FINANCE AS AN INSTRUMENT TO A SUSTAINABLE COMPANY

Financiering als instrument voor een duurzame onderneming

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Preface and acknowledgements

Finishing a dissertation after 20 years of working in a University aroused feelings of both shame and pride. In the end, the feelings of pride and satisfaction won. This study on the sustainability of finance could probably not have been written in the timeframe of 20 years ago. At least, I was not ready for that topic at that time myself. My switch at Erasmus University in 2001 from the school of economics to the school of law enabled me to teach 'financial ethics' in the Master's of Financial Law. This wonderful opportunity strongly stimulated me to emphasize sustainability in finance. So, first of all, I want to thank my colleagues from our department for providing the relaxed and stimulating environment to do our daily jobs in both education and research.

A substantial part of this study is based on previously published articles. Chapter 2 draws heavily on a publication in Zsolnai (2002), chapter 3 is basically a reprint from Soppe (2004) in the Journal of Business Ethics and finally, chapter 7 has been published before in the European Journal of Operational Research: Hallerbach, W., H. Ning, A. Soppe and J. Spronk (2004). I would like to thank my co-authors for their contribution and their permission to include this research into this thesis. Special thanks go to the Triodos Bank and the DSR group for allowing me to use their valuable dataset.

Knowledge is not a private property; the underlying study is a result of inspiration provided by many persons. The first person I want to thank is Ben Verheijden, for being both master and friend in a critical period in my life where my personal connection to sustainable development was born. He facilitated the fundaments of this study. The last two years, I was guided and stimulated skilfully by my promoters Auke de Bos and Johan Wempe. In the many conversations we had, they encouraged me permanently in the development of the sustainability concepts. Moreover, and even more important, they had a delicate job in forcing me all the time to ground my ideas onto well studied scientific concepts. Thank you for that professional attitude and carefully chosen words. Further I would like to thank Jeanny Bovenberg and Suja Suryanarayanan for patiently and professionally correcting my English texts; Bert Dekker and Jan van der Meulen for their mental and physical support by literally standing behind me during the ceremony. Finally, but most importantly though, there are my lifetime partners in sustainability:

Margot, my wife, and my children Jurjen, Tjarde and Lennart. You probably suffered most from my lack of time and sometimes resulting lack of friendliness and understanding. Let's proceed as before, intensively and sustainably. Thanks a lot, I love you.

Contents

Executive summary

The study underlying this thesis, *Finance as an instrument to a sustainable company*, focuses on the development of terminology, concepts and instruments to introduce the concept of sustainable development into the financial practise and literature. Current developments on financial markets show an increasing interest for both socially responsible investments (SRI) and sustainable corporate responsibility (CSR). Major institutional investors, including PGGM and ABP in the Netherlands, actively invest a (small) part of their portfolio in sustainable companies as a long-term financial policy behind their pension fund activities. This thesis introduces the necessary terminology, theoretical background and some instruments to link the SRI and CSR.

Chapter two uses an ethical approach to make a case for sustainability in finance. The utilitarian character of traditional financial theory, with an emphasis on capital gains for the provider of risky capital, is considered inappropriate for sustainable development in finance. The modern company is changing from a technical institution that produces cash flows, to a stakeholder community where contractual relations are influenced by the ethical framework and the integrity of the organisational structure of the company and its participants. The chapter extends the strictly utilitarian character of the ethical framework to a more principle-based corporate responsibility.

Chapter 3 further develops the concept of sustainable corporate finance, defining it as *a multi-attribute approach to finance the company in such a way that all of the company's financial, social and environmental elements are interrelated and integrated*. The core elements are the mission statement of the company, the relevant ethical framework, the assumptions on human behaviour and the corporate governance choices on the ownership of shares. The stakeholder equity model, as presented in chapter 4, discusses the shareholder paradigm in the sense that there is no *a priori* reason to appoint the provider of risky capital (called the pure shareholder) as the ultimate owner of the residual risk. This study departs with Hansmann (1996), who stated, '*the theoretical optimal position to assign ownership is to that class of patrons for whom the problems of market contracting - that is, the costs of market imperfections - are most severe (p. 21)*'. The chapter explores the issue of whether the market circumstances for the

shareholder are more severe than that of the other stakeholders, and concludes that this is not necessarily the case.

Part two of the thesis, empirical applications, presents examples and applications of sustainable (corporate) finance. The models and examples are based on a dataset of 571 major international companies, as provided by the Triodos Bank in the Netherlands. The data concerns both financial indicators and sustainability scores in relation to the stakeholder performance of the company. One important conclusion is that companies that have transparent governance structures perform statistically significantly better than less transparent companies, and that companies with a low free-float of stocks perform financially better than companies with highly dispersed stock ownership. Thus, (transparent) governance structures seem to matter! The study provides two examples of investment models that represent both an SRI approach and a CSR approach. First, in chapter 6, a style analysis model is used to estimate empirically the sustainability style of portfolios of international companies. Chapter 7 then provides a framework for managing an investment portfolio, given the multi-attribute descriptions of companies and the individual investment preferences of investors.

Summarising the question regarding the connection between CSR and SRI, the study finds that both theoretical approaches can be reduced to (at least one of) the building blocks of sustainable finance. Theoretically, a continuous spectrum of each element of sustainable finance is distinguished between the traditional firm and the sustainable firm. It is crucial to realise that finance decisions are the foundation of managerial policy in general. Funding a company's activities or deciding on the capital structure of the company implies structuring the control rights and establishing the monitoring positions. Within the limits of the legal conditions of a country, any participant of the economic process can freely develop corporate governance structures in a market economy. The ultimate answer, therefore, on the question of how finance can contribute to sustainable development in the economy can be found in the 'power of free choice'. Just as Hayek and Friedman already argued in their classical economic thinking: freedom and morality are two sides of the same coin. In a free society, economic agents choose their own values, one of which could be sustainable finance. Practically, this could involve shareholders or boards of companies that decide that the mission statement of the company should explicitly refer to the interests of all production factors: capital, labour and the environment. From a scientific-theoretical perspective, the 'power of free choice' implies that sustainable finance deserves and requires more attention in the academic literature and in economic education. This study hopes to trigger that discussion.

PART ONE

Theoretical background and terminology of sustainble finance

Chapter 1 Introduction, problem setting and terminology

1.1 Introduction

Sustainability as a societal phenomenon entered the economic literature many decades ago. Initially, sustainability was launched in the strict environmental interpretation during United Nations conferences in the 1970s and 1980s. Then, during the 1980s and the 1990s, sustainability gradually entered the business ethics literature and the management literature as an internal responsibility of corporations and management – designated as Corporate Social Responsibility (CSR). The literature offers many definitions to describe the CSR concept. Kakabadse, Rozuel and Davies (2005) present an extensive historical overview of the development of the concept of CSR, provide two tables with definitions[1] and describe the core elements. They classify CSR as a contribution of the business and civil society (Kakabadse et al., figure 2, p. 286) to the sustainable development of the economy, and refer to the well-known economic, social and environmental responsibilities of CSR companies. Another popular name for a similar phenomenon was introduced by Elkington (1997): the Triple Bottom Line. Just like CSR, the triple bottom line extends the classical bottom line (economic and financial performance) by an environmental and a social dimension[2]. The above developments have one thing in common: the initiatives to improve the business climate are predominantly *supply-driven*. In other words, the company itself - or its stakeholders - want to redefine their goals and reorganise the production process into a more sustainable entity with broader goals than financial success alone.

In the discipline of finance, however, the process of sustainable development is primarily *demand-driven*. In capital markets, sustainability is initiated primarily by the rapidly growing market for socially responsible financial products. The roots of socially responsible investing (SRI) are difficult to trace exactly, but SRI presumably goes back to the 18th century in the US. Many religious investors, whose traditions embrace peace and non-violence, have actively avoided investing in certain kinds of enterprises, the so-

1 One table with definitions of CSR is based on academic research; the other contains definitions as produced by business and civil society's representatives.

2 Another well-known name for the similar concept is the People, Planet, Profit (triple-P) approach.

called 'sin' stocks – alcohol, tobacco, weapons and gambling (Louche (2004)). In the 1960s, some major charitable institutions like the *Ford Foundation* and the *Corporate Assistance Fund* (founded by the Taconic Foundation) announced that ethical investments had become part of their philanthropic programme (Bruyn (1987)). That renewed social inspiration was something already long in evidence in US churches. Around 1900, for example, the churches boycotted companies producing tobacco and alcoholic beverages, especially during the (unsuccessful) 'Prohibition' from 1922-1930. In 1968, Alice Tepper Merlin, acting on behalf of a brokerage house, developed a portfolio of companies that were **not** involved in arms production for the war in Vietnam and Laos (Luijk (1993)). This portfolio was subsequently offered to the public through a small advertisement in the *New York Times* and became unexpectedly successful. The Council of Economic Priorities (CEP) was thus launched, with Alice Tepper as the first president. In the 1980s, ethical investments entered the Europe stage and developed into a commercial product involving new types of actors, new organisations and new values. Ethical investments became popular among financial institutions initialising their own pricing mechanisms (Soppe and Ysebaert (1995)). In 1984, the first ethical investment fund was launched in the UK: Friends Provident Stewardship. An impressively growing market for social investments now exists in the US, Europe and Japan (see e.g. Scholtens (2005)).

1.2 Problem setting

The primary research objective of this study is neither a specialised analysis of the abovementioned socially responsible investments nor a specific study of corporate social responsibility. The literature on these two topics is already extensive. This thesis focuses on the connection between the two theoretical concepts. CSR is a concept that was basically introduced by the business ethics discipline and then was developed further and accepted in the management literature. The corporate finance literature has shown little interest in sustainability. SRI, on the other hand, is a market-driven development; it has therefore primarily been analysed in the financial literature. *This study introduces sustainability analysis in finance as the connecting concept between CSR and SRI.* Financial markets connect the savings of households and financial institutions with business ideas of the real economic markets. This is accompanied by (asymmetrical) information problems in all (financial) markets and incentive problems at all levels of the pro-

3 The lemons problem is based on Akerlof (1970) and basically argues that due to asymmetrical information general market prices are always overvalued because low-quality suppliers get the same market price as high-quality suppliers. This encourages suppliers with low morality to enlarge the business at the expense of highly moral suppliers, endangering the necessary trust in financial markets. See also Gresham's law: 'bad money always drives out good money'.

duction process. Especially the 'lemons' problem endangers a proper functioning of the capital markets[3]. The presence of well-known threats to capital markets, such as moral hazard and adverse selection, justify the call for strong national legal systems to monitor both real economic and financial institutions.

From this perspective, this thesis argues that finance urgently needs a 'sustainability approach' to connect the initiatives from the CSR companies with the investor preferences of the SRI capital market. Finance represents the intermediate discipline between demand and supply of both real economic- and financial markets, and therefore has the potential capacity to contribute to sustainable developments in the economy. This brings us to the following central research question:

> ***Considering the well-developed streams of literature on corporate social responsibility (CSR), on the one hand, and the literature on socially responsible investing (SRI), on the other, how can finance contribute to sustainable development in society?***

Deduced questions are as follows:

1. ***What concepts are needed in order to describe the potential role of sustainability in finance?***
2. ***How can sustainable finance lead to a sustainable market economy?***
3. ***What are applications of financial instruments that are able to contribute to sustainable developments in market economies?***

The main goal of this research is to develop some terminology as well as an exchange syntax of sustainable-finance concepts that can be used to perform further research on the connection between economic, social and environmental research. After centuries of concentration and specialisation in many different scientific disciplines, and decades of specialisation within disciplines and sub-disciplines, economics - including finance - is showing signs of becoming scattered, and thereby losing its integrated approach to primary production and allocation processes. Sustainability in finance implies necessarily a holistic approach - combining economics with sociological, psychological, moral and environmental elements. A second goal of this research is to present applications and examples that explicitly use the three-dimensional approach[4] that is the foundation of sustainable finance. Part two of this study addresses these issues.

4 See the definition of sustainable finance of section 1.4.3.

5 I would like to thank Marcel Jeucken, Bas Ruter and Rosl Veltmeijer of the Triodos Bank in Zeist for their support in making this data available for pure research goals.

Part two applies empirical data (provided by the Triodos Bank in the Netherlands[5]) to social, environmental and economic processes. This unique dataset, which comes from a cooperative project between major social research agencies in the world (SiRi), holds sustainability data of more than 600 companies quoted on international stock markets. The study uses these data to formulate explicit answers. An integrated answer to the problems set forth above, including deduced questions, will not be presented, however, until chapter 8, which contains the summary, conclusions and reflections.

1.3 Methodology

Where the finance literature of the 20th century focused on risk/return equilibriums (asset-pricing models such as CAPM, APT) and strict selfish human behaviour[6] (e.g. agency theory), the challenge of the coming decennia is on integrating management- and strategic values into financial theory. The behavioural finance scholars have already extended the traditional finance assumptions on rational economic man. Richard Thaler, for example, in his acceptance speech upon receiving his honorary doctorate from the Erasmus University Rotterdam[7], expanded the assumptions on economic agents from rational behaviour to bounded rationality, from selfishness to bounded selfishness, and from willpower to bounded willpower. Even arbitrage was expanded to bounded arbitrage. All of these extensions from the strictly selfish behaviour of economic agents to a more enlightened form of human behaviour widen the research horizon beyond the neoclassical equilibrium models. Sustainable finance aims at contributing to this process of enriching the financial economic vocabulary and fine-tuning potential financial behaviour.

1.3.1 Sustainable finance as a normative concept

Sustainability analysis in finance is used in this study as a strategic instrument to improve societal welfare. An important point of departure is that sustainability and ethical values should be approached as regular strategic investment projects. Rather than aiming at the traditional discounted-cash-flow (DCF) method, this study pursues a broader strategic investment approach. For example, Smit and Trigeorgis (2004) synthesise cutting-edge developments in corporate finance and related fields:[8]

6 See chapter 2: Moral Economic Man, by Zsolnai, L., 2002, Ethics in the economy, (Peter Lang, Bern).
7 The ceremony took place on November 8, 2005 at the EUR, celebrating the university's 92nd Dies Natalis.
8 They emphasise, in particular, the role of real options and game theory. Game theoretic approaches are fruitful in financial research because they allow more players (stakeholders) in the economic analysis, including future generations (the explicit option to wait).

> *'The gap between finance and corporate strategy remains embarrassingly large, as academics and practitioners alike have recognised for some time now. The most important managerial decisions – in terms of both the size of expenditures and their impact on the future of the firm – are strategic decisions, yet they are the least well understood and often are made without the discipline of rigorous analysis' (p. 23, introduction).*

Sustainable finance therefore, is interpreted as a strategic choice based on normative decisions regarding how to manage a company in the long run. Research on sustainable finance implicitly aims at filling the gap between finance and corporate strategy.

The applied methodology of this thesis is based on Ryan, Scapens and Theobald (1992), who explicitly categorise methods and **methodology** in finance and accounting. They emphasise that scientific research is a social activity in itself (p.20), and that research in the natural sciences - and especially finance and accounting - is not a value-neutral, objective search for the 'truth'. The dominant methodology of the financial disciplines is rooted in the nature of assumptions and in the linkage between observations and theoretical terms. Although sheer objectivity is impossible, Ryan et al. (1992 p. 25) argue that much of the literature in accounting and finance can best be described as follows:
(1) a network of core models with adapted models around assumption changes,
(2) an exchange syntax through which meaning is (unreliably) transmitted and
(3) well-tested observation reports. The above structure will be used throughout this study to organise the sustainability concepts.

First, however, as a brief historical introduction, section 1.3.2 describes the general transition of the firm from the traditional to the sustainable concept. Then, section 1.4 presents and develops the core sustainability concepts of this study and section 1.5 will provide the outline of the thesis.

1.3.2 Transition to a sustainable firm

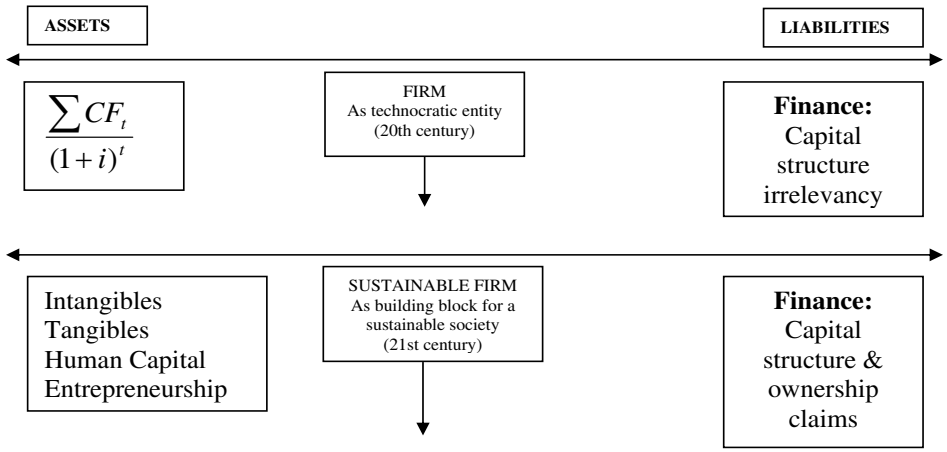
> *Chi lascia la strada vecchia per la nuova,*
> *Sa quel che lascia ma non quel che trova* [9]

'He who leaves the old road for a new one knows what he leaves, but does not know what he will find'. This saying expresses well the tentative character of the preceding and following sections. Concepts from different disciplines will be combined in order to introduce completely new dynamics. This section first presents two types of companies (Figure

9 Classical Italian proverb.

1.1) representing the development of the concept of the 'firm' during the last century. The case is then made that a modern sustainable company could distribute the equity of the firm among its stakeholders in such a way that it represents the distribution of the company's cash flow to the relevant stakeholders. The concept of *stakeholders equity* (SE) is introduced to create financial commitment for all stakeholders – not just for the providers of capital (stockholders) alone (see chapter 4 for an extensive discussion).
Figure 1.1 illustrates the balance sheets of two companies: the traditional company and the sustainable company[10]. The upper part of the schedule defines the firm in the traditional neoclassic perception: the firm is perceived as a technocratic entity and as such is completely separated from the social process. In that typical Friedman approach (Friedman (1970)), it is the government that is responsible for the social welfare of society, and firms (as laid down in their statutes) must simply maximise their economic efficiency in terms of profits.

Figure 1.1 Finance as an instrument to a sustainable market economy



On one side of the horizontal axis are the assets of a company, and on the other are the liabilities. The neoclassical finance approach proxies the value of the firm's assets (value of the firm) by calculating the present value of the expected future cash flow of the sum of all direct-investment projects. The strict positivistic approach should replace the burden of the accountants to value the assets of the firm at one specific point in time. This path-breaking insight was introduced by Modigliani and Miller (1958), and paved the way for their seminal capital structure irrelevancy hypothesis. In that view, the liability

10 This figure represents a prototype of the balance sheet of a traditionally financed firm and a sustainably financed firm in order to illustrate the transition process of the firm. The development of the terminology is postponed until the coming section 1.4.

side of the balance sheet merely represents the capital structure; it is supposed to be important for the ownership structure (stocks and debt) of the firm, but is irrelevant for the value of the firm. The positivistic finance approach opposed and attacked the normative approach of the management accounting of that time (approximately 1960-70). In the period afterwards, research in management accounting also evolved from a purely normative accounting practice and 'a priori' research (Nelson (1973)) in the beginning, to a more objective decision-usefulness approach. Accounting-decision models then, according to Ryan, Scapens and Theobald (1992), encouraged the emergence of the empirical accounting approach and the positive accounting research. These days, the positivistic approaches dominate both finance and management accounting literature.

The lower part of the schedule represents the sustainable company. In that view, the stakeholders approach is applied and capitalised in the balance sheet. Cornell and Shapiro (1987) have already proposed a balance sheet that includes implicit claims of various stakeholders (e.g. the value of human capital). Assets are no longer part of a technocratic project to produce the highest possible return, but are the result of specific stakeholder efforts from the past, and are valued in such a way that sustainable production is secured in the near future. The theoretical problem addresses the pricing of these implicit (moral) claims. However, a company that chooses to apply a sustainable financial policy makes an explicit choice to incorporate a broader definition of the goals of the company. Depending on the normative choice regarding the definition of the firm, the shareholders paradigm could be extended to a stakeholders approach. Such a choice, once made, will have severe consequences for the (financial) policy of the firm. More debt implies greater external monitoring power; more equity implies further agency conflicts between the shareholder and the board of a company. Within this perspective, it is hard to argue that the financial claim coming from the capital providers (stock- and debt holders) can be based on pure positivistic market analyses alone. A normative choice on who holds the ultimate risk and return is always implicitly there.

Section 1.4 discusses and develops the terminology of the sustainability concepts of this thesis. The concepts are connected in a network (see figure 1.3), and are derived from changing assumptions on human behaviour. Chapters 2 and 3 elaborate extensively on this additional terminology in finance and chapter 4 will extend the shareholders paradigm to a stakeholders approach by introducing a stakeholder-equity model.

1.4 Defining the concepts

Sustainability in traditional finance is usually described in terms of sustainable growth rates or sustainable dividends. The sustainable growth rate is defined as the rate at which

a firm can grow while keeping its profitability and financial policies unchanged (e.g. Palepu, Healy and Bernard (2000), Brealey and Myers (1991) or Weston and Copeland (1992)). The sustainable growth rates of general financial planning models aim at a stable risk and return for the owners of the residual risk of the company, and include the following variables:

$$g_{sustain} = ROE \times b \qquad [1.1]$$

$$ROE = T \times m \times L \qquad [1.2]$$

where:

$g_{sustain}$	=	the sustainable growth rate
ROE	=	the return on equity
b	=	the retention rate (1- payout ratio)
T	=	the asset turnover (sales divided by total assets)
m	=	the profit margin on sales
L	=	the financial leverage of a company

Equations [1] and [2] show that the sustainable growth rate depends on both the return on equity (ROE) and the dividend policy (the level of b). The return on equity, in turn, is a result of the operating return on assets and the financial leverage of the company. In other words, sustainability is defined in terms of a stable operational policy and a stable financial policy (leverage) for its owners, the shareholders. Traditional sustainable growth rates are defined in terms of shareholder wealth only. A lower payout ratio (thus, a higher retention rate), for example, increases the sustainable growth of the company. Retention of cash flows, in general, strengthens the financial resistance of the firm. Yet, an increase of the profit margin m, or higher leverage through an increase in the level of debt (higher L) also implies higher sustainable growth in traditional financial theory. This approach is consistent with the neoclassical assumptions on the behaviour of economic agents. In a stakeholders approach, however, both the increase of profit margin m, and higher leverage may be inconsistent with consumer- or creditor interests, for example.

The coming sections and chapters will demonstrate how sustainability, within the traditional sustainability definition, aims exclusively at shareholder wealth, but does little for the stakeholders. The next subsection presents a general discussion on sustainable development. Then, sections 1.4.2 through 1.4.4, respectively, discuss and define the thesis' three core sustainability concepts of finance: **sustainable corporate finance, sustainable finance** and **sustainable financial markets**.

1.4.1 Sustainable development

A widely used definition of sustainable development is the one established by the Brundtland Commission (Brundtland (1987) and generally accepted by the WCED 1987. There, sustainable development is defined as, 'development that meets the needs of the present without compromising the ability of future generations to meet their own needs' (p. 43). The commission referred to 'common concerns, common challenges and common endeavours', using these as the basis for proposals for institutional and legal changes. This academic endeavour was followed by a worldwide initiative of the global business society itself. Schmidheiny (1992) published a declaration of the business council for sustainable development - subscribed by 49 other captains of industry. All major topics were addressed: from the theoretical concept of sustainable development itself to complex topics such as the growth controversy, the pricing of the environment, the energy market, the role of the capital market and the influences of sustainable development on trade.

In recent years, lively discussions have taken place regarding the uniformity of the concept of sustainable development. Fergus and Rowney (2005a) reviewed the concept extensively and built a semantic framework of sustainable development in which the neoclassical economic model for business is an accepted, but not necessarily implemented, tool within the development of social relationships. The semantic roots, as identified by Lélé (1991)[11], were later extended by Fergus and Rowney within the context of an economical, ecological and social future direction of human progress. Implementing the neo-classical dominant paradigm, Fergus and Rowney finally identify 'sustaining growth' as an objective in itself. They argue that a definition, in general, is intended to clarify things in order to free us for action. But a definition can easily become a means of control – and that is what happened to the Brundtland definition of sustainable development. Fergus and Rowney (2005a) conclude that new insights and perspectives are necessary, reminding us that the neoclassical market approach is not necessarily the only context within which sustainable development can be attained.

Today, many countries and companies have embraced and implemented the concept of sustainable development at different levels. There is a growing understanding that sustainability is not the exclusive responsibility of one society, country or sector. Sustainability, in practice, constitutes a set of actions; sustainable development is therefore incremental and builds on what already exists. Boadi (2002) discusses three argu-

11 The literal meaning of 'sustain' is: *to maintain or to prolong*; 'develop' means: *to build on or change the use of*. Lélé (1991) described these words as 'contradictory and trivial,' p. 608. Fergus and Rowney therefore conclude that the context itself is crucial in providing a meaning.

12 Because the environment is not a priced stakeholder in the traditional finance concept, there is an economic impulse to externalise these costs, which deteriorates the quality of the environment

ments in favour of sustainable development. First, there is the '*healthy environment*' argument, which emphasises the need to stop the environmental degradation caused by traditional economic development[12]. A second approach maintains that sustainability is a *holistic* concept that is based on the idea that the whole is greater than the sum of the parts. This is a powerful aspect of sustainability, but at the same time a major obstacle for progress, in practice. Sustainable development avoids the shortcomings of approaching social policy from the single perspective of the market-based economy. However, an integrated approach of economics, environment and social equity calls for a critical mass in favour of collective care; this is difficult (if not impossible) to obtain in a world that is evolving in the direction of individualism. Free riders, in particular, are endangering social cohesion. The third argument, used by Boadi to illustrate the necessity of sustainable development, is the inherent *promotion of equity*. Sustainability basically incorporates a two-dimensional commitment to equity: between present- and future generations, and between the rich and the poor of the world's population. Boadi argues that the art of sustainable development, from the perspective of the policymaker, is to ensure a fair distribution between the current costs and both current- and future benefits.

The sustainable development concept has also shortcomings. The concept is ambiguous and vague in some points, which makes policymaking more difficult, and it attaches values to the environment that tend to disguise economic growth. This thesis contributes to the sustainable-development discussion by emphasising the role of financial markets and institutions in the sustainable economy. However, in order to avoid any further complication in terminology, I will stick to the generally accepted WCED definition of sustainable development as presented in the first paragraph of this section. Subsequent subsections will address the specific role of finance and financial markets.

1.4.2 Sustainable corporate finance

In this study on the connection between sustainable development and corporate finance, the CSR literature is used as a footing for the sustainable corporate finance concept. Although the financial policy of the firm is merely one aspect of its strategic decision-making, it is a crucial aspect. The major problem is that finance explicitly or implicitly interferes with all decisions in the firm. Orlitzky and Benjamin (2001) make a strong case that CSR is directly related to financial risk. Based on a meta-analysis of over 1200 US and international business- and trade journal articles from 1970 until 2000, they developed six hypotheses linking CSP (corporate social performance) to firm risk. A minority of the articles measured financial risk explicitly. However, those that were integrated quantitatively were separated according to the temporal order of measures taken: (a) prior CSP → subsequent risk, (b) prior risk → subsequent CSP, and (c) contemporaneous (cross-sectional) measures. They concluded that the empirical study supports the theoretical argument that the higher a firm's CSP, the lower its financial risk.

More specifically, the relation between CSP and risk appears to be one of reciprocal causality, because prior CSP is negatively related to subsequent financial risk, and prior financial risk is negatively related to subsequent CSP. Additionally, CSP is more strongly correlated with measures of market risk than measures of accounting risk. Of all CSP measures, *reputation regarding social responsibility* appeared to be the most important one in terms of risk implications.

Taking into account the general relationship between CSR and financial risk as described above, it is important to develop an 'exchange syntax' to transmit sustainability developments into the (traditional) financial literature. The term *sustainable corporate finance* could be used as an example of such exchange syntax. In the academic literature, the term is not yet used at all. Chapter 3 of this study explores the concept extensively. There, the term is defined in the conclusion as: '*a multi-attribute approach to finance the company in such a way that all the company's financial, social and environmental elements are interrelated and integrated*'. The chapter further deduces sustainable corporate finance from traditional finance theory by identifying four criteria by which sustainable corporate finance distinguishes itself from traditional finance and behavioural finance. Through a closer look at a) the consisting elements of the 'theory of the firm', b) the assumed behaviour of the economic agents, c) the discussion on the ownership of the firm and d) the ethical framework of the company, the chapter proposes an alternative financial policy. It is concluded that a sustainable financed company is a multi-attribute optimiser of goals. The assumptions of, and approach to, human behaviour are based on cooperation and trust, instead of purely selfish behaviour. The sustainable company, further, is one that is owned by a portfolio of stakeholders in a virtue-ethical/integrative-ethical framework. Figure 3.4 serves to illustrate the entire discussion, which is the main topic of chapter 3. This chapter will now continue by defining the broader concept: sustainable finance.

1.4.3 Sustainable finance

After 25 years of development, the market of socially responsible investments is reaching another stage. Although well-developed socially responsible markets are in evidence in the US, the UK and continental Europe, such markets are emerging also in regions like Australia, Canada and Japan – all applying their own style of social responsibility. Sparkes (2002) asserts that the SRI development is so strong that we can expect the imminent beginning of the global revolution. Despite its impressive growth in the last decades, SRI is still a niche market with limited power, compared to the regular worldwide financial markets. Also Haigh and Hazelton (2004) argue that social investments and shareholder activism, in their current form, lack the power to create significant corporate change. Shareholder advocacy has been largely unsuccessful to date, and the claim that SRI funds systematically outperform their regular peers will likely continue to occupy the attention of empirical researchers for the foreseeable future. The Haig and

Hazelton paper is innovative in the SRI literature in the sense that they adopt a legitimacy framework to explain the continued presence of SRI funds. Both consumers and suppliers of SRI funds appear to be motivated by prospects other than mere superior returns. Many investors choose to direct only a small proportion of their investment monies into SRI funds, suggesting that SRI allows investors to 'alleviate their conscience' and legitimise their current holdings of more conventional investments. Also institutional legitimacy has been explored, and Smith (1990) argues that corporations (and by extension, capital markets) must find ways to legitimise their power by producing evidence that they can deal effectively with the externalities of capitalist production. Haigh and Hazelton (2004) suggest that the mechanism for solving the legitimacy problem of SRI funds is collective lobbying of corporations and, especially, governments.

This thesis argues that the sustainable-finance concept can lead to greater acceptance of behavioural approaches to the instabilities of financial markets. Despite the general acceptance of the sustainability concept in all scientific disciplines, the concept of sustainable finance has not yet captured the attention of the academic literature. Apart from the commercial[13] and institutional use[14] of the term on the Internet, only Jeucken (2004) has introduced and analysed the term in economic theory (without presenting a definition). His work focuses on the banking sector, and more specifically, identifies facets of the response of banks to sustainability issues. In that research, sustainability is primarily analysed in relation to financing risk and product development. However, just as finance embraces more than the banking sector, sustainable finance is broader than sustainable banking.

Finance is the connection between the markets of real goods and services, on the one hand, and the purely financial markets, on the other. Figure 1.2 distinguishes between two types of transactions: monetary transactions and real economic transactions.

Figure 1.2 The difference between monetary and real economic transactions

13 See e.g. Sustainable Finance Limited (SFL): http://www.sustainablefinance.co.uk/aboutus/services.htm.
14 See e.g. the site of the World Bank Group: http://www.ifc.org/ifcext/enviro.nsf/Content/SFMF.

The crucial difference between the two types of transactions is that trust is more important in monetary transactions than in real economic transactions. In monetary transactions, both elements in the trade concern claims that cannot be consumed immediately. The possession of money is a claim in itself, and the other part of the monetary transaction is a *future* claim on money. Real economic transactions, however, deal with money, on the one hand, and an immediate delivery of services or physical goods, on the other. The time lag between the money and the claim of money makes financial transactions more vulnerable for moral hazard. Without trust, financial markets cannot perform at all.

Sustainable finance embraces the entire universe of SRI, CSR, sustainable banking and sustainable corporate finance. The following definition attempts to portray the concept:

> *Sustainable finance deals with institutional policies, or systems of analysis, where all financial decisions aim at an integrated approach to optimise a firm's social, environmental and financial mission statement.*

An essential element of the sustainable-finance concept is the three-dimensional goal function, where finance is more of a restrictive variable than a goal in itself. In the market economy, financial viability and continuity are prerequisites for existence. But excellence and sustainability extend beyond these targets. The economy is there to sustain wealth and happiness, and not vice versa. Financial performance, as a goal in itself, can easily be used for the selfish aims of a single production factor (e.g. the provider of capital). In the sustainable-finance concept, the word *shareholders* mean that the 'holder' owns a 'share' in the company – implying more than just a financial claim. Sharing is considered in this view as commitment to the firm's total performance, which also includes the social and environmental performance.

The next section discusses the sustainable market economy and develops the argument that the allocation of ownership and responsibility could be distributed more equally among the stakeholders.

1.4.4 Sustainable market economy

A *sustainable market economy*, as mentioned in the second deduced question, is one step beyond the concept of sustainable finance. The term *sustainable market economy* will be rooted in a macroeconomic approach and connected to a modern version of the economic output model, with production factors as known from the classical microeconomic theory, mostly derived from David Ricardo (see e.g. Nentjes (1971), p.21-29).

$$Y = \mathbf{f}(C, L, N) \qquad [1.3]$$

In this concept, Y represents the *total production* (or income) of an economy, C represents the production factor *capital goods*, L is labour and N stands for *nature*, implying that the traditional factor *land/ground* is extended from a simple resource that can be exploited for production and consumption purposes only to *nature*, as a metaphor of the environment. The environment as a stakeholder as such is explicitly included in the production process. Also the government (by means of its collective production) is part of this production function. The factor *capital goods* represents the real economic accumulation of former savings. The reward of capital goods is usually called interest, and can therefore be interpreted as the representative of the financial capital (financial sector) in this model.

In order to explain the concept of the sustainable market economy, we must ask the following crucial question: who owns the corporate residual risk and return in the production process of the market economy? The current widely accepted answer is the shareholder, who is therefore also considered to be optimally suited to monitor the board and management (see Alchian and Demsetz (1972) and Berle and Means (1932)). Alternatively, we may answer, in terms of equation [3], that it is the C (the provider of just one production factor (capital)) that theoretically owns the residual returns and (therefore) bears the ultimate risk of the total of activities of the economy.

Based on the theoretical work on transaction costs of Coase (1937) and the theory of the firm by Williamson (1979) and Williamson (1985), which provides the crucial background in the concept the sustainable market economy, is the notion that the transaction costs (in this case the cost assignment of ownership) should be as low as possible. Then, according to Hansmann (1996), the optimal owner of the residual risk is **dependent on the character of the market**. The theoretically optimal position is to assign ownership to that class of patrons for whom the problems of market contracting (that is, the costs of market imperfections) are most severe (p. 21). That policy should provide a natural motivation for that specific group of patrons to organise the production process in the most cost-efficient way. In other words, it is not a law of nature that shareholders, being the representatives of the production factor capital, are always optimally suited to take the ultimate residual risk and return position of the company. Chapter 4, which presents the stakeholder equity model, elaborates extensively on this topic. For our purposes now, I propose the following hypothesis: there is no *a priori* reason to assume that it is always the shareholder that fits the role of residual risk and return position best. Historically, circumstances in the first part of the 20th century, when capital was a scarce resource, suggest that the shareholders were optimally suited to own the residual risk. However, capital has become less scarce in modern financial markets, which reduces the necessity of ownership exclusively by the providers of capital. Today, the global economy consists of a complex network of different stakeholders that all have their own (im-

plicit or explicit) claim on the company resources. A more complete discussion of the stakeholder equity model takes place in chapter 4.

A sustainable market economy in a stylised model with one firm and many stakeholders can be can be defined as follows:

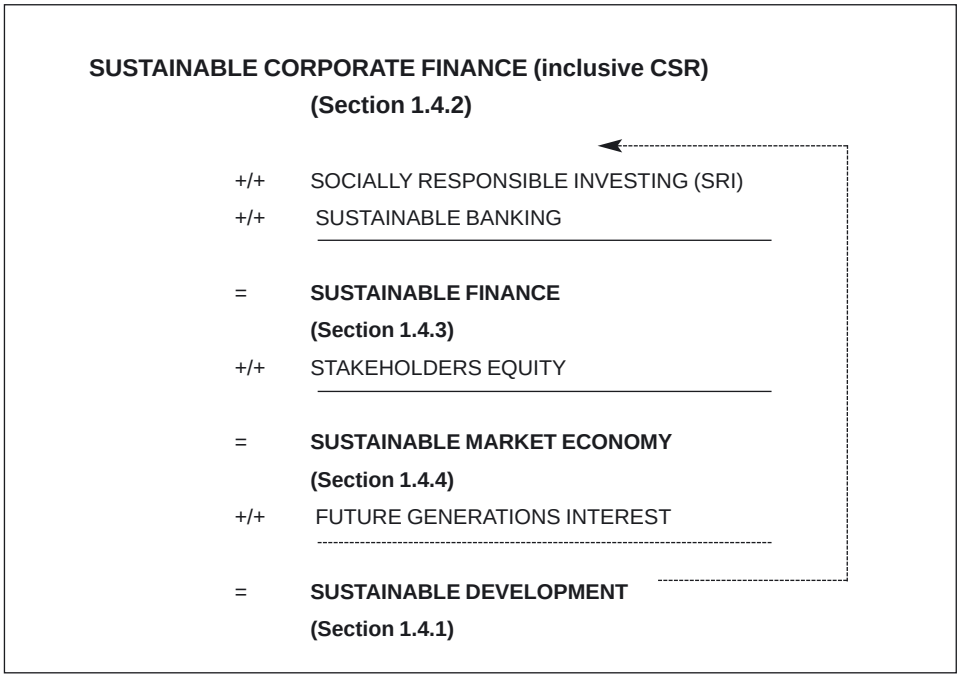
> *a market economy in which all major stakeholders hold proportional financial responsibility for the residual risk of the company.*

In this definition, a sustainable market economy is dominated by companies in which a substantial amount of the emitted equity of each of the companies (at least 51%) is sold to the major stakeholders of each company. The percentage of stocks held by internal stakeholders is called *stakeholders equity* (SE). In that model, the legal ownership of a company's residual profits (including the potential losses) is no longer only for 'pure' capital providers; legal ownership is shared also by shareholders that provide capital but also have other stakes in the company (e.g. employees, environmental NGOs or suppliers). A broader group of stakeholders thus has greater interest in the firm and more responsibility – beyond their pure stakeholder interest. The traditional shareholders, on the other hand, still get the same reward for investments (although the short-term higher expected return as a result of highly speculative projects may diminish), but lose power because ownership is now dispersed among the relevant stakeholders of the company.

In the sustainable market economy, therefore, corporate governance needs to be changed in the sense that a majority (at least) of the emitted shares of the company is owned by the major stakeholders of the company, dependent on the magnitude of the stake of the relevant stakeholder in the turnover of the company. This is what is called *stakeholders equity* (SE). In regular agency theory, the alignment of interests by providing the management with options and shares as part of their remuneration package is a well-accepted tool to lower agency costs. Sustainable finance extends this model to all other stakeholders. In a sustainable financial system, agency relations cannot be restricted to shareholders and management alone. Other stakeholders have a similar financial claim on the company, dependent on the cash-flow involvement of the stakeholder.

Figure 1.3 now presents an overview of the different sustainability concepts as described above. It is important to note that the holistic concepts that are depicted are highly dependent on each other.

Figure 1.3 Summarising the sustainability concepts



In the figure above, the concept of sustainable development is positioned at the end of the aggregation. Nevertheless, it could just as well appear at the beginning. Sustainable development is a living concept, active in all levels of the terms portrayed.

1.5 The outline of the thesis

This study, entitled, *Finance as an instrument to a sustainable company*, consists of two parts. The first part (chapters 1 through 4) is entirely devoted to the 'exchange syntax' of sustainable finance. The exchange syntax refers to the terminology of all different sustainability concepts, their interconnections and the ethical values behind them. Traditional finance is used as a benchmark for describing new developments. The first four chapters are all devoted to developing the arguments and pursuing the case that since market circumstances are changing, we therefore need new approaches. Or, in terms of Currie (2005): there is a 'need for a new theory of economic reform'. She argued that the major reason for economic reform is the worldwide privatisation process and the inherent withdrawal of governments to effectuate social changes. Sustainable finance is one tool in that change process. Part one of this doctoral thesis presents the theoretical background for answering the central research question and the deduced

questions (numbers one and two) of the problem setting. Chapter 4 explores the stakeholder equity model, as a theoretical corporate governance application of the sustainable market economy that is developed in the first three chapters. The second part of this study (chapter 5-7), presents empirical examples of applications derived from the terminology developed in the first part. After the theoretical approach of part one, part two therefore focuses on empirical research to test whether the existing data on sustainability can be used to find a relationship between sustainability measures and expected financial returns. These chapters present examples and applications of instruments that contribute to a general sustainability process and answer the third deduced research question. Finally, chapter 8 brings all of the research questions together, answers the central research question explicitly and presents some reflections on sustainability in finance. Figure 1.4 reflects this structure graphically and presents an overview of the total structure of this study. The coming subsections first briefly summarise the chapters of this dissertation.

1.5.1 Ethics and the theory of the firm

Chapter 2 introduces ethics as an argument to criticise the shareholders paradigm. Finance's strong dependence on the neoclassical approach and on the concept of rational economic man has created obvious restrictions concerning realistic human behaviour that have led to the emergence of alternative theoretical concepts. Well-known examples are quasi-rational economics, institutional economics and behavioural finance. The traditional theory of the firm is too restrictive to incorporate other ethical values than the utilitarian approach into the financial framework. In this view, the company is considered to be a set of direct-investment projects that converts inputs into outputs. It is not a system of cooperating persons, but a contracting institute that produces cash flows. This typical neoclassical approach takes no account of social responsibility. It is justified by selecting the shareholders as the optimal stakeholders in order to reduce means *shareholders* agency costs. This line of argument denies an explicit relationship between social cohesion and operational efficiency.

The "finance and ethics" approach replaces the neoclassical paradigm with a broader economic view. Care for the environment and the (social) health of employees are necessarily juxtaposed with competition and profitability as priorities. Competition encourages operational efficiency, but at the same time it is too limited to function solely as an allocation mechanism. The problem with this type of approach is that it replaces the strictly quantifiable approach by a more qualitative one. It looks less structured than the modern mathematical approach used in financial theory. But, like the well-known "invisible hand" of Adam Smith, there could also be an "invisible morality" in the functioning of the market.

1.5.2 Sustainable corporate finance

Chapter 3 presents and illustrates the concept of sustainable corporate finance. A broader definition of what is called 'the firm' is used in order to connect sustainability with the finance literature. The concept of sustainable finance is compared to traditional and behavioural finance. Four criteria are used to analyse systematically the basic differences. First on the order is the theory of the firm: the definition of the firm is reconsidered by integrating behavioural aspects and by expanding financial analysis to three-dimensional goal setting. Second, a closer look is taken at the assumed behaviour of economic agents and its consequences for the applied methodology. The shareholders paradigm is discussed against the background of growing stakeholder importance. Finally, the fourth criterion deals with the different ethical framework and its implications for financial behaviour.

1.5.3 The stakeholder-equity model

Chapter 4 answers deduced question number 3 of the problem setting by providing theoretical arguments for a change from a shareholders approach in finance to a stakeholders approach. Over the past decades, the ideology of shareholder value has become entrenched as the basic principle of corporate governance among companies in the western economies. In the meantime, an impressive body of literature has emerged that argues that the interest in stakeholder approaches to strategic management is growing around the world (see e.g. Freeman (1984), Donaldson and Preston (1995) and Clarke (1998)), or that there are good conceptual reasons (e.g. Engelen (2002) that the concern with shareholder value should increase. Moreover, compelling social reasons can be identified to challenge the traditional shareholders paradigm (Margolis and Walsh (2003). This chapter extends the well-known risk/return concept of the finance literature from the shareholders to other stakeholders in the firm. A comparison of the expected payoff graphs per stakeholder reveals that the shareholder is not by definition the most efficient residual claimholder. Governance costs – as an element of total agency costs – increase if ownership is not assigned to that class of patrons for whom the problems of market contracting are most severe (Hansmann (1996)). In the modern company, the shareholder is the legal owner of residual claims. The chapter develops the argument that in sustainable financial markets it is not the shareholders alone that operate in the most severe market. More stakeholders are competing for that claim.

1.5.4 Corporate governance transparency

Chapter 5 empirically analyses the influence of corporate governance attributes such as board transparency, CEO monitoring policy and the percentage of freely traded shares of a company, on financial performance. A unique dataset of 580 companies from 21 different countries, as provided by the Triodos Bank in the Netherlands, is used to quantify relations between reported corporate governance attributes and financial perform-

ance. After a short cross-section analysis of the relation between the above-mentioned governance variables and the cost of capital, the chapter applies the Fama and French (1993) and Carhart (1997) methodology to measure the influence of 'good governance' on financial performance. Quintile top- and bottom portfolios are selected and compared financially. Controlling for size, risk, book-to-market value and a momentum factor, the analysis concludes that the top transparent companies statistically show significantly better financial performance compared to the less transparent companies. Also companies with a low free float of stocks perform financially better than companies with highly dispersed stock ownership. On the other hand, there is no evidence that a more intense CEO monitoring policy of a companies' board leads to better financial performance of the company.

This empirical study contributes to the problem setting as a prerequisite for the success of corporate governance changes. If markets are not informationally efficient, it is useless to try to attain strategic management changes in the modern market economy. Empirical results indicate that a transparent corporate governance structure matters financially.

1.5.5 Sustainability style of international companies

After the corporate governance application of chapter 5, chapter 6 applies the sustainability concept to a company's informational structure. This chapter implements a multi-attribute capital market approach by applying style analysis to a cross-sectional set of sustainability scores of internationally traded stocks. This enables CSR companies to proxy the relative costs of efforts directed toward a stakeholders approach. Using a dataset of 427 European and US companies quoted on the London Stock Exchange and NASDAQ, the study relates the financial performance of the firms to a multi-stakeholder sustainability profile. Specific portfolios of stocks are selected by nation and sector, and the factor scores of every portfolio are estimated by using the methodology of style analysis. Sustainability indicators and financial market data are implemented for six distinguished stakeholder groups: corporate governance, customers, the environment, contractors, employees and the community. Preliminary conclusions indicate that companies are more oriented toward community values such as preventing fraud and promoting charitable causes, whereas European companies aim more at corporate governance disclosure and customer quality. Further, employee sustainability is pursued assiduously only by the banking and telecom sectors, whereas 'media' and 'health' are predominantly community oriented. Although the results of this study are consistent with intuition, the lack of robustness in the dataset precludes statistically reliable conclusions. The applied methodology, however, does provide companies pursuing sustainable policies with a general indication of the sustainability style of their country or sector in relation to financial performance.

1.5.6 A framework for managing a portfolio of socially responsible investments [15]

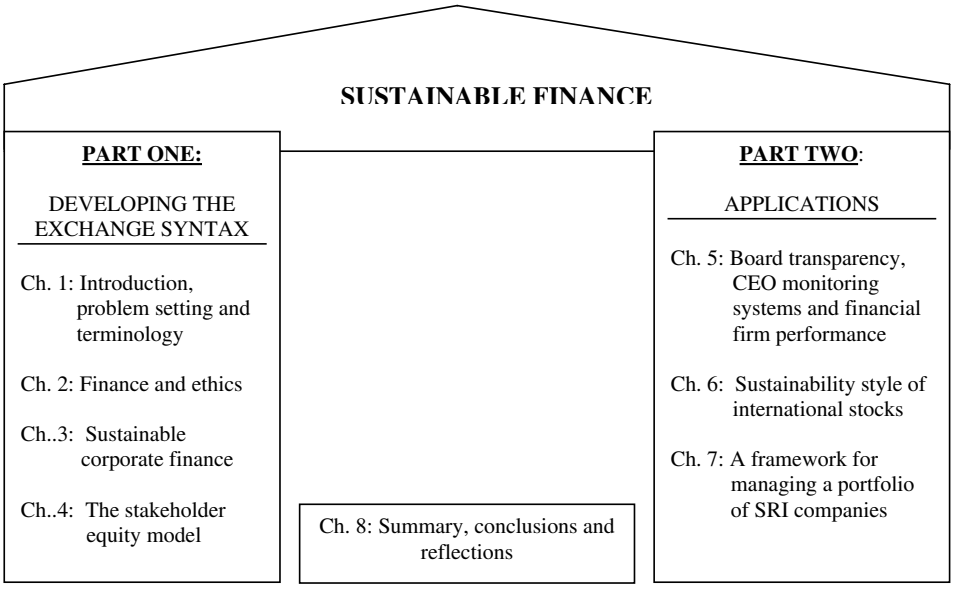
Chapter 7 presents and describes a framework for managing an investment portfolio in which the investment opportunities are portrayed as a set of attributes where part of this set is intended to capture the effects on society. Given the multi-attribute descriptions of the individual investment opportunities, the analysis shows how these attributes can be combined into portfolios with the same attributes at the portfolio level. It is also shown how a manager can systematically be supported in the choice between different portfolio profiles. Multi-criteria decision tools are used as part of the framework.

1.5.7 Summary and conclusions

Chapter 8 summarises, concludes and reflects on the new terminology as presented in the study. At the heart of this chapter are answers to the research questions of chapter 1. Each question will be addressed separately, and recommendations for further research will be presented, together with reflections on the role of sustainable finance. The structure of the entire study is summarised in Figure 1.4.

15 This chapter has been published before in Hallerbach, W., H. Ning, A. Soppe, and J. Spronk, 2004, A framework for managing a portfolio of socially responsible investments, European Journal of Operational Research 153, 517-529. I want to thank my co-authors for allowing me to use this paper in this thesis. All errors remain mine.

Figure 1.4 Structure of this study



Chapter 2 Finance and Ethics[16]

2.1 Introduction

Finance and ethics: contradiction or paradox? Despite the rapidly growing interest in business ethics, the development of finance and ethics as a topic of research is relatively slow. Ironically, the introduction of money into economic transactions seems to distance humans from the moral implications of economic trade. As a science, traditional financial theory reduces economic relations to the behaviour of "rational economic man." From that perspective, human behaviour can be represented by neo-classical utility functions where agents optimise their individual preferences. The Neumann & Morgenstein axioms (see e.g. Copeland and Weston (1988)) facilitate a set of strict assumptions in financial theory that enable a smooth quantitative approach wherein more is always better than less. At first sight, the resulting mathematical and econometric approach seems to be value free and morally neutral. When we take a closer look at the underlying ethical values, however, we can only conclude that the finance-scientific approach is as normative a choice as any other.

Many alternative approaches to human behaviour can be considered. Section 2.3 discusses some of them. One alternative approach is human behaviour as described by Aristotle. He was the first to analyse the influence of money and prices in the chain of the physical production process. He stated for example that for "a virtuous man," money could never be an end in itself, but rather a means to a higher end (Meikle (1995), p.96). Although this statement is approximately 2,350 years old, it may be as applicable to our world as to Aristotle's. Money and the role of financial institutions have been hotly debated throughout history (see Davies (1994)) The discussion on "Usury" in the late Middle Ages, in particular, beautifully reflects the natural connection between money and ethical values. Even today, religion maintains outspoken (social) ideas on how to cope with money.

16 This chapter draws heavily on: Soppe, A.B.M., 2002, Ethical theory of the firm, in L. Zsolnai, ed.: Ethics in the economy (Peter Lange, Bern). pp. 81-104.

Surveying the financial industry in the last three decades of the 20th century, we must realize that fundamental changes have taken place. To begin with, the "*communications revolution*" facilitated the finance sector in such a *globalising* way that its service-oriented culture was transformed into one characterized by leadership in the process of economic growth. Making money for the sake of making money has become an acceptable way of life. The investment industry, for example, used to be a gentlemen's business that primarily served its clients, based on high standards of honesty, integrity, care and diligence. In the profession nowadays, these entry barriers have disappeared and the key employees are creative, risk-taking, success-driven, analytical and intelligent people with a paucity of training in the common ethical values that once accompanied the profession (Caccese (1997)). There are company treasurers nowadays who sometimes act as if the capital should be more productive than the real economic activities on the asset side of the companies' balance sheet.

A second important aspect of the changing financial environment is the *securitisation process* of international financial markets. During the last decades of the former century, traditional bank lending instruments gradually acceded their primacy to market traded assets. This boosted the volume growth of international financial markets, and, just as importantly, increased the anonymous identity of the market participants. Closely related to this trend was the substantial rise in the trade of off-balance-sheet products or derivatives. The inherent volatility of underlying assets prices required an adequate set of financial instruments to manage the increasing financial exposure. This financial as well as cultural change influenced the increasing role of the international institutional investors and the necessary risk diversification and reinsurance processes.

A third important factor is the growing influence of the "*civil society*" with regard to the responsibility for social welfare. In recent decades, Europe in particular is characterized by sizable privatisation projects of industries that traditionally belonged to the domain of the public sector. The increase in private competition created a competitive advantage for the private sector over the public sector. The paramount question here is whether it was the financial market liberalization that encouraged this more politically engaged process or if the urge to national privatisation was driven by political liberalization and globalisation. The fact is that a growing number of companies do realize that their responsibilities extend beyond self-interest to include other stakeholders.

In this chapter we criticize the traditional neoclassical approach from an ethical perspective. The shareholders paradigm is especially admonished as being a purely normative choice favouring agents that primarily represent the interests of the production factor capital. This chapter begins with a short description of the existing *theories of the firm,* giving particular attention to the shareholders paradigm. Then we provide some

arguments for an integration of finance and ethics. In section 2.3 we introduce an ethical framework in order to benchmark the normative character of finance as a discipline. We use the well-known trilogy in philosophy of the teleological, the deontological and the virtue-ethical approach (see e.g. Baron, Pettit and M.Slote (1997)). In section 2.4 we present some alternative perspectives of finance and corporate governance. Section 2.5 summarizes the finance and ethics relationship in the modern market economy, and we conclude that finance in its current manifestation is a typical example of the ends-based and utilitarian approach that strives for economic rationalism. This approach focuses on the financial interest of the shareholder. If we choose to attain a more sustainable growth, we are compelled to make the case that a virtue-driven ethical approach is more suited to finance.

2.2 The shareholders paradigm1[17]

Shareholders differ from other constituencies of the firm by virtue of being residual risk-bearers and therefore residual claimholders. Where all other claimants of the firm have fixed contracts, the shareholders are held ultimately financially responsible for the performance of the firm. The crux of the shareholders wealth paradigm is that shareholders are considered optimally suited to maximize the wealth of the society through their natural ability to discipline management. In this major model, which is the foundation of Anglo-Saxon finance literature, corporate direct investment decisions are separated from the individual stockholders' preferences for consumption. The Hirshleifer[18] model that underpins financial markets theory, allows theoretically for the establishment of the separation of ownership and management in the larger firms. So we see that in fact shareholders own the corporation and demand that managers maximize their wealth by investing in all possible positive net present value (NPV) projects. However, agency theory describes and assumes that managers only act in their own interest. Therefore it is necessary that monitoring and bonding costs be effectuated in markets to discipline the manager. Because every manager is assumed to be selfish, the incentive for managers to act according to the shareholders' interest is subsequently based on the bonding and monitoring abilities of the shareholder. This is not always an easy job. An example in the Netherlands of the fact that corporate governance in practice is less straightforward as it is in theory is presented in *Box 2.1*.

17 See chapter 4 for an extension of the discussion on the shareholders paradigm.

18 This model builds on the separation theorem of Fisher, that demonstrates that utility maximizing and perfectly rational owners will agree on forcing the managers of the firms they own to pursue the profit-maximizing strategy. This theorem is also known as the unanimity principle because it unites the shareholders in agreeing on the profit maximization strategy. See Hirschleifer, J., 1970, Investment, interest and capital, (Prentice Hall, New York).

Box 2.1 ***The Dredgers War***

During the years 1998-2001 there was a heavy corporate governance battle between the shareholders and management of HBG (Hollandse Beton Groep) and its local competitors Boskalis and Heymans. HBG is an international construction company located in the Netherlands with a sales turnover of € 5.4 billion in 2000 and more than 20,000 employees worldwide. The conflict concerned an intended merger between the dredging activities of HBG and Boskalis. Based on cultural and economic arguments, the management of HBG preferred a joint venture with Ballast Nedam, another construction company in the Netherlands. In that choice their employees, who feared massive unemployment in other strategic options, supported the managements' choice. On the other hand there were the shareholders who preferred to accept a hostile tender offer as released by Boskalis and later on Heymans, another Dutch competitor. Because the takeover offer was substantially higher than the current share price at that time, it was the shareholders that went to court to force the management to accept the takeover-offer. After two independent inquiries of two different committees, the Dutch Court decided that the HBG management made the right choice and rejected the demands of the shareholders. In this very complicated public corporate governance fight, we could see that it was obviously hard to accept the shareholders' demands that were primarily based on their strict financial interest.

Boatright (1999) pp. 170-172 explicitly discusses the shareholders paradigm and states that the notion of shareholders being owners of the firm is dependent on the theory of the firm that underlies the model. He distinguishes among three different theories of the firm. First there is the above-mentioned *property rights model*, where the stockholder is the owner of the firm who chooses to do business in corporate form. Then there is the *social institution theory*, which holds that the right to incorporate is a privilege granted by the state, and therefore the "right to incorporate" inherently has a public aspect. Thirdly there is the *contractual theory*, in which the corporation is sanctioned by the state to serve the general welfare. This approach is derived from transaction cost economics (see e.g. Coase (1937)), Williamson (1975), Williamson (1979) and has been extended in a way such that organisational hierarchies are internalised in the economic process together with external (social) costs by use of implicit contracts (see e.g. Cornell and Shapiro (1987)), Donaldson and Dunfee (1999), Donaldson and Dunfee (2002), Kaptein and Wempe (2002) p. 208-217. Boatright (p. 171) states that in contrast to the property rights theory, the contractual right theory does not hold that the firm is the private property of the shareholders. Rather, shareholders - along with other investors, employees, and the like - each own assets that they make available to the state. Thus, the firm results from property rights and the right of contract of every corporate constituency *and not from those of the shareholder alone* [19].

19 Italics by AS.

In the transaction cost models the company is defined as a "nexus of contracts" (see for example Coase (1937), Alchian and Demsetz (1972) and Jensen and Meckling (1976). The problem, however, is that this does not automatically answer the question of who should be the owner of the residual risk. Boatright makes a case against the shareholder as the unique company owner and residual risk-taker. He argues that the shareholder can easily diversify his portfolio of stocks to eliminate idiosyncratic downside risk. The highly skilled employee on the other hand, who develops valuable firm-specific human capital, may possibly assume considerably more residual risk. The labour market is far less efficient and flexible compared to the financial markets. Moreover there is the interest of the environment to consider as a stakeholder. As long as there are no private institutions acting on behalf of the environment, government or private organizations must act as its representatives.

The neoclassical finance approach is rational and intuitively attractive in the sense that it enhances operational efficiency. The existence (and the size) of the company, in that view, is explained by the fact that transaction costs inside the company are lower than outside the company. In neoclassical terms: the marginal transaction costs of the company are zero. Then, neoclassical economists argue, because shareholders hold the claims on the residual return of the company they are optimally suited to monitor the board. As a result, the efficiency of the capital markets[20] will also discipline the real economic markets through the monitoring process of the principles of the company (the shareholders). However, if shareholders monitor the board of a company, and the board monitors the others stakeholders of the company through managing the fixed contracts, this normative choice represents the crux of the power relations in the market economy. This so-called shareholders paradigm is generally accepted and hardly discussed in financial literature. In chapter 4, the stakeholder equity model, we will elaborate extensively on this topic.

A crucial assumption in the neoclassical approach is the common belief that people are motivated by their own material well-being when taking economic actions. This is called the *Homo Oeconomicus* image that depicts economic agents as rational and self-interest maximizing beings. There is a lot of research (e.g. Zsolnai (2002), pp. 40-58 and Jolls, Sunstein and Thaler (2000)) that indicates that people have rather different motivations which may determine their economic choices[21]. So, in other words, reducing the behaviour of financial agents to acts that conform to homogeneous expectations results in nothing more than describing a unique case of an entire range of alternatives on human behaviour in financial transactions. One problem with the approach, as as-

20 In this case with the efficiency we mean informational-, mean-variance- and operational efficiency.

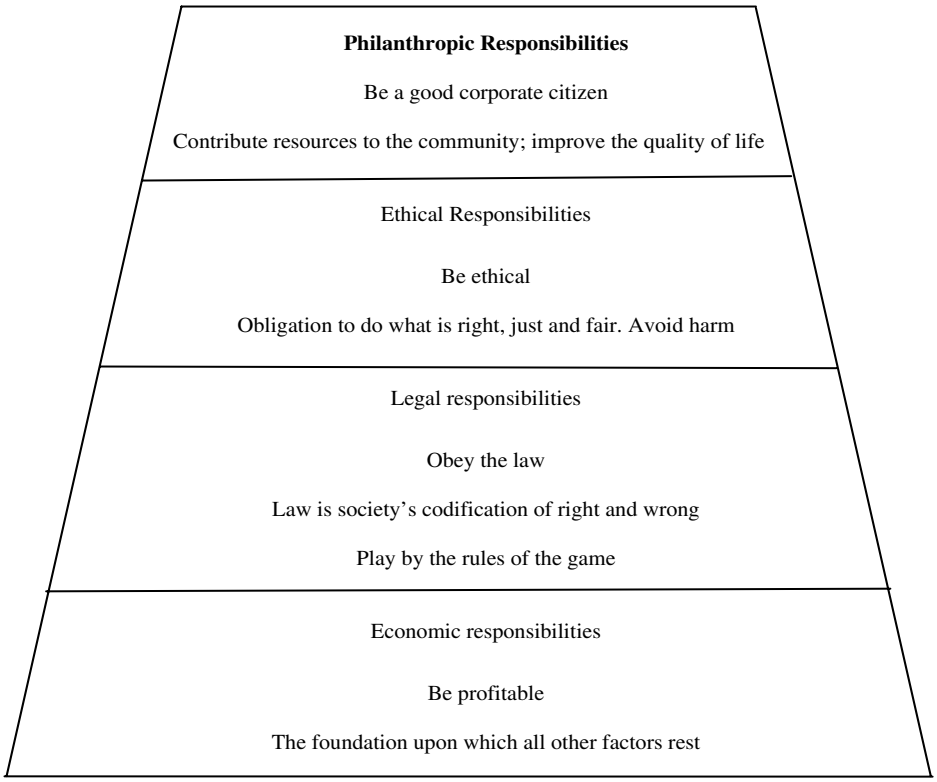
21 For example people consider the interest of others they know well, people are willing to sacrifice their own material well-being to help those who are kind to them, people are interested in their own reputation, etc.

sumed by the homogeneous expectations, is that it encourages the belief that finance is a sheer positive science where rational behaviour is the key to personal success. It is important to realize that the above generally accepted attitude to finance and financial theory is based on normative assumptions that enable positivistic theories. The necessity of emphasizing the role of assumptions on human behaviour in positivistic finance research, is exactly the element where ethics come in.

The seminal criticisms of Sen (1993), (1987) and Fuckuyama (1995) are in fact cultural criticisms based on the financial paradigms. Apart from behavioural finance (see chapter 3), there are also many new developments in the finance literature itself. For example, Bovenberg and Klundert (1999) state that neoclassical economics in general gives scant attention to moral values and bounded rationality. They fear that such a restricted economic scope encourages a so-called 'economizing of the society'. In the coming sections, numerous references will be made to literature that basically boils down to criticism of the fundamental Anglo-Saxon shareholders paradigm, and attempts are made to replace it with what is more or less a stakeholders' approach to finance.

So what do we mean by the combination of finance and ethics as stated in the beginning of this chapter? Let us start with an instructive model coming from the business ethics literature. Carroll (1996) categorizes the activities of corporations in terms of four types of responsibilities (see Figure 2.1). The economic and the legal responsibilities of companies are hardly questioned by anyone in the market economy. The discussion starts with the ethical and the philanthropic responsibilities. Introducing these elements into the economic terminology implies accepting moral values explicitly in economic actions. This is the crucial difference between the neoclassical approach based on shareholders' value and a broader concept of finance.

Figure 2.1 The Pyramid of Corporate Social Responsibilities



Source: Carrol (1996), p. 39.

Because finance is dominated by legal contracts, and because contracts always imply explicit economic agents representing specific contractual institutions, modelling these relationships necessarily restricts itself to the parties involved. In other words, framing human behaviour into financial trade is akin to stepping into a suit of armour. At the very moment human actions are confirmed by contractual relations, individual freedom is lost and the moral implications change drastically. An ethical approach to finance in this context is defined as a set of thought constructions in which financial transactions consider not only the economic consequences of the subjects in that transaction, but also the moral and the (im)material aspects of other stakeholders in the economy at hand and that of future generations. Or, formulated in terms of the CSR pyramid of Carroll in Figure 2.1, financial institutes do not just have economic and legal responsibilities, but also the ethical and philanthropic responsibilities indigenous to these institutes as representatives of a sustainable financial process.

2.3 An ethical framework

For reasons of systemic analysis of economic actions, we use an ethical framework that is well-established in the more recent business ethics literature. In accordance with Baron, Pettit and Slote (1997), Donaldson and Werhane (1996), Boatright (1999), Koslowski (1995) and many others, we use the classical trichotomy of deontological ethics, teleological ethics (consequentialism) and virtue ethics (human nature ethics). We start with the virtue ethics and Aristotle as its most inspiring representative. Then the deontological framework follows, basically inspired by Kant and Locke. Next is the teleological ethics, represented by Bentham and Mill.

2.3.1 Virtue ethics

Virtue ethics is described by Slote (in Baron et al 1997, p. 177) as all ethics which are not based on moral laws, rules and or principles. The focus is on the virtuous individual and on the inner traits, dispositions and motives that qualify him or her as being considered virtuous. Aristotle was one of the first philosophers emphasizing the importance of practical reasoning. For the scholars in the Middle Ages it created a theoretical framework on which to build their Christian perspective on human conduct.

Closely related to economics and finance is the Aristotelian discussion on the notion that two products of different dimension must be comparable "in a way"" (see Meikle (1995), p. 12). This problem of commensurability is introduced immediately when goods have to be exchanged. Aristotle divides what we call "economic value" into two parts: *use value* and *exchange value*. It is important to note that at the very moment that use value becomes subordinate to exchange value for the pricing of goods or labour, ethics and/or virtues become less relevant in the transaction. If we include money in the transaction, by paying the exchange value, the alienation of the idea that we are also exchanging use values is strengthened. In the neoclassical paradigm of the (financial) market economy, using exchange values as prices, the process of making money has become a goal in itself. This is contrary to the original Aristotelian idea on the neutral use of money. Money can be used as a means but never as an end, because acquiring money doesn't fit into Aristotle's model of the "perfect life."

A recent interpretation of virtue ethics, as applied to business and finance, is provided by Solomon (1996). He describes the Aristotelian approach to virtue ethics by using six dimensions. First there is the *community* and the idea that the self-interest of members of a community is for the most part identical to the larger interest of the group. Secondly, there is *excellence.* It is not enough to do "no wrong" (as in Kantianism); something additional called excellence is needed. Thirdly, he mentions *role identity.* All ethics is contextual, and one of the problems with all of those grand theories is that they try to tran-

scend contexts and end up with vacuity. The fourth element is *integrity.* It is judged as the linchpin of all virtues. *Good Judgment*, the fifth element, gives careful consideration to the particular circumstances of the persons involved. Finally Solomon conveys the concept of *holism*. He criticizes the tunnel vision of ordinary business life, which is buttressed by the overly narrow business curriculum and the daily rhetoric of the corporate community. According to Solomon, a broader concept of economic acting is needed and virtues are a shorthand way of summarizing the ideals that define a "good character."

2.3.2 Deontological ethics

The most prominent deontological (derived from *deon*, the Greek word for duty) theory is based on Kant's ethical theory outlined in his Fundamental Principles of the Metaphysics of Morals (1785). In deontological ethics, duty rather than virtue is the fundamental moral category. Kant characterized moral rules as imperatives that express what human beings ought to do either hypothetically or categorically. An essential feature of categorical imperatives is the principle of universalizability. This implies that if someone says that an act is right for one person, he is committed to the idea that it is right for all other persons in similar situations. So always ask yourself the question: What if everyone acted as I do? If the act is acceptable for one, it might be acceptable for all. Another important characteristic (Boatright (1999), p. 65-71) of Kantian ethics is the concentration on human rights and respect for other persons. Kant defined a right as "a moral capacity to bind others." Rights are divided by Kant into *innate*, those that belong to everyone and are "by nature" independent of any juridical act; and *acquired*, which depend on some human convention or juridical act. According to Kant there is only one fundamental innate right and that is the right to be free from the will of others insofar as this is compatible with a similar freedom for all.

The difference between duties and virtues is a complicated and subtle one. Kant wonders whether ethics (which is similar to the science of virtues) and the legal system are based on metaphysical thinking. His answer is a clear yes (Kant (1797), p. 35 introduction). In the "Metaphysics of Morals" (1797), Kant begins with an extensive description of the legal system. This is needed because in the second part *(Tugendlehre)* he develops his "elementary ethical theory" (*Ethische Elementarlehre*) in terms of duties. Kant considers virtues as qualities of persons (or institutions), enabling the fulfilment of duties, as based on the legal system of a country. The term duty is necessary because of the existing legal control of discretion. It's a moral imperative that forces rational human beings, who are a part of Nature, into the armour of duties. According to Kant this is all based on the moral freedom of humans, and we are discussing "ethical duties" that differ from legal duties. Kant distinguishes between "duties towards oneself and duties towards others." Well-known examples of a duty to oneself are described in Kant's opin-

ions on suicide and on lying or "truth telling" (Donaldson and Werhane (1996), p.131-136). The exchange of sentiments is perceived by Kant as the fulcrum of social intercourse and truth telling must be the guiding principle herein. The first social duty is to love others (Kant (1797), p. 448). Love is not meant to be a feeling in this context, but a categorical imperative for well doing and beneficence. Other examples of duties against others are wasting talents and simply helping others. In Menzer (1924) a wide range of Kant's "ought and must" is described extensively in lots of ethically sensible subjects.

2.3.3 Teleological ethics

Teleological ethics (telos = goal) is a theory stating that the consequences of a moral act determine the act's worth and correctness. It is a perception of ethics wherein the rightness or wrongness of an act is judged with reference to some well defined end result that is regarded as good and desirable (as opposed to judging on the basis of the actor[']s intention[s], motive[s] or moral principle[s]). In essence, teleological ethics do not deny or undervalue the importance and existence of either the virtue or the deontological approaches to ethics. Despite severe criticism, Pettit (in Baron, Pettit and M.Slote (1997)) claims that the consequentialist answer to questions on rightness are still tenable because of additional important aspects. He states: "The fundamental determinants of rightness are the values on the basis of which the property is predicated of options, and that these values, if they are to satisfy the relevant version of the universalizability test, must ultimately be all neutral in character. What ultimately makes any option the right one for an agent to take or to have taken, as consequentialists say, is the fact that that option best promotes the neutral values that are relevant in the situation on hand" (see Barron, Pettit and M.Slote (1997) p.151).

From our viewpoint, the main strength of the teleological approach is the process of reflection upon all optional consequences of an act. This thinking process in itself gives birth to the creation of neutral values and a more objective approach to ethics. Cynically enough, this very same strength is subject to the major objections of the consequentialists' opponents. As Pettit discusses extensively (Baron et. al. [1997], p.151-169), agents acting along consequentialists maxims often require decisions that are either intuitively wrong or based on intuitively wrong arguments. In essence this vitalizes the discussion on ethical approaches.

Figure 2.2 summarizes the ethical framework presented in the former sections. For example, in the teleological approach we see that the motive of human actions consists in the consequences of acts rather than (legal) duties and inner freedom which are found in the deontological and the virtue ethical approaches respectively. Further, we note that human decisions are based on rationality in the teleological concept where wealth distribution is theoretically obtained by optimising utility functions. The moral responsi-

bility for the aggregate material wealth is a collective problem because *everybody* is assumed to behave as rational. In the virtue ethical approach, on the other hand, the moral responsibility is purely individual because the economic agents voluntarily act the way they do.

Figure 2.2 Stylised summary of an ethical framework.

	1) motive of human acting	2) primary human decision mechanism	3) instrument for wealth distribution	4) primary moral responsibility
VIRTUES *Voluntary goodness*	Inner freedom	Intuition/ metaphysical	Community thinking	Individual
DUTIES *Enforced goodness*	Duties	Social willpower	Legal supervision	Individual and collective
TELOS *Rational goodness*	Consequences/ goals	Rationality	Utility functions	Collective

In section 2.2, it was argued that neoclassical finance theory was based on rational economic man and the utilitarian approach of human behaviour. Without any intention to be complete, the above schedule shows that from an ethical perspective, many more approaches of human behaviour are possible. In the coming section, some examples as presented in financial literature are discussed.

2.4 Alternative approaches

The question at hand is still why the shareholder carries the residual risk. In section 2.2 it was Boatright who argued that assuming the shareholder solves the agency costs problem best is based on fuzzy logic. Control rights in themselves are varied and diverse. Restricting the agency- and control-relations to shareholder/manager and shareholder/bondholder relationships (see Jensen and Meckling (1976), is a far too rigorous assumption of relevant corporate behaviour. Especially outside the finance discipline there is a lot of criticism on the points of departure of the property rights theory and its inherent importance to the agency theory (see for example Bouckaert (1994), and Bowie and Freeman (1992). But also within the limits of the financial theory itself, more and more alternative approaches in finance are introduced.

In the following sections we focus on finance literature that criticizes the shareholders paradigm. First we briefly mention the behavioural approach, where the model e.g. distinguishes between implicit and explicit claims. In 2.4.2 we briefly describe a relationship between finance and ethics through the efficiency/fairness frontier as introduced by Shefrin and Statman (1993). Then, in section 2.4.3, we take once again a brief look at the concept of social responsibility as an important alternative paradigm in the business ethics literature. Section 2.4.4 deals with the "post-modern approach" of the firm as introduced by Dobson (1999). And finally, in section 2.4.5 we reconsider the opening question of this chapter, finance & ethics: contradiction or paradox.

2.4.1 Behavioural approach

The first refinements of the neoclassical approach, as applied in early financial models, were based on the behavioural theory of the firm. In this approach the managers are perceived as human beings who are incapable of behaving completely rationally and have all sorts of interests and motives aside from their formal organizational ones and their narrow self-interest. They can only partially achieve the best interest of their stockholders because they operate from a position of "bounded rationality" (see Simon (1982) rather than complete rationality. Cornell and Shapiro (1987) emphasize the distinction between explicit contractual claims like wage contracts and product warranties on one side and implicit claims, such as the promise of continuing service to customers and job security of employees, on the other. They define the distinguishing feature of implicit claims as: being "too nebulous and state contingent to reduce to writing at a reasonable cost.... For this reason implicit claims have little legal standing" (Cornell and Shapiro (1987) p.6). They stress that as long as only explicit claims are considered, stakeholders will not play an important role in the financial policy of the company because their explicit claims are generally senior to those of stockholders and bondholders.

Cornell and Shapiro developed a so-called extended balance sheet, on which the "net organizational capital" was added on the asset side and "organizational liabilities" on the liability side. The organizational capital (OC) is defined as "the current market value of all future implicit claims the firm expects to sell" and the organizational liabilities (OL) equal the "expected costs, from the firms standpoint,... honouring both current and future implicit claims" (Cornell and Shapiro (1987), p. 8). It may be clear that it is very difficult to value both the organizational assets and liabilities. The value of the implicit claims is dependent on the character of the company, the product market involved and the nature of its stakeholders. In other words, the value depends on the relevant perception of cultural and ethical values of the society at hand. Cornell and Shapiro predicted that firms expecting to provide high payoffs on implicit claims would attempt to distinguish themselves *ex ante*. This could be done through an appropriate dividend payout rate or financial structure.

2.4.2 Efficiency and fairness

Shefrin and Statman (1993) introduced the efficiency/fairness frontier. Starting from a financial case of insider trade, they argue that there is a permanent tug-of-war between fairness and efficiency. The political policy makers responsible for the legislative process in a country will operate as if they have utility functions that depend on both efficiency and fairness. Shefrin and Statman (1993, p. 23) contend that policy makers construct an efficiency/fairness framework in much the same way portfolio managers construct a mean/variance framework. Some combinations of efficiency and fairness dominate other combinations. The efficiency/fairness frontier is composed of combinations that are not dominated by any other. On the fairness axis, any configuration of regulations can be described as a point in the multidimensional efficiency/fairness space. A regulation is on the frontier unless another regulation improves both fairness and efficiency. This concept of the efficiency/fairness frontier is a beautiful example of integrating a mere finance concept with the much broader political process of financial legislation. Integrating fairness in the mean variance framework can be interpreted as another attack on the one-dimensional shareholder wealth (SHW) paradigm.

2.4.3 Social responsibility

Social responsibility is a stakeholders' approach wherein the mission statement of the firm is extended. Where classical firms define profits as their primary goal, socially responsible firms consider profits only as a necessary condition. In the latter approach profits are no more and no less important than a healthy environment and a sustainable employee policy. Examples of classical opponents of social responsibility are Modigliani and Miller (1958), (1963), Friedman (1970) and Jensen and Meckling (1976). Their strictly neoclassical approach is firmly based on the shareholder wealth model (SWM) as described in former sections. Especially famous is the Friedman (1970) article entitled: "The social responsibility of business is to increase its profits." There he makes the case that firms have to make economic choices based on operational efficiency exclusively. All social responsibility is deemed a government concern and is therefore irrelevant in the domain of business decisions. In the 1970s it was an understandable position, but in today's world, where the deregulation of government tasks and the development of the civil society are routine, it is more difficult to accept that opinion.

In academic literature there is a huge debate on the question of whether socially responsible behaviour on the part of corporations increases or decreases the long-run profits of the firm (see among others Pava and Kraus (1996), Hamilton (1993), McGuire, Sundgren and Schneeweis (1988). For the time being, only empirical results may answer the question. But one thing seems clear: the interest of the shareholder is not the same as (and may not even be congruent to) the interest of the firm. (See *Box 2.2*)

Box 2.2 ***Sustainable development***

In the final decade of the last century we saw the emergence of some alternative approaches of the shareholders paradigm in practice. European and US research agencies started to screen companies on their social and environmental performance in order to measure their degree of social sustainability. Corporate sustainability can be defined as a business approach to create long-term shareholder value by embracing opportunities and management risks deriving from economic, environmental and social developments. This approach is becoming increasingly popular in both the United States and Europe. To measure the performance of the companies subject to the criteria of the research agencies, beginning in December of 1993 the New York Stock Exchange has published the so-called Dow Jones Sustainability Group Index (*DJSGI*). This first global sustainability index tracks the performance of the top 10% of the world's leading sustainability companies. It is fully integrated with the Dow Jones Global index family and is diversified both by geography and by lines of business. Additionally they deliver specialized indexes ex alcohol, ex tobacco, ex gambling and if requested customer customized. This allows for all kinds of individual investing styles. Examples of major companies in the index are Proctor&Gamble Co., Bayerische Motoren Werke AG and Credit Suisse Group. In London a similar index started more recently under the name *FTSE4Good*. In close cooperation with UNICEF the index provides the first standardized benchmark for socially responsible investing in the UK. In the meantime most European countries publish similar indices. As a result, green and social investment funds are becoming a regular appearance in the financial pages of the newspapers.

2.4.4 Virtue ethics and finance

The most recent concept could be called the "post modern approach" to business and finance. Dobson (1999) brings together two articles. The first is John Hasnas's article: "The Normative Theories of Business Ethics: A Guide for the Perplexed", which invokes the shareholder's model as a valid normative theory of business ethics (Hasnas 1998). The second article is Thomas W. Dunfee's: "The Market Place of Morality: Small Steps Toward a Theory of Moral Choice." In that article Dunfee (1998), p. 142) suggests, "MOM (market place of morality) could provide a unifying framework integrating moral preferences, reasoning, behaviours and organizational context with broader political and economic concepts." Dobson (1999) concludes that both articles imply that the accepted financial-economic view of the firm is very well able to accommodate ethics. He underlines that the postmodern approach emphasizes business as a type of aesthetic activity, rather than business as a strict science. Dobson advocates virtue ethics and derivatives thereof such as "corporate soul craft" Johnson (1997) and "craftsmanship ethics" (Klein (1998)).

In the Netherlands the Aristotelian approach is firmly supported by Staveren (1999) in her dissertation: Caring for Economics, An Aristotelian Perspective. The shortcomings

of "Rational Economic Man" are extensively described and the case is made that in order to provide a meaningful explanation of economic behaviour, four moral capabilities (Commitment, Emotion, Deliberation and Interaction) have to be added to economic modelling. Without explicitly mentioning the post-modern approach, van Staveren paves the same road to reintegrate moral values into economic theory.

2.4.5 Finance and ethics again

Let us return to the opening question of this chapter: finance & ethics, contradiction or paradox? Basically the question boils down to the choice on the relevant "theory of the firm" and the assumed assumptions on human behaviour. On the one hand we can define the firm in technical (neoclassical) terms as a "set of investments projects" that generates cash flow. On the other hand we can see the firm as a cooperation of human agents satisfying both economic and social needs. The transaction cost approach, which considers the company as a "nexus of contracts", is somewhere in between, but in all cases a normative choice must be made on how to cope with the implicit contracts. From that perspective economic (financial) incentives are necessary to motivate agents who are both selfish and cooperative. So morality implicitly exists, but under the neoclassical finance rationale economic behaviour is treated as an exogenous (strict utilitarian) variable and therefore value neutral from the economic perspective. The alternative approaches, as presented in the sections 2.4.1 until 2.4.5, all assume bounded rationality and include a more principle based ethical framework. In the alternative economic concepts, both virtue ethical and duty ethical relations gain importance in relation to the strict consequential ethical framework of neoclassical economy.

The normative acceptance of other ethical frameworks (e.g. virtue ethics or duty ethics) beside utilitarianism as crucial condition for financial theory, challenges the neoclassical finance paradigm to broaden the economic view. Care for the environment and the (social) health of employees could possibly be juxtaposed with competition and profitability as organisational priorities. Competition encourages operational efficiency, but at the same time it is too limited to function solely as an allocation mechanism. The problem with a broader ethical framework is that it reduces the strictly quantifiable approach of neoclassical economics to a more qualitative one. It looks less structured than the modern mathematical approach as used in financial theory. But, like the well-known "invisible hand" of Adam Smith, there could also be an "invisible morality" in the functioning of the market.

2.5 Conclusion

Today's capital market models are ruled by strict quantitative trade-offs between ex-

pected return and risk. The underlying ethical framework is teleological, or more specific: strictly utilitarian. For example, in the Capital Asset Pricing Model, the theoretical equilibrium in the capital market is found at the point of contact between a convex utility function with a linear capital market budget line. The utility function represents the mean variance expected return and risk of shareholders alone. The normative choice of the property rights model as the optimal "theory of the firm" basically boils down to the neoclassical shareholders paradigm, justified by considering the shareholders as the optimal stakeholder to reduce agency cost. Reconsidering the utilitarian approach to human behaviour as the most relevant attitude in today's economy, and emphasizing the role of principle based ethics like virtue ethics and duty ethics, also reopens the question on the optimal holder of the residual risk in the company.

In the next chapter, it will be argued that a sustainable approach in finance departs from more cooperation human behaviour of economic agents that are necessarily committed to economic transactions in order to satisfy their needs. Accepting the moral capabilities of every human agent and the importance of ethics as a guiding line in human (financial) behaviour, financial managers are free to apply the *virtues* - the *duty* or the *goal* concepts of morality to motivate their actions. Because, as presented in Figure 2.2, the virtue concept is the only choice where a pure individual responsibility is assumed[22], this approach opens the possibility of improving the moral character of financial behaviour more easily in sustainable firms. Both the duty-ethical and the utilitarian approach make individual decision makers dependent on decisions of others. We conclude that from the virtue ethical perspective finance & ethics is a paradox that can be solved by financial managers with an open eye to social consequences and individual responsibility.

22 The duty ethical approach is based on both an individual and a collective moral responsibility, whereas the utilitarian approach analyses primarily collective moral responsibilities.

Chapter 3 Sustainable Corporate Finance[23]

Sustainability as a phenomenon is rapidly entering the economic and the financial literature. Initially, the concept was launched in the environmental interpretation during United Nations conferences[24] in the seventies and eighties. Following on chapter 1, this chapter treats sustainable corporate finance (SCF) as a multi-attribute approach in which financial, social and environmental elements are interrelated and integrated. The key concept of sustainability is that an explicit connection should be made between present and future generations. Because of its discounting capacity, the character of finance is specifically suited to store present and future developments. A major problem, however, is the relevance of the assumptions on the behaviour of economic agents. Whereas capital market theories can be analysed as positive theories based on strictly rational human behaviour, financial management cannot be value-free because of the consequences of the choices of economic agents. This chapter extensively discusses the new concept of sustainable corporate finance, benchmarked to the existing concepts of traditional finance and behavioural finance.

Sustainability is a well-established concept in the discipline of environmental economics. This chapter's contribution is to pinpoint sustainability to the corporate finance and business ethics literature. By comparing the concept of sustainable corporate finance to traditional and behavioural finance, we systematically analyse basic differences by means of four criteria. A major goal of this chapter is to reconsider the underlying assumptions of financial theory against the background of sustainability. The chapter concludes that finance as a discipline requires a multifaceted approach instead of the present one-dimensional risk and return focus.

Section 3.2 first deals with the relevance of sustainability in financial theory. Next, the applied

23 This chapter is published before in Soppe, A.B.M., 2004, Sustainable corporate finance, Journal of Business Ethics 53, 213-224.

24 See the 1972 Declaration of the UN Conference on the Human Environment in Stockholm, Preamble and principle 13. Sustainable development, is defined later on in 1980, in the world conservation strategy of the International Union for the conservation of Nature and Natural Resources (IUNC), and in 1987, in Our Common Future of the World Commission on Environment and Development WCED).

methodology is introduced by a short overview of the distinguished theoretical schools in financial theory. Four criteria are then presented in order to describe the concept of sustainable corporate finance. All of these elements are subsequently discussed in separate sections. Section 3.3 deals with the theoretical background of the firm, and stresses the normative character of (sustainable) finance as a discipline. Section 3.4 briefly accentuates the difference between selfish and co-operative behaviour of our virtual economic agents. Section 3.5 explores the question of who is the optimal residual risk taker in the company, and section 3.6 emphasises the ethical framework of the three distinguished perspectives. Section 3.7 concludes with comments on the approach of sustainable corporate finance as a discipline.

3.1 Sustainable corporate finance, its criteria and the methodology applied

The second half of the 20th century can be characterized by and large as a period of strong economic growth. After a recession in the mid-seventies and a (relatively small) stock market crash in 1987, a strong bull market followed until March 2000. With the collapse of the Internet hype in the subsequent period, we entered a serious bear market (or a time-spread stock market crash[25]) with numerous reported (more or less serious) fraud cases[26]. Under such circumstances, it is hardly unexpected that concepts such as sustainability, social responsibility and business ethics have drawn much attention.

The foundations of all of these events, however, were already laid already long before the major fraud cases erupted. The best-known general definition of sustainable growth, for example, is the one given by the World Commission on Environment and Development (WCED) in *Our Common Future* (1987): "Sustainable development is a development that meets the needs of the present without compromising the ability of future generations to meet their own needs". Applying this sustainability concept to finance as a discipline, we may note two aspects that emphasise the relevance of this study. First, there is the storage function of money and capital, which implies that finance is very well suited to realise (or not to realise) 'future generations' needs'. Pension fund policy (defensively or aggressively?) is a major example of this aspect. Secondly, if financial processes are assumed to reflect underlying real economic processes, rather than a goal in itself, it is important to stress a financial policy aimed at integrity and trust in the longer run. Although it is understandable that in the recession of a competitive economy accounting rules are easily stretched in order to gain time for future policy measures, financial short-termism will be proven unsustainable sooner or later. In the long

25 In the period from March 2000 until March 2003, the US and European stock markets dropped on average approximately by 40 and 60% respectively!
26 E.g. Enron, WorldCom and Ahold.

run, sound accounting discipline and full disclosure of relevant information of the company are basic requirements of the real economic process.

In order to typify the new sustainable finance concept, this study applies four criteria, and benchmarks these to a traditional and behavioural approach of finance. First, we refer to the 'theory of the firm' in order to define the identity and the goal(s) of a company (criterion 1). Then, we take a closer look at the assumed human nature of economic actors (criterion 2), which has consequences for the ownership paradigm and the methodological approach of finance as a discipline (criterion 3). Finally, we analyse the ethical framework of the company to exemplify the renewed points of departure from a business ethical perspective (criterion 4). Table 1 summarises the criteria.

Figure 3.1: The criteria describing Sustainable Corporate Finance

The criteria distinguished are:
1) Theory of the firm/ goal variables;
2) Human nature of economic actors;
3) Ownership paradigm;
4) Ethical framework.

The following sections (3.3 to 3.6) extensively discuss each of the criteria and benchmark the SCF concept against the background of two distinguished general schools in finance: traditional finance and behavioural finance. Before proceeding, we will elaborate a little on these schools by recalling the highlights in their developments.

In the first part of the 20th century, the school of traditional finance utilised primarily a descriptive methodology. This period was characterised by a strong emphasis on accounting information. Ratio-analysis became well established as the theoretical background for securities analysis. Important representatives of that period are Berle and Means (1932), and the 'Investment Bibles' of Graham and Dodd (1934) and many updated editions later on, e.g.1940, 1951). In the second part of the century, financial theory began to lean heavily on neoclassical economic theory. In that period, financial theory evolved rapidly by means of positive mean-variance equilibrium models such as the Capital Asset Pricing Model (CAPM) of Markowitz (1952), Markowitz (1959), Sharpe (1964) and Lintner (1965), and the Arbitrage Pricing Theory (APT) of Ross (1976). The inherent risk/return paradigm dominated financial theory for many decades. Using the Efficient Market Hypothesis (EMH) of Fama (1970), Agency Theory (Jensen and Meckling (1976) and the Option Pricing Model (OPM) of Black and Scholes (1973), tra-

ditional finance built a strong theoretical foundation to explain the dominance of capital markets in the economy of the last quarter of the former century. From this financial perspective, the company is a technocratic entity where cash flows are maximised and economic agents act from a strictly rational and selfish perspective. The value of the firm and its capital structure became explicitly dependent on the market mechanism and the functioning of the capital markets.

The second approach we distinguish is a more institutional approach of financial markets that is called behavioural finance. This school emerged in a rather dispersed manner in the economic literature[27], and started approximately in the mid-seventies. Inspired by concepts such as *information asymmetry* (Akerlof (1970) and *bounded rationality* (Simon (1955)) the persistent deviations from equilibrium models (called anomalies) became institutionalised. Encouraged by a growing body of empirically tested anomalies, game theoretic approaches gained popularity in financial research. At the same time, adjacent disciplines such as psychology, sociology and business ethics began to start developing alternatives for the strict assumptions of the neoclassical equilibrium models.

In order to distinguish sustainable corporate finance (SCF) from the aforementioned traditional and behavioural finance, we will discuss this new concept by applying the four criteria of Table 3.1 in sections 3.2 through 3.6. Section 3.7 concludes.

3.2 Theory of the firm

The questions surrounding the genesis and the theoretical evolution of the economic entity called firm are older than finance itself as a discipline. Vromen (1994) speaks of an 'old' and a 'new' theory of the firm. The debate on the 'old theory of the firm' takes place at a higher aggregated level (industry), and deals with the selection arguments of the neoclassical 'marginalism controversy'[28]. The 'new' theory of the firm breaks open the black box character of the firm and deals with contractual behaviour, property rights and agency costs of the individual participants[29]. Especially the latter debate is relevant for the financing decisions in the firm.

27 Especially Thaler, R.H., 1991, *Quasi rational economics*, (Russel Sage Foundation, New York). Thaler, R.H., 1993, *Advances in Behavioral Finance*, (Russell Sage Foundation, New York). And Thaler, R.H., 1994, *The winner's curse*, (Princeton University Press, New Yersey). 1994) brought together the leading articles in quasi-rational economics and behavioral finance.

28 The 'marginalism controversy' deals with the question of whether the size of the firm does or does not depend on the equality of marginal costs and marginal returns.

29 In the old theory, the firm was identified with the entrepreneur only.

As already argued in chapter 2.2, Boatright (1999, pp. 170-172) distinguishes between three different theories of the firm. First is the *property rights model*, where the owner of the firm is the stockholder who chooses to do business in corporate form. In this situation, the 'right to incorporate' is purely private and therefore there is no incentive or necessity to fulfil any social purpose (see Friedman (1970). The second theory of the firm is the *social institution theory*, which holds that the 'right to incorporate' is a privilege granted by the state, and has therefore a public aspect. Thirdly, there is the modern midway between the former two: *contractual rights theory*, in which the private corporation is sanctioned by the state to serve the general welfare. Boatright states that in contrast to the property rights theory, the contractual rights theory does not hold that the firm is the private property of the shareholders: 'Rather, shareholders, along with other investors, employees, and the like, each own assets that they make available to the firm. Thus, the firm results from the property rights and the right of contract of every corporate constituency *and not from the shareholder alone*' (Boatright (1999), p. 171).

The central question at hand is the normative choice on the preferred theory of the firm. The traditional finance approach is based on the private property theory of finance in which the company maximises the shareholders' value without giving consideration to social and environmental aspects. The primary goal is to optimise the expected return in relation to the lowest risk. Attaining social goals should be the research topic of politicians, as they are the specialists in that field, but is not an objective for economists (see Friedman [1970] and Jensen & Meckling [1976]). Because financial contracts concern only the consequences of the contracting economic agents, the impact of these contracts on third parties (e.g. employees, environment) or on the welfare of the total society is considered to be the subject of analysis of other disciplines. The resulting cash flow approach in finance just emphasizes that there "is no such thing as a free lunch". By accepting the efficient market hypothesis (EMH), traditional finance creates the illusion that markets are pricing the financial assets properly and completely. In other words, financial theory has no room for gifts, unselfish behaviour, irrational behaviour or external effects for parties other than the contracting ones. Only contracts that are priced in markets or which can potentially be priced by replicating (synthetically) assets are topics of research. Therefore, the restrictions of the traditional finance literature arise from its definition and its assumptions alike[30]. As long as the goal of the company is reduced to a mechanical maximisation of the cash-flow generating process, traditional finance theory is too narrow to answer the major financial management questions.
Also behavioural finance emphasises expected risk and return but Kahneman and

30 The theoretical financial models assume the existence of perfect markets (e.g. atomistic competition, no transaction or bankruptcy costs, complete and perfectly transparent markets, homogeneous expectations, absence of taxes, etc.). This reduces the explanatory capacity of the models.

Tversky (1979) extended in their path breaking article the Von Neuman/Morgenstern expected utility theory underlying the traditional CAPM model to what they called Prospect Theory[31]. The major difference between traditional and behavioural finance, though, is in the assumptions regarding human behaviour and the (non) acceptance of the efficient market hypothesis. The overreaction hypothesis of De Bondt and Thaler (1985) was the first major attack on the previously generally accepted idea that markets were information efficient. Their research preceded a rich and ongoing literature on the 'anomalies' in finance. Haugen's New Finance' (Haugen (1995)) more or less established this 'new paradigm' that markets are not informationally efficient, as was generally believed until that time. This micro-economic impulse to beat the market undermined the 'black box' character of the traditional firm concept, and strengthened the theoretical building blocks for a new and much broader and multidisciplinary theory of the firm. Jensen and Meckling (1994) distinguished four interrelated areas. The first area includes fundamental building blocks: a) the nature of human beings and their behaviour, b) the cost of transferring information among agents, c) agency costs and d) organisational rules of the game. The second, third and fourth major areas concern, respectively, the residual claims, the compensation of its participants, and the divisional performance measurement and total quality management. This broadened the theory of the firm from a one-dimensional transaction costs approach to a complex and multidisciplinary theory.

The sustainable finance concept also emphasises the importance of behavioural premises of the modern economic agents, but explicitly extends the goals of the company.[32] Using transaction costs as a guiding mechanism, the concept chooses three goals of the company· Next to the necessary risk /return objective, a company in its financing policy should also consider future environmental and or social claims to be the core company activity. There are two reasons for this normative choice; one is that reducing a company to a cash-flow generator is not in accordance with the moral responsibility of the company in the civil society. For example, Kaptein and Wempe (2002) make a strong case for moral responsibility at both the individual- and the company level. We will postpone the discussion of this argument to section 6, but accept it at this stage as a motivation for a paradigm shift. The second reason for the normative choice involves a long-term historical observation. Consider the traditional economic production function in which wealth is a function of Nature, Capital and Labour. Note that labour was the key value driver in the second half of the nineteenth century and the first half of the twen-

31 Prospect Theory defines decision making under risk as a choice between prospects or gambles, and states that people have an irrational tendency to be less willing to gamble with profits than with losses. With this risk concept the symmetrical risk perception of the traditional expected utility concept is abandoned.

32 This is in accordance with 'triple bottom line' of Elkington (1997).

tieth. Capital showed itself to be a dominant value driver in the last decades of the twentieth century. Considering the environmental and moral problems of the last decade, it may be time for nature to be the dominant value driver of the near future. Nature is represented in this perspective not only by the physical quality of the environment, but also by the mental and moral environment of the economic agents. In other words, if the existence of the firm is a result of a multidisciplinary process (as suggested by behaviouralists), then the goals of that very firm should also be multidisciplinary. A sustainable financial policy can therefore be defined as a policy optimising a three-dimensional goal variable. The sustainable expected return (or capital cost) is then a result of optimising long-term financial, social ànd environmental variables.

3.3 Human nature of economic actors

In the traditional finance discipline, where economics is defined as a strict allocation problem, the behaviour of economic actors is assumed to be selfish and purely rational. Human behaviour itself is not an element of economic research, but is displaced to adjacent disciplines such as psychology and sociology. The problem, however, is that the behaviour and character of economic actors is an essential input variable for financial modelling. The traditional financial models are based on the 'rational expectations' concept and the 'homo economicus' perspective of human behaviour. In financial theory, this resulted in concave utility functions, where expected utility was driven by expected return ($E[r_i]$) and its expected risk ($E[\sigma_{ri}]$). The rational expectations hypothesis already produced a great deal of criticism for the US macroeconomic policy in the 1970th (see Sheffrin (1983), ch. 6). The traditional asset pricing models, based on the strictly rational and atomistic behaviour of the 'homo economicus', resulted in many anomalies in the subsequent years and are basically the pioneers of what we call behavioural finance.

The behavioural finance models recognised the behaviour of economic agents as the most vulnerable feature and developed many alternative, often game theoretic, models. Thaler (1991, chap. 7-9), in cooperation with Kahneman and Knetch, developed quasi-rational economics by introducing the psychology of choice to refine the behavioural assumptions of traditional finance. Also Tvede (1990) and Sheffrin (2000) developed strong evidence against the traditional 'homo economicus' approach. After their path-breaking 1976 article on agency cost, also Jensen and Meckling (1994) acknowledged the shortcomings of the traditional finance concept of human behaviour and allowed the 'homo economicus' to become a caring and evaluating individual, and a resourceful maximizer with unlimited wants (the so-called REMM model). It is important to notice, however, that behavioural models recognise the opportunistic and bounded rationality elements of behav-

iour, but do not accredit any morality aspects to their economic agents.
The sustainable finance concept embraces the behavioural developments, but expands the economic agent to a moral human being, as advocated in the business ethics literature. This implies that the identity of the company cannot be reduced to a one-dimensional financial and cash-generating institute, but needs to be extended to a multidimensional perspective. Zsolnai (2002), chapter 3, extensively evaluated the ethical and behavioural literature and arrived at an economic agent who is a 'calculating person whose behaviour is determined by the moral character of the agent and the relative cost of ethical behaviour' (p.52-53). 'Moral economic man' is assumed to be at the foundation of the sustainable corporate finance concept. This individual acts rationally, but aims at cooperation and trust because of the higher expected utility in terms of the multidimensional goal function of the company. An example is the stewardship theory of management (Davis, Schoorman and Donaldson (1997). In stewardship theory, the model of man is based on a steward whose behavior is ordered such that pro-organizational, collectivistic behaviors have higher utility than individualistic, self-serving behaviors. This model is based on psychological factors like motivation, identification and the use of power; and situational factors like the management philosophy, the culture of the company and the power distance. Figure 3.2 summarises the different perspectives until now.

Figure 3.2 Key elements of sustainable corporate finance

	TRADITIONAL	BEHAVIOURAL	SUSTAINABLE
Criteria:			
'Theory of the firm'; the company as:	Black Box	Hierarchic set of rules	Multi-attribute optimiser: (Profit & People & Planet)
Human nature actors	Selfish	Selfish and/ or cooperative	Cooperative/trust

3.4 The ownership paradigm

Shareholders differ from other constituencies of the firm primarily by virtue of being residual risk-bearers and therefore residual claimholders. The crux of the shareholders' wealth paradigm is that shareholders are considered optimally suited to maximise the wealth of society through their natural ability to discipline management. In this major

model, which is the foundation of Anglo-Saxon finance literature, corporate direct investment decisions are separated from the individual stockholders' preferences for consumption. This paves the way for the establishment of the separation of ownership and management in the larger firms (Berle and Means [1932]). So we see that shareholders own the corporation and demand that managers maximise their wealth by investing in all possible positive net present value (NPV) projects. Agency theory, however, assumes that managers act in their own interest, and describes this process. It is therefore necessary that monitoring and bonding costs be effectuated in markets to discipline the manager. Because every executive is assumed to be selfish, the incentive for managers to act according to the shareholders' interest is subsequently based on the bonding and monitoring abilities of the shareholder.

The problem, however, is that this does not automatically answer the question of who should own the residual risk. Boatright (1999) makes a case against the shareholder as the unique company owner and residual risk-taker. He argues that the shareholder can easily diversify his portfolio of stocks to eliminate idiosyncratic downside risk. The highly skilled employee, on the other hand, who develops valuable firm-specific human capital, may possibly assume considerably more residual risk. The labour market is far less efficient and flexible compared to the financial markets. Moreover, the interest of the environment must also be considered to be a stakeholder. As long as relevant NGO's are not in the position to act efficiently on behalf of the environment, the production factor nature has only the government as its representative.

In the discipline of behavioural finance, the question of who owns the company is not relevant. As a game theoretic extension of traditional finance, focussing primarily on human behaviour and market efficiency, the shareholder is generally accepted as the ultimate owner of the company. Nevertheless, we think that the ownership question may be the key to optimal human behaviour. Alchian and Demsetz (1972) specify the classical firm as a privately owned internal market competing for informational advantages of specialists based on team production processes. In their analysis it is essential to appoint one claimant that is optimally efficient in realising a reduction of shirking (which is assumed to occur if two or more people cooperate). We quote: "the 'specialist' who receives the residual rewards will be the monitor of the members of the team". And: "to discipline team members and reduce shirking, the residual claimant must have power to revise the contract terms and incentives of individual members without having to terminate or alter every other input's contract" (Alchian and Demsetz, 1972, p.84). The necessary monitoring of the individual inputs, therefore, should be the task of the residual risk-bearer because they alone have an additional motive not to shirk themselves.

If we accept the former analysis, we then raise the central question of this section: who

is the optimal residual claimant from an economic perspective? There is no a priori reason to assume that the 'specialist' in the Alchian and Demsetz analysis must be the stockholder. In the property rights model, as distinguished in section 3 on the theory of the firm, it was simply a choice based on property rights. The question at hand, though, is whether the stockholder is "optimally suited" to discipline all the claimants of the firm, including the employees. Or, in terms of Alchian and Demsetz, are the stockholders the specialists to hold that residual claim in the most economical way?

In the sustainable finance concept, the answer is a clear no. First, there is the limited downside (financial) risk, as argued by Boatright in the second paragraph of this section. But, far more important, however, is the fact that ever since the separation of management and ownership became widely accepted in the modern economy, stockholders are no longer 'specialists' in gathering information regarding shirking behaviour in the company. Management is far better positioned, but so do employees, suppliers, customers, financial analysts etc. But who monitors the management? One good candidate would be the shareholders, but they are far too dependent on the efficiency of information flows, that are provided by all the different stakeholders, each with their own utility functions. So it must be concluded that the shareholder, although residual claimant because of legal ownership in many cases, is not the most efficient economic monitor of the economic production process that is called 'the firm'. If we integrate this into the three-dimensional goal function of the company (as set in section 3.3), the inclusion of moral aspects in the behavioural approach (as set in section 3.4), we propose a multi-stakeholder residual risk-bearer in the sustainable finance approach[33]. We argue that if the residual risk is allocated among different stakeholders, then also the financial interest will be allocated among those parties to a similar extent. This responsibility and potential financial gain aligns up the interests of the stakeholders. The agency costs will therefore decrease. On the other hand, the monitoring responsibility is decentralised in this approach and may therefore lose efficiency and create some new bureaucratic costs. The cooperative human nature should lead to a positive balance in the former trade-off. Figure 3.3 summarises the sustainable finance concept as discussed until now.

33 In the next chapter, called 'stakeholders equity' we will elaborate extensively on this point.

Figure 3.3 The key elements of sustainable corporate finance

	TRADITIONAL	BEHAVIOURAL	SUSTAINABLE
Criteria:			
'Theory of the firm'; the company as:	Black Box	Hierarchic set of rules	Multi-attribute optimiser: (Profit & People & Planet)
Human nature actors	Selfish	Selfish and/ or cooperative	Cooperative/trust
Ownership paradigm	Shareholders	Shareholders	'Portfolio' of stakeholders

3.5 The ethical framework of sustainable corporate finance

The necessity of introducing an ethical framework into sustainable corporate finance can be explained by the character of finance as a discipline. If economics is defined as the allocation process of real goods and income, then financial transactions are by definition intermediate, because they are not an end in themselves in the real economic process[34]. Money and finance are primarily instrumental in reaching the end of the optimal allocation of physical goods. Under this definition, the monetary system should be neutral in the economic growth process. If so, the technical equilibrium approach of the traditional finance methodology is clearly justified. Empirical research, on the other hand, reveals substantial evidence to refute the claim. At this point we will not refer to the substantial macro and monetary literature[35], but will restrict ourselves to the moral character of the individual economic agents in relation to the moral character of the institution called firm.

A classical philosophical approach to human behaviour is based on the virtue ethics as developed by the Greek philosophers Socrates, Plato and Aristotle. Virtuous behaviour is a balanced position between a virtue and a vice. It is a mature and rational choice somewhere in the middle between self-interest, and the choice made by a realistic and practical other person (Aristotle (1999), Book 2, p. 55-72). In particular, four cardinal virtues can be considered important in establishing coherent leadership

34 This is in line with the Aristotelian perspective (see Meikle (1995)), which came to a similar conclusion from a philosophical perspective.

35 See appendix one for a short overview of some classical literature on this topic.

based on freedom and excellence (see Kessels, Boers and P.Mostert (2002), p.27-29, 221). These are temperance, courage, prudence and justice (the latter being the most important of all). For example, in a company it is important to restrict greed (temperance), to take calculated risks (courage) and to rationalise human acts to a well thought-out level (prudence). Balancing these three virtues, in such a way that *justice* is being done, could be called the 'art of doing business'. A strong proponent of this line of argument is also Dobson (1999), in what he calls the post-modern approach. He asserts that the post-modern approach emphasises business as a type of aesthetic activity, rather than as a strict science. Dobson advocates virtue ethics and derivatives thereof such as 'corporate soul craft' (Johnson (1997)) and 'craftsmanship ethics' (Klein (1998)). The Aristotelian approach was also firmly supported by Van Staveren (1999) in her dissertation: Caring for Economics, An Aristotelian Perspective (see also chapter 2.4.4). The shortcomings of 'Rational Economic Man' are extensively described, and the case is made that in order to provide a meaningful explanation of economic behaviour, four moral capabilities (Commitment, Emotion, Deliberation and Interaction) must be added to economic modelling. This is basically in accordance with the approach of behavioural finance.

Kaptein and Wempe (2002) observe that an important problem inherent to applying general ethical concepts and theories to corporations is the individualistic (atomistic) nature of the dominant theories (p. 106). Since the seventeenth and eighteenth centuries, moral judgements have focused on (actions) of natural persons, who have consciences and act voluntarily. This is what they call an 'atomistic orientation' in ethics, and it cannot be directly applied to corporations. Kaptein and Wempe distinguish three positions on the question of the localisation of the moral responsibility of corporate activities. First is the *amoral model*, which does not acknowledge corporate moral responsibility at all. Secondly, there is the *functional model* of corporate responsibility, which acknowledges that the organised character of actions within the organisational context results in responsibility, but reduces it to the individual responsibility of company representatives. Finally there is the *autonomy model,* which portrays the corporation as a social entity with a corporate responsibility separate from the individuals that represent the company (Kaptein and Wempe (2002), p. 110). After an extensive review of the literature on these company responsibilities, Kaptein and Wempe conclude that both the amoral and the functional models rely on a form of ontological individualism. In these models, the company does not exist and can therefore not act. The corporation is nothing more than the sum of a number of individuals. Kaptein and Wempe state that ontological individualism is more radical than methodological individualism, which recognises the existence of social reality, although understood as an expression of individual actions. They then make the case for an organisational ontology; the whole is more

than the sum of the parts. They propose an 'integrated corporate moral practices' theory, which perceives the company as a moral entity. Corporate integrity is a balanced position between a virtue-ethical, a duty ethical and a consequential approach of business activities.

Also Brown (2005) focuses on corporate integrity, however, Brown extends the Kaptein and Wempe model by emphasising that the corporations purpose also depends on its place in a larger social system. Next to the corporations' integrity he also discerns a social integrity and an environmental integrity. Then, the Brown model extensively discusses the corporate integrity and distinguishes between an economic perspective, a management perspective and a civil perspective on corporate purpose. In the civic perspective, an extensive debate is presented on comparison of for-profit and nonprofit companies, which basically boils down to the 'theory of the firm' discussion of Boatright (1999) as presented in chapter 2.2. For our purpose, sustainability in finance, a society broad approach is far too complex to apply to all companies. Corporate integrity will be interpreted as a stakeholder integrity policy, applicable for the sustainable company.

In Figure 3.4 we claim that the ethical framework of sustainable finance is basically a virtue-ethical approach, extended to the Kaptein and Wempe (2002) integrative methodology as applied to what is called the 'balanced company'. This is in contrast to the strict utilitarian and 'rational economic man' approach that is applied in traditional finance. The behavioural approach evolved from strict rationality to 'bounded rationality', and incorporated adjacent disciplines into the financial framework. This resulted in a wide variety of game theoretic, mostly rule-based, models. Also these rule-based models are unable to explain the various fraud cases that have recently surfaced. Therefore, the normative choice for a moral concept of the company is an implicit result from the chosen theory of the firm (see also chapter 2 of this study). The virtue-ethical approach, as proposed in the sustainable corporate finance concept, connects smoothly to the 'specialists' concept of Alchian and Demsets (1972) from 30 years ago. Basically, SCF reintroduces[36] the Aristotelian concept of justice as portrayed in Book 5 of the Nicomachean Ethics into the behaviour of economic subjects. The method to measure the results will be a multi-attribute model to measure economic performance. Figure 3.4 summarises the Sustainable Corporate Finance concept.

36 It is easily forgotten that the analysis of the 'fathers' of the market economy, like Smith and Keynes, unmistakably had a similar point of departure.

Figure 3.4 The key elements of sustainable corporate finance

	TRADITIONAL	BEHAVIOURAL	SUSTAINABLE
Criteria:			
'Theory of the firm'; the company as:	Black Box	Hierarchic set of rules	Multi-attribute optimiser (Profit & People & Planet)
Human nature actors	Selfish	Selfish and/ or cooperative	Cooperative/trust
Ownership paradigm	Shareholders	Shareholders	'Portfolio' of stakeholders
Ethical Framework	Utilitarian	Duty ethical/ rule based	Virtue-ethical/ integrative

3.6 Conclusions

The traditional finance approach is rational and intuitively attractive in the sense that it enhances operational efficiency and theoretical simplicity. On the other hand, requiring financial agents to act in conformity with homogeneous expectations results in nothing more than a description of a unique case in an entire range of alternatives on human behaviour in financial transactions. One problem with this one-dimensional approach is that it encourages the belief that finance is a sheer positive science in which rational behaviour automatically optimises efficiency.

The behavioural approach explicitly acknowledges the caveats of traditional finance theory and extends the models in such a way that the behaviour of economic agents becomes a subject of analysis in direct relation to financial markets. The resulting game theoretic approach is theoretically rich, but complicates financial modelling because of the numerous possible games of the economic agents. It is argued that agency costs remain high, as long as the preference function of each participant is exclusively dependent on individual money maximisation.

In the concept of sustainable corporate finance, the (normatively chosen) goal of the financial policy is sustainability, specified as a policy of caring for future generations. This choice results in a multi-attribute approach to financial policy and theory. This may complicate financial modelling even more, but encourages an empirical approach of

the market process from which normative human and economic guidelines can be deducted. Prediction of market behaviour is less relevant than measuring economic results from institutional and behavioural rules. From that perspective, we describe sustainable corporate finance as '*a multi-attribute approach to finance the company in such a way that all the company's financial, social and environmental elements are interrelated and integrated*'. The approach makes a case for a company owned by different stakeholders, rather than by pure shareholders alone. SCF aims at long-term financial goals reflecting a credible and reliable picture of the underlying company. In a way, it is a reintegration of virtue ethical values into economic theory. Figure 3.5 and appendix 2 summarise the four criteria by using catchwords for the three distinguished approaches.

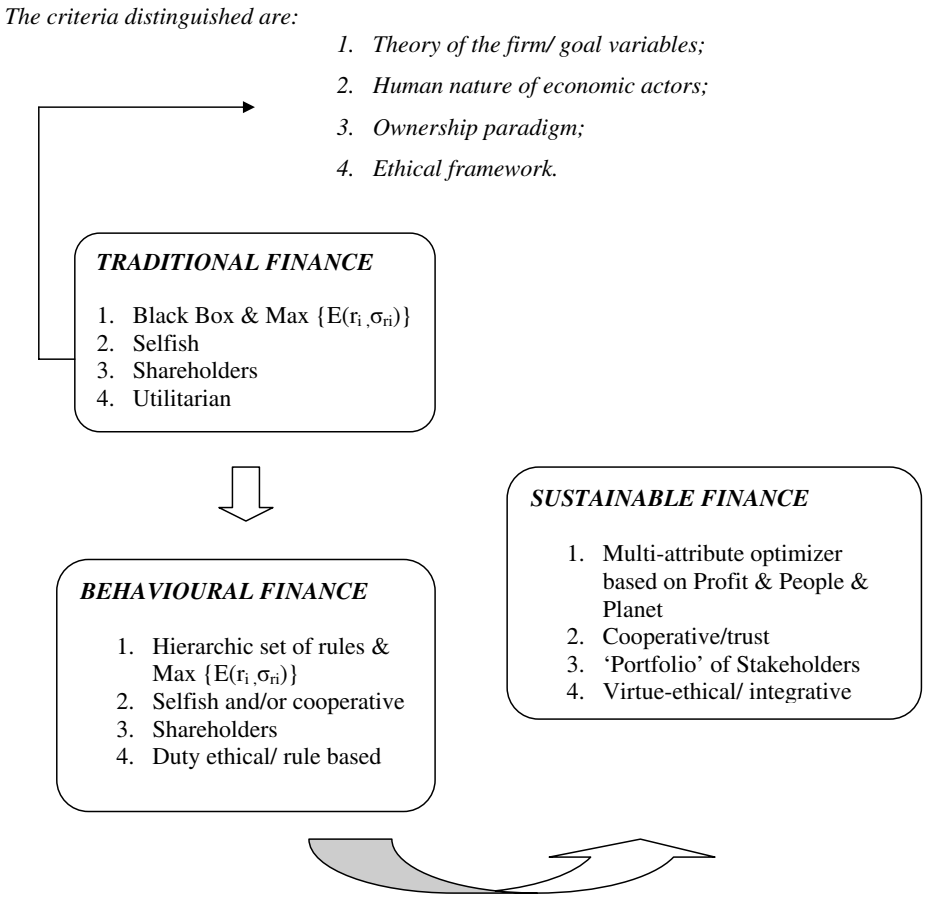
Appendix 1: On the neutrality of money

Discussions referring to the monetarist neutrality question of the financial sector are rare in financial theory these days. Early work on this topic (functional finance) by Koopman[37], Hicks (1939) and others is dated in the second quarter of the former century. Modern economic literature features different perspectives to look at the theoretical relationship between the real economic- and the financial sectors. From this literature, a distinction can be drawn between a *macro*-economic and a *micro*-economic approach. All original contributions of the macroeconomic approach, including the *monetary* literature, coincide in suggesting that there is a strong positive correlation between the extent of financial development and economic growth. Both approaches emphasise only different channels of transmission. For example, the work of McKinnon (1973) and Shaw (1973) provided the first theoretical basis for arguments in favour of the liberalisation of financial markets as an essential step in the development process of developing countries. They state that freely fluctuating interest rates influence growth in the economy through their effects on saving and investments. More recent models of e.g. Bencivenga and Smith (1991) focused on cases where the marginal productivity of capital always remains positive. These 'endogenous growth' models tend to conclude that the introduction of financial intermediaries shifts the composition of savings toward capital, causing intermediation to be growth-promoting. The micro-economic and finance literature goes back to the Fisher separation theorem (Fisher (1930)) at the beginning of the 20th century. It was concluded that, under perfect market conditions, the investment decision and the financing decision can be taken independently. The optimal growth of the real economy (the marginal productivity of direct investments) is dependent on the risk-free interest rate, being the opportunity cost of capital. Extensions of this theory, such as the introduction of taxes and side effects, generate an interaction between finance and investment decisions in later publications of Modigliani and Miller (1958, 1963) and DeAngelo and Masulis (1980). In essence, they conclude that the introduction of debt enlarges the investment capacity of firms and hence the growth of the real economy.

37 See Fase, M.M.G. et.al, 1982, Neutraal geld (neutral money), (Stenfert Kroese, Leiden-Antwerpen). For an extensive selection of the major work of J.G. Koopmans (1900-1958).

Appendix 2: Schedule SCF

Figure 3.5: Sustainable Corporate Finance as a concept in finance



Chapter 4 The stakeholder equity model

4.1 Introduction

Over the past decades the ideology of shareholder value has become entrenched as the basic principle of corporate governance among companies in the western market economies. historical analysis, Lazonick and O'Sullivan (2000) argue that not only the merger and acquisition market in the US until the 1970s encouraged this development[38], but also the reverse process of downsizing of corporate labour forces and distribution of corporate earnings to shareholders over the 1980s and 1990s. Numerous types of (leveraged) buy-outs or buy-ins changed the traditional character of a company. Companies themselves became more and more a tradable. In the same period, capital and derivatives markets expanded exponentially and matured[39]. The above factors enabled flexible company boundaries and fuelled the success of the shareholder model.

A more recent development in the global economy is the emergence of stakeholder participation. In business ethics, an impressive body of literature has emerged in which it is argued that the interest in stakeholder approaches to strategic management is growing around the world. Seminal articles on this topic are e.g. Freeman (1984), Donaldson and Preston (1995), Clarke (1998)). More recently Friedman and Miles (2002) distinguish between four different types of stakeholders in order to explain theoretically the changing stakeholder relations. In today's network economy there are many agency relationships such as between employees and management or between creditors and management. Where the shareholder/ management relation is theoretically well studied and often solved by aligning the interests through performance dependent fees for management, the research on the relation between employees and management and between suppliers and management are in a premature stadium. Empirically no research has been performed.

Apart from the emergence of stakeholder participation, there are more reasons which

38 As financed by the retention of corporate earnings and reinvested in corporate growth.
39 See various IMF annual reports.

challenge the traditional shareholder paradigm. Zingales (2000), in search for new foundations of corporate finance, stressed that the nature of the firm is changing. The traditional corporation, which emerged at the beginning of the twentieth century, is an asset-intensive and highly vertically integrated firm with tight control over its employees. The modern firms have relinquished direct control of their suppliers and moved toward looser forms of collaboration. Human capital is emerging as the most crucial asset, which influences the power relations within a company. Margolis and Walsh (2003) present compelling social reasons to challenge the shareholder paradigm. Based on major inequalities of the social life in the world's most populous nations, they make a strong case to rethink social initiatives by companies and provide innovative solutions based on a normative theory of the firm. Engelen (2002) focuses on strong conceptual reasons that can be identified why the concern about shareholder value is increasing[40]. Another relevant aspect of changing power positions in companies is the growing interest in CSR, which is strongly connected to stakeholder theory. In an article that reviews the existing research on CSR in the past 50 years, Kakabadse, Rozuel and Davies (2005) highlight many challenges and implications of the stakeholders approach. They conclude that as the network economy intensifies, new forms of cooperation are needed and that the shareholder is not necessarily the only ultimate owner of the residual claim of the company.

This chapter contributes to the above discussion and aims at answering the second and third deduced question of the deduced problem setting: *how can sustainable finance lead to a sustainable market economy* and *give examples of instruments that are able to contribute to the sustainability process?* Basically the answer boils down to arguing that in the modern network economy, unequal contracting power leads to increasing agency costs between stakeholders other than the traditional shareholder - management relation alone. In the traditional shareholder model agency costs for other stakeholders than shareholders and management are hardly studied because these parties all have fixed contracts with the company. Due to increasing (global) competition and a strong market position of management and shareholders, many stakeholders with fixed contracts are successfully pressurized. The resulting unequal market positions of different stakeholders may increase governance costs and hence threaten sustainable development.

First we need to explain that the wealth of the society may increase if contracting relations between different stakeholders change. Finance and financial theory will be used to describe payoff diagrams not for the shareholder alone but also for the other stakeholders. Section 4.2 starts off by analysing the shareholder model from an economic and

40 Engelen distinguishes between prudential, functional and moral claims to justify the shareholder as the ultimate claimholder of the firm. By debunking all three claims extensively he concludes that corporate democracy is a proper solution to the unequal power relations within the company.

a legal perspective. Then in 4.3 we distinguish between five different stakeholders and explain the main drivers of the market, against the background of an option approach for allocating the company assets. Section 4.4 presents and explains the different payoff diagrams per stakeholder and their mutual differences. In section 4.5 the 'stakeholder equity' model is addressed and section 4.6 concludes on the model.

4.2 The shareholder paradigm[41]

Shareholders as the ultimate claimants in the company are deeply rooted in economic and financial theory. Based on the free markets arguments as posed by classical economist like Smith, Friedman and Hayek, freedom of choice is the major driving force behind shareholders' ownership. Already Hayek (1948) and Friedman and Friedman (1980) argued that free markets utilize dispersed information most efficiently. By freedom (individual liberty) Hayek means the state in which a man is not subject to coercion by the arbitrary will of another. The liberal or free society at which Hayek aims is a society in which the subjugation of individuals to the will of others and the use of coercion is minimised. Moreover coercion does not involve the absence of choice. An individual that is faced with an agent that can dispose of overwhelming force and decides to obey still made a rational choice. The freedom of choice is very much represented by trading in financial markets.

Related to corporate governance, Hayek claims that management should primarily obey the interests of shareholders. As Wempe and Melis (1997) pp.38-39 observe, Hayek discusses four 'stakeholders' that could be aligned with the company goals. First there is the interest of the management. From a society perspective the claim is considered restricted to some individuals only, implying that the claim is not taken seriously by Hayek. More complicated is the denial of the claim of employees on the company results. Albeit humans that manage capital goods, the company is in the first place a union of material possessions, a technocratic entity. Because employees are free to choose the company to work for, it is impossible to identify the firm with its employees. Economic efficiency is optimal, in Hayek's perspective, if the company represents material possessions only and labour is considered as an external and autonomous factor. The third potential stakeholder that could make a claim for the company results could be the community. In a similar reasoning like Friedman, Hayek argues that managers are not educated nor selected to serve community goals, but are specialists in running a company

41 Because or the fact that the ownership of the residual claim of the company, is one of the core elements in this study, and the last two chapter are published before, the shareholders paradigm is also explicitly discussed in section 2.2 and 3.4 of this study.

efficiently. Therefore, management can best be considered to serve shareholders interests. This negative choice for shareholders as the optimal owners of residual risk makes the shareholder automatically the most effective group to control management' activities. This classical type of reasoning is still most popular in today's financial literature.

Analysing the core features of modern company law, Davies (2002), p.5-8, outlines three main groups of people who dominate the companies' activities: 1) shareholders (or 'members' of the company; 2) its directors and, to a lesser extent, its senior managers, whether they are directors or not; and 3) its creditors, who may be secured or unsecured. The law seeks to regulate the relationship between this trinity of stakeholders. The legal function of the director is to manage the company, though what that entails can vary according to the size of the company and the distribution of its shareholding. Shareholders, who may or may not be the directors of the company, usually provide the company with a particular type of capital: risk capital. In return they receive in general two types of rights. One is to exercise ultimate control over the company, notably by selecting or removing the directors and setting the terms of the company's constitution. The other right is just to receive a financial return on their investment in shares. The shareholders rights are essentially a matter of contract with the company and so different companies may wish to issue shares on different terms. The third major participant of the company is the creditors, and these also come in many varieties. The most obvious are the suppliers of goods yet to be paid for, and the banks that provide medium or long term loans to the company.

A legality of crucial importance in shareholder's analysis is the fact that a company is a *separate legal entity* and as such separate from its shareholders, directors, creditors, employees and anyone else. This complicates legal abstraction because company law does not always establish definite legal relations between these groups directly, but instead only mediates between them through the company as a legal person. Bigger companies mostly concern Public limited companies (Plc) with limited liability. Limited liability means that the rights of the companies' creditors are confined to the assets of the company and cannot be asserted against the personal assets of the company's members (shareholders)[42]. Thus, directors will owe duties over the company rather than over shareholders and shareholders may have rights to the company rather than against the directors. The commonly heard expression 'limited liability companies' can be explained by the above fact, but this is really a misnomer. The liability of the company is not limited at all. Creditors' rights can be asserted to the full against company's assets. But: *it is the liability of the members (i.c. shareholder) which is limited* (Davies 2002, p. 11). There are good rationales for limited liability such as: the encouragement of public investment and facilitation of public markets in shares. However, as mentioned in chap-

42 In the Dutch law this principle is legally anchored in Art 2:64 lid 1 BW.

ter 1.4.4, the question is whether today's financial markets really need that encouragement.

Summing up the core features of the modern company we get: separate corporate legal personality; limited liability; centralized management under a board structure; shareholders control and free transferability of shares. There is a clear positive correlation between the size of the company and the likelihood of manifestation of all five core features[43]. The coming analysis in section 4.3 and 4.4 focuses on the shareholder control of this type of companies, where all these core features are present. The stakeholders' powers derive, in the main, from the companies' constitution, not from company's legislation. In other words, a company may always choose to change the statutes in such a way that other governance rules are applied. This study does not aim at that objective, but the substantive question needs to be addressed of whether and how shareholder control can still be justified in the rapidly changing (financial) markets of the last decades. Davies' arguments pro shareholder control boil down to a perceived necessity of attracting risky capital, which cannot be successful without inherent control rights. However, there are other viable opinions. The coming section first generalizes the roles of the different stakeholders in the company and applies agency theory as driving mechanism in lowering transaction costs.

4.3 The company as a special type of producer cooperative?

In an extensive analysis on the ownership of the firm, Hansmann (1996) perceives the regular stock company as a special type of producer cooperative, or more specific: a 'lenders cooperative' or 'capital cooperative'. This theoretical generalisation of contracting parties in a company is useful in analysing the company in an objective way. He compares the 'lenders cooperative' with a farmers' cheese cooperative in which the cheese factory is owned by the farmers who supply the factory with raw milk. In the latter case, the firm pays its owners (or 'members') a predetermined price for their milk. This price is set low enough so that the cooperative is almost certain of having positive net earnings. Then, at the end of the year, the firm's net earnings are divided pro rata among the members according to the volume of milk the member sold to the factory. Upon liquidation of the firm, any net asset value is divided among its members, according to some measure of the relative value of their relative patronage.

The structure of the cooperative, as described above, is basically similar to the organisation of modern companies that are quoted on stock markets. In an investor-owned firm, the transactions between firm and patrons – who supply capital in stead of milk–

43 See Davies 2002, p. 27.

occur within the context of ownership, while all other transactions take the form of market contracting. The providers of capital are legally the 'member' or 'owners' of the residual result of the production process. The accompanying voting rights - dependent on the amount of capital provided - are exclusively in the hands of the shareholder. It is important to note that this prerogative equips them with the right to 'set the prices'. In order to get the highest societal wealth, the essential question from a theoretical perspective is: what governance model of the company brings the lowest cost of assignment of ownership! Or in terms of lowering transaction costs: what organization of the company (corporate governance) brings the lowest governance costs. According to Hansmann (1996) the answer is **dependent on the character of the market**. The theoretically optimal position is to assign ownership to that class of patrons for whom the problems of market contracting – that is the costs of market imperfections – are most severe (p. 21). Severe market conditions cause a natural motivation for that group of patrons to organize the production process in the most cost efficient way.

Then, Hansmann distinguishes between two types of transaction costs: 1) costs of market contracting for those classes of patrons that are not owners (costs of contracting); and 2) costs of ownership for the class of patrons that own the firm (governance costs). Examples of the latter are the costs of making collective decisions among the owners (resolving conflicts and bureaucratic threats), the costs of monitoring managers (monitoring and bonding), the costs of poor decisions and excessive managerial discretion that results if monitoring is imperfect. And, of course, there are also the costs of risk bearing associated with the receipt of residual earnings. The costs of contracting depend among other things on the market power of the contractor, the risk of long term contracting, and the level of asymmetric information (e.g. on the quality of the products sold). Other problems are the communication of the patron's preferences and the alienation of workers. The scope of this study does not allow elaborating on all these possible costs[44]. For now it is sufficient to model the cost function that has to be minimized in order to be cost efficient:

$$C_j^O + \sum_{i \neq j} C_{ij}^K \qquad [4.1]$$

where C_j^O is the cost of ownership (governance costs) for the group of patrons in class j and C_{ij}^K is the cost of market contracting for the group of patrons in class i when class j owns the firm. Consequently, to decide on the optimal ownership of the firm we must consider both the transaction costs for those contractors who are not own-

44 This study explores a different role of finance and financial instruments in the sustainable company and is unable to estimate total transactions costs in an economy. Estimating the risk and return positions of the distinguished shareholders will be part of future research though.

ers and the governance costs for the class of owners of the firm. A change in ownership may influence *both* variables in the cost function.

There is one major conclusion to draw from the above Hansmann analysis: there is no *a priori* theoretical reason that explains why it is the provider of capital alone who should hold the ultimate rights to residual claims of most public companies in the world. According to the above line of argument, the question at hand right now is whether the market circumstances for the shareholder are more 'severe' than those of the other stakeholders. If this is not the case, the Hansmann costs function implies, *ceteris paribus*, that agency costs can be reduced by changing ownership. To estimate the 'severity' of the market, the coming section will apply an expected risk and return analysis for each distinguished stakeholder.

4.4 The stakeholder risk model

The new element of this model is applying the well-known expected risk and return analysis of the shareholders theory not just to shareholders but also to other stakeholders. It is well admitted that statistical data, as abundantly available for shareholder analysis, are scarce for the other stakeholders. As a result, the model is purely conceptual and needs quite some additional assumptions. On the other hand, following the clear logic of the Hansmann analysis of the former section, which deals with all stakeholders in an equal way, applying financial theory to other stakeholders is just a rational extension of financial theory.

The first step to develop the stakeholder risk model is to suppose an aggregated theoretical economy with (in our example) 5 stakeholders. Let us assume that only companies produce economic output. The selected stakeholders in this example model are: 1) shareholders, 2) management (represented by CEOs), 3) suppliers, 4) employees and 5) the government, representing the general community's interest. The selection of these stakeholders is deduced from a SiRi dataset as used in the second part of this dissertation and described in earlier publications of Soppe and Vink (2004) and chapter 7 of this study. For the sake of financial identity, the stakeholder *called community* that is used in the SiRi dataset is replaced in model by the stakeholder*: government*. A representative of the environment and local communities would be preferred, but it is very difficult to estimate relevant cash flows for these stakeholders. For all different stakeholders there is a different claim at stake. First there are the strictly financial claims of the shareholder. For this group an upfront financial payment (investment) is at stake. Then there are the CEOs and employees that hold (long lasting) regular contractual labour relations with the company. For the government it is the receipt of taxes or the

payment of social security allowances that are at stake, and last but not least, there are the suppliers who invest (sell) goods & services in the companies (for reasons of simplicity only, financial creditors like banks and bondholders are not included in this model).

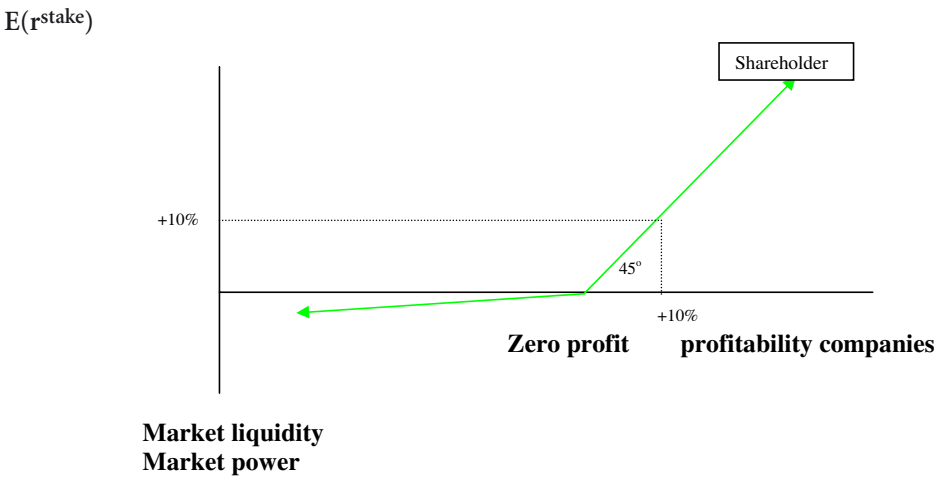
A theoretical problem we encounter is that every stakeholder expects a different return, to be earned in a different (segmented) market. In order to compare these risks and returns it is essential to bring them under the same denominator, here called *expected return on stakes* ($E[r^{stake}]$). For the shareholder the $E(r^{stake})$ is the expected return on the stock containing cash dividends, stock bonuses plus stock price changes (total returns). The CEO aims for fixed salaries together with performance dependent bonuses in terms of own company stocks and options. The supplier expects money as a result of the goods & services delivered to the company. Employees are generally dependent on fixed salaries and the government earns taxes from healthy firms or pays subsidies and/or social security payments if companies are in trouble or go bankrupt. What is of importance here is the fact that all returns at stake are set in different market segments that are well developed. Only markets that are sufficiently liquid and complete are informationally and operationally efficient and can be compared to financial markets.

The second step involves the definition of the main drivers of the downside risk. First there is the market liquidity of which it is assumed that the more liquid the market, the more flexible and less risky it is. In liquid and complete markets it is easier to create a diversified portfolio of assets enabling different hedging strategies. The second aspect of the downside risk of expected return on stakes is the general market power of the specific stakes in the total market economy. The more powerful a stakeholder is, the better are the market results. For example, in the labour market the market power of CEOs is assumed to be stronger than the market power of employees. Both market liquidity and the market power are considered equally important in the following subsections where the payoff diagram per stakeholder will be presented.

4.4.1 Payoff diagrams shareholder

Figure 4.1 presents the payoff diagram of the shareholder. The expected return on stakes (in this case shareholder returns) is measured on the vertical axis. The horizontal axis represents the aggregate profitability of the companies as a proxy for the success of the whole stakeholder economy. The (on average) zero profit of companies is placed in the middle of the profitability range of firms. Further the plus 10% of growth in company profits is depicted on the horizontal axis as an example.

Figure 4.1 Theoretical expected return pay-off of the shareholder of the company in case of different profitability perspectives of the economy



Black and Scholes (1973) were the first to provide the insight that the equity of the firm which has debt in its capital structure (a leveraged firm[45]) is really a call option on the value of the firm. Proof of this can be read in many textbooks on finance (e.g. Weston and Copeland (1992), p.457-58). For our analysis we take this as the starting point for comparison with other stakeholders. The shareholders as a group are entitled to the complete upward potential of the residual returns. This is represented by the 45° line. So, if company profits increase by 10%, the expected return for shareholders also increases by 10%[46]. On the other hand, from the downside risk the idiosyncratic part can completely be diversified away. What remains is the systematic risk (the market risk). Because stock markets are liquid in general and a diversification of a portfolio of stocks can easily be reached, the downside risk of an average investor is limited to the potential negative market return[47]. A second and even more important explanation of the asymmetrical risk position of shareholders is based on the ´limited liability` of the shareholders. If a company defaults, shareholders lose their initial investments but are not sued for any further losses that may occur because of management failures. These costs are externalised to other stakeholders like customers and creditors for example. In figure 4.1 this market risk is represented by the green solid line.

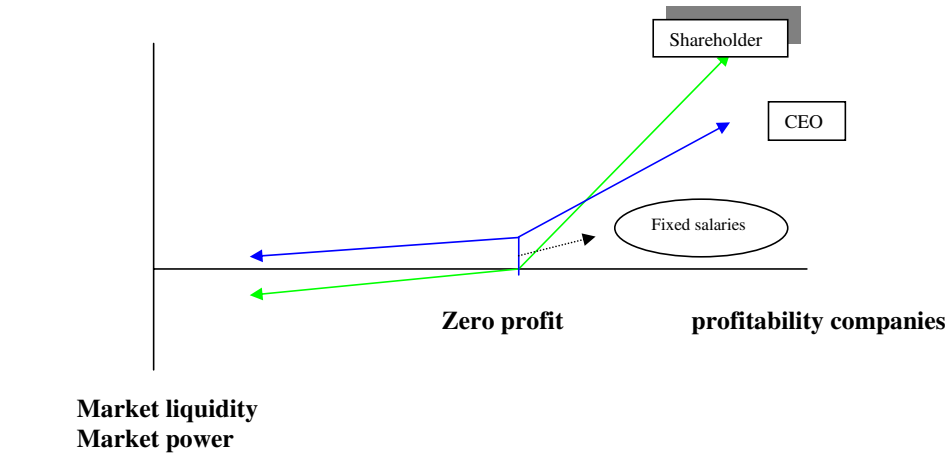
45 Debt is needed in a company to enlarge the value of the firm.
46 The retained profits are excluded from this analysis.
47 In addition there are a lot of hedging opportunities in the matured derivatives markets.

4.4.2 Payoff diagram management

Figure 4.2 inserts similar lines for the management of the company. Because CEOs earn fixed salaries plus bonuses like stocks and options of the own company, their upward potential is less than that of a shareholder but still with good potential. Dependent on the relative share of the performance dependent part of their total fee, CEOs upward market position is strong.

The down side risk of CEOs is limited because of fixed salaries and the strong contracting position of (top) management in general. In the short run, even badly performing CEOs are able to leave the company with substantial financial bonuses. These bonuses are usually paid as a compensation for the (perceived) risk a manager takes when he (she) changes positions. Also the (international) market for corporate control is well developed implying good alternative job positions and therefore low downside risks.

Figure 4.2 Theoretical expected relative return pay-off of the management of the company in case of different profitability perspectives of the economy



4.4.3 Payoff diagram suppliers

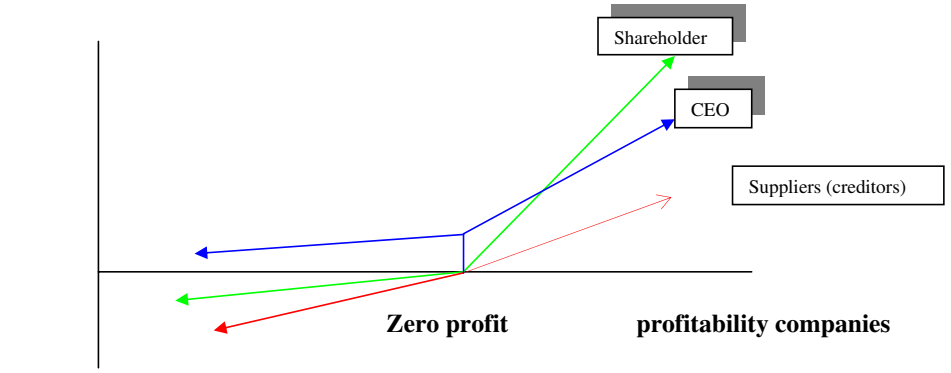
From a cash flow perspective especially the supplier (one specific form of creditors) is an important stakeholder in the company[48]. A problem of modelling the contracting position of creditors is that the legal positions of different creditors vary widely. Where banks in general have strong positions in the sense that they are able to require collaterals, suppliers of goods & services are in general more vulnerable. The risk position of

48 See figure 4.6 for an example of this phenomenon.

the supplier is also dependent on the expansion policy of the management in a company and the expected growth rate of the economy in general. In low growth scenarios, suppliers do not have strong bargaining positions. As a result they are considered worse off than the shareholder and CEOs, but on the other hand during high growth periods with scarce production capacity, the wealth easily goes to the creditors in general. Figure 4.3 presents the average modelled payoff for creditors.

Similar to strong upward potential of creditors in an upward market is the downward risk in a declining market. As a protection, creditors can diversify their portfolio of clients, and thereby diversify that risk. However, because creditors operate in less liquid markets compared to the stock market, the downward risk is worse for creditors than for shareholders. Another problem for creditors is their relatively weak bargaining positions in case of bankruptcies. Of course, specific contractual arrangement may result in different individual risk positions, but in most cases creditors are legally vulnerable.

Figure 4.3 Theoretical expected relative return pay-off of the creditors of the company in case of different profitability perspectives of the economy



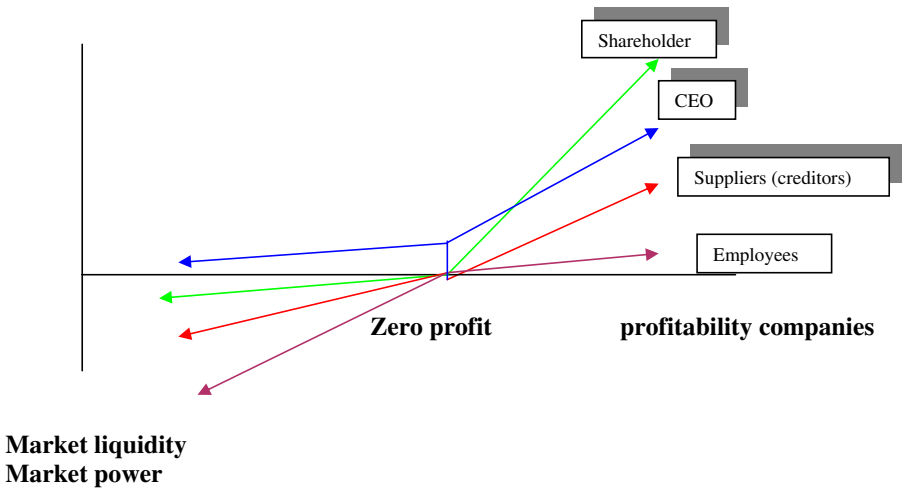
4.4.4 Payoff diagram employees

Then there are the employees. Because they have long term fixed wage contracts in general, the upward potential is relatively limited. In a growing economy, labour unions do negotiate some gains, however, because of the strong competition with other stakeholders also fighting for the residual results, employees, as a massive homogenous group, are

often the last stakeholder to share in profits. Figure 4.4 presents the modelled positions.[49]

The downside risk of the employee is considered the most severe of all stakeholders. Because of long term education and long term fixed contracts, employees have a vulnerable bargaining position in the sticky labour market. The most important fact is that employees cannot easily diversify their labour contracts. This makes the individual employee the most vulnerable party in this stakeholder's approach of the market economy. In the aggregated stakeholder model above, we see a linearly declining expected return implying that more people are laid off when profits fall further. It is important to note that the weak employee position is based on the lack of economic power and the lack of flexibility of employees in the modern network economy. From a legal perspective employees are often much better protected.

Figure 4.4 Theoretical expected relative return pay-off of the employees of the company in case of different profitability perspectives of the economy



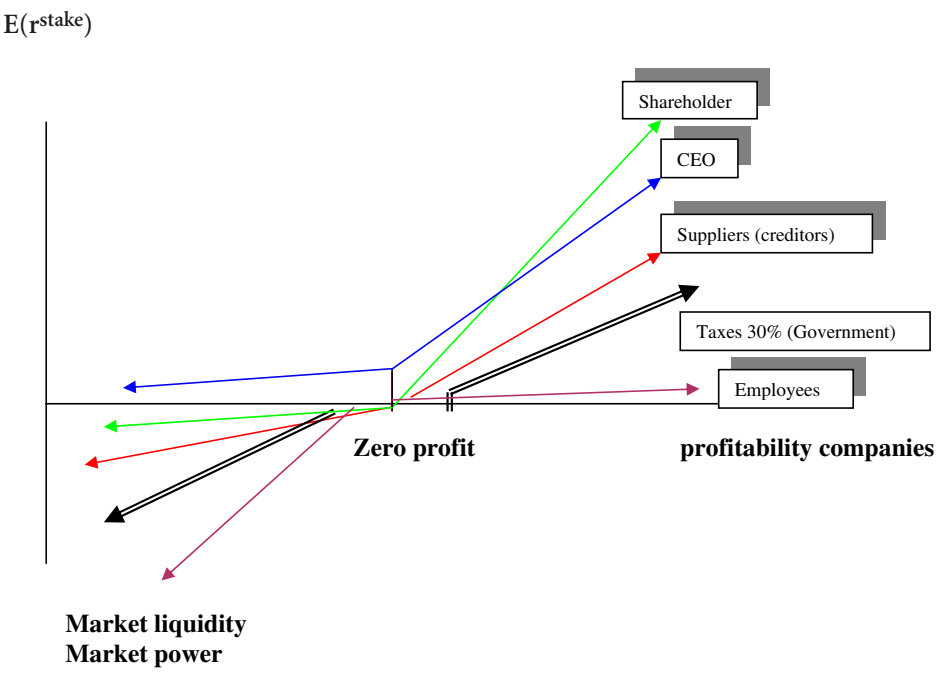
4.4.5 Payoff diagram government

Finally, we take a closer look at the position of the government in the stakeholder economy. The government is supposed to reflect the interest of the community concerning social security, safety, legal infrastructure and the environment. The market liquidity of

49 In Germany it is not uncommon that employees participate in the equity of their company. The main reason is to increase employee motivation and enhance labour productivity. See: Die Welt, December 30, 2005.

the government is non-existent because the state is by definition ultimately responsible for the performance of the market and therefore cannot leave the scene. On the other hand, because the government is in a strong position to incur political and legal changes (e.g. tax changes) they are considered better off than the employees. Figure 4.5 positions the upward potential of the government between the suppliers and the employees. The upward potential of a government is restricted in this case by an internationally competitive tax rate of for example 30%.

Figure 4.5 Theoretical expected relative return pay-off of the government in case of different profitability perspectives of the economy



Especially the governments' downward risk is difficult to estimate. In periods of recession or depression, the costs coming from additional unemployment payments, increasing subsidies, lower tax income etc. can be estimated. More troublesome are the costs coming from environmental threats, such as public health and natural disasters. It is most important to realise that environmental costs are still externalised by the private sector and as such has become the responsibility of the government. This makes the position of the government weak in the downward risk segment. But then again, if the stakeholder economy is able to flourish, these risks are exactly the ones to be controlled by the private sector itself.

4.4.6 Conclusions on the payoff diagrams

Let's first go back to the analysis of Hansmann (1996) in section 4.3, stating that '*the theoretical optimal position to assign ownership is to that class of patrons for whom the problems of market contracting – that is the costs of market imperfections – are most severe (p. 21)*'. In that section we ended with the question whether the market circumstances for the shareholder are more severe than that of the other stakeholders. As based on the above analysis with the general factors: **market power** and **market liquidity**, the general conclusion coming from figures 4.4.1 till 4.4.5 is that of all stakeholders, it is the shareholder and management[50] who hold the *best* risk / return pay-off positions in the market economy. Employees, government and suppliers all have lower expected returns and higher downside risks. For that reason it is concluded that because the market circumstances are not 'most severe' for shareholders in the modern economy, there is no valid theoretical economic argument to point towards shareholders alone to hold the ultimate risk and return of the modern stock market quoted company. Shareholders are primarily providers of risky capital, however that does not make them automatically the optimal stakeholder to control management. Depending on the character of the company, or the sector in which it performs, different stakeholders may be optimally suited to own the residual risk. According to the theoretical Hansmann model, this could lower agency costs and therefore increase total wealth.

The contribution of the above model is that it criticizes the hypothesis that shareholders are optimal owners of the residual claim as caused by their own 'severe' market position. The market position of other stakeholders is not *a priori* better. Despite the abstract character of the model, allowing for a lot of criticism on the exact relative positions of risk and return between different stakeholders, it is illustrative in the sense that from a strict economic efficiency perspective more stakeholders are candidates to own the residual claim of the firm[51]. Monitoring management may improve when other stakeholders are also involved financially. From an economic perspective it is crucial to find that governance model that minimises the corporation's transaction costs. In the next section we return the sustainability terminology in order to make a case for introducing other stakeholders than shareholders buying shares to gain control of the company.

50 Financial creditors like bondholders and banks are not considered in this model.

51 The residual claim of the company implies social, environmental and financial responsibility for the firm, but also a substantial upward financial potential. A portfolio of 'dual shareholders' at least improves the corporate democracy of the company.

4.5 The sustainable market economy and 'stakeholders equity'

What are the consequences of a potential change from shareholder governance to stakeholder governance for the company's transaction costs? Theoretically it is argued above that the agency costs, as defined by the cost function in equation [1] in section 4.3, will probably decrease because of changing ownership of the residual risk (governance costs). Based on the assumptions of agency theory in general - that an economic agent primarily maximizes its own utility function – the diversification of interests in the sustainable economy reduces agency conflicts between stakeholders because their interests are more aligned. Equal distribution of the ownership rights in the company may lower agency conflicts and hence reduce transaction costs. On the other hand, it can also be argued that the very same portfolio of owners of a company increases governance costs because decision processes become more complex. This study does not answer that question. Additional research is needed to study the consequences of such a corporate governance change. In this thesis the stakeholder equity model is primarily introduced to describe a sustainable economy. A stakeholder approach then is considered crucial for a sustainable economy.

Only few discussions in economics are as debated as the (perceived or real) controversy between shareholder and stakeholder value. For example, in a gentlemen's debate in the journal: *Organization Science*, Sundaram and Inkpen (2004) cynically accuse Freeman, A.C.Wicks and Parmar (2004) of confounding issues of 'value' (economic value) and 'values' (human values). Stakeholder theory begins with the assumption that values are necessarily and explicitly a part of doing business, and rejects the separation thesis. The separation thesis begins by assuming that ethics and economics can be neatly and sharply separated. Many proponents of the shareholder view of the firm distinguish between economic and ethical consequences and values. The sustainable market approach and sustainable finance tries to find the parallels between the stakeholder valuation of the firm and the shareholder valuation.

Also Szwajkowski (2000), p.382-384, makes a case that stakeholder management does not inherently conflict with sound conventional economics. He shows that companies with good reputation ratings, as measured by the Fortune Reputation Survey (FRS) used widely in the U.S., have low systematic risk (beta < 1) during recession periods and then higher betas (>1) in periods of growth. So there is a clear suggestion that high quality companies are less vulnerable to economic recessions than companies with a low reputation. Of crucial importance for the stakeholder view is to know that reputation ratings are arithmetic averages of eight attributes, five of which are non-financial (relating to employees, product quality, environmental quality etc.). In other words, the traditional shareholder view, in which stock prices reflect the value of the firm, values repu-

tations that depend on stakeholder relations. Then, Szwajkowski argues, the most important principle of stakeholder management is to disclose information. Chapter 5 elaborates on that.

Accepting stakeholder management, now the question is raised whether corporate governance changes can be used to attain more sustainable company policies. Jansson (2005) argues that it is not practical to give full property rights to more than one group of stakeholders. In some countries decision rights to employees[52] and creditors are already in place and the right of stakeholders are well protected legally, reducing the need to give them more formal decision rights. More specifically, Hillman, Keim and Luce (2001) empirically tested the hypothesis whether stakeholder representation on the board will be positively associated with stakeholder performance. Based on a dataset of 250 randomly chosen S & P 500 firms in 1995, their answer was a clear no. They presented a possible explanation by claiming that maybe the inclusion of community directors are useful in an attempt of the firm to gain legitimacy in the eyes of the public. The importance of the reputation of a company supports that hypothesis, but that question remained unanswered. In the coming section, some changes are suggested in the corporate governance of the sustainable firm. The main goal of the proposal is to lower agency costs through lower ownership costs.

4.5.1 Stakeholders equity

Let's first quote Fama and Jensen (1983):

> '*… whenever decision makers are not owners, decision management and decision control will be separated. Only when the decision maker is also the residual claimant – the person with legal rights to the profits of the enterprise once all the other claimants of the firm (for example, bondholders and employees) are paid – does it make sense to combine decision management and control*'.

To this background, it is proposed that a sustainable company emits a substantial amount of the equity of the company (at least 51%) to the major stakeholders of the company. The percentage of stocks held by internal stakeholders is called: stakeholders' equity (SE)[53]. This brings the legal ownership of the companies' residual profits (including the potential losses), from the capital providers alone, to new shareholders who provide capital on the one hand but also have other stakes in the company (e.g. employees, environmental NGO's or suppliers). The purpose is to strengthen the interest in - and

52 Especially Germany has a reputation in accepting representatives of employees in the board of directors.

53 To realise this idea new institutions are needed to organise and finance share ownership of employees or environmental organisations. A good example are the ESOP programs in the US.

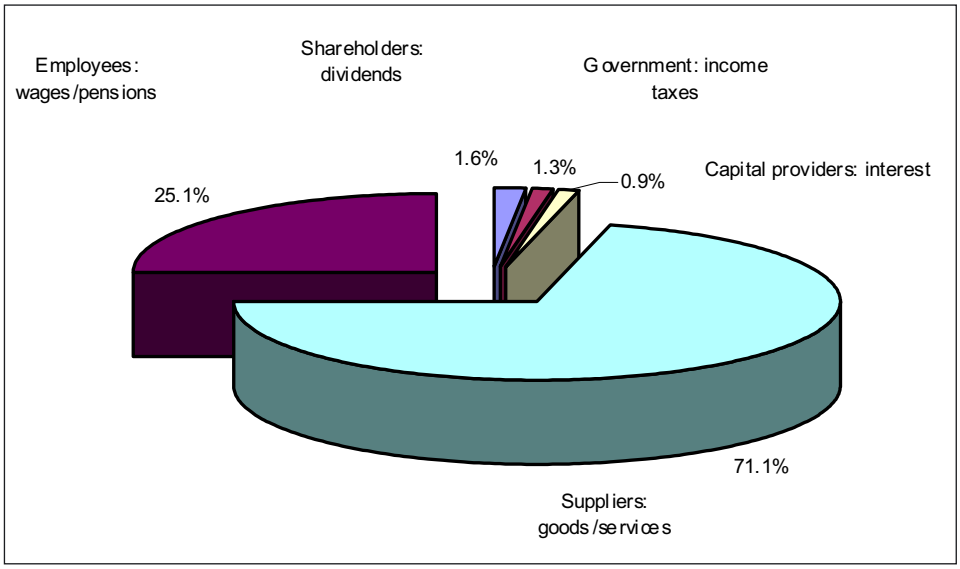
the responsibility of - different stakeholders *beyond* their conventional stakeholder interest. The old shareholders on the other hand still get the same reward for investments (although short term expected return - as caused by highly speculative projects- may diminish). The crucial difference is that capital providers lose ultimate control because ownership is now dispersed among the relevant stakeholders of the company. However, the shareholder model, including its legal property claims, remains unchanged.

In regular agency theory, the alignment of interests by providing the management with options and shares as part of their remuneration package is a well accepted tool to lower agency costs. Sustainable finance extends this traditional model to other stakeholders. In a sustainable financial system, agency relations cannot be restricted to shareholders and management alone. Other stakeholders, who also have big financial claims in terms of cash flows of the company, may be better motivated to manage the company efficiently. Suppose that the majority of the cash flow of a company is distributed to creditors, employees and shareholders (see figure 4.6 as a real world example). Then, shares could be sold to supplier organizations, labour unions, and the traditional shareholders. As a result all three stakeholders have a (financial) interest in the residual claim. This so-called stakeholder's equity (SE) should align the interests of the major stakeholders, and may therefore reduce the governance costs. Additionally, the government could propose a law to sell a minimum of shares (5%) to environmental NGO's to force these institutions to 'dirty their hands' (Wempe (1998)) and make their financial result dependent on the performance of the local economy. All these measures align the financial interests of companies in an economy. In this way we create two types of shareholders: 1) 'pure' shareholders being the traditional (and strict financial) shareholder and 2) 'dual' shareholders implying other stakeholders that also own shares. Dual shareholdings encourage corporate democracy and aims at a more fair distribution of corporate results without lowering shareholder value. To illustrate the relevance of these propositions, the coming section will present the example of the distribution of the cash flow of Philips in 2004 and two other examples on the importance of stakeholders' relations to the cash flow of a company.

4.5.2 Examples of sustainable finance

The first example is generated from the *Philips Sustainability Report 2004*. Figure 4.6 represents the stakeholders distribution of the Philips cash flow in that year.

Figure 4.6 Distribution of economic benefits of Philips in 2004



Source: Philips Sustainability Report 2004, p. 74.

The interesting signal from the cash flow distribution in Figure 4.6 is the substantial role of the suppliers: 71.1% of the total Philips cash flow in 2004 is redirected to this stakeholder. On the other extreme we find the stake of the capital providers (0.9%), the government (1.3%) and the dividends of the shareholders (1.6%). This example suggests that the success of Philips is relatively more important for the suppliers and the employees of the company than for the capital suppliers and the government. Concerning the shareholders it must be noted that only dividends are scheduled as the return on stocks. The majority of the expected return on stocks – a potential stock appreciation – is not reflected in this cash flow picture. Also should be noted that this example reflects the situation of one company in one sector in one single year. The long term distribution of stakes in a company is of course highly dependent on the sector and the timeframe in the economy.

Another example concerns the ongoing discussion on the remuneration policy of company executives. In the year 2004 the bonuses of Dutch CEOs of the 17 biggest companies in the Netherlands increased by 55% to a total of 13.4 million euro[54]. This evoked a fierce discussion on the desirability of such increases to the background of the moderate overall prospective of the economic growth in that period in which the govern-

54 This number is based on the digital archive of the *NRC Handelsblad*, dated 09-04-2005.

ment asked the social partners to be moderate in their wage demands. Here the general problem with the traditional agency theory is revealed, that only the costs coming from the shareholder /management relations are considered. However, observing more stakeholders in an economy, the number of agency relations will theoretically increase. In a sustainable financial policy, such differences in remuneration development between stakeholders are not desirable because new agency conflicts may arise. Employees, for example, could be tempted to increase shirking because top management is able to improve their situation in the same period that workers where forced to moderate their claims.

A final example is related to the influence of per January 2005 compulsory introduction of the IFRS accounting standards for stock market quoted firms. One of the new transparency demands is that the financial risk concerning the future liabilities of pension funds are included in the annual report of the sponsor company. DSM, a Dutch chemical firm, recently reached an agreement with their labour unions on that issue. From January 2006 on, the pension fund and its 47500 insured employees are completely held responsible for the financial risks and hence the sponsor company itself does not bear any financial risk for their employees anymore. In exchange, the company pays for a period of 5 years a premium of 21% in stead of the regular 12%. In fact, the company in this case redeems its financial solidarity with an important stakeholder[55]. Despite the attractive financial offer in the short run, such a deal is not done from a sustainable financial perspective. In that view it is the solidarity between stakeholders that makes the company strong with low(er) governance costs. The risk reduction of the current shareholders may be attractive for the stock price in the short term, but endangers the financial position of future generations of employees. Considering the expected risk and return position of major stakeholders as presented in Figure 4.5, these types of measures may increase governance costs and do not contribute to a sustainable market economy.

4.6 Conclusion

The basic conclusion of this chapter is based on the analysis of Hansmann (1996), stating that '*the theoretically optimal position to assign ownership is to that class of patrons for whom the problems of market contracting – that is the costs of market imperfections – are most severe (p. 21)*'. In the analysis, as presented in figures 4.1 until 4.5, the shareholder is not considered to be 'that class of optimal patrons of the investor owned company whose market position is most severe'. In fact, as portrayed in figure 4.5, shareholders in

56 Source: digital archive *NRC Handelsblad*, 02-07-2005.

general have the best risk/return position compared to other stakeholders of the company. For that reason it is concluded that there is no valid theoretical argument for shareholder, in its role as capital provider, to hold the ultimate risk and return of the modern stock market quoted company.

Therefore, a theoretical reduction of governance costs can be attained by introducing a corporate governance rule for the sustainable company. The rule proposes to sell more than 50% of the companies' equity to the major stakeholders of the company, as based on the distribution of the companies' cash flow. This part of the equity is called stakeholders equity (SE). The major goal of the stakeholders equity is to prevent one specific stakeholder from being the only owner of the company's residual returns. The SE approach widens the interest and the responsibility of stakeholders from one specific interest group to a two dimensional interest and responsibility. Shareholders are capital providers **and** ultimate owners, employees get a broader responsibility than just saving jobs and suppliers get a more sophisticated financial interest and responsibility than maximising their own turnover. From this perspective, the stakeholder equity model is considered an important instrument for achieving a sustainable market economy.

PART TWO

Empirical applications of sustainable finance

Chapter 5 Board transparency, CEO monitoring systems and financial firm performance

5.1 Introduction

The urgency for transparent accounting information and 'good' corporate governance has become painfully apparent after the major financial scandals in the beginning of the 21st century[56].There is a general 'text-book' agreement that information asymmetry is the driving theoretical factor behind the demand for disclosure of information in the modern capital market-economy. In that line of thinking, the inherent agency costs of insufficiently disclosed markets are the most important cause of an increase in capital costs. More generally speaking, agency relationships and moral hazard are endangering the informational efficiency of the capital markets. The problem with this line of argument is that it invokes just as many new questions as it answers. The broad research field on disclosure is categorised into four major topics by Healy and Palepu (2001). First, there are the questions concerning the regulations of disclosure. Why is there a need for regulations of disclosure and what types of disclosures should be regulated? Second, there are the questions on the effectiveness of auditors and intermediaries. Do they enhance the credibility of financial statements? The third group of questions deals with the disclosure decisions of managers. What factors affect management disclosure choices? Lastly, they distinguish the capital market consequences of disclosure. How do investors respond? In this chapter, we contribute only to this last question by relating the level of board transparency and the level of CEO monitoring to financial performance. By implementing a capital market approach, we want to answer the question whether a 'good' corporate governance policy is recognized by the market and rewarded with higher financial performance.

Corporate transparency, as a concept, is described extensively by Bushman, Piotroski and Smith (2003). They define it generally as: *the availability of firm specific information to those outside publicly traded firms*. Then, a specific distinction is made between three components of corporate transparency. The first component is called *corporate report-*

56 Enron, WorldCom, Parmalat and Ahold are well known examples.

ing and includes disclosure intensity, financial disclosures, governance disclosures, accounting principles, timelines of disclosures and the credibility of disclosures. The second component is called *private information acquisition & communication* and concerns the communication from external financial analysts and institutional investors. The third component distinguished is *information dissemination*, representing the media penetration of the company in general. Their research implemented this entire corporate transparency concept empirically and it was concluded that the governance transparency factor is primarily dependent on a country's legal/judicial regime, whereas financial transparency is primarily related to political economy.

This chapter focuses on one aspect of corporate transparency called *board transparency*. At a company level, the chapter analyses empirically whether the general Anglo Saxon governance model, with highly competitive and high transparency standards of the board, actually increases firm value. 'Good governance' is interpreted as a company with highly transparent board- and stock-ownership information, together with a clear and published set of corporate governance principles and policies. In this research, CEO monitoring signifies extensive public board information with independent audit and remuneration procedures. Theoretically it is expected that companies with strongly monitored CEOs have lower agency costs and hence lower costs of capital. From that perspective we may expect an improvement of the company's performance. In order to conclude on the financial performance of these types of basic corporate governance attributes, we apply a Fama and French (1996), Carhart (1997), capital market model, on a dataset of 580 companies from 21 different countries as provided by the Triodos Bank in the Netherlands. This model is used as a robust and well-tested financial benchmark to conclude on the performance of governance attributes.

Section 5.2 deals with the theoretical background of corporate transparency and disclosure of governance information in relation to financial firm performance. Concepts as information asymmetry, 'good governance', and their theoretical implications will be discussed. Then, the dataset is described extensively in section 5.3 and the implemented calculation of the weighed average cost of capital is explained. Several descriptive statistics of the data are provided. Also the choice for the four factor model as the framework for measuring financial performance is clarified in that section. Section 5.4 presents the empirical results and all its interpretations. Finally, section 5.5 summarizes and concludes.

5.2 Corporate governance transparency, monitoring power and firm performance

The transparency of governance systems can be classified into two sorts of disclosure: a mandatory one and a voluntary one. The mandatory disclosure firstly depends on the country in which a firm is located. Easterbrook and Fischel (1991) discuss extensively the need and importance of the legal structure of the business environment. Especially the 'lemon problem', as argued by the seminal paper of Akerlof (1970), is the crux of the economic argument. This Akerlof paper states that because of moral hazard and adverse selection, a market needs strong legal protection against low quality products ('lemons'). The problem in a non protected market economy is that suppliers tend to offer 'lemons' at regular (higher) market prices, undermining the informational efficiency of the market. Voluntary disclosure goes beyond the minimal legal requirements. Companies choose to disclose additional information in order to be more transparent to outsiders. This is mostly part of a good investors' relations policy of the company.

5.2.1 Transparency and financial performance

International empirical studies show that better legal protection for investors is associated with higher valuation of the stock market (e.g. La Porta, Lopez-de-Silanes, Schleifer and Vischny (2002)). Yet another similar empirical result is that the level of corporate transparency is highly dependent on the legal regime of the home country (Healy and Palepu (2001)). This study does not distinguish between mandatory (legal) and voluntary transparency. The sustainability data, as applied in this chapter, measure the level of governance disclosure in 21 different countries and hence in many different legal and political regimes. In order to answer the economic question of the capital market performance of governance transparency, we focus on the sign and the magnitude of the relationship along with the robustness of the model; rather than looking at the why of disclosure.

From the theoretical perspective, it was first of all Diamond and Verrecchia (1991) who argued convincingly that revealing public information to reduce information asymmetry can reduce a firm's cost of capital. The major reason is that disclosure of information reduces information asymmetries and therefore attracts increased demand from large investors[57]. This line of argument is what Healy and Palepu (2001) call the increased information intermediation. As based on Bhushan (1989a), Bhushan (1989b) and Lang and Lundholm (1996), it is argued that voluntary disclosure lowers the cost of information acquisition for analysts and hence increases their supply of information.

57 The costs of capital depend on the cost of equity and *ceteris paribus* of ?i alone (see equation [2] and [3] of this chapter). If, because of the lower information asymmetry occurring independent of the market, the return of firm i improves, $?_i$ lowers causing a lower cost of equity and therefore a lower cost of capital.

Expanded disclosure enables financial analysts to create valuable new information such as superior forecasts, thereby increasing demand for their services. But there are more economic reasons to hypothesize a value increasing influence of financial disclosure through a lower capital cost. Increased disclosure also reduces the estimation risk regarding the distributions of returns (e.g. [Clarkson, Guedes and Thomson (1996)]). An alternative explanation for firms to disclose information is because it is the socially responsible thing to do (Gelb and Strawser (2001)). Based on rating of the Council of Economic Priorities as proxies for the degree of social responsibility they found a positive relationship between level of disclosure and corporate social responsive activities. Once again, we are not chasing the why of the disclosure, but merely looking at the influence of either mandatory or voluntary corporate governance disclosure on the financial performance of the company itself. It is essential to know that there are good *a priori* theoretical reasons to assume a positive relation between corporate transparency and financial performance. In this chapter therefore, the hypothesis is tested that companies with highly transparent governance structures show better financial performance than companies with poor transparency on governance.

5.2.2 CEO monitoring and financial performance

Another question addressed in this chapter is the influence of CEO monitoring on firm performance. By reviewing the literature on this topic, this question does not reveal such a clear relation as stated above on transparency. CEO monitoring knows many shapes (e.g. internal and external monitoring) and there is no general linear relationship between monitoring power of companies and its financial performance. Incentives and motivation structures of either workers or CEOs are complex and not easily identified. Nevertheless there is quite some empirical research on this topic. Based on a dataset of 494 companies from 24 countries, scored in the year 2000, Durnev and Kim (2005) find that (i) firms with better investment opportunities, higher concentration of ownership and greater needs for external financing practice better governance (ii) firms that practice better governance are valued higher; and (iii) these relations are stronger in weaker regimes. They argue that ownership concentration matters because 'one does not steal from oneself' (p. 1462). In other words: firms with high ownership concentration will exert strong monitoring power and will not allow incompetent managers as their agents. In their view, the quality of corporate governance is dependent on the proportion of firm value diverted for private gains. Private gains include a wide range of value decreasing activities from what Jensen and Meckling (1976) define as excessive shirking and corporate perks to outright stealing of tangible or intangible corporate resources. This definition of the quality of governance captures various governance and managerial practices that may or may not be legally binding. Examples of diverting values by CEOs are the costs of reputation loss, costs of fines and costs of fraud. By using this broad definition of governance quality, both mandatory and voluntary disclosure of gover-

nance information is needed in order to reduce shirking behaviour of CEOs.

A more qualitative approach to evaluate the quality of the board of directors is presented by Berghe and Levrau (2004). Next to the quantitative and structural elements as often discussed in literature (board size, board composition, and board leadership construction), they introduced 'soft' factors into the analysis. The construction of that tool was deduced from an international comparison of corporate governance codes, former research and practitioner's views. Based on 60 in-depth interviews with directors of Belgian listed companies on Euronext and on Nasdaq Europe, they developed an evaluation tool for performance criteria to measure superior corporate governance and value creation. In the end the authors identified three areas of improvement or challenges for the board. First a formal board and director evaluation system is needed, both for the directors as a group but also for individual directors. Then a professionalisation of the selection process of new outside directors is needed in order to reduce the influence of the old-boys-network. Finally, the importance to improve the disadvantageous position for outside directors with regard to information gathering was stressed[58].

Stock exchanges all over the world require a specific level of disclosure of information of the listed companies simply because financial markets need that information for a proper pricing process. The disclosure on corporate governance though is relatively poor. Based on a Danish dataset, Parum (2005) for example concludes that the quality of information on the independence and qualification of the leading coalition, the management processes and strategic and financial goals have at least: 'room for improvement' (p.707). The most attractive part of the underlying study is that this kind of soft information is explicitly scored by the sustainability rating agencies underlying our quantitative analysis. The following section will elaborate on the distinguished variables, however summarizing the theoretical and empirical literature we do not formulate an explicit hypothesis between CEO monitoring power and financial firm performance.

5.3 Dataset and Methodology

The implemented dataset consists of two types of variables. First there are the scores of the rating agencies on transparency and monitoring power of a company (see section 5.3.1). Then, in section 5.3.2, a description is presented of the quantitative economic variables on the company's performance as retrieved from Datastream International. The employed methodology is discussed in section 5.3.3 and section 5.3.4 presents some descriptive statistics.

58 These qualitative results are more or less part of our quantitative input as can be read in appendix 2, questions 6-11.

5.3.1 The data on transparency, CEO monitoring and 'CG performance'

The dataset consists of qualitative scores on the corporate governance performance of 571 major companies quoted on stock exchanges in 21 different countries from all over the world (see appendix 1 for more details). The scores of the companies are based on questionnaires gathered by the SiRi research agencies[59] based on the year 2003. The Triodos Bank in the Netherlands, a member of the SiRi group, put the dataset at s.o.'s disposal. In this chapter, transparency (TRANS) is measured by the scores of six questions regarding the availability of public reports on the directors' biographies, directors' remuneration, CEO`s remuneration, number and nature of board committees, primary stock ownership and voting rights, and the availability of a set of published corporate governance principles. See appendix 2 for the entire list of questions. The scores are set between 0 and 100 percent according to strict criteria based on the level of disclosure of a specific question. For example, the question on directors' biographies results in a '100' if the company annually discloses biographies of all members of the board (including supervisory board in case of a two-tier system) containing name, age, position in the company, other positions held in listed companies or major institutions, and a broad outline of the past career. If the company publishes biographies of only some directors but not all, or does not include all the information of the SiRi guidelines, a score of '40' is provided. A '0' results if the company does not provide any information at all of its directors in its public reporting. Although based on years of experience and development, it is important to realise that the resulting corporate governance scores are relative numbers, representing a systematic but qualitative perception of transparency.

The variable CEO monitoring (CEOMONI) represents the 11 questions under the heading 'management systems' in appendix 2. Transparency aims exclusively at providing information to all relevant stakeholders, CEO monitoring on the other hand, focuses on management systems. CEO monitoring represents the applied policy to reduce agency costs and to create a competitive and monitored environment for the board. This variable concerns information on the existence of a performance evaluation system, board effectiveness and the number of non-executive directors (NED) in the board, the position of the chairman of the board and the existence and composition of an audit and/or nomination committee. Also the existence of independent remuneration and compensation committees are considered. The criteria for the scores of a company are struc-

59 SiRi is a cooperation of 12 European social research companies that developed a research questionnaire for analysing companies from different countries according to an identical international structure. The sources of information for the analyst are: 1) companies documents that are publicly released; 2) national and international press articles 3) Associations, non-profit and non-governmental organizations and 4) contacts between SiRi group members and the company. If not all relevant information could be found or was not disclosed by the company, SiRi used two codes: NA (not available) and ND: not disclosed. NA is awarded if the efforts made by the analyst to answer a specific question proved insufficient; this resulted in a neutral score of 0.5 points. In the quantitative analysis the ND got a score of zero points.

tured in such a way that the higher the level of monitoring and competition among board members, the higher is the score on CEO monitoring. Also this variable scores between 0 and 100 percent and represents the percentage of 'good' governance in terms of reducing agency costs.

The third distinguished governance variable is called the Free Float Number of Shares: FFNOSH. The data are retrieved from Datastream International and the variable is calculated as the percentage of total outstanding shares of the company that is freely traded in the market. This governance indicator proxies the (monitoring) power of shareholders in the sense that the higher the free float of shares, the lower the institutional holdings of shares and therefore the lower the monitoring power. A high free float indicates that there is a highly dispersed shareholder ship for which it is difficult to raise a majority during the annual shareholder meeting of the company. Or vice versa, the lower the free float of shares, the higher the institutional share holdings which make it easier for the bigger shareholders to create a coalition with other shareholders to monitor the board more closely.

5.3.2 Data on financial firm performance

Next to the corporate governance data as gathered by the SiRi research group, the financial data of the companies involved are also retrieved from Datastream International. All relevant financial information of the analysed companies is gathered, ranging from yearly balance sheet data to weekly stock prices. The research period is 2002 till 2004, and in that period 156 weekly total stock returns were calculated based on Wednesday closing prices (including reinvestment gains such as dividend and bonus shares). The only calculated variable is the cost of capital. The weighed average cost of capital (WACC) is proxied by implementing the Damodaran (2001), p. 587-88 methodology:
Where c_e and c_d are respectively the cost of equity and the cost of debt, t is the local tax rate, E is the amount of equity of the company at the end of a specific year and D is the amount of debt in that year. R_m and R_f represent respectively the return of the market

$$WACC = c_e \frac{E}{E+D} + (1-\tau)c_d \frac{D}{E+D} \qquad [5.1]$$

$$c_e = R_f + \beta(R_m - R_f) \qquad [5.2]$$

in the country of the company and the risk free rate of that country. As risk free rate the 1-3 years government bonds is selected because short term money market rates where not available for all the 21 involved countries. The source of the corporate tax rate is the annual report of the OECD of 2003. The cost of equity, c_e, is estimated as shown in equation [2] where ß is calculated as the yearly covariance between the companies' return on

equity and its local market return, divided by the variance of the local market return. Finally, the cost of debt is proxied by using the interest coverage ratio as an input for the companies' bond ratings. Appendix 3 presents the applied bond ratings in relation to a specific interest coverage ratio, as published by Damodaran on his website. By subtracting the risk free rate from both sides of equation [2], interest rate parity is assumed to neutralize the foreign currency risk between the 21 different countries.

5.3.3 Descriptive statistics

Panel A of table 5.1 shows the descriptive statistics and the 2-sides Pearsons correlation coefficients of the main variables of this research.

Table 5.1: Descriptive statistics

Panel A shows the descriptive statistics and the 2-sided Pearson correlation coefficients of the main variables in this research. TRANSP(arency) represents the quality of the internal written and published communication of the companies' corporate governance indicators. The variable CEO-MON indicates the level of the monitoring power as derived from the applied management system concerning the corporate governance issues of the company. The scores of these two variables range from 0 until 100. The higher the score, the better the company fulfills the requirements of the SiRi research group. FFNOSH is the free float number of shares as a % of the total number of issued shares. All the other variables represent economic indicators. EBITDA is the earnings before taxes, interest and depreciation. Ri is the return of company i in the year 2003. Also the beta, market value (MV) and the price to book value (PtBV) are based on the year 2003. CoD, CoE and CoC represent respectively the cost of debt, the cost of equity and the cost of capital.

Panel B shows the descriptives and correlations of the weekly returns of the selected (hedge) portfolios in the period 2002-2004. A hedge portfolio is calculated as the difference in weekly returns between the top 30% companies of the entire sample minus the bottom 30%, as selected for a specific variable. Further is Ri the return of company i, Rf the risk free rate, Rm the return on the local market portfolio. SMB represents the small minus big portfolio, measured by market value, PtBV the price to book value, MOM the momentum variable, TRANSP the transparency, and CEO-MON the CEO monitoring portfolio.

PANEL A

	N	Min	Max	Mean	Std. Dev.	TRANSP	CEO-MON	ebitda	FFNOSH	Ri2003	beta2003	MV 2003	PtBV	CoD	CoE	CoC
TRANSP	583	0	100	67.1	18.9	1										
CEO-MONITORING	583	0	75	22.8	13.2	0.376 **	1									
ebitda[1]	546	-105.6	13501	65.5	649.1	-0.163**	-0.038	1								
FFNOSH (in %)	579	7	100	55.9	22.3	-0.224**	-0.002	0.103	1							
Ri2003	579	-0.952	1.862	0.183	0.322	-0.070	-0.033	-0.034	0.055	1						
beta2003	579	-0.075	3.065	1.027	0.454	0.121**	0.029	-0.006	0.078	0.090*	1					
Market Value 2003[1]	579	23.52	245559	17737	30428.7	0.117**	-0.084*	0.077	-0.017	-0.140**	-0.036	1				
PtBV2003	579	-239.1	186.0	2.2	15.8	-0.006	-0.087*	-0.003	-0.001	-0.039	-0.031	0.046	1			
Cost of Debt	573	0.001	0.248	0.064	0.068	0.099*	0.095*	-0.029	0.094*	0.315**	0.223**	-0.076	-0.103*	1		
Cost of Equity	574	0.014	0.606	0.135	0.110	-0.332**	-0.089*	-0.025	0.303**	0.215**	0.395**	-0.181**	-0.035	0.100*	1	
Cost of Capital	571	0.009	0.434	0.089	0.071	-0.269**	-0.047	-0.021	0.219**	0.228**	0.323**	-0.189**	-0.083*	0.391**	0.740**	1

** *Correlation is significant at the 0.01 level (2-tailed).*

* *Correlation is significant at the 0.05 level (2-tailed).*

PANEL B[2]

	N	Min	Max	Mean	Std. Dev.	Ri-Rf	Rm-Rf	H-SMB	H-PtBV	H-MOM	H-TRAN	H-MONI
Ri-Rf	155	-0.103	0.050	-0.0279	0.028	1						
Rm-Rf	155	-0.116	0.109	-0.0276	0.029	0.359**	1					
Hedge30%-SMB	155	-0.100	0.081	0.0013	0.029	-0.307**	0.263**	1				
Hedge30% PtBV	155	-0.078	0.103	0.0014	0.029	0.470**	-0.150	-0.766**	1			
Hedge30% MOM	155	-0.101	0.108	0.0039	0.030	-0.335**	-0.445**	-0.598**	0.366**	1		
Hedge30% TRANSP	155	-0.089	0.094	-0.0001	0.027	-0.325**	0.222**	0.868**	-0.826**	-0.570**	1	
Hedge30% CEO-MON	155	-0.092	0.062	-0.0002	0.024	-0.219**	0.238**	0.744**	-0.514**	-0.652**	0.792**	1

1 In millions of EUROS

2 All figures represent equity returns per week in the period January 2002 until December 2004

Especially the many statistically significant correlations between the corporate governance variable: TRANSP(arency) and almost all other variables catch the eye. Transparency shows a clear negative relation to the earnings before interest, the free float number of shares, the cost of equity and the weighed cost of capital. Apart from the negative EBIT relation, are all relationships conform expectations. The better the transparency of the companies' board, the lower the agency costs and hence the cost of equity and the total costs of capital. A higher free float of shares (FFNOSH) reduces the monitoring power of the shareholders and thus explains the negative coefficient. The negative relation between transparency and the earnings is remarkable (Ebitda). Size (market value) and risk (beta) are components that are expected to contribute positively to the transparency of the company.

The CEO monitoring capacity of a company shows negative relations to all variables except beta and the cost of debt. Statistically significant negative are only the market value (size), the value stocks (Price to Book Value) and the cost of equity. The cost of debt shows a positive relation to CEO monitoring, indicating that debt is monitored by the debt holders themselves and does not need monitoring from the board itself.

Panel B analyses the statistical descriptives of the equity returns of the relevant hedge portfolios in the Fama/French/Carhart framework in the period of January 2002 until December 2004. The mean returns of the total sample portfolio minus the risk free rate and the market portfolio minus the risk free rate of respectively -/-2.79% and -/-2.76%, indicate that the markets were worldwide in decline in the aftermath of the 2000 stock market crash. Both the financial hedge portfolios (Small Minus Big, Price to Book Value and Momentum) and the governance hedge portfolios (Transparency and CEO Monitoring) all outperformed the market by showing light positive or light negative mean returns. With regard to the correlation matrix it's important to note the high correlation between the transparency hedge portfolio and the size- and value stock hedge portfolios. Moreover the correlation between the CEO monitoring hedge portfolio and the size and transparency portfolios is high and statistically significant.

5.3.4 The applied methodology

5.3.4.1 Cross-section analysis

The applied analysis in this chapter is twofold. First a cross-section regression model is formulated in order to get a better feeling for the relationship between governance variables and the cost of capital in general. If these factors show statistically significant relations, as expected by the theory described in section 2, then there are good reasons to believe that board transparency, CEO monitoring and shareholder power (as expressed

by the percentage of free shareholder ship), all show a considerable influence in the financial performance of the company. Equation [3] represents the tested relationship:

$$CoC_t = a + b\beta_t + cMV_t + eTRANS_t + fCEO_t + gFFNOSH_t + \varepsilon_t \qquad [5.3]$$

where for all companies i in period t:

CoC_t	=	the weighed average cost of capital
$ß_t$	=	the market risk
MV_t	=	market value
$TRANS_t$	=	the transparency
CEO_t	=	the level of CEO monitoring power
$FFNOSH_t$	=	the percentage of free floating shares

In this model, beta (ß) and size (*MV*) of a company are observed as controlling variables. In the cross-section methodology there is by definition no room for a momentum variable. Although we get clear empirical answers on the relation between governance and cost of capital, the problem is that the cross-section model does not answer the ultimate question on financial performance. The low expected adjusted R-squares indicates that the model is strongly under-specified resulting in biased estimates and therefore insufficient answers on financial performance.

5.3.4.2 Time series analysis

To reduce these problems to a minimum, the choice is made to apply the 3-factor Fama and French (1993) and the 4-factor Carhart (1997) model in order to measure the influence of governance variables on financial performance. These models are well accepted in finance and present robust factors for both financial and non-financial firms (see Barber and Lyon (1997)). Despite the relatively short period of analysis (January 2002-december 2004), this model is considered suitable for answering the main research question at hand (see section 1). By using capital asset pricing models, it is implicitly assumed that it is the financial market (being the stockholder and the debt holder) that ultimately disciplines the management and determines the cost of capital. This framework therefore is considered optimal to benchmark the exact measurement of the influence of 'good governance' on financial performance. On the other hand, a problem of this methodology is that we need the assumption of informational efficient markets and, more importantly, an exact identification of the main value drivers of the return generating process. The applied model is:

$$R_t - Rf_t = a + b(Rm_t - Rf_t) + cSMB_t + dBtMV_t + eMOM_t + fCGOV_t + \varepsilon_t \quad [5.4]$$

where:

SMB	=	a Small Minus Big hedge portfolio
BtMV	=	the Book to Market hedge portfolio
MOM	=	the momentum portfolio (based on the financial performance in the year t-1, in this case the year 2002)
CGOV	=	corporate governance hedge portfolios (TRANS and CEO-MON)

A hedge portfolio implies that an investor buys a portfolio of companies that belong to the top of a specific criterion (a long position), e.g. transparent companies, and finances that transaction with the sale of the bottom portfolio (a short position) of that variable in such a proportion that a zero investment remains. The return earned with that arbitrage portfolio is supposed to be totally generated by the isolated selection criterion. Extensive empirical research in the last ten years has shown that the first four factors of equation [4] very well explain the overall market return generating process. It is important to note that the model only applies if the idiosyncratic risk (measured by the constant a in the regression model) is zero for all portfolios together. If this is not the case, the coefficients are still biased and unreliable to measure the assumed relationship. The methodology produces robust results, but is still a joint test of the validity of the general capital market model and the identity of the tested variable in question.

In this methodology, the general capital model is basically applied to isolate the influence of the tested governance variables. The variables measuring 'good governance' are board transparency (TRANS), the applied management systems aimed at CEO monitoring (CEO-MON) and the percentage of freely tradable stocks as a proxy for shareholders monitoring power (FFNOSH). All other variables serve as control variables.

5.4 Results

5.4.1 The cross-section approach

The major question of this chapter, as raised in section 5.1 and 5.2, is to find a robust quantitative relation between financial firm performance and 'good' corporate governance. The cross-section analysis enables a straightforward regression model between the cost of capital of a company as the dependent variable, and the level of board transparency, the level of CEO monitoring and the percentage of freely floating shares as independent variables. The implemented control variables are ? as the measure for market risk, and the market value of a company as the proxy for size. Table 5.2 presents the results.

Table 5.2: Cross-section regression results

Regression of the cross-sectional relationship between the cost of capital as independent variable and the governance variables: transparency (TRANS), CEO-monitoring (CEOMON) and the percentage of freely traded stocks (FFNOSH) as independent variables. The applied controlling variables are beta and firm size through market value (MV). The research period concerns the year 2003 and numbers are expressed as yearly percentages. The governance variables are added as a single factor in each of the three presented models.

$$CoC_t = a + b\beta_t + cMV_t + dTRANS_t + eCEOMON_t + fFFNOSH_t + \varepsilon_t$$

	a	b	c	d	e	f	R^2
Model 1	0.204	0.354	-0.284	-0.284			0.24
(t-stat)	(10.2)	(9.59)	(-5.65)	(-7.65)			
Model 2	0.172	0.324	-0.255		-0.095		0.17
	(8.16)	(8.47)	(-6.58)		(2.46)		
Model 3	0.115	0.307	-0.226			0.187	0.19
	(5.63)	(8.07)	(-5.97)			(4.93)	

Note that the sign of governance variables (coefficient *d*, *e* and *f*) are all conform expectations as based on agency theory. Board transparency of firms shows a statistically significant negative influence on the cost of capital. Intensive CEO monitoring policies have a smaller coefficient but also lower the cost of capital. A high percentage of freely floating shares in a company increases the capital costs, which can be explained by lower monitoring power as caused by the more dominant free riders problem in companies with more dispersed share ownership.

Despite the clear statistical results, which are in accordance with other empirical studies, there are some general theoretical problems with the relation between the cost of capital and the financial performance of the firm. Although the fact that a lower cost of capital increases the value of the firm, in the short term it is also possible that a higher cost of capital signals a high growth potential of the firm. The cross-section results of the above model do not shed any light on this question. The theoretical relation between the cost of capital and the financial performance is a lot more complex than shown in the above model. Basically, the cost of capital is a weighed average of the market value of debt and equity of the firm and relies on the hypothesis of informationally efficient markets in which it is the investor that ultimately determines the cost of capital. In the above analysis, the results of the cross-section model is conform theoretical expectations and as such a useful indication of the quality of the theory and the dataset. However, the low adjusted R^2 (between 19 and 24 percent) demonstrates that the model is underspecified and therefore not robust enough for reliable empirical conclusions. For that reason, in the next section a methodology is chosen that includes the most robust benchmark possible in order to measure the relation between governance variables and financial performance more exactly.

5.4.2 The time series analysis

This section implements the Fama and French (1993), Fama and French (1992) and Carhart (1997) asset market pricing models as the benchmark for measuring financial performance of companies with specific governance factors. In this approach performance is measured as the return of an investor holding a specific portfolio of stocks during a 3-years holding period. The controlling variables are: risk (ß), size (market value), price to book value and a momentum variable (based on the portfolio return of the year before). To measure the influence of governance variables on financial performance the governance variables are added one by one in the regression model. Of crucial importance then is the sign, the value and the statistical significance of the coefficient *f* in Table 5.3. The column with the f- coefficients represent the dependence of that portfolio return for the three 'good governance' variables: transparency, high CEO monitoring and freely floating number of stock ownership. Table 5.3 presents the results of the regression model. The sample portfolio of 580 international stocks is subdivided into quintiles of 116 companies each, ordered by the level of the governance variables: respectively transparency, CEO-monitoring power and free stockownership. The most transparent, highly monitored and high free float companies are selected first and the least transparent (monitored, low free float) companies are gathered in the fifth's quintile. For example, the portfolio with the 116 firms with the most transparent board information is shown in row number 2. It reads that, apart from the price to book value, all coefficients of the controlling variables in the regression model are statistically significant with a sign conform expectation.

Table 5.3: Time-series regression results

Regression of the weekly returns of 15 value-weighted quintile portfolios on proxies of market premium (Rm-Rf), size (SMB), Price to Book (PtBV) and momentum risk factors in returns. Added are three 'good governance' variables (CG), being respectively a transparency proxy, a CEO monitoring proxy and a proxy of the tradability of a company, being the percentage of free floating shares of the total number of shares of a company. The research period is January 2002-december 2004 (155 weeks). The estimated model is:

$$R_t - Rf_t = a + b(Rm_t - Rf_t) + cSMB_t + dPtBV_t + eMOM_t + fCG_t + \varepsilon_t$$

Quintile	a	b	c	d	e	f	R^2	DW	Mean Rp-Rf
Transparant	-0.302	0.814	-0.220	-0.027	-0.180	0.197	0.93	2.14	-1.1
	(-4.14)	(22.2)	(-5.28)	(-0.52)	(-6.02)	(2.79)			
2	-0.247	0.827	-0.218	0.088	-0.102	0.082	0.94	2.11	-1.29
	(-4.21)	(26.3)	(-5.99)	(1.95)	(-3.83)	(1.34)			
3	-0.113	0.908	-0.042	-0.006	0.066	0.075	0.93	2.05	-1.30
	(-2.13)	(25.6)	(-1.06)	(-1.31)	(2.06)	(1.19)			
4	0.020	1.025	0.263	-0.044	-0.046	-0.200	0.95	2.18	-1.68
	(0.369)	(27.4)	(6.24)	(-0.84)	(-1.32)	(-2.92)			
Non-transparant	-0.332	0.734	-0.295	-0.138	-0.007	-0.458	0.90	2.12	-1.84
	(-5.17)	(14.8)	(-5.47)	(-2.04)	(-0.14)	(-5.31)			
High CEO-Monitoring	-0.027	0.990	0.075	-0.078	-0.203	-0.075	0.95	2.26	-1.81
	(-0.42)	(30.2)	(1.85)	(2.32)	(-6.18)	(-1.98)			
2	-0.187	0.850	-0.067	0.063	0.007	0.003	0.89	2.32	-1.53
	(-2.96)	(23.2)	(-1.56)	(1.74)	(0.19)	(0.078)			
3	-0.220	0.850	0.233	-0.118	-0.051	-0.144	0.93	2.25	-1.49
	(-3.89)	(24.8)	(5.71)	(-3.40)	(-1.36)	(-3.757)			
4	-0.664	0.490	-0.501	-0.451	-0.136	0.217	0.89	2.49	-1.34
	(-8.70)	(9.62)	(-8.48)	(-9.01)	(-2.36)	(3.91)			
Low CEO-monitoring	0.110	1.182	0.113	-0.108	0.051	-0.893	0.95	1.89	-1.05
	(2.34)	(30.2)	(2.82)	(-3.23)	(1.34)	(-23.6)			
High Free Float	-0.387	0.656	-0.293	-0.049	-0.140	-0.602	0.92	2.29	-1.12
	(-6.79)	(14.9)	(-6.23)	(-0.84)	(-3.45)	(-9.28)			
2	-0.053	0.973	0.182	-0.233	0.001	0.019	0.94	2.07	-1.49
	(-0.87)	(25.5)	(4.63)	(-4.80)	(0.04)	(0.34)			
3	-0.221	0.914	-0.132	-0.753	0.353	0.667	0.74	2.19	-1.61
	(-1.58)	(11.3)	(-1.51)	(-7.35)	(5.20)	(5.66)			
4	-0.234	0.859	-0.322	-0.144	0.015	0.235	0.71	2.14	-1.55
	(-1.83)	(10.9)	(-3.89)	(-1.48)	(0.22)	(2.09)			
Low Free Float	-0.301	0.787	-0.198	-0.085	-0.109	0.340	0.93	2.16	-1.47
	(-5.11)	(20.3)	(-5.02)	(-1.85)	(-3.33)	(6.35)			

The regressions are estimated with weekly returns. For readability reasons the constant and the mean excess return are multiplied by 52 in order to find yearly returns. The numbers in parenthesis below the regression coefficients are t-statistics.

The constant (a) is negative and represents the negative trend in the stock markets in the 2001-2003 period. The adjusted R^2 of 93 % indicates the robustness of the model and the autocorrelation (as tested by the Durbin Watson coefficient) is between the accepted limits. This pattern can be read for all 15 regressions.

To answer the main question of the analysis we need to interpret the *f* coefficients of all quintile portfolios. The transparency block of table 3 shows that (both) the portfolios

in the lower two quintiles have a statistically negative relation with the expected return of respectively -0.2 % and –0.458 %, whereas the first quintile with very transparent companies has a positive influence of +0.2 %. The second and third quintile do show a positive f-coefficient, but no statistically significant difference from zero. Because of the gradually improving average return of the five portfolios (from –1.11% until –1.84%) and the steadily improving f-coefficients, it is concluded that board transparency, as a general governance policy, pays off.

The f-coefficients in the CEO monitoring block do not show the above consistency. Both the lowest and the highest quintile have significant negative scores, whereas the fourth quintile exhibits a clear positive influence. The results are even contra intuitive because the table reads that the average returns of the five portfolios improve if the CEO monitoring deteriorates. Here it is concluded that the effort of the board to monitor the CEO is not effective, but needs further research.

The third conclusion concerns the concentration of shareholder ship as measured by the percentage of free floating shares. Also here no straightforward conclusion can be drawn. Although a statistically significant influence in four out of five portfolios, there is no straight upward or downward trend in both the *f* coefficient and the average quintile return. We conclude that the highest dispersion of stock ownership (quintile 1) has a negative impact on the return of the company, whereas the companies with average concentrated share ownership (quintile 3) generate the most positive contribution to the financial return. This indicates that there is an optimum amount of free-floating shares somewhere around the mean in our sample (i.c. 56% free float of shares, implying 44% of institutional ownership).

How reliable are the above conclusions as based on the implemented capital market methodology? The critical test for accepting the entire capital asset pricing model is that the five constant terms jointly do not differ from zero. In that case only, all idiosyncratic risk is eliminated, and the market variables included in the model capture all the remaining systemic risk. In our case, the constants are close to zero (altogether less than –0.302 % per year in the transparency block), but do statistically differ from zero. Therefore the entire model must be rejected as an attempt to predict future stock returns. On the other hand, we are not searching for a model that explains the entire return generating process, but only a robust benchmark is needed to find unbiased estimators for the influence of board structures in companies on the financial performance of that company. The high R^2 of this benchmark model suits this condition.

5.5 Summary and Conclusion

This study analyses agency relations between the board of major international companies and the residual claimants of that company: the shareholders. Especially the question whether the general Anglo-Saxon governance model, with highly competitive and high transparency standards, increases financial performance, is studied. 'Good governance' is interpreted as a company with highly transparent board- and stock-ownership information, together with a clear and published set of corporate governance principles and policies. CEO monitoring comprehends in this research extensive public board information and management systems with independent audit and remuneration procedures. Agency theory argues that transparent companies and companies with strongly monitored CEOs have lower agency costs and hence a lower cost of capital. The results in Table 5.2 do not reject these theoretical relations and show for the research period 2002 – 2004 a statistically significant negative relation between transparent governance structures and stronger monitoring policies on one side and financial performance on the other side.

Then, by applying the Carhart (1997), Fama and French (1996) capital market model, a robust and well-tested financial benchmark is used in order to conclude on the financial performance of specific corporate governance attributes. Fifteen quintile portfolios are selected, ranked and compared financially. Controlling for size, risk, book-to- market value and a momentum factor, it is concluded that a portfolio of top transparent companies shows a statistically significant improvement in financial performance compared to the less transparent companies. Further, it can be read that the transparency factor contributes positively to this result. It is concluded that firms that provide transparent board information are better rewarded by the investor.

Companies with middle and low free float percentages of stocks perform financially better than companies with highly dispersed stock ownership. From the perspective of reducing agency costs by increased shareholder monitoring power, an indication is found that the optimal concentration of share ownership is in the middle of our sample of about 56% (implying 44 percent of institutional ownership). A third and final conclusion is that there is no evidence that a more intense CEO monitoring policy of a company's board does lead to a higher financial performance of the company. Therefore, 'good governance' policies do imply transparent board information, aims at an average institutional share ownership and does not spend too much energy to a strict CEO monitoring managing system. From a financial perspective, the latter policy does not pay off.

Appendix 1

Analysed number of firms per country

	Countries	*Number of Firms*
1	Australia	6
2	Austria	5
3	Belgium	11
4	Canada	4
5	Denmark	4
6	Finland	6
7	France	53
8	Germany	38
9	Hong Kong (China)	10
10	Ireland	7
11	Italy	32
12	Japan	34
13	Korea (South)	2
14	Netherlands	28
15	Portugal	7
16	Singapore	1
17	Spain	21
18	Sweden	20
19	Switzerland	36
20	United Kingdom	102
21	United States	144
	Total	**571**

Appendix 2: Description of the corporate governance data question list.

I Public Reports and Communications

1. Directors' biographies

a. The company publishes for all directors' biographies that satisfy SiRi guidelines.
b. The company does not provide (sufficient) biographies for all directors.

2. Directors' remuneration/compensation

a. The company publishes information on directors` remuneration that satisfy SiRi guidelines

3. CEOs remuneration/compensation

a. The company publishes information on the CEO`s remuneration that satisfy SiRi Guidelines.

4. Number and nature of board committees

a. Nature/Mandates as well as names and composition of all the Board Committees is disclosed
b. Some information is disclosed but the nature or composition of committee(s) of one or sever al committees remain unclear.
c. The company does not have any Board Committees.
d. No information is disclosed or it is not clear if there are any board committees.

5. Primary stock ownership and voting rights

a The company details voting rights and all major shareholders (as required by national law).
b. The company details voting rights but not major shareholders (as required by national law)
c. The company details major shareholders (as required by national law) but not voting
d. The company provides no information.

II Principles and Policies

6. The company has a set of corporate governance principles

a. The company has a formal policy that satisfies SiRi requirements
b. The company has a formal policy that partially satisfies SiRi requirements
c. The company has a formal policy that very partially satisfies SiRi requirements
d. The company has only a very general statement.
e. There is no such policy evident in the company's public reporting or the policy is not disclosed

III Management Systems

1. Board performance evaluation

a. The Board has a performance evaluation system to evaluate its own performance
b. The Board does not have such system in place

2. Board effectiveness

a. The Board has routines to have NED meet without ED
b. The Board does not have such routines.
c. The Board does not have executive directors.

3. Number of NEDs in the Board

a. 60% or more members of the board are non-executive directors.
b. Between 51% and 59% of the members of the board are non-executive directors.
c. 50% or less of the members of the board are non-executive directors.
d. The information disclosed is insufficient to determine the share of non-executive directors

4. Number of independent NEDs in the Board

a. All non-executive directors are considered independent.
b. Between 80% and 99% of non-executive directors are independent.
c. Between 51% and 79% of non-executive directors are independent.
d. 50% or less than 50% of non-executive directors are independent.

5. Separate position for chairman of board and CEO

a. The positions of chairman and CEO are not combined.
b. The positions of chairman and CEO are combined.
c. The information is not available in the public reporting.

6. Existence of audit committee

a. There is an audit committee
b. There is no evidence for an audit committee

7. Audit committee composition

a. There is an audit committee and all members are considered to be independent
b. There is an audit committee, but not all members are considered to be independent
c. There is an audit committee, but it is not clear whether members are independent.
d. There is no audit committee.

8. Existence of remuneration/compensation committee

a. There is a remuneration/compensation committee.
b. There is no evidence for a remuneration/compensation committee

9. Remuneration/Compensation committee composition

a. There is a remuneration committee and all members are considered to be independent.
b. There is a remuneration committee, but not all members are considered to be independent

10. Existence of nomination committee

a. There is a nomination committee (for example, nomination and remuneration committee),
b. There is no evidence for a nomination committee

11. Nomination committee composition

a. There is a nomination committee and all members are considered to be independent.
b. There is a nomination committee, but not all members are considered to be independent.
c. There is a nomination committee but it is not clear whether all members are independent.

Appendix 3: Ratings Damodaran as published in his homepage on April 2004

Inputs for synthetic rating estimation

Please read the special cases worksheet (see below) before you use this spreadsheet.

Before you use this spreadsheet, make sure that the iteration box (under calculation options in excel) is checked.

Enter the type of firm =	1	(Enter 1 if large manufacturing firm, 2 if smaller or riskier firm, 3 if financial service firm)
Do you have any operating lease or rental commitments?	Yes	
Enter current Earnings before interest and taxes (EBIT) =	10000	(Add back only long term interest expense for financial firms)
Enter current interest expenses =	2000	(Use only long term interest expense for financial firms)
Enter current long term government bond rate =	3,98%	

Output

Interest coverage ratio =	**3,98**
Estimated Bond Rating =	**A-**
Estimated Default Spread =	**1,00%**
Estimated Cost of Debt =	**4,98%**

Note: If you get REF! All over the place, set the operating lease commitment question in cell F5 to No, and then reset it to Yes. It should work.

Updated: February 2004; If you want to update the spreads listed below, please visit http://www.bondsonline.com

For large manufacturing firms

If interest coverage ratio is			
>	≤ *to*	*Rating is*	*Spread is*
-100000	0,199999	D	20,00%
0,2	0,649999	C	12,00%
0,65	0,799999	CC	10,00%
0,8	1,249999	CCC	8,00%
1,25	1,499999	B-	6,00%
1,5	1,749999	B	4,00%
1,75	1,999999	B+	3,25%
2	2,2499999	BB	2,50%
2,25	2,49999	BB+	2,00%
2,5	2,999999	BBB	1,50%
3	4,249999	A-	1,00%
4,25	5,499999	A	0,85%
5,5	6,499999	A+	0,70%
6,5	8,499999	AA	0,50%
8,50	100000	AAA	0,35%

For financial service firms (default spreads are slighty different)

If long term interest coverage ratio is

greater than	≤ to	Rating is	Spread is
-100000	0,049999	D	16,00%
0,05	0,099999	C	14,00%
0,1	0,199999	CC	12,50%
0,2	0,299999	CCC	10,50%
0,3	0,399999	B-	6,25%
0,4	0,499999	B	6,00%
0,5	0,599999	B+	5,75%
0,6	0,749999	BB	4,75%
0,75	0,899999	BB+	4,25%
0,9	1,199999	BBB	2,00%
1,2	1,49999	A-	1,50%
1,5	1,99999	A	1,40%
2	2,49999	A+	1,25%
2,5	2,99999	AA	0,90%
3	100000	AAA	0,70%

For smaller and riskier firms

If interest coverage ratio is			
greater than	≤ to	Rating is	Spread is
-100000	0,499999	D	20,00%
0,5	0,799999	C	12,00%
0,8	1,249999	CC	10,00%
1,25	1,499999	CCC	8,00%
1,5	1,999999	B-	6,00%
2	2,499999	B	4,00%
2,5	2,999999	B+	3,25%
3	3,499999	BB	2,50%
3,5	3,9999999	BB+	2,00%
4	4,499999	BBB	1,50%

4,5	5,999999	A-	1,00%
6	7,499999	A	0,85%
7,5	9,499999	A+	0,70%
9,5	12,499999	AA	0,50%
12,5	100000	AAA	0,35%

Chapter 6 Sustainability style of international stocks: A stakeholder approach to corporate social responsibility[60]

6.1 Introduction

As argued in former chapters, in the traditional financial approach social and environmental questions were considered harmful for the return generating processes of companies. Today's companies however, are pressurized to improve their social and ecological performance as caused by an increasing consciousness within the society on these topics. This chapter will search for an empirical approach to illustrate the financial sensitivities of companies for stakeholder care. In the CSR literature there is a lot of attention for the stakeholder approach to manage the interests of companies (see e.g. Freeman (1984), Donaldson and Preston (1995), Jensen (2001) and O'Higgins (2002)). Also management literature on social responsibility (see e.g. Csikszentmihalyi (2003), Drucker (1999)) contributed to the increasing CSR popularity. This 'demand' for sustainable management approaches developed relatively independent from a similar trend on the supply side of the capital markets (as represented by in the social investments, - SRI - literature). Also the SRI phenomenon showed a systematic growth of interest to add moral, social or environmental factors to the traditional financial (risk/return) criteria in the construction of portfolios (see e.g. Kinder (1993), Hamilton (1993), Pava and Kraus (1996), Hickman (1999) et al. and Simpson (2002)). These developments were accompanied by the foundation of the first social rating agencies that provide datasets on all kinds of social and ecological performance of stock market quoted companies. The combination of sustainability data with the traditional financial information enables us to derive (shadow) prices for sustainable behaviour of companies.

This chapter applies a technique called style analysis, as provided by the investment literature, to connect supply-driven CSR preferences of companies with regular investment preferences. The crux of this research is neither the traditional question

60 I like to thank Paul Carstens and Ad Vink for their cooperation and contribution to the above study, of course all errors remain mine. See also Soppe, A.B.M., and A. Vink, 2004, Een multicriterium beslissingsmodel voor maatschappelijk geörienteerde beleggingen, *Maandblad voor Accountancy en Bedrijfseconomie* 78, 150-159. And: Carstens, P.F., and A.B.M. Soppe, 2005, Ondernemingsstijl ten aanzien van maatschappelijke verantwoordelijkheid, *FSR forum* 26-33.

of whether or not a relation exists between the financial policy of the firm and its so-called social policy, nor can be considered as a search for the sign of that relationship. Costs spent on social activities (such as stakeholder sustainability) are treated as any other direct investment, and can be both value creating as well as value diminishing. The coming analysis starts off with the presentation of a multivariate investment model as the general framework for the analysis. Then, as an experiment, it is assumed that a company's financial return is only driven by market risk (beta) and by sustainability elements of the various stakeholders in that sector or country. To estimate the sustainability style of a specific economic region or a specific industry, we then apply a cross-sectional one-period variant of the style analysis approach of Sharpe (1992). The experimental model calculates factor scores under the assumption that there is only a trade-off between financial return on one side and risk and sustainable direct investments on the other. In other words, the results give an indication of the costs of companies in optimizing their preferences concerning their sustainability policy in relation to six distinguished stakeholder groups. It must be stressed beforehand that the quantitative character of the model has an experimental character. Due to a lack of time series data the model is reduced to a one period analysis. The innovative character of this chapter concerns the fact that the style analysis concept, traditionally used in measuring investment fund performance, is applied to calculate factor costs of stakeholder management. For sustainable companies this can be useful information to optimize their stakeholder policy under budget constraints.

Section 6.2 starts off with a brief categorization of the background of corporate social responsibility and the stakeholder approach of the company. As a compromise between different economic schools the value maximization of Jensen (2001) is used as the point of departure for analyzing a dataset on stakeholder sustainability of international companies Then, in section 6.3, the gathering of the data is described extensively together with descriptive statistics of the dataset and the exploration of some potential quantitative relationships without any underlying economic model (factor analysis). The general investment framework and the results of two example portfolios are presented in section 6.4. Section 6.5 provides the details of the implemented style model and discusses the necessary assumptions. For the sake of simplicity, only positive style coefficients are allowed. The third part of that section (subsection 6.5.3) is devoted to the theoretical pitfalls and the (ir)relevancy of the applied model from an economic perspective. Section 6.6 brings the conclusions.

6.2 Theory of the firm, once again

The main (normative) topic of this study is the conceptual approach of what is or should be the mission statement of the (sustainable) company. After the extensive discussion in the first part of the dissertation, this chapter is in search of applications of sustainable developments into financial theory and practice. To this background this section departs from the so-called enlightened value maximization of Jensen (2001) to derive stakeholder value from economic theory. After the explanation of the background of this concept in section 6.2.1, section 6.2.2 emphasizes the role of both CSR and SRI in measuring the sustainability style of companies.

6.2.1 Enlightened value maximization

With regard to the social responsibility of the firm, the literature generally distinguishes between three different approaches. First is the *traditionalist (neo-classical) view*, in which the shareholder value of the firm will be lower whenever money is spent on economically inefficient projects such as those serving social goals (see Friedman (1970), Jensen and Meckling (1976)). Because shareholders carry the ultimate residual risk and return, they are the principals in the theoretically distinguished agency relation to regulate the economic production process called the firm. Jensen and Meckling (1976) define monitoring, bonding and residual costs for an efficient regulation of the implicitly assumed shirking behaviour of other stakeholders in the company (such as managers and employees). According to the traditionalists, the company is responsible for economic production only. Enhancing social welfare remains the task of government officials because managers are educated to maximise stock returns and civil servants are educated to serve societal welfare.

On the other end of the spectrum is the pure stakeholders approach that *optimises the stakeholder value* (see Freeman (1984), Cornell and Shapiro (1987), Griffin (2000) and many others). These authors make the case that social and sustainable developments create both stakeholder and shareholder value in the long run. In the ultimate stakeholder approach the goal of the company is 'to serve as a vehicle for coordinating all stakeholders' interests' (Freeman (1994)). The company is seen as a social contracting institute in which several stakeholders have a legitimate claim on the company's economic profits.

The third approach, the strategic approach, is midway between the above-mentioned extremes of the discussion. It is acknowledged that both costs and returns are involved in socially responsible production, and that every company must make a strategic deliberation between the optimal amounts of social investments. Jensen (2001) referred to this as 'enlightened value maximisation'. Many more au-

thors consider stakeholder management and social responsibility to be comprised of strategically important decisions, especially in relation to a long-term company goal setting[61]. The value of a socially responsible project should be related to its transaction costs and monitoring costs, on one side, versus the opportunity costs of socially irresponsible behaviour, on the other. Pava and Kraus (1996) nicely summarize the opposing positions and present empirical evidence against the 'traditionalists view' that claims a negative association between social or sustainable development and financial performance. They discuss a number of explanations for what they referred to as 'the paradox of social cost'. The 'paradox' stated that, in spite of the existence of corporate costs as a result of social and/or environmental investments, no inferior (but also not superior) financial performance for such investments could be observed. In our analysis we have deliberately abandoned the word 'paradox', because recent economic developments undermine the traditional approach of approximately 35 years ago. The case for the stakeholders view is getting stronger every year (see e.g. Sullivan and Mackenzie (2006)).

6.2.2 Connecting CSR and SRI

This chapter does not primarily address the question of whether or not sustainability enhances performance or whether SRI leads to inferior rather than superior portfolio performance[62]. This study contributes instead to what is called 'the strategic decision approach'. The novel aspect of the chapter is its application of a capital market model to estimate corporate financial sensibility for sustainability preferences as derived from investor preferences. Capital market theory assumes that investors optimise their personal utility functions. But in integrated capital markets, CSR companies can also attempt to optimise their company utility function. By assuming informational market efficiency, a company can withdraw information from the sensibility factors in order to minimize the difference between costs and sustainability profiles.

By applying style analysis to estimate the relative costs faced by CSR companies, we effectively use a capital market (and therefore demand-driven) approach to facilitate an optimal stakeholder policy for the company. The supply-induced stakeholder policy of CSR companies is benchmarked against country- or sector portfolios of stocks as (virtually) held by (SRI) investors. The methodology

61 See e.g. Brickley, J.A., C.W. Smith, and J.L.Zimmerman, 2002, Contractors as stakeholders: reconciling stakeholder theory with the nexus-of-contracts firm, *Journal of Banking & Finance* 26, 1687-1718.; Boatright, J.R., 1999, *Ethics in finance,* (Blackwell, London).; Chami et al., 2002; Davis, K., 1973, The case for and against business assumption of social responsibilities, *Academy of Management Journal* 16, 312-321.

62 See e.g. Derwall, J., N. Gunster, R. Bauer, and K. Koedijk, 2005, The eco-efficiency premium puzzle, *Financial Analyst Journal* 61, 51-64.

implemented in this chapter therefore starts off by assuming that the return-generating process is driven by financial data (beta) on one side, and by sustainability factors on the other. This model reduces the statistical robustness of the empirical results to the experimental level. The contribution to literature merely aims for an example of an empirical connection of sustainable behaviour of companies with financial performance. The search therefore is for sustainability styles of internationally traded stocks. After describing the example dataset and some descriptive statistics in the coming section, the chapter then applies factor analysis to identify underlying factor(s) that could drive the return-generating process of the distinguished portfolios.

6.3 Exploring the data

The information infrastructure for social investments (the social research analysts) is well established nowadays in both the United States and Europe. The existence of specialist information services such as EIRIS in the UK, FIFEGA in Austria and Eco-Rating International in Switzerland, are creating the necessary informational infrastructure in Europe for a development similar to that which occurred earlier in the US. Especially in the UK, the Scandinavian countries, Germany, Switzerland and the Netherlands, social research activities are expanding rapidly [63]. These new datasets enable us to model the relationship between a company's perceived sustainability in the market and its financial performance.

6.3.1 Gathering the data

Our dataset consists of quantitative scores on the sustainability performance of 273 European corporations of the FTSE-300 index (on London Stock Exchange) and 166 US companies (on NASDAQ). The scores of these 439 companies are based on questionnaires (base-year 2000), which were gathered by the SiRi research group. SiRi, a cooperative effort of 12 European Social research companies (see Appendix 1), developed a single research questionnaire for analyzing companies. Sources of information include the following: 1) corporate documents that are publicly released; 2) national and international press articles; 3) associations, non-profit and non-governmental organizations; and 4) contacts between SiRi group members and the company. To complement the yes/no answers elicited by the SiRi research, the Triodos bank in the Netherlands developed a quantitative interpretation. They distinguished six stakeholder groups represented by 41 issues measuring a specif-

63 For a practical guide on the screening process of sustainability and the involved rating agencies, see Brink, van den, T.W.M., 2002, *Guide: Screening and rating sustainability,* (Triple P Performance Centre, Amsterdam).

ic sustainability aspect of the company. The stakeholder groups include Corporate governance, Customers, Vendors and Contractors, Employees, the Environment and Community. Table 6.1 lists all the attributes as classified per stakeholder group. Every attribute consists of four categories of questions: a) Public reports and communications, b) Principles and policies, c) Management systems and d) Impact and key data. *Public reports and communications* aim at measuring the degree of disclosure of information. The second category, *Principles and policies,* represents the written results and communication of the company's sustainability intentions. The questions on *management systems* address the company's organizational structure and control of its sustainability intentions. Finally, the category of *impact and key data* refers to data concerning the company's intentions toward sustainable behavior (as formulated in former questions). For example, in the category *impact and key data*, the analyst evaluates whether a company's good intentions and management structures do or do not lead to public controversies regarding marketing, product safety and quality certification.

Altogether, the entire score list is based on 223 yes/no questions and some additional texts according to a fixed format for every company analyzed. "Yes" is awarded one point, and "no" zero points. The questions are then grouped according to the topics listed in Table 1, and the corresponding points are added. Finally, scores are computed as a percentage of the difference between the maximum and minimum attainable number of points. For example, a score of 40 indicates that a company reached 40% of the maximal sustainability score of 100. The higher the score, the better the company satisfies the sustainability requirements of the SiRi analysts[64]. In the next stages of data processing and portfolio optimization, we assume that the scores are measured on an interval scale. Table 6.1 summarizes the attributes on sustainability.

64 If all relevant information could not be found or was not disclosed by the company, SiRi used two codes: NA (not available) and ND (not disclosed). 'NA' is awarded if efforts made by the analyst to answer a specific question proved insufficient. In the quantitative analysis, the 'ND' got zero points and the 'NA' resulted in an average number for the company of the question involved.

Table 6.1: Sustainability attributes, scheduled per stakeholder group

1-CORP. GOVERNANCE DISCLOSURE	**2-CUSTOMERS**	**3-VENDORS & CONTRACTORS**
8-Director's remuneration	11-Product quality	38-Principles & policies
9-Board structure	12-Anti-trust regulations	39-Management & organisation
10-Voting rights	13-Marketing	40-Impact contractors
	14-Customer satisfaction	41-Reports & communication
4-EMPLOYEES	**5-ENVIRONMENT**	**6-COMMUNITY**
15-Health & safety	28-Legislation & damage	1-Corruption
16-Discrimination	29-Principles & policies	2-Dictatorial regimes
17-Forced labour	30-Management & organisation	3-Accounting
18-Child labour	31-Genetic modification	4-Tax
19-Unions/employee participation	32-Reports & communication	5-Other legislation
20-Working hours	33-Energy & water use	6-Community involvement
21-Compensation	34-Emissions	7-Beneficiary products
22-Labour legislation	35-Waste & recycling	
23-Reports & communication	36-Transport	
24-Management & organization	37-Product impact on the environment	
25-Financial participation		
26-Personal circumstances		
27-Training		

The financial data, as retrieved from Datastream International, represent end-of-year observations. Both the *Total returns* and the *Book-to-market value* concern the research period of the years 1999-2001. Growth figures are calculated from end-of-year prices or accounting indicators.

6.3.2 Descriptive statistics

The first step toward revealing the relation between sustainability scores and financial performance measures, is examining the dataset statistically. To facilitate economic interpretation, we first grouped the companies into 12 different countries or regions (see table 6.2) and 15 sectors (table 6.3). Both tables provide the means and standard deviations of the data per portfolio.)

Table 6.2: Average value and standard deviation of the sustainability indicator and financial performance of companies; listed by country for the year 2000.

Stakeholder:	Corp. Gov.	Cust.	Suppl.	Empl.	Env.	Com.	Aver. sustain	TotRet % yr	Beta	BtM	N
1-Europe	79	67	74	63	55	76	69.1	5.5	0.74	0.39	270
	(13.5)	(11.8)	(28.1)	(10.9)	(15.4)	(7.2)	(9.0)	(32.0)	(.36)	(1.00)	
2-Continental	70	64	74	63	59	74	67.4	4.0	0.83	0.81	95
N/East	(9.7)	(13.0)	(27.4)	(11.0)	(16.4)	(6.2)	(8.4)	(32.3)	(.40)	(1.58)	
3-Germany	68	63	70	65	55	75	65.9	5.7	1.00	0.34	25
	(9.7)	(9.4)	(28.9)	(10.0)	(16.1)	(6.6)	(8.9)	(31.3)	(.30)	(0.33)	
4-Benelux	76	61	76	61	51	73	66.2	1.9	0.70	**0.12**	26
	(8.2)	(13.9)	(29.4)	(11.1)	(14.9)	(4.5)	(7.3)	(32.2)	(.39)	(0.33)	
5-Scandinavia	73	74	76	66	68	77	72.0	-2.2	0.70	2.16	27
	(8.6)	(8.4)	(24.2)	(10.7)	(14.0)	(5.3)	(6.3)	(37.2)	(.34)	(2.49)	
6-Switzerland	**63**	**58**	72	60	61	**71**	64.0	15.0	0.95	0.36	17
	(8.5)	(15.8)	(29.5)	(12.6)	(16.8)	(7.7)	(9.6)	(25.2)	(.31)	(0.30)	
7-Continental	73	67	71	59	47	74	65.1	3.2	0.79	0.18	81
South	(10.9)	(12.1)	(30.5)	(10.8)	(13.5)	(6.2)	(8.2)	(28.9)	(.34)	(0.35)	
8-France	74	71	**58**	**58**	**46**	75	**63.5**	0.4	0.79	0.13	41
	(10.7)	(9.7)	(31.0)	(12.4)	(14.7)	(6.5)	(9.2)	(28.1)	(.35)	(0.34)	
9-Spain	76	72	84	63	50	77	70.2	-8.3	0.83	0.25	14
	(12.0)	(13.0)	(24.0)	(7.2)	(14.1)	(6.4)	(7.7)	(26.7)	(.40)	(0.20)	
10-Italy	67	59	84	58	**46**	73	64.8	**-30.9**	0.83	0.21	26
	(10.0)	(11.5)	(24.8)	(9.2)	(11.4)	(5.4)	(5.5)	(18.9)	(.27)	(0.50)	
11-United	92	70	79	67	58	80	74.3	9.1	**0.60**	0.16	94
Kingdom	(7.0)	(9.7)	(26.4)	(9.5)	(13.3)	(7.1)	(8.0)	(34.2)	(.35)	(0.22)	
12-United	75	67	77	67	53	80	69.9	13.9	1.06	1.04	158
States	(7.3)	(15.1)	(22.1)	(7.0)	(9.3)	(7.4)	(5.6)	(58.1)	(.54)	(8.35)	

1- bold values in a column represent the lowest value of a stakeholder, the highlighted values the highest.

With regard to the sustainability scores, note that the average scores are rather alike and that standard deviations are relatively large, implying that the clusters are dispersed. Proxied by the average sustainability score, the UK and Scandinavia perform best, and France and Switzerland worst. Note that Swiss companies had the highest average financial return in the year 2000 (+15.0%). Table 6.3 presents the statistics of the similar companies categorized by sector.

Table 6.3: Average value and standard deviation sustainability and financial performance of companies; listed by sector for the year 2000

Stakeholder:	Corp. Gov.	Cust.	Suppl.	Empl.	Env.	Com.	Aver. sustain	TotRet % yr	Beta	BtM	N
1-Banks	77	68	100	70	56	76	74.5	18.2	1.00	0.75	50
	(12.7)	(9.8)	(3.5)	(8.2)	(13.0)	(7.0)	(5.4)	(26.8)	(.88)	(1.2)	
2-Chemicals	77	63	62	**59**	52	**75**	**64.7**	- 9.0	0.89	1.92	16
	(14.7)	(16.8)	(21.2)	(8.6)	(11.6)	(8.0)	(8.4)	(21.7)	(.24)	(6.2)	
3-Electricity	77	75	69	72	57	76	69.3	4.9	0.66	0.74	29
	(10.9)	(9.8)	(27.0)	(10.1)	(13.2)	(7.0)	(8.1)	(27,9)	(.27)	(1.80)	
4-Food	83	64	65	62	58	81	68.9	29,3	0,55	0,15	30
	(10.4)	(14.9)	(24.9)	(11.0)	(12.3)	(5.7)	(8.4)	(25.7)	(.30)	(.32)	
5-Health	76	71	74	66	55	84	71.0	61.9	0.67	0.25	21
	(9.0)	(13.7)	(24.9)	(9.6)	(10.9)	(8.5)	(7.6)	(90.4)	(.50)	(.30)	
6-Inf. Techