*]	_ _

22. In the next two years, the number of full time positions in your firm will prospectively...
☐ increase strongly (1)
☐ increase somewhat (2)
☐ stay the same (3)
☐ decrease somewhat (4)
☐ decrease strongly (5)
☐ don't know

Screen 10 - Turnover

23. Please mark the category in which your VUT member firms' turnover lay in the following years.

		Turnover in €	Response categories (code) – same for all sub-questions
a.	2004	(☐)	Please mark the appropriate in € No turnover / 0 (1)
b.	[*'1998' for firms founded before the year 1998 and the ,year of foundation +1' for firms founded in 1998 or later / the year always appeared as a number*]	(☐)	1 – 16,000 (2) 16,001 – 45,000 (3) 45,001 – 100,000 (4) 100,001 – 250,000 (5) 250,001 – 500,000 (6) 500,001 – 1,000,000 (7) 1,000,001 – 2,000,000 8) 2,000,001 – 4,000,000 (9) 4,000,001 – 6,000,000 (10) more than 6,000,000 (11)

24. In the next two years, the turnover of your firm will prospectively...
☐ increase strongly (1)
☐ increase somewhat (2)
☐ stay the same (3)
☐ decrease somewhat (4)
☐ decrease strongly (5)
☐ don't know

25. What is the percentage share of your VUT member firm's turnover in 2004 that has been generated by exports?

(☐) Please mark the appropriate
0% (1)
0.1 to 5% (2)
5.1 – 10% (3)
10.1 – 20% (4)
20.1 – 30% (5)
30.1 – 40% (6)
40.1 – 50% (7)
50.1 – 60% (8)
60.1 – 70% (9)
70.1 – 80% (10)
80.1 – 90% (11)
90.1 – 99.9% (12)
100% (13)

Screen 11 – Instruction

[*No question*]
All the following questions refer exclusively to your VUT-member firm's activities as a RECORD COMPANY / LABEL.

[*All question below are contingency questions that did not appear if the response to question 11 was coded as smaller than 3 (implying no revenues as record company/label).*]

Screen 12 – New physical releases

26. How many different, new titles (*Neuveröffentlichungen*) did your firm release as primary master-owner in all of 2004
Please include titles that your firm marketed itself as well as titles that your firm licensed to other parties.

a.	Number of new releases in 2004 – Playing-time more than 25 minutes	_ _
b.	Number of new releases in 2004 – Playing-time less than 25 minutes	_ _

27. What was the percentage share of the following categories in the total number of new titles that your firm released as master-owner in 2004?
Please include titles that your firm marketed itself as well as titles that your firm licensed to other parties.

		Share in new releases	Response categories (code) – same for all sub-questions
a.	New releases containing contributions ´by composers or performing artists that reside in Germany	(☐)	Please mark the appropriate 0% (1) 0.1 to 5% (2) 5.1 – 10% (3) 10.1 – 20% (4)

b.	New releases that were also marketed abroad (*im Ausland*)	(☐)	20.1 – 30% (5) 30.1 – 40% (6) 40.1 – 50% (7) 50.1 – 60% (8) 60.1 – 70% (9) 70.1 – 80% (10) 80.1 – 90% (11) 90.1 – 99.9% (12) 100% (13)

28. i to iix. How has the number of number of new titles that your firm released as master-owner changed between 2004 and [*'1998' for firms founded before the year 1998 and the 'year of foundation +1' for firms founded in 1998 or later / the year always appeared as a number*]?

☐ increased strongly (1)
☐ increased somewhat (2)
☐ stayed the same (3)
☐ decreased somewhat (4)
☐ decreased strongly (5)
☐ don't know

Screen 13 – Total physical supply

29. Please consider your firm's entire repertoire of titles – that is back-catalogue and novelties.
How many different titles (*Veröffentlichungen*) has your firm marketed on physical sound-carriers and as primary master-owner in 2004?
Please include titles that your firm marketed itself as well as titles that your firm licensed to other parties.

a.	Number of titles marketed in 2004 – Playing-time more than 25 minutes	_ _
b.	Number of titles marketed in 2004 – Playing-time less than 25 minutes	_ _

30. i to iix. How has the total number of titles that your firm marketed as master-owner changed between 2004 and [*'1998' for firms founded before the year 1998 and the 'year of foundation +1' for firms founded in 1998 or later / the year always appeared as a number*]?

☐ increased strongly (1)
☐ increased somewhat (2)
☐ stayed the same (3)
☐ decreased somewhat (4)
☐ decreased strongly (5)
☐ don't know

Screen 14 – Internet supply

31. How many different titles (*Veröffentlichungen*) for which your firm is the primary master-owner did you make available as Downloads or Streams via the Internet in all of 2004?

Please include titles that your firm made available itself as well as titles that your firm licensed to other parties for making them available online.

a.	Number of new releases in 2004 – Individual songs (*Einzeltitel*)	_ _
b.	Number of new releases in 2004 – Bundles of titles, playing-time less than 25 minutes	_ _
c.	Number of new releases in 2004 – Bundles of titles, playing-time more than 25 minutes	_ _

Screen 15 – Unit sales

32. How many units of physical sound-carriers (*Tonträgereinheiten*) has your firm sold (*abgesetzt*) worldwide as primary master-owner in 2004?
Please include units of sound-carriers that your firm marketed itself as well as units that your firm licensed to other parties.

a.	Unit sales of sound-carriers in 2004 – Playing-time more than 25 minutes	_ _
b.	Unit sales of sound-carriers in 2004 – Playing-time less than 25 minutes	_ _

33. What was the percentage share of the following categories in the total number of physical unit sales of your firm as primary master-owner in 2004?
Please include units of sound-carriers that your firm marketed itself as well as units that your firm licensed to other parties.

		Share in unit sales	Response categories (code) – same for all sub-questions
a.	Novelties (released less than 18 months ago at time of sale)	(☐)	Please mark the appropriate 0% (1) 0.1 to 5% (2) 5.1 – 10% (3) 10.1 – 20% (4) 20.1 – 30% (5) 30.1 – 40% (6) 40.1 – 50% (7) 50.1 – 60% (8) 60.1 – 70% (9) 70.1 – 80% (10) 80.1 – 90% (11) 90.1 – 99.9% (12) 100% (13)
b.	Units containing contributions by composers or performing artists that reside in Germany	(☐)	
c.	Units of titles that your firm had licensed to other firms	(☐)	

34. How many Internet-Downloads has your firm sold (*abgesetzt*) as master-owner in 2004?
Please include downloads that your firm marketed itself as well as downloads that your other firms marketed with your license or commission.

a.	Unit sales of downloads in 2004 – Individual songs (*Einzeltitel*)	_ _
b.	Unit sales of downloads in 2004 – Bundles of titles, playing-time less than 25 minutes	_ _
c.	Unit sales of downloads in 2004 – Bundles of titles, playing-time more than 25 minutes	_ _

Screen 16 – Co-operation with creators

35. Is your VUT-member firm a 'Self-Issuer', i.e. does it mainly market sound-recordings of composers and performers who also work in other functions within your firm or who are its owners?
☐ Yes (1)
☐ No (2)
☐ Don't know

36. Which type of contract does your firm as record company/label mainly enter into with performers – does your firm finance the bulk of the production costs of a recording up-front (*Künstlervertrag*) or does it take on master-recordings that are largely finished (*Bandübernahmevertrag*)?
☐ *Künstlerverträge* are the rule (1)
☐ *Bandübernahmeverträge* are the rule (2)
☐ Neither of the two (3)
☐ Don't know

37. i to iix. Please consider the new titles that your firm releases as master-owner. How has the share of new releases on the basis of *Künstlerverträge* in the year 2004 changed in comparison to the year [*'1998' for firms founded before the year 1998 and the 'year of foundation +1' for firms founded in 1998 or later / the year always appeared as a number*]?
☐ increased strongly (1)
☐ increased somewhat (2)
☐ stayed the same (3)
☐ decreased somewhat (4)
☐ decreased strongly (5)
☐ don't know

Screen 17 - Revenues

38. Please consider the total revenues of your firm as Record company / label in 2004. What was the share in this total that revenues due to the following activities have had?
When you click on the response boxes, the response categories will be displayed.
Your responses should add up to roughly 100%.

		Share in revenues as record company/label	Response categories (code) – same for all sub-questions
a.	Payments of the GVL to your firm	(☐)	Please mark the appropriate 0% (1) 0.1 to 5% (2) 5.1 – 10% (3) 10.1 – 20% (4) 20.1 – 30% (5) 30.1 – 40% (6) 40.1 – 50% (7) 50.1 – 60% (8) 60.1 – 70% (9) 70.1 – 80% (10)
b.	Sales or licensing of physical sound-carriers that were sold via traditional retailers (including sales in live venues)	(☐)	
c.	Sales or licensing of physical sound-carriers that were sold via Online-retailers	(☐)	

d.	Merchandising	(☐)	80.1 – 90% (11) 90.1 – 99.9% (12)
e.	Other revenues from commercialising sound recordings	(☐)	100% (13)

39. Has the share in your firms' total revenues as record company / label of revenues due to these activities changed particularly much when you compare the year 2004 with the year [*'1998' for firms founded before the year 1998 and the 'year of foundation +1' for firms founded in 1998 or later / the year always appeared as a number*]?

		Response categories (code) – same for all sub-questions
a.	Payments of the GVL to your firm	☐ grew particularly strongly since [*reference year as defined in the question*] (1) ☐ no strong change (2) ☐ fell particularly strongly since [*reference year as defined in the question*] (3) ☐ don't know
b.	Sales or licensing of physical sound-carriers that were sold via traditional retailers (including sales in live venues)	
c.	Sales or licensing of physical sound-carriers that were sold via Online-retailers	
d.	Merchandising	
e.	Other revenues from commercialising sound recordings	

Screen 17.a – Other revenues

39. f You have reported that ‚other' revenues account for a substantial part of your firm's revenues as record company / label. Please explain briefly with what activities you generated these ‚other' revenues.

_ _ _ _

[*Contingency question; appeared only if response to question 37.e was > 3*]

Screen 18 - Expenses

40. Please consider the total expenses of your firm as Record company / label in 2004. What was the share in this total that expenses on the following types of services have had?
Please include both services produced within your firm as well as commissions of your firm to external service providers.

		Share in expenditure as record company/label	Response categories (code) – same for all sub-questions
a.	Artists & Repertoire Costs of research on, selection of and managing relations to creators.	(☐)	Please mark the appropriate 0% (1) 0.1 to 5% (2) 5.1 – 10% (3)
b.	Compositions and lyrics Expenses on services of composers and lyricists as well as payments to	(☐)	10.1 – 20% (4) 20.1 – 30% (5) 30.1 – 40% (6)

	publishers and authors' collecting societies (*GEMA*) for the use of copyrighted works.		40.1 – 50% (7) 50.1 – 60% (8) 60.1 – 70% (9) 70.1 – 80% (10)
c.	Services of performing artists	(☐)	80.1 – 90% (11) 90.1 – 99.9% (12)
d.	Sound recording Expenses on the upkeep and use of recording facilities including services by sound technicians and music producers	(☐)	100% (13)
e.	Advertising and promotion	(☐)	
f.	Manufacturing of physical sound carriers The complete production costs of physical sound carriers (e.g. pre-recorded CDs) including packaging and booklets.	(☐)	
g.	Distribution and retailing of any kind	(☐)	
h.	Licenses of copyrighted sound-recordings for which your firm is not the master-owner (E.g. licenses from other record companies)	(☐)	
i.	Durable Investments (E.g. the acquisition of technical equipment or training of staff)	(☐)	
j.	Other expenditures	(☐)	

41. i to iix. Has the share of expenses on these types of services in your firms' total expenses as record company / label changed particularly much when you compare the year 2004 with the year [*'1998' for firms founded before the year 1998 and the 'year of foundation +1' for firms founded in 1998 or later / the year always appeared as a number*]?

		Response categories (code) – same for all sub-questions
a.	Artists & Repertoire Costs of research on, selection of and managing relations to creators.	☐ grew particularly strongly since [*reference year as defined in the question*] (1) ☐ no strong change (2)
b.	Compositions and lyrics Expenses on services of composers and lyricists as well as payments to publishers and authors' collecting societies (*GEMA*) for the use of copyrighted works.	☐ fell particularly strongly since [*reference year as defined in the question*] (3) ☐ don't know

c. Services of performing artists

d. Sound recording
Expenses on the upkeep and use of recording facilities including services by sound technicians and music producers

e. Advertising and promotion

f. Manufacturing of physical sound carriers
The complete production costs of physical sound carriers (e.g. pre-recorded CDs) including packaging and booklets.

g. Distribution and retailing of any kind

h. Licenses of copyrighted sound-recordings for which your firm is not the master-owner
(E.g. licenses from other record companies)

i. Durable Investments
(E.g. the acquisition of technical equipment or training of staff)

j. Other expenditures

Screen 18.a – Other expenses

41. k You have reported that ‚other' expenses account for a substantial part of your firm's total expenses as record company / label. Please explain briefly what these expenses were spent on.

_ _ _ _
[*Contingency question; appeared only if response to question 38.j was > 3*]

[*Screens 19 and 20 were authored by Simon Peter Zietsch, Universität Leipzig*]

Screen 19 –Promotion 1

42. Has your firm ever commissioned Media Control to monitor the sales of sound recordings?
☐ Yes (1)
☐ No (2)
☐ Don't know

43. Does your firm own a website?
☐ Yes (1)
☐ No (2)
☐ Don't know

44. Please consider the promotion activities of your firm as record company/label in the last 12 months. How often did your promotion activities effectuate airplay or coverage for your repertoire in the following types of media?
Please exclude airplay of coverage that your firm paid for.
Please include promotion activities conducted by your firm and promotion that your firm commissioned with external service providers.

	Response categories (code) – same for all sub-questions
a. Print media	☐ very often (1)
	☐ often (2)
b. Television	☐ rarely (3)
	☐ very rarely (4)
c. Radio	☐ never (5)
d. Internet	

Screen 20 – Promotion 2

45. Do at least 75% of the performing artists / bands you have got under contract run their own artist website?
☐ Yes (1)
☐ No (2)
☐ Don't know

46. Does your firm's website offer a press material?
☐ Yes (1)
☐ No (2)
☐ Don't know

47. Does your firm's website offer free downloads of sound recordings?
Please mark all valid responses.
○ Yes, complete titles (1)
○ Yes, incomplete titles / snippets (2)
☐ No (3)
☐ Don't know

48. Does your firm's website offer downloads of video clips?
☐ Yes (1)
☐ No (2)
☐ Don't know

49. Does your firm's website contain a guest book or forum?
☐ Yes (1)
☐ No (2)
☐ Don't know

50. Does someone in your firm evaluate the logfiles of your firm's website?
☐ Yes (1)
☐ No (2)
☐ Don't know

51. Does your firm send email-newsletters at least occasionally?
Please mark all valid responses.
○ Yes, to fans / consumers (1)
○ Yes, to journalists and other multipliers (2)
☐ No (3)
☐ Don't know

52. Do you supply journalists / multipliers with samples as digital sound-files?
Please mark all valid responses.
○ Yes, we do so ourselves (1)
○ Yes, via MPN (Musik Promotion Network) (2)
○ Yes, via another service provider (3)
☐ No (4)
☐ Don't know

53. Does your firm use an online community to promote your releases or does it support the artists/bands you have got under contract in doing so?
☐ Yes (1)
☐ No (2)
☐ Don't know

Screen 21 – Acknowledgment / End of survey

[*No question*]
You have completed the survey.
Thank you for your participation!

REFERENCES

Abernathy, W.J. and J.M. Utterback. 1975. 'A Dynamic Model of Product and Process Innovation', *Omega*, 3(6); 639-56.

Abernathy, W.J. and J.M. Utterback. 1978. 'Patterns of Innovation in Industry', *Technology Review*, 80(7); 40-7.

Acheson, K. and C. Maule. 2004. 'Convention on Cultural Diversity, *Journal of Cultural Economics* 24(4); 243-256.

Adler, M. 1985. 'Stardom and Talent', *American Economic Review* 75(1), 208–12.

Agarwl, R. and G.M. Gort. 2001. 'First-Mover Advantage and the Speed of Competitive Entry 1887–1986', *Journal of Law & Economics* 44(1); 161–77.

Aghion, P., N. Bloom, R. Blundell, R. Griffith, and P. Howitt. 2006. 'Competition and Innovation: An Inverted U-shaped Relationship', Quarterly Journal of Economics 120(2); 701-728.

Aghion, R. and P. Howitt. 1992. 'A Model of Growth through Creative Destruction', *Econometrica* 60(2); 323-351.

Akerlof, George A. 1970. 'The Market for 'Lemons': Quality Uncertainty and the Market Mechanism', *Quarterly Journal of Economics* 84 (3); 488–500.

Albini, S. 1993. 'The problem with music', *The Baffler* vol. 5, reprinted in *Maximum RocknRoll* (No.133, June 1994). Online: http://www.arancidamoeba.com/mrr/problemwithmusic.html

Aldermann, J. 2001. *Sonic Boom, Napster, MP3, and the New Pioneers of Music*, Cambridge: Perseus Publishing.

Alexander, P.J. 1994. 'New Technology and Market Structure in the Music Recording Industry', *Journal of Cultural Economics* 18(2); 113-23.

Alexander, P.J. 1996. 'Entropy and popular Culture: Product diversity in the popular music recording industry', *American Sociological Review* 61(1); 171-174.

Alexander, P.J. 2002. 'Peer-to-Peer File Sharing: The Case of the Music Recording Industry', *Review of Industrial Organization* 20(2); 151-61.

Andersen, E.S. and K. Philipsen. 1998. 'The Evolution of Credence Goods in Customer Markets: Exchanging 'Pigs in Pokes'', Paper presented at the DRUID Winter Seminar, Middelfart, 8-10 January 1998. Online: http://www.business.aau.dk/evolution/esapapers/esa98/Credence.pdf

Andersen, B. and M. Frenz. 2007. *The Impact of Music Downloads and P2P File-Sharing on the Purchase of Music: A Study for Industry Canada*. Online: http://strategis.ic.gc.ca/epic/site/ippd-dppi.nsf/en/h_ip01456e.html

Anderson, C. 2004. 'The Long Tail', *Wired Magazine* 12(10). Online: http://www.wired.com/wired/archive/12.10/tail.html

Anderson, C. 2006. *The Long Tail: Why the Future of Business Is Selling Less of More*, New York: Hyperion.

Anderson, P. and M.L. Tushman. 1990. 'Technological Discontinuities and Dominant Designs: A Cyclical Model of Technological Change', *Administrative Science Quarterly* 35; 604-633.

Anderson, P. and M.L. Tushman. 1991. 'Managing through Cycles of Technological Change', *Research-Technology Management* 34(3); 26-31.

Arnau, J. and R. Bono. 1998. 'Short time series analysis: C statistic vs Edgington model', *Quality and Quantity* 32(1); 63-75.

Arrow, K.J. 1962. 'Economic Welfare and the Allocation of Resources for Invention', in National Bureau of Economic Research (ed.), *The Rate and Direction of Inventive Activit*y, Princeton: Princeton University Press; 609-25.

Banerjee, A. 1992. 'A simple Model of Herd Behaviour', *Quarterly Journal of Econmics* 107; 797-812.

Barfe, L. 2004. *Where Have All the Good Times Gone? The Rise and the Fall of the Record Industry*, London: Atlantic.

Baron, D.P. and R.B. Myerson. 1982. 'Regulating a monopolist with unknown costs', *Econometrica* 50(4); 911-930.

Barras, R. 1986. 'Towards a theory of innovation in services', Research Policy 15(4); 161-173.

Barras, R. 1990. 'Interactive innovation in financial and business services', *Research Policy* 19(3); 215–237.

Baumol, W.J. 2003. 'Applied welfare economics', in Towse R. (ed.), *A Handbook of cultural economics*, Cheltenham: UK: Edward Elgar; 20-31.

Baumol, W.J. 2006. 'The Arts in the "New Economy"', in V.A. Ginsburgh and D. Throsby (eds.), *Handbook of the Economics of Art and Culture*, Amsterdam: North-Holland.

Baumol, W.J. and Bowen, W.G. 1966. *Performing Arts: The Economic Dilemma*. New York: The Twentieth Century Fund.

Becker, G.S.and G.J.Stigler. 1977. 'De gustibus non est disputandum', *American Economic Review* 67(1); 76–90.

Bendixen, P. 2001. *Einführung in die Kultur- und Kunstökonomie*, Greifenstein-Beilstein: Westerwaldverlag.

Benhamou, F. 2003. 'Artists' labour market', in R. Towse (ed.), *A Handbook of Cultural Economics*. Cheltenham: Edward Elgar.

Benhamou, F. and Peltier, S. 2007. 'How should cultural diversity be measured? An application using the French publishing industry', *Journal of Cultural Economics* 31(2); 85-107.

Bensaid, B. and J.-P. Lesne. 1996. 'Dynamic Monopoly Pricing with Network Externalities', *International Journal of Industrial Organization* 14(6); 837-55.

Berndorff G., B. Berndorff and K. Eigler. 2000. *Musikrecht*, Bergkirchen: PPV.

Besen, S. and L. Raskind. 1991. 'An Introduction to the Law and Economics of IP', *Journal of Economic Perspectives* 5; 3-27.

Besen, S.M. 1986. 'Private copying, reproduction costs, and the supply of intellectual property', *Information Economics and Policy* 2(1); 5–22.

Besen, S.M. 1998. 'Intellectual Property', in Newman, P. (ed.), *New Palgrave Dictionary of Law and Economics*, London: Macmillan; 348-51.

Besen, S.M. and S.N. Kirby. 1989. 'Compensating Creators of Intellectual Property – Collectives That Collect', Santa Monica, CA: The RAND Corporation.

Besen, S.M. and S.N. Kirby. 1989. 'Private copying, appropriability and optimal copying royalties', *Journal of Law and Economics* 32(2); 255-80.

Besen, S.M., S. Kirby and S.C. Salop. 1992. 'An Economic Analysis of Copyright Collectives', *Virginia Law Review* 78(38); 3–411.

Bhattacharjee, S., R.D. Gopal and G.L. Sanders. 2003. 'Digital music and online sharing: software piracy', *Communications of the ACM* 46; 107-111.

Bhattacharjee, S., R.D. Gopal, L. Kaveepan, J.R. Marsden, and R. Telang. 2007. 'The Effect of Digital Sharing Technologies on Music Markets: A Survival Analysis of Albums on Ranking Charts', *Management Science* 53(9); 1359-1374.

Bijker, W. 1995. *Of Bicycles, Bakelites, and Bulbs*, Cambridge MA: MIT Press.

Bikhchandani S., D. Hirshleifer and I. Welch. 1992. 'A Theory of Fads, Fashion, Custom and Cultural Change as Inforrmation Cascades', *Journal of Political Economy* 100; 992-1026.

Blackburn, D. 2006. *A Study of Online Piracy and Recorded Music Sales*. Working paper, Harvard University. Online: http://www.katallaxi.se/grejer/blackburn/blackburn_fs.pdf (older version)

Blaug, M. 1997a (5th edition). *Economic Theory in Retrospect*, Cambridge University Press.

Blaug, M. 1997b. 'Competition as an End-State and Competition as a Process', in ditto, *Not Only an Economist. Recent Essays*. Cheltenham, UK: Edward Elgar; 66–86.

Blaug, M. 1998. 'Disturbing currents in modern economics', *Challenge* 41(3); 11-34.

Blaug, M. 2001. 'Where Are We Now On Cultural Economics', *Journal of Economic Surveys* 15(2); 123-143.

Blaug, M. 2005. 'Why did Schumpeter Neglect Intellectual Property Rights?', *Review of Economic Research on Copyright Issues* 4(2); 69-7.

Blumberg, C.J. 1982. 'Comments on "A simplified time-series analysis for evaluating treatment interventions"', *Journal of Applied Behavior Analysis* 17(4); 539-542.

Bockstedt, J., R.J. Kauffman and F.J. Riggins .2005. 'The Move to Artist-Led Online Music Distribution: Explaining Structural Changes in the Digital Music Market', *Proceedings of the 38th Annual Hawaii International Conference on System Sciences* – Track 7, 180a.

Boldrin, M. and D. Levine. 2002. 'The case against intellectual property', *American Economic Review, Papers and Proceedings* 9(2); 209-12(4).

Boldrin, M. and D. Levine. 2005. 'Intellectual property and the efficient allocation of social surplus from creation", *Review of Economic Research in Copyright Issues* 2(1); 45-67.

Boorstin, E. 2004. *Music Sales in the Age of File Sharing*. Senior thesis, Princeton University. Online: http://www.cs.princeton.edu/~felten/boorstin-thesis.pdf

Box, G.E.P and G.M. Jenkins. 1970. *Time Series Analysis - Forecasting and Control*, San Francisco: Holden Day.

Box, G.E.P. and G.C. Tiao. 1975. 'Intervention Analysis with Applications to Economic and Environmental Problems', *Journal of the American Statistical Association* 70 (March); 70-79.

Boyle, J. 2000. 'Cruel, Mean or Lavish?; Economic Analysis, Price Discrimination and Digital intellectual Property', *Vanderbilt Law Review* 53: 2007-2040.

Breschi, S. and F. Malerba. 2001. 'Sectoral Innovation Systems: Technological Regimes, Schumpeterian Dynamics, and Spatial Boundaries', in C. Edquist and M. McKelvey (eds.), *Systems of Innovation Vol.I.*, Cheltenham, UK: Edward Elgar.

Breyer, S. 1970. The uneasy case for copyright: A study of copyright in books, photocopies and computer programs. *Harvard Law Review* 84: 281-351.

Brosio, G. 1994. 'The arts industry: problems of measurement', in A. Peacock and I. Rizzo (eds.), *Cultural Economics and Cultural Policies*, Dordrecht: Kluwer Academic Publishers.

Brynjolfsson, E. and M.D. Smith. 2000. 'Frictionless commerce? A comparison of Internet and conventional retailers', *Management Science* 46(4); 563-585.

Brynjolfsson, E., Y.J. Hu and D. Simester. 2007. "Goodbye Pareto Principle, Hello Long Tail: the Effect of Search Costs on the Concentration of Product Sales". Available at SSRN: http://ssrn.com/abstract=953587

Bundesverband Musikindustrie / IFPI Germany. 2008. 'Umsatz', *Jahreswirtschaftsbericht 2007*, Online: http://www.musikindustrie.de/uploads/media/3_Umsatz.pdf

Burke, A.E. 1996. 'The Dynamics of Product Differentiation in the British Record Industry', *Journal of Cultural Economics* 20(2); 145-164.

Burke, A.E. 1997. 'Small Firm Start-up by Composers in the Recording Industry', *Small Business Economics* 9; 463-471.

Burnett, R. 1990. *Concentration and Diversity in the International Phonogram Industry*. Gothenburg: Gothenburg Studies of Journalism and Mass Communication.

Burnett, R. 1996. *The Global Jukebox: The International Music Industry*, London: Routledge.

BV Phono / Bundesverband der Phonographischen Wirtschaft. 1995. *Jahrbuch 1995 – Phongraphische Wirtschaft*, Munich: Musikmarkt Verlag.

BV Phono / Bundesverband der Phonographischen Wirtschaft. 2004. *Jahrbuch 2004 – Phongraphische Wirtschaft*, Munich: Musikmarkt Verlag.

BV Phono / Bundesverband der Phonographischen Wirtschaft. 2005. *Jahrbuch 2005 – Phongraphische Wirtschaft*, Munich: Musikmarkt Verlag.

BV Phono / Bundesverband der Phonographischen Wirtschaft. 2006. *Jahrbuch 2006 – Phongraphische Wirtschaft*, Munich: Musikmarkt Verlag.

Cameron, S. 1986. 'The Supply and Demand for Cinema Tickets: Some U.K. Evidence', *Journal of Cultural Economics* 10; 38–62.

Cameron, S. 1990. 'The Demand for Cinema in the United Kingdom', *Journal of Cultural Economics* 14; 35–47.

Carlsson, B. and R. Stankiewicz. 1991. 'On the nature, function and composition of technological change', *Journal of Evolutionary Economics* 1(2); 93-118.

Castañer, X. and Campos, L. 2002. 'The Determinants of Artistic Innovation: Bringing in the Role of Organizations', *Journal of Cultural Economics* 26: 29-52.

Caves, R. 2000. *Creative Industries: Contracts Between Art and Commerce*, Cambridge, MA: Harvard University Press.

Caves, R. 2003. 'Contracts between Arts and Commerce', *Journal of Economic Perspectives* 17(2); 73-83.

Caves, R. 2005. *Switching Channels – Organization and Change in TV Broadcasting*, Cambridge, MA: Harvard University Press.

Chamberlin, E. 1933 (8th edition 1962). *Theory of Monopolistic Competition*, Cambridge MA: Harvard University Press.

Chapple, S. and R. Garofalo .1977. *Rock 'n' Roll Is Here to Pay: The History and Politics of the Music Industry*, Chicago: Nelson-Hall.

Chung, K. and R. Cox. 1994. 'A Stochastic Model of Superstardom:An Application of the Yule Distribution', *Review of Economics and Statistics* 76(4); 771–5.

Coase, R.H. 1960. 'The Problem of Social Cost', *Journal of Law and Economics* 3 (October); 1-44.

Coleman, M. 2003. *Playback: From the Victrola to MP3 – 100 Years of Music, Machines and Money*, New York: Da Capo.

Coles, A., L. Harris and R. Davis . 2004. 'Is the Party Over? Innovation and Music on the Web', *Information, Communication & Ethics in Society* 2(1); 21-9.

Collingridge, D. 1980. *The social control of technology*. London: Pinter.

Cook, T. D. and D. T. Campbell. 1979. *Quasi-Experimentation – Design Analysis Issues for Field Settings*, Boston: Houghton Mifflin.

Cowan, R. 2006. 'Waves and Cycles: Explorations in the Pure Theory of Price for Fine Art', in C. Antonelli, D. Foray, B.H. Hall, and W.E. Steinmueller, *New Frontiers in the Economics of Innovation and New Technology*, Cheltenham: Edward Elgar; 188-204.

Cunningham, S.D., T.A. Cutler, G.N. Hearn, M.D. Ryan, and M.A. Keane. 2004. 'An Innovation Agenda for the Creative Industries: Where is the R&D?', *Media International Australia (Incorporating Culture & Policy)* 112; 174-185.

Das, B.J., W. Chappell and W. Shughart. 1993. 'Advertising, competition and market share instability', *Applied Economics* 25; 1409-12.

David, P.A. (1985), "Clio and the Economics of QWERTY", *American Economic Review* 75(2); 332-337.

David, P.A. 1993. 'Intellectual Property Institutions and the Panda's Thumb: Patents, Copyrights and Trade Secrets in Economic Theory and History', in M. Wallerstein, M. Mogee and R. Schoen (eds.), *Global Dimensions of Intellectual Property Rights in Science and Technology*, Washington DC: National Academy Press; 19-61.

David, P.A. 2000. 'Path dependence, its critics and the quest for 'historical economics'', in P. Garrouste and S. Ioannides (eds.), *Evolution and Path Dependence in Economic Ideas: Past and Present*, Cheltenham, UK: Edward Elgar Publishing.

David, P.A. 2000. *A Tragedy of the public knowledge 'commons'? Global science, IP and the digital technology boomerang*. Working Paper. Online: http://www.researchineurope.org/documents/paul3.pdf

David, P.A. 2004. 'Koyaanisqatsi in Cyberspace', in K.E. Maskus and J. H. Reichman (eds.), *International Public Goods and Transfer of Technology under a Globalized Intellectual Property Regime*, Cambridge, MA: Cambridge University Press; 81-120.

David, P.A. 2004. 'The End of Copyright History?', *Review of Economic Research on Copyright Issues* 1; 5-10.

Demsetz, H. 1970 'The Private Production of Public Goods', *Journal of Law and Economics* 13; 293-306.

Depoorter, B. and F. Parisi. 2002. 'Fair use and copyright protection: a price theory explanation', *International Review of Law and Economics* 21(4); 453-473.

Depoorter, B., F. Parisi and N. Schulz. 2003. 'Fragmentation in Property: Towards a General Model', *Journal of Institutional and Theoretical Economics* 158(4); 594-613.

DiMaggio, P. 1977. 'Market structure, the creative process and popular culture: towards an organizational reinterpretation of mass-culture theory', *Journal of Popular Culture* 11(2); 436-52.

Djellal, F. and Gallouj, C. 1999. 'Services and the Search for Relevant Innovation Indicators: A review of National and International Surveys', *Science and Public Policy* 26(4): 218-232.

Djellal, F., Francoz, D., Gallouj, C., Gallouj, F. and Jacquin, Y. 2003. 'Revising the definition of research and development in the light of the specificities of services', *Science and Public Policy* 30(6): 415-429.

Dosi, G. 1988. 'Sources, Procedures, and Microeconomic Effects of Innovation', *Journal of Economic Literature* 26(3); 1120-71.

Dowd, T.J. 1992. 'The Musical Structure and Social Context of Number One Songs: An Exploratory Analysis', in R. Wuthnow (ed.), *Vocabularies of Public Life*, London: Routledge.

Dowd, T.J. 2004. 'Concentration and Diversity Revisited: Production Logics and the U.S. Mainstream Recording Market, 1940-1990', *Social Forces* 82; 1411-1455.

Doyle, G. 2002. *Understanding Media Economics*, London: Sage.

Economides, N. 1996. 'The Economics of Networks', *International Journal of Industrial Organization* 14: 673–699.

Edquist, C. (ed.). 1997. *Systems of Innovation, Technologies, Institutions and Organisations*, London: Pinter.

Edquist, C. 1994. 'Technology policy: the interaction between governments and markets', in G. Aichholzer and G. Schienstock (eds.), *Technology policy – Towards an integration of Social and Ecological Concerns*, Berlin: de Gruyter.

Edquist, C. 2001. 'Innovation Policy - a systemic approach', in B.A. Lundvall and D. Archibugi, *The Globalizing Learning economy*, Oxford University Press.

Einhorn, M. 2001. 'Music Licensing in the Digital Age', in R. Towse (ed.), *Copyright in the Cultural Industries*, Cheltenham, UK: Edward Elgar; 165-77.

Erickson, J.S. 2003. 'Fair use, DRM, and trusted computing', *Communications of the ACM* 46(4); 34-39.

EU / European Union. 2001. *European Parliament and Council Directive 2001/29/EC of 22 May 2001 on the harmonisation of certain aspects of copyright and related rights in the information society*, Brussels: European Union.

European Commission / Directorate-General Joint Research Centre. 2007. *Fourth European Community Innovation Survey: Strengths and Weaknesses of European Countries*. Brussels: European Commission. Online: http://statind.jrc.ec.europa.eu/Innovation/CIS_S&W-13Feb2007.pdf

European Commission. 1995. *Green Paper – Copyright and Related Rights in the Information Society*, COM(95)382, July 1995.

European Commission. 1997. *Green Paper on the Regulatory Implications of the Convergence of the Telecommunications, Audiovisual and Information Technology Sectors*, COM(97)623. Online: http://www.europa.eu.int/ISPO/convergencegp/97623en.doc

Eurostat. 2008. 'Innovation', in ditto, *Science, Technology and Innovation in Europe*, Luxembourg: Office for Official Publications of the European Communities; 84-154.

Evans, P. and T. Wurster. 1999. *Blown to Bits: How the Economics of Information Transforms Strategy*, Boston: Harvard Business School Press.

Fagerberg, J. 1994. 'Technology and International Differences in Growth Rates', *Journal of Economic Literature* 32; 1147–1175.

Farchy, J. and F. Rochelandet. 2002. 'Copyright protection, appropriability and new cultural behaviour', in R. Towse (ed.) *Copyright in the Cultural Industries*, Cheltenham: Edward Elgar.

Federal Trade Commission. 2000. *Record Companies settle FTC charges of restraining competition in CD music market*, Washington DC: Federal Trade Commission.

Fine, M. 2000. 'Soundscan Study On Napster Use And Loss of Sales'. Online: http://www.riaa.com.

Foroughi, A., A. Albin, and S. Gillard. 2002. 'Digital rights management: A delicate balance between protection and accessibility', *Journal of Information Science* 28(5); 389-395.

Freeman, C. and C. Perez. 1988. 'Structural Crisis of Adjustment', in G. Dosi, C. Freeman, R. Nelson, G. Silverberg and L. Soete (eds.), *Technical Change and Economic Theory*, London: Pinter; 38-66.

Freeman, C. and L. Soete. 1997 (3rd edition). *The Economics of Industrial Innovation*, London: Pinter.

Frey, B. S. 1997. *Not Just for the Money: An Economic Theory of Personal Motivation*, Cheltenham, UK: Edward Elgar.

Frey, B.S. 1999. 'State Support and Creativity in the Arts: Some New Considerations', *Journal of Cultural Economics* 23(1); 71-85.

Frey, B.S. 2000. *Arts and Economics: Analysis and Cultural Policy*. Berlin: Springer.

Friedman, M. 1953. 'The Methodology of Positive Economics', ditto, *Essays in Positive Economics*, Chicago University Press; 3-46.

Frith , S. 1987. 'The Industrialisation of Popular Music', in J. Lull (ed.), *Popular Music and Communication,* London: Sage.

Frith, S. 1981. *Sound Effects: Youth, Leisure and the Politics of Rock'n'Roll*, New York: Pantheon.

Frith, S. 1990. *Facing the Music – Essays on Pop, Rock and Culture*. London: Mandarin.

Frith, S. and L. Marshall (eds.). 2004 (2nd edition). *Music and Copyright*, Edinburgh: University of Edinburgh Press.

Gander, J. and A. Rieple. 2004. 'How Relevant is Transaction Cost Economics to Inter-Firm Relationships in the Music Industry?', *Journal of Cultural Economics* 28; 57-79.

Gantchev, D. 2004. 'The WIPO Guide on Surveying the Economic Contribution of the Copyright Industries', *Review of Economic Research on Copyright Issues* 1; 5-16.

Garofalo, R. 1994. 'Die Relativität der Autonomie', *PopScriptum* 2; 9-30.

Garofalo, R. 1997. *Rockin Out*, Ally&Bacon.

Gayer, A. and O. Shy. 2006. 'Publishers, Artists, and Copyright Enforcement', *Information Economics and Policy* 18; 374–384.

GfK Panel Services Consumer Research GmbH. 2002. *Brennerstudie 2002*. Online: http://www.ifpi.de/news/279/.

GfK Panel Services Consumer Research GmbH. 2004. *Brennerstudie 2004*. Online: http://www.ifpi.de/news/379/brennerstudie2004.pdf

GfK Panel Services Consumer Research GmbH. 2006. *Brennerstudie 2006*. Online: http://www.ifpi.de/wirtschaft/brennerstudie2006.pdf

GfK Panel Services Consumer Research GmbH. 2007. *Brennerstudie 2007*. Online: http://www.musikindustrie.de/brennerstudien.html

Gilbert, R.J. 2006a. 'Competition and Innovation', in W.D. Collins (ed.), *Issues in Competition Law and Policy*, American Bar Association Antitrust Section. Online: http://works.bepress.com/richard_gilbert/12

Gilbert, R.J. 2006b. 'Competition and Innovation', *Journal of Industrial Organization Education* 1(1); Article 8.

Gillett, C. 1970 (revised edition 1983). *The Sound of the City – The Rise and Fall of Rock and Roll*. London: Pantheon.

Ginsburgh, V.A. and D. Throsby. 2006. *Handbook of the Economics of Art and Culture*. Amsterdam: North Holland.

Goldstein, P. 1994. *Copyright's Highway: From Gutenberg to the Celestial Jukebox*, New York: Hill and Wang.

Gordon, W.J. and R. Bone. 1998. 'Copyright', Entry 1610 in B. Bouckaert and G. De Geest (eds.), *Encyclopedia of Law and Economics*, Cheltenham, UK: Edward Elgar.

Gordon, W.J. 1982. 'Fair use as market failure: a structural and economic analysis of the Betamax case and its predecessors', *Columbia Law Review* 82; 1600-1657.

Gosh, S., A. Maffioletti and G.B. Ramello. 2005. 'IP Rights or Liability Rules: How Do We Tackle Copyright Infringement in the Music Market? Insights from Experimental Data', paper presented at the *1st Annual Workshop on the Law and Economics of IP and Information Technology*, July 22-23, 2005, Università Carlo Cattaneo, LIUC.

Granger, C. 1991. 'Reducing self-interest and improving the relevance of economics research', in D. Prawitz, E. Skyms and P. Westershal (eds.), *Proceedings of the 9th International Conference of Logic, Methodology and Philosophy of Science*, Uppsala, Sweden. Amsterdam: Elsevier; 763-788.

Granovetter, M. 1985. 'Economic Action and Social Structure: The Problem of Embeddedness', *American Journal of Sociology* 91; 481-493.

Gronow, P. and I. Saunio. 1998. *An International History of the Recording Industry*, London: Cassell

GVL / Gesellschaft zur Verwertung von Leistungsschutzrechten. 2003. *Geschäftsbericht 2003* (internal report available only in excerpts).

GVL / Gesellschaft zur Verwertung von Leistungsschutzrechten. 2006. *Geschäftsbericht 2006* (internal report available only in excerpts).

Hadfield, G.K. 1992. 'The economics of copyright: A historical perspective', *Copyright Law Symposium* (ASCAP) 38: 1-46.

Haller, J. 2005. *Urheberrechtsschutz in der Musikindustrie: Eine ökonomische Analyse*. Lohmar: Josef Eul.

Handke, C. 2006. *Wachstum gegen den Trend - Grundlegende Ergebnisse der VUT-Mitgliederbefragung 2005 unter kleinen und mittleren Tonträgerunternehmen*, Berlin: VUT. Online: http://www.vutonline.de/studie_wachstum_gegen_den_trend_-_vut.pdf.

Handke, C. 2006a. 'Plain Destruction or Creative Destruction? Copyright Erosion and the Evolution of the Record Industry', *Review of Economic Research on Copyright Issues* 3(2): 29-51.

Handke, C. 2008. 'On Peculiarities of Innovation in Cultural Industries and how to measure them', paper presented at the 15th International Conference of the *Association for Cultural Economics International*, Boston, 13-15 June 2008.

Handke, C. 2010. *The Economics of Copyright and Digitisation: A Report on the Literature and the Need for Further Research*, Report for the Strategic Advisory Board for Intellectual Property Policy (SABIP), UK. Online: http://www.sabip.org.uk/economics-finalreport.pdf.

Handke, C. and R. Towse. 2007. 'Economics of Copyright Collecting Societies', *International Review of Intellectual Property and Competition Law* 38(80; 937-957.

Handke, C., P. Stepan and R. Towse. 2008. 'Development of the Economics of Copyright', in J. Drexl (ed.), *Handbook on Intellectual Property and Competition Law*, Cheltenham, UK: Edward Elgar.

Hansen, J.A. 2001. *Technology Innovation Indicators. Proceedings from an NSF Workshop*. Online: http://www.nsf.gov/sbe/srs/nsf01336/p2s3.htm

Hart, O. 1983. 'The Market Mechanism as an Incentive Scheme', *Bell Journal of Economics* 14(2); 366-382.

Heilbrun, J. 1991. 'Innovation in art, innovation in technology and the future of the high arts'. *Journal of Cultural Economics* 17: 89–98.

Hellmann, H. 1983. 'The New State of Competition in the Record Industry', *Sosiologia* 20; 285-295.

Hesmondhalgh, D. 1998a. 'The British Dance Music Industry', *British Journal of Sociology* 49; 235-251.

Hesmondhalgh, D. 1998b. 'Post-Punk's Attempt to Democratize the Music Industry', *Popular Music* 16; 255-274.

Hesmondhalgh, D. 2006 (2nd edition). *The Cultural Industries*, London: Sage.

Hicks, J.R. 1935. 'Annual Survey of Economic Theory: The Theory of Monopoly', *Econometrica* 3(1); 1-20.

Hill, T.P. 1999. 'Tangibles, Intangibles and Services: a Taxonomy for the Classification of Output', *Canadian Journal of Economics* 32(2); 426-444.

Hippel, E. von and G. von Krogh. 2003. 'Open Source Software and the 'Private Collective' Innovation Model: Issues for Organization Science', *Organization Science* 14(2); 208-223.

Hippel, E. von. 1986. 'Lead users: a source of novel product concepts', *Management Science* 32(7); 791-805.

Hippel, E. von. 1988. *The Sources of Innovation*, Oxford University Press.

Hippel, E. von. 2005. *Democratizing Innovation*, Cambridge, MA: MIT Press.

Hirsch, P.M. 1972. 'Processing Fads and Fashions: An Organization-Set Analysis of Cultural Industry Systems', *The American Journal of Sociology* 77(4); 639-659.

Hollander, A. 1984. 'Market Structure and Performance in Intellectual Property: The Case of Copyright Collectives', *International Journal of Industrial Organization* 2(3); 199-216.

Holm, H. J. 2001. 'The Computer Generation's Willingness to Pay for Originals when Pirates are Present - A CV Study', Working Papers, Department of Economics, Lund University 2000:9.

Holm, Hakan J. 2003. 'Can economic theory explain piracy behavior?', *Topics in Economic Analysis & Policy* 3, Article 5.

Hong, Seung-Hyun. 2004. 'The Effect of Napster on Recorded Music Sales: Evidence from the Consumer Expenditure Survey', SIEPR Discussion Paper No. 03-18.

Hugenholtz, B. 2001. 'Copyright and Freedom of Expression in Europe', in Dreyfuss, R.C., D.L. Zimmerman and H. First (eds.), *Expanding the Boundaries of Intellectual Property*, Oxford University Press; 343-363.

Hui, Kai-Lung, and I.P.L. Png. 2003. 'Piracy and the Legitimate Demand for Recorded Music', *Contributions to Economic Analysis & Policy* 2, Article 11.

Hurt, R.M. and R.M. Schuchman. 1966. The economic rationale of copyright. *American Economic Review Papers and Proceedings* 56; 421-432.

Hutter, M. 2003. 'Information Goods', in R. Towse, *Handbook of Cultural Economics*, Cheltenham: Edward Elgar.

Hutter, M. 2006. *Neue Medienökonomik*, München: Fink.

IFPI / International Federation of the Phonographic Industry. 2008. *IFPI Digital Music Report 2008*, London: IFPI. Online: http://www.ifpi.org/content/library/DMR2008.pdf

IFPI / International Federation of the Phonographic Industry. 2004. *The Recording Industry in Numbers*, London: IFPI.

Johnson, J.P. and M. Waldman. 2005. 'The Limits of Indirect Appropriability in Markets for Copiable Goods', *Review of Economic Research on Copyright Issues* 2; 19-37.

Johnson, W.R. 1985. 'The economics of copying', *Journal of Political Economy* 93: 158-74.

Jovanovich, B. and G.M. MacDonald. 1994. 'Competitive Diffussion', *Journal of Political Economy* 102; 24-52.

Katz, M.L. and C. Shapiro. 1994. 'Systems Competition and Network Effects', *Journal of Economic Perspectives* 8(2); 93- 115.

Khan, B.Z. 2004. *Does Copyright Piracy Pay? The Effects of U.S. International Copyright Laws on the Market for Books, 1790-1920*, National Bureau of Economic Research, Working Paper 10271.

Kim, Jin-Hyuk. 2007. 'Strategic Use of Copyright Protection to Deter Entry', *The B.E. Journal of Economic Analysis & Policy* 7(1); Article 47.

Klamer, A. (ed.). 1996. *The Value of Culture:on the relationship between economics and art*. Amsterdam: Amsterdam University Press.

Klamer, A. 2004. 'Social, Cultural and Economic Values of Cultural Goods', in V. Rao and M. Walton (eds.) *Cultural and Public Action*, Stanford University Press.

Klein, L.R. 1998. 'Evaluating the Potential of Interactive Media through a New Lens: Search versus Experience Goods', *Journal of Business Research* 41; 195-203.

Klein, B., A. Lerner and K. Murphy. 2002. 'The Economics of Copyright "Fair Use" in a Networked World', *The American Economic Review, Papers and Proceedings* 92: 205-208.

Kleinknecht, A. 2000. 'Indicators of Manufacturing and Service Innovation: Their Strengths and Weaknesses', in J. Metcalfe and I. Miles (eds.), *Innovation Systems in the Service Economy: Measurement and Case Study Analysis*, Boston: Kluwer.

Klepper, S. and E. Graddy. 1990. 'The evolution of new industries and the determinants of market structure', RAND Journal of Economics 21(1); 27-44.

Klepper, S. 1996. 'Entry, Exit, Growth, and Innovation over the Product Life Cycle', *The American Economic Review* 86(3); 562-83.

Koboldt, C. 1995. 'Intellectual Property and Optimal Copyright Protection', *Journal of Cultural Economics* 19: 131–55.

Kretschmer, M. 2002b. 'The Failure of Property Rules in Collective Administration: Rethinking Copyright Societies as Regulatory Instruments', *European Intellectual Property Review (EIPR)* 24, 126-137.

Kretschmer, M., G.M. Klimis and J.C. Choi. 1999. 'Increasing Returns and Social Contagion in Cultural Industries', *British Journal of Management* 10; 61–72.

Kretschmer, Martin. 2002a. 'Copyright Societies Do Not Administer Individual Rights: The Incoherence of Institutional Traditions in Germany and the UK', in R. Towse (ed.), *Copyright in the Cultural Industries*, Cheltenham, UK: Edward Elgar.

Krishnan, R., M.D. Smith and R. Telang. 2003. 'The Economics of Peer-to-Peer Networks', *Journal of Information Technology Theory and Applications* 5; 38-44.

Ku, Raymond Shih Ray. 2002. 'The creative destruction of copyright: Napster and the new economics of digital technology', *University of Chicago Law Review* 69(Winter); 263-324.

Lancaster, K. 1966. 'A new approach to consumer theory', *Journal of Political Economy* 74; 132-157.

Lancaster, K. 1990. 'The Economics of Product Variety', *Marketing Science* 9(3); 189-206.

Landes, W.M. 2002. 'Copyright, borrowed images and appropriation art: an economic approach', in R. Towse (ed.), *Copyright in the Cultural Industries*, Cheltenham, UK: Edward Elgar; 9-31.

Landes, W.M. and R.A. Posner. 1989. 'An Economic Analysis of Copyright Law', *Journal of Legal Studies* 18(2); 325-363.

Landes, W.M. and R.A. Posner. 2002. *Indefinitely renewable copyright*. Working Paper No. 154, University of Chicago John M. Olin Law and Economics.

Landes, W.M. and R.A. Posner. 2003. *The Economic Structure of Intellectual Property Law*, Cambridge, MA: The Belknap Press of Harvard University Press.

Lash, S. and Urry, J. 1994. *Economies of Signs and Space*, London: Sage.

Leibenstein, H. 1950. 'Bandwagon, Snob and Veblen effects in the theory of consumers' demand', *The Quarterly Journal of Economics* 65(2): 183-207.

Leibenstein, H.1966. 'Allocative Efficiency versus X-Efficiency', *American Economic Review* 56(3); 392-415.

Lessig, L. 1999. *Code and Other Laws of Cyberspace*, New York: Basic Books.

Levinsohn, J.A. and W. Petropoulos, W. 2001. 'Creative Destruction or Just Plain Destruction?: The U.S. Textile and Apparel Industries since 1972', *NBER Working Paper* No. W8348.

Leyshon, J.A. 2001. 'Time-space (and digital) compression: software formats, musical networks, and the reorganisation of the music industry', E*nvironment and Planning A* 33(1); 49-77.

Leyshon, A., P. Webb, S. French, N. Thrift and L. Crewe. 2005. 'On the reproduction of the musical economy after the Internet', *Media, Culture & Society* 27; 177-209.

Liebowitz, S.J. 1985. 'Copying and Indirect Appropriability: Photocopying of Journals', *Journal of Political Economy* 93(5); 945-957.

Liebowitz, S.J. 2002. 'Policing Pirates in the Networked Age', *Policy Analysis 438,* Cato Institute.

Liebowitz ,S.J. 2004. Will MP3 downloads annihilate the record industry? The evidence so far', in E. Boorstin (ed.), *Advances in the Study of Entrepreneurship, Innovation, and Economic Growth,* Volume 15, Amsterdam: Elsevier; 229-60.

Liebowitz, S.J. 2005a. 'Economists Examine File-Sharing and Music Sales', in M. Peitz and P. Waelbroeck (eds.), *The Industrial Organization of Digital Goods and Electronic Markets*, Cambridge, MA: MIT Press.

Liebowitz, S.J. 2005b. 'Economists' Topsy-Turvy View of Piracy', *Review of Economic Research on Copyright Issues* 2; 5-17.

Liebowitz, S.J. 2005c. 'MP3s and copyright collectives: a curse worse than the disease?', in L.N. Takeyama, W.J. Gordon and R. Towse (eds.), *Developments in the Economics of Copyright: Research and Analysis*, Cheltenham, UK: Edward Elgar.

Liebowitz, S.J. 2006. 'File-Sharing: Creative Destruction or just Plain Destruction?', *Journal of Law and Economics* 49; 1-28.

Liebowitz, S.J. 2007a. 'How Reliable is the Oberholzer-Gee and Strumpf Paper on File-Sharing?'. Online: http://ssrn.com/abstract=1014399

Liebowitz, S.J. 2007b. 'A Comment on Oberholzer-Gee and Strumpf Paper on File-Sharing?'. Online: http://ssrn.com/abstract=1017418

Liebowitz, S.J. 2008. 'Testing File-Sharing's Impact by Examining Record Sales in Cities', *Management Science* 54(4); 852-859. Earlier version available online: http://som.utdallas.edu/capri/Impact_file_sharing.pdf

Liebowitz, S.J. and R. Watt. 2006. 'How Best to Ensure the Remuneration of Creators in the Market for Music? Copyright and its Alternatives', *Journal of Economic Surveys* 20(4); 513-545.

Liebowitz, S.J. and S.E. Margolis. 1990. 'The Fable of the Keys', *Journal of Law & Economics* 33(1); 1-25.

Liebowitz, S.J. and S.E. Margolis. 1995. 'Are Network Externalities a New Source of Market Failure?', *Research in Law and Economics* 17: 1-22.

Lipsey, R.G. 2007. 'Technological transformation, intellectual property and second best theory', *Review of Economic Research on Copyright Issues* 4(2); 5-28.

Lipsey, R.G. and K. Lancaster. 1956. 'The general theory of second best', *Review of Economic Studies* 24; 11-32.

Lipsey, R.G., K.I. Carlaw and C.T. Bekar. 2005. *Economic Transformations - General Purpose Technologies and Long-Term Economic Growth*, Oxford University Press.

Lopes, P. 1992. 'Innovation and Diversity in the Popular Music Industry, 1969 to 1990', *American Sociological Review* 57: 56-71.

Lundvall, B. 2001. 'Introduction', in C. Edquist and M. McKelvey (eds.), *Systems of Innovation: Growth, Competitiveness and Employment Vol.I.*, Cheltenham, UK: Edward Elgar.

Machlup, F. and E. Penrose. 1950. 'The Patent Controversy in the Nineteenth Century', *Journal of Economic History* 10(1); 1-29.

MacMillan, F. (ed.) 2005. *New Directions in Copyright Law: Volumes 1 and 2*, Cheltenham, UK: Edward Elgar.

Macqueen, H. L. and A. Peacock. 1995. 'Implementing Performing Rights', *Journal of Cultural Economics* 19(2); 157-75.

Maffioletti, A. and G.B. Ramello. 2004. 'Should We Put Them in Jail? Copyright Infringement, Penalties and Consumer Behaviour: Insights from Experimental Data', *Review of Economic Research on Copyright Issues* 1(2); 81-95.

Mahoney, J. 2000. 'Path Dependence in Historical Sociology', *Theory and Society* 29(4); 507-548.

Malerba, F. 2005. 'Innovation and the evolution of industries', *Journal of Evolutionary Economics* 16; 3-23.

Mankiw, N.G. and M.D. Whinston. 1986. 'Free entry and social inefficiency', *Rand Journal of Economics* 17(1); 48-58.

Margolis, S.E. and S.J. Liebowitz. 2000. 'Path Dependence, Lock-In, and History', *Journal of Law, Economics and Organization* 11(1); 205-226.

Marshall, A. 1890 (8th edition 1920). *Principles of Economics*, London: Macmillan.

Marsnik, S.J. 2004. 'A Delicate Balance upset: A preliminary survey of exceptions and limitations in U.S. and European Union digital copyright laws', *International Business Law Review* 4; 110-129.

Matusmoto, S. 2002. 'Performers in the Digital Era: Evidence from Japan', in R. Towse (ed.), *Copyright in the Cultural Industries*, Cheltenham, UK: Edward Elgar.

McCain, R. 1981. 'Cultivation of Taste, Catastrophe Theory, and the Demand for Works of Art', *American Economic Review* 71(2); 332–334.

McCain, R. 2006. 'Defining Cultural and Artistic Goods', in V.A. Ginsburgh and D. Throsby, *Handbook of the Economics of Art and Culture*, Amsterdam: North Holland; 147-168.

McClellan, J.E. and H. Dorn. 1999. *Science and Technology in World History*, Baltimore: The Johns Hopkins University Press.

McKelvey, M. 1994. *Evolutionary Innovation*, Linköping: Linköping University / Department of Technology and Social Change.

Media Group. 2003. *The Contribution of Copyright and Related Rights to the European Economy*, Report for the European Commission, Directorate General - Internal Market Copyright Unit.

Menell, P.S. 1998. 'Intellectual Property: General Theories', entry 1600 in B. Bouckaert and G. De Geest (eds.), *Encyclopaedia of Law and Economics*, Cheltenham, UK: Edward Elgar.

Merges, R.P. 1995. 'The economic impact of intellectual property rights: An overview and guide', *Journal of Cultural Economics* 19(2); 103-117.

Merges, R.P. 1996. 'Contracting into Liability Rules: Intellectual Property Rights and Collective Organizations', *California Law Review* 84(5); 1293-376.

Michel, N. 2005. 'Digital File Sharing and the Music Industry: Was There a Substitution Effect?', *Review of Economic Research on Copyright Issues* 2(2); 41-52.

Michel, N.J. 2004. 'The Evidence So Far and What It Means for the Future', Backgrounder No.1790 (The Heritage Foundation). Online: http://www.heritage.org/research/internetandtechnology/bg1790.cfm

Michel, N.J. 2004. 'The Impact Of The Digital Age On The Music Industry: An Empirical Analysis', *The B.E. Journal of Economics and Policy* 6(1), Article 18.

Mokyr, J. 1990. *The Lever of Riches: Technological Creativity and Economic Progress*, Oxford University Press.

Monopolies and Mergers Commission. 1996. *Performing Rights*, cm. 3147, London: HMSO.

Mortimer, J.H. and A. Sorensen. 2004. 'Digital Distribution and Demand Complementarities: Evidence from Recorded Music and Live Performances', Unpublished paper.

Murph, F. 1984. 'The Classical Record Industry in the United States', *Journal of Cultural Economics* 8(1); 81-9.

Negus, K. 1992. *Producing Pop: Culture and Conflict in the Popular Music Industry*, London: Edward Arnold.

Negus, K. 1996. *Popular Music in Theory*, Cambridge: Polity Press.

Nelson, P. 1970. 'Information and Consumer Behaviour', *Journal of Political Economy* 78(2); 311-329.

Nelson, R. 1995. 'Recent evolutionary theorizing about economic change', *Journal of Economic Literature* 33; 48-90.

Nelson, R. and Winter, S.G. 1977. 'In search of a useful theory of innovation', *Research Policy* 6(1); 36-76.

Nelson, R. and Winter, S.G. 1982. *An Evolutionary Theory of Economic Change*, Cambridge, MA: Harvard University Press.

Neumann-Braun, K. 2000. 'Medien – Medienkommunikation', *Medien- und Kommunikationssoziologie*, München: Juventa.

Novos, I.E. and M. Waldman. 1984. 'The effects of increased copyright protection: An analytic approach', *Journal of Political Economy* 92: 236-246.

NVPI / Nederlandse Vereniging van Producenten en Importeurs van Beeld- en Geluidsdragers. 2008. *Audiomarkt algemeen*. Online: http://www.nvpi.nl/assets/nvpi/NVPI%20Marktinformatie%20Audio%202008.pdf

Oberholzer-Gee, F. and K. Strumpf. 2007. 'The Effect of File Sharing on Record Sales. An Empirical Analysis', *Journal of Political Economy* 115(1); 1-42.

Oberholzer-Gee, F. and Strumpf, K. 2009. *File-Sharing and Copyright*, Working Paper 09-132, Harvard Business School.

OECD. 1992. *Proposed Guidelines for Collecting and Interpreting Technological Innovation Data: Oslo Manual 1st edition*. Paris: OECD.

OECD. 1997. *Proposed Guidelines for Collecting and Interpreting Technological Innovation Data: Oslo Manual 2nd edition*. Paris/Luxembourg: OECD/Eurostat.

OECD. 1998. *Content as a New Growth Industry Working Party on the Information Economy*, Paris: OECD.

OECD. 2001a. 'Innovation Surveys: Lessons from OECD Countries' Experience', *STI Review* 27; 77-101.

OECD. 2001b. *Innovating Networks. Collaboration in National Innovation Systems*, Paris: OECD.

OECD. 2002. *Frascati Manual 2002 – Proposed Standard Practice for Surveys on Research and Experimental Development*. Paris: OECD.

O'Hare, M. 1985. 'Copyright: When is monopoly efficient?', *Journal of Policy Analysis & Management* 4, 407.

Peacock, A. and Weir, R. 1975. *The Composer in the Marketplace*, London: Faber.

Peitz, M. and P. Waelbroeck. 2003. 'Piracy of Digital Products: A Critical Review of the Economics Literature', *CESifo Working Paper No. 1071*.

Peitz, M. and P. Waelbroeck. 2004. 'The Effect of Internet Piracy on CD Sales: Cross-Section Evidence', *Review of Economic Reserach on Copyright Issues* 1; 71-79.

Peitz, M. and Waelbroeck, P. 2005. 'An Economist's Guide to Digital Music', *CESifo Economic Studies* 51(2-3); 359-428.

Peitz, M. and P. Waelbroeck. 2006. 'Why the music industry may gain from free downloading – the role of sampling', *International Journal of Industrial Organization* 24(5); 907-913.

Peterson, R.A. 1990. 'Why 1995?', *Popular Music* 9; 97-116.

Peterson, R.A. and D.G. Berger. 1971. 'Entrepreneurship in Organizations', *Administrative Science Quarterly* 15; 97-107.

Peterson, R.A. and D.G. Berger. 1975. 'Cycles in symbol production: the case of popular music', *American Sociological Review* 40(2); 158-73.

Peterson, R.A. 1976. *The Production of Culture*, London: Sage.

Peterson, R.A. and N. Anand. 2004. The Production of Culture Perspective", *Annual Review of Soiology* 30; 311-334.

Pethig, R. 1988. 'Copyrights and Copying Costs: A New Price Theoretic Approach', *Journal of Institutional and Theoretical Economics* 144; 462–95.

Picard, R.G. 1989. *Media Economics: Concepts and Issues*. Newbury Park: Sage.

Picard, R.G. 2002. *The Economics and Financing of Media Companies*, New York: Fordham University Press.

Plant, A. 1934. 'The economic aspects of copyright in books', *Economica* 1; 167-195.

Png, I.P.L. 2006. 'Copyright: A Plea for Empirical Research', *Review of Economic Research on Copyright Issues* 3(2); 3-13.

Png, I.P.L. and Q.H. Wang. 2009. *Copyright Law and the Supply of Creative Work: Evidence from the Movies*, Working paper, National University of Singapore. Online: http://www.comp.nus.edu.sg/~ipng/research/copyrt.pdf

Pollock, R. 2007. 'Optimal Copyright Over Time: Technological Change and the Stock of Works', *Review of Economic Research on Copyright Issues* 4(2); 51-64.

Pollock, R. 2009. 'Forever Minus a Day? Calculating Optimal Copyright Term', *Review of Economic Research on Copyright Issues* 6(1); 35-60.

Posner, R.A. 2005. 'Intellectual property: the law and economics approach', *Journal of Economic Perspectives* 19; 57–73.

Power, D. and D. Hallencreutz. 2002. 'Profiting from creativity? The music industry in Stockholm, Sweden amd Kingston, Jamaica', Environment and Planning A 34; 1833-1854.

Power, D. and A.J. Scott. 2004. 'A prelude to cultural industries and the production of culture', in ditto (eds.). *Cultural Industries and the Production of Culture*, London: Routledge.

Pugatch, M.P. 2006. 'The Lessons of History: Waves of IP Debates', in ditto (ed.), *The Intellectual Property Debate: Perspectives from Law, Economics and Political Economy*, Cheltenham, UK: Edward Elgar.

Raskind, L. 1998. 'Copyright', in *New Palgrave Dictionary of Law and Economics* Vol 1, London: Macmillan; 478-83.

Reinganum, J.F. 1983. 'Uncertain Innovation and the Persistence of Monopoly', *American Economic Review* 73(4); 741-748.

Rob, Rafael and Joel Waldfogel. 2006. 'Piracy on the High C's: Music Downloading, Sales Displacement, and Social Welfare in a Sample of College Students', *Journal of Law and Economics* 49(1); 29-62.

Rochelandet, F. 2003. 'Are Copyright Collecting Societies Efficient? An Evaluation of Collective Administration of Copyright in Europe', in W.J. Gordon and R. Watt (eds.), *The Economics of Copyright – Developments in Research and Analysis*, Cheltenham, UK: Edward Elgar; 176-98.

Rochelandet, F. and F. le Guel. 2005. 'P2P Music Sharing Networks: Why the Legal Fight Against Copies may be Inefficient', *Review of Economic Research on Copyright Issues* 2(2); 69-82.

Rogers, E.M. 1962 (3rd edition 1983).. *Diffusion of Innovations*, New York: Free Press.

Romer, P. 1990. 'Endogenous Technological Change', *Journal of Political Economy* 98(5); 71-102.

Romer, P. 2002. 'When Should We Use IP Rights?', *The American Economic Review, Papers and Proceedings* 92: 213-216.

Rosen, S. 1981. 'The Economics of Superstars', *American Economic Review* 71: 845–58.

Rosenberg, N. 1998. 'Uncertainty and technological change', in D.D. Neef, G.A. Siesfeld, and J. Cefola (eds.), *The Economic Impact of Knowledge*, Oxford: Butterworth-Heinemann.

Röttgers, J. 2003. *Mix, Burn & R.I.P. – Das Ende der Musikindustrie*, Hannover: Heinz Heise.

Salop, S. 1976. 'Information and Monopolistic Competition', *American Economic Review* 66(2); 240-245.

Salop, S. 1979. 'Monopolistic Competition with outside goods', *Bell Journal of Economics* 10(Spring); 141-156.

Scherer F.M. 1983. 'The Propensity to Patent', *International Journal of Industrial Organization*, 1(1); 107-128.

Scherer, F.M. 2008. 'The emergence of musical copyright in Europe from 1709 to 1850', *Review of Economic Research on Copyright Issues* 5(2); 3-18.

Scholz, L. 2008. *Phonomarkt*, Bonn: Deutsches Musikinformationszentrum. Online: http://www.miz.org/static_de/themenportale/einfuehrungstexte_pdf/07_Musikwirtschaft/scholz.pdf

Schramm, H., S. Petersen, K. Rütter, and P. Vorderer. 2002. 'Wie kommt die Musik ins Radio? Stand und Stellenwert der Musikforschung bei deutschen Radiosendern', *Medien & Kommunikationswissenschaft, 50*(2); 227-246.

Schulze, R. 1995. *Die Musikwirtschaft. Marktstrukturen und Wettbewerbsstrategien der deutschen Musikindustrie*, Hamburg: Kammerer & Unverzagt.

Schumpeter, J.A. 1942 (reissue 1975). C*apitalism, Socialism and Democracy*, New York: Harper.

Schweizer, T.S. 2003. 'Managing Interactions between Technological and Stylistic Innovation in the Media Industries', *Technology Analysis & Strategic Management* 15(1); 19-41.

Shapiro, C. and H.R. Varian. 1999. *Information Rules, a Strategic Guide to the Network Economy*, Boston: Harvard Business School Press.

Shavell, S. and T. van Ypersele. 2001. 'Rewards Versus Intellectual Property Rights', *Journal of Law and Economics* 44: 525–548.

Sheskin, D. 2003. *Handbook of Parametric and Nonparametric Statistical Procedures*. Boca Raton, FL: Chapman & Hall.

Silva, F. and G. Ramello. 2000. 'Sound Recording Market: The Ambiguous Case of Copyright and Piracy', *Industrial and Corporate Change* 9(3); 415-42.

Smith, K. 1991. 'Innovation Policy in an evolutionary context', in P. Saviotti, and S. Metcalfe (eds.), *Evolutionary Theories of Economic and Technological Change*, Harwood: Chur.

Smith, K. 2003. 'Measuring Innovation', *TEARI working paper* (6). Online: http://tikpc51.uio.no/teari/teari.htm

Snow, A. and R. Watt. 2005. 'Risk Sharing and the Distribution of Copyright Collective Income', in L.N. Takeyama, W.J. Gordon and R. Towse (eds.), *Developments in the Economics of Copyright: Research and Analysis*, Cheltenham, UK: Edward Elgar; 23-36.

Solow, R. 1956. 'A Contribution to the Theory of Economic Growth', *Quarterly Journal of Economics* 70(1); 65-94.

Söndermann, M. 2004. *Musikwirtschaft*, Bonn: Deutsches Musikinformationszentrum. Online: http://www.miz.org/static/themenportale/einfuehrungstexte_pdf/07_Musikwirtschaft/soendermann.pdf

Söndermann, M. 2007. *Musikwirtschaft*, Bonn: Deutsches Musikinformationszentrum. Online: http://www.miz.org/static_de/themenportale/einfuehrungstexte_pdf/07_Musikwirtschaft/soendermann.pdf

Stigler, G.J. 1958. 'The Economies of Scale', *Journal of Law and Economics* 1; 54-71.

Stigler, G.J. and G.S. Becker. 1977. 'De gustibus non est disputandum', American Economic Review 67(2); 76-90.

Stirling, A. 1998. 'On the Economics and Analysis of Diversity', *SPRU Electronic Working Papers Series* 28.

Strobl, E.A. and C. Tucker. 2000. 'The Dynamics of Chart Success in the U.K. Pre-Recorded Popular Music Industry', *Journal of Cultural Economics* 24(2); 113–34.

Swann, G.M.P. 2006. 'Is the World Round or Flat? Mapping changes in the Taste for Art', in C. Antonelli, D. Foray, B.H. Hall, and W.E. Steinmueller, *New Frontiers in the Economics of Innovation and New Technology*, Cheltenham: Edward Elgar; 158-187.

Takeyama, L. 1994. 'The welfare implications of unauthorized reproduction of intellectual property in the presence of demand network externalities', *Journal of Industrial Economics* 42; 155-166.

Teece, D. 1992. 'Strategies for capturing the financial benefits from technological innovation', in R. Rosenberg and D. Mowery, *Technology and the wealth of nations*, Stanford University Press.

Tether, B.S., I. Miles, K. Blind, C. Hipp, N. de Liso, and G. Cainelli. 2001. *Innovation in the Service Sector – Analysis of Data Collected Under the Community Innovation Survey (CIS-2)*. Brussels and Luxembourg: ECSC-EC-EAEC.

Throsby, D. 1994. 'The Production and Consumption of the Arts: A View of Cultural Economics', *Journal of Economic Literature* 32(1), 1-29.

Throsby, D. 1994. 'Preferred Work Patterns of Creative Artists', *Journal of Economics and Finance* 31(3); 395-402.

Throsby, D. 2001. *Economics and Culture*, Cambridge University Press.

Throsby, D. 2006. 'An Artistic Production Function: Theory and an Application to Australian Visual Artists', *Journal of Cultural Economics* 30(1); 1-14.

TNO Informatie- en Communicatietechnologie. 2009. *Ups and Downs – Economische en culturele gevolgen van file sharing voor musziek, film en games*, TNO Raport on behalf of the Dutch ministries of Economics, Justice and Education, Culture and Science. Online: http://www.ez.nl/Actueel/Pers_en_nieuwsberichten/Nieuwsberichten_2009/Januari_2009/Downloaden_en_delen_van_muziek_films_en_games_vertrouwd_verschijnsel/Ups_and_Downs

Towse, R. (ed.). 2003a. *A Handbook of Cultural Economics*. Cheltenham, UK: Edward Elgar.

Towse, R. 1993. *Singers in the Marketplace: The Economics of the Singing Profession*. Oxgord: Clarendon.

Towse, R. 1999. 'Copyright and Economic Incentives: An Application to Performers' Rights in the Music Industry', *Kyklos* 52; 369-390.

Towse, R. 2000. 'Cultural Economics, Copyright and the Cultural Industries', *Society and Economy in Central and Eastern Europe* 2000(4); 107-127.

Towse, R. 2001. *Creativity, Incentive and Reward*. Cheltenham, UK: Edward Elgar.

Towse, R. 2003a. *A Handbook of Cultural Economics*, Cheltenham: Edward Elgar.

Towse, R. 2003b. 'Introduction', in ditto (ed.), *A Handbook of Cultural Economics*, Cheltenham: Edward Elgar; 1-15.

Towse, R. 2003c. 'Cultural Industries', in ditto (ed.), *A Handbook of Cultural Economics*. Edward Elgar, Cheltenham: 170-176.

Towse, R. 2004. 'A Comment: Number- Crunching is not just a "Neutral" Activity', *Review of Economic Research on Copyright Issues* 1; 79-82.

Towse, R. 2006. 'Copyright and Artists: a View from Cultural Economics', *Journal of Economic Surveys* 20(4); 567-585.

Towse, R. and R. Holzhauer. 2002. 'Introduction', in ditto (eds.), *The Economics of Intellectual Property*, Cheltenham UK: Edward Elgar; ix-xxxii.

Towse, R., C. Handke and P. Stepan. 2008. 'The Economics of Copyright - A Stocktake of the Literature', *Review of Economic Research on Copyright Issues* 5(1); 1-22.

Toynbee, J. 2000. *Making Popular Music – Musicians, Creativity and Institutions*, London: Arnold.

Tripsas, M. 1997. 'Unraveling the Process of Creative Destruction: Complementary Assets and Incumbent Survival in the Typesetter Industry', *Strategic Management Journal* 18 (Summer Special Issue); 119-142.

Tryon, W.W. 1982. 'A Simplified Time-Series Analysis for Evaluating Treatment Interventions', *Journal of Applied Behavior Analysis* 15(3); 423-9.

Tryon, W.W. 1984. '"A Simplified Time-Series Analysis for Evaluating Treatment Interventions": A Rejoinder', *Journal of Applied Behavior Analysis* 17(4); 543-4.

Tschmuck, P. 2003. *Kreativität und Innovation in der Musikindustrie*, Innsbruck: Studienverlag.

Tschmuck, P. 2003b. 'How Creative are the Creative Industries? A Case of the Music Industry', *Journal of Arts Management, Law, and Society* 33(2); 127-141.

van Ark, B., Broersma, L. and den Hertog, P. 2003. *Services Innovation, Performance and Policy: A Review*. The Hague: Ministry of Economic Affairs.

van der Wurff, R. 2004. 'Supplying and viewing diversity: The role of competition and viewer choice in Dutch broadcasting', *European Journal of Communication* 19; 215–237.

van der Wurff, R., and J. Van Cuilenburg. 2001. 'Impact of moderate and ruinous competition on diversity: The Dutch television market', *Journal of Media Economics* 14; 213–229.

van Eimeren, B. and B. Ridder. 2005. 'Trends in der Nutzung und Bewertung der Medien 1970 bis 2005', *Media Perspektiven* 10; 490-504.

UNESCO. 2004. *Preliminary Study on the Technical and Legal Aspects Relating to the Desirability of a Standard-Setting Instrument on Cultural Diversity*, 166 EX/28, Paris: UNESCO.

UNESCO Institute for Statistics. 2005. *International Flows of Selected Cultural Goods and Services 1994–2003: Defining and Capturing the Flows of Global Cultural Trade*, Montreal: UNESCO.

Vaidhyanathan, S. 2001. *Copyrights and Copywrongs*, London: New York University Press.

Varian, H. 2005. 'Copying and Copyright', *Journal of Economic Perspectives* 19(2); 121-38.

Varian, H. 2000. 'Buying, sharing and renting information goods', *Journal of Industrial Economics* 48; 473–488.

Vogel, H.L. 1998 (4th edition). *Entertainment Industry Economics*. Cambridge University Press.

Vogel, H.L. 2004 (6th edition). *Entertainment Industry Economics*. Cambridge University Press.

Vormehr, U. 2003. 'Independents', R. Moser und A. Scheuermann (eds.), *Handbuch der Musikwirtschaf*t, München: Josef Keller Verlag.

Wallis, R. 2002. 'A case study of the Music Industry in a digital networked world. Three firms – two didn't make it, one still hasn't quite made it', *MusicCase* March 2002; 6.

Wassal, G. and Alper, N. 1992. 'Towards a Unified Theory of the Determinants of Artists' Earnings', in R. Towse and A. Khakee (eds.), *Cultural Economics*. Heidelberg: Springer.

Watt, R. 2000. *Copyright and Economic Theory: Friends or Foes?*, Cheltenham, UK: Edward Elgar.

Weber, S. 2004. *The Success of Open Source*, Cambridge, MA: Harvard University Press.

Weitzman, M. L. 1992. 'On diversity', *Quarterly Journal of Economics* 107; 363–406.

Weitzman, M. L. 1993. 'What to preserve? An application of diversity to crane conservation', *Quarterly Journal of Economics* 102; 157–183.

Weitzman, M. L. 1998. 'The Noah's ark problem', *Econometrica* 66(6); 1279–1298.

Weitzman, M. L. 2000. 'Economic profitability versus ecological entropy', *Quarterly Journal of Economics* 109; 237–263.

Weitzman, M.L. 1974. 'Optimal rewards for economic regulation', *American Economic Review* 68; 683-691.

Wikström, P. 2006. 'Reluctantly Virtual – Modelling Copyright Industry Dynamics', Dissertation at Karlstad University, Sweden, Faculty of Economy, Communication and IT.

WIPO / World Intellectual Property Organisation. 1996. *WIPO Copyright Treaty*, Geneva: WIPO.

WIPO / World Intellectual Property Organisation. 1971. *Berne Convention for the Protection of Literary and Artistic Works*. Online: http://www.law.cornell.edu/treaties/berne/2.html

WIPO / World Intellectual Property Organisation. 2003. *Guide on Surveying the Economic Contribution of the Copyright-based Industries*, Geneva: WIPO.

Yoo, C.S. 2005. 'Towards a differentiated products theory of copyright', in L.N. Takeyama, W.J. Gordon and R. Towse, *Developments in Economics of Copyright Research and Analysis,* Cheltenham, UK: Edward Elgar.

Young, L.C. 1941. 'On Randomness in ordered sequences', *Annals of Mathematical Statistics* 12, 293-300.

Zar, J.H. 1999 (4th edition). *Biostatistical Analysis,* New Jersey: Prentice Hall.

Zentner, A. 2005. 'File Sharing and International Sales of Copyrighted Music: An Empirical Analysis with a Panel of Countries', *Topics in Economic Analysis & Policy* 5(1), Article 21.

Zentner, A. 2006. 'Measuring the Effect of Music Downloads on Music Purchases', *Journal of Law and Economics* 49(1); 63-90.

ABOUT THE AUTHOR

Curriculum Vitae

Christian Handke went to school in Göttingen (Germany) and in Olympia (USA). When he was not busy as a mediocre rock musician, he studied architecture in Braunschweig, European studies at the University of London, and innovation economics at the University of Linköping (Sweden). In 2000, he worked as co-ordinator special events for the EXPO world exhibition in Hannover. Between 2003 and 2007, Christian was junior lecturer at the Centre for British Studies of Humboldt University Berlin. Since 2007, he is Assistant Professor in Cultural Economics at Erasmus University Rotterdam. Christian's research interests are cultural economics, the economics of copyright, as well as innovation and technological change. He has consulted for a variety of public and private organisations, including Industry Canada, Fundación Autor (Spain), and the Strategic Advisory Board for Intellectual Property Policy (UK).

Publications

Monographs

- *The Economics of Copyright and Digitisation*, report for the Strategic Advisory Board for Intellectual Property Policy (SABIP), UK, 2010. Online: http://www.sabip.org.uk/economics-finalreport.pdf
- with R. Towse, *Economics of Collective Management of Copyright / Análisis Económico de las Sociedades de Gestión de Derechos de Autor*, Madrid: Ediciones Autor, 2007.
- with C. Eisenberg and R. Gerlach (eds.), The Cultural Industries: The *British Experience in International Perspective*, 2006. Online. Humboldt University Berlin, Edoc- Server and ISBN 978-3-86004-203-8.

Peer-reviewed journal articles and book chapters

- 'Promises and challenges in innovation surveys of the media industries', in H.L. van Kranenburg and C. Dal Zotto (eds.), *Management and Innovation in the Media Industry*, Cheltenham: Edward Elgar, 2008; 87-106.
- with P. Stepan and R. Towse, 'Development of the Economics of Copyright', in J. Drexl (ed.), *Research Handbook on Competition and Intellectual Property Law*, Cheltenham: Edward Elgar, 2008; 373-403.

- with R. Towse and P. Stepan, 'The Economics of Copyright Law: A Stocktake of the Literature', *Review of Economic Research on Copyright Issues* 5(1), 2008; 1-22.
- with R. Towse, 'Economics of Copyright Collecting Societies', International *Review of Intellectual Property and Competition Law* 38(8), 2007; 937-957.
- 'Guest Editor's Introduction', *Review of Economic Research on Copyright Issues* 4(2), 2007; 1-3.
- 'Indies im Aufwind - Der Umbruch am Tonträgermarkt und sein Verteilungseffekt', in B. Schneider and S. Weinacht (eds.), *Die Musikwirtschaft - aus der Perspektive der Medien*, München: R. Fischer, 2007.
- 'Plain Destruction or Creative Destruction? Copyright Erosion and the Evolution of the Record Industry', *Review of Economic Research on Copyright Issues* 3(2), 2006; 29-51.
- with C. Eisenberg and R. Gerlach, 'Introduction', in C. Eisenberg, R. Gerlach, and C. Handke (eds.), *The Cultural Industries: The British Experience in International Perspective*, 2006. Online. Humboldt University Berlin, Edoc- Server and ISBN 978-3-86004-203-8, 6 pages.
- 'Copyright and Digital Copying Technology – A Critical Introduction to the Economic Literature with Reference to the British and German Record Industries', in C. Eisenberg, R. Gerlach, and C. Handke (eds.), *The Cultural Industries: The British Experience in International Perspective*, 2006. Online. Humboldt University Berlin, Edoc- Server and ISBN 978-3-86004-203-8, 28 pages.

NEDERLANDSE SAMENVATTING
(Dutch Summary)

Een belangrijke zorg over de digitalisering in de culturele industrieën is dat ongeautoriseerd, digitaal kopiëren – dat auteursrechten ondermijnt – het aanbod van culturele producten zal verstoren. De empirische bevindingen van deze dissertatie tonen aan dat deze zorg niet gerechtvaardigd is.

Op de Duitse markt voor fysieke audiodragers is het aanbod van verschillende titels toegenomen tijdens de aanwezigheid van digitaal kopiëren. Er is erg weinig bewijs dat de groeiratio negatief is beïnvloed door digitaal kopiëren. Belangrijker nog, kleine onafhankelijke platenmaatschappijen lijken op te bloeien in deze markt. De veerkracht van het aanbod en de 'boom' in bedrijven die aan de rand van de markt opereren is consistent met een proces van creatieve vernietiging in de context van radicale technologische veranderingen. Het lijkt er zelfs op dat ongeautoriseerd, digitaal kopiëren voordeel oplevert voor dergelijke kleine bedrijven en consumenten, door de markt voor audiodragers competitiever te maken.

Deze bevindingen maken ons bewust van beperkingen in normale economische analyses van digitaal kopiëren. Ze tonen ook aan dat de roep om meer bescherming van de auteursrechten vaak misplaatst is. Dergelijke maatregelen zouden aangevuld of zelfs vervangen moeten worden door beleid dat erop gericht is de technologische veranderingen te ondersteunen.

De impact van ongeautoriseerd digitaal kopiëren

De economische rechtvaardiging voor auteursrecht is dat deze institutie ervoor zorgt dat het aanbod van de beschermde werken toeneemt, terwijl het anders beneden een bepaald sociaal gewenst niveau zou vallen. Deel I van deze dissertatie bevat een van de eerste empirische studies van de impact van ongeautoriseerd, digitaal kopiëren op een markt voor auteursrechtelijk beschermd werk. Tot nu toe heeft de economische literatuur zich geconcentreerd op de consequenties voor de opbrengsten van rechthebbenden. Dergelijke studies zijn niet afdoende om het nut van auteursrechtelijke bescherming aan te tonen, omdat ze geen rekening houden met de effecten van dergelijk beleid voor gebruikers.

Het wordt vaak aangenomen dat ongeautoriseerd kopiëren en afnemende opbrengsten voor de rechthebbenden een negatief effect hebben op het creatieve aanbod. Dit is de logische conclusie als de effecten van digitaal kopiëren bestudeerd worden in termen van externe schokken op een efficiënt werkende industrie. Een cruciale bevinding van deze dissertatie ondermijnt deze aanname echter. Er is geen bewijs dat creatief aanbod is afgenomen gedurende de periode dat de kopieertechnologie op de markt verscheen en vervolgens toen de opbrengsten voor rechthebbenden afnamen na 1998.

Om dit contra-intuïtieve resultaat te kunnen verklaren legt deze dissertatie de nadruk

op twee uitbreidingen van meer conventionele economische analyse. Gebaseerd op de economische literatuur over innovatie en de gespecialiseerde literatuur over de culturele industrieën, ontwikkelt deze dissertatie een alternatieve verklaring die rekening houdt met bredere technologische veranderingen (breder dan enkel de introductie van kopieertechnologie), alsmede met verschillen tussen aanbieders en onvolledige competitie.

Op die manier kan op verschillende manieren verklaard worden waarom een recessie in de muziekindustrie niet heeft geleid tot een afname in het creatieve aanbod in die industrie. Ten eerste, ongeautoriseerd kopiëren hoeft niet noodzakelijk te leiden tot een afname in creatieve productie, omdat dergelijke productie voortkomt uit intrinsieke motivatie, of omdat bedrijfsmodellen succesvol aangepast worden. Ten tweede, mogelijke negatieve effecten van ongeautoriseerd kopiëren, kunnen worden gecompenseerd door positieve effecten. Netwerkeffecten kunnen er bijvoorbeeld voor zorgen dat het inkomen in gerelateerde markten toeneemt, of omdat ongeautoriseerd kopiëren leidt tot een toename in de 'contestability' van de markt en x-inefficiënties doet verdwijnen.

Creatieve Vernietiging

Deel II van deze dissertatie brengt in kaart hoe de muziekindustrie zich ontwikkelt in een periode van relatief snelle technologische ontwikkeling. De dissertatie voert een test uit naar Schumpeteriaanse creatieve vernietiging, wat een vroege indicatie oplevert voor een typische periode van radicale technologische verandering zoals beschreven in de structureel-evolutionaire economische literatuur.

Er is ruim bewijs voor creatieve vernietiging in de Duitse muziekindustrie na 1998. Gedurende de recessie trad een boom op onder kleinere, onafhankelijke platenlabels, en de intensiteit van innovatie was hoog ondanks dalende opbrengsten voor de industrie als geheel. Dit proces van industriële fragmentatie en bredere technologische veranderingen moet in ogenschouw worden genomen, om de impact van digitaal kopiëren te kunnen begrijpen en een wenselijk niveau van auteursrechtelijke bescherming te kunnen vaststellen. Het wordt echter niet geheel duidelijk of dit proces van creatieve vernietiging samengaat met de verspreiding van de kopieertechnologie of hierdoor wordt veroorzaakt.

De innovatiekosten van auteursrecht en competitie

Het is niet gemakkelijk om het effect dat auteursrechtelijke bescherming heeft op competitie en innovatie heeft te isoleren. Deel III van de dissertatie analyseert een aantal hypothetische redenen voor een toename van het aantal kleine onafhankelijke platenlabels ondanks de recessie in de primaire markt voor geluidsdragers. De resultaten van een enquête onder dergelijke bedrijven op de Duitse markt gehouden in voorbereiding op deze dissertatie suggereren dat noch inkomen uit gerelateerde markten (zoals merchandise en live-concerten), noch digitale verkopen een sterke invloed hebben gehad op deze sterke toename. Er is beperkt bewijs dat afnemende vaste kosten gedurende de recessieperiode en nieuwe

mogelijkheden om audiodragers online te promoten de traditionele voordelen van de grote spelers iets hebben ondergraven. Verder bestaat de helft van de geënquêteerde bedrijven uit amateurbedrijven of uitgaven in eigen beheer. Dergelijke aanbieders zijn wellicht minder gevoelig voor monetaire prikkels dan traditionele bedrijven, en hun aanwezigheid zou een deel van de veerkracht van de 'indies' kunnen verklaren. Er is echter weinig bewijs dat er een snel proces van amateurisatie of het wegvallen van intermediairs aan de gang is. Geen van deze fenomenen lijkt meer dan een gedeeltelijke verklaring te kunnen geven voor de geobserveerde boom onder de 'indies' in de Duitse muziekindustrie.

Hoofdstuk 14 verschaft wat bewijs dat het huidige systeem van auteursrechten innovatie bij kleine platenlabels beperkt: 'indies' stelden zelfs dat het huidige systeem meer kosten oplevert die samenhangen met handhaving van het auteursrecht dan kosten die samenhangen met onvolledige handhaving van die rechten. Deze geluiden contrasteren met die van grotere platenlabels – zoals bijvoorbeeld geformuleerd door de IFPI – die stellen dat slappe handhaving een serieuze bedreiging vormt voor de muziekindustrie. Het lijkt dus te verwachten dat schade door ongeautoriseerd, digitaal kopiëren meer schade oplevert voor grote bedrijven dan voor de indies. Het is zelfs waarschijnlijk dat minder bescherming van auteursrechten beter is voor de 'indies'. In elk geval zijn deze bevindingen consistent met een situatie waarin het gedeeltelijk afbrokkelen van het auteursrechtensysteem niet enkel samengaat met bredere technologische veranderingen. Het auteursrechtelijk systeem voor de late jaren '90 zou dus een barrière kunnen hebben veroorzaakt in de markt voor geluidsdragers, en zo concurrentie en prikkels voor radicale innovatie hebben tegengehouden.

Implicaties voor de economische theorie over auteursrecht

De verspreiding van kopieertechnologie is een van de meest fundamentele veranderingen in het de facto niveau van auteursrechtelijke bescherming van de laatste decennia. Als deze gedeeltelijke afbrokkeling van de bescherming van auteursrecht geen waarneembaar negatief effect heeft gehad op het aanbod, is het onwaarschijnlijk dat dit systeem een efficiënte manier is om het aanbod te stimuleren, en is het noodzakelijk om de onbedoelde gevolgen van auteursrechtelijke bescherming beter in kaart te brengen. Deze dissertatie suggereert dat dit vereist dat de conventionele economische analyse moet worden uitgebreid met een analyse van bredere technologische veranderingen en graduele veranderingen in concurrentie. Dit is zeker het geval in een context van radicale technologische verandering, waaronder digitalisering.

Suggesties voor auteursrechtelijk beleid

De empirische bevindingen van deze dissertatie hebben implicaties voor auteursrechtelijk beleid. Ten eerste, als de variëteit aan auteursrechtelijke werken die worden aangeboden in de

aanwezig van digitaal kopiëren toeneemt, dan zal het doel van auteursrechtelijk beleid er niet op gericht moeten zijn om het beschermingsniveau terug te brengen op het niveau dat vroeger bestond – dat wil zeggen, het niveau vlak voor de verspreiding van de kopieertechnologie.

Ten tweede, de belangen van stakeholders zijn vaak tegenstrijdig. Een deel van de recente economische literatuur over ongeautoriseerd kopiëren is gebaseerd op de aanname dat de belangen van verschillende stakeholders zeker op de lange termijn niet tegenstrijdig zijn. De empirische bevindingen in deze dissertatie betwisten dat idee. Als het aanbod niet afneemt door ongeautoriseerd kopiëren, dan leidt grotere toegankelijkheid tot meer welvaart voor gebruikers, bovendien kan dit zelfs in het belang zijn van bepaalde rechthebbenden. Resultaten van een enquête onder kleine onafhankelijke platenlabels impliceren dat de kosten van het bestaande auteursrechtensysteem vaak groter zijn dan de kosten van het ongeautoriseerd kopiëren. Een manier om auteursrechtelijk beleid te verbeteren in deze context, is om het auteursrechtelijk beleid flexibeler te maken voor rechthebbenden.

Ten derde, in een wereld van snelle technologische veranderingen kunnen grote lange termijn productiviteitswinsten worden geboekt ten koste van aanpassingen in het nu. Waar een snel proces van creatieve vernietiging plats vindt (dat leidt tot kostenbesparende, radicale technologische verandering), is een efficiënt auteursrechtelijk systeem waarschijnlijk heel anders dan de systemen die in de conventionele literatuur worden voorgesteld op basis van statistisch efficiënte marktmodellen. In een scenario van radicale technologische verandering zou overheidsbeleid zich kunnen richten op het versnellen van het innovatieproces en het wegnemen van obstakels in die richting, in plaats van het behouden van eerdere niveaus van industrie-opbrengsten. Het punt is niet dat nieuwe interventies per definitie noodzakelijk zijn. Technologisch beleid kan zich er simpelweg op richten bestaande wet- en regelgeving aan te passen zodat institutionele obstakels voor radicale innovatie en veranderingen worden weggenomen en de volledige voordelen van nieuwe technologieën op de gewenste snelheid beschikbaar komen. Meerdere auteurs hebben reeds hun zorg uitgesproken dat het auteursrechtensysteem technologische innovatie zou tegenhouden. In het bijzonder tijdens een periode van snelle technologische veranderingen, kunnen zaken op het gebied van innovatie belangrijker worden dan auteursrechtelijke bescherming.

Ten vierde, de literatuur over innovatie en technologische verandering benadrukt gewoonlijk de onzekerheid en de openheid van het proces. Omgaan met een dergelijk proces waarin het maken van voorspellingen alleen mogelijk is op de korte termijn vereist constante interactie tussen observaties en beleid.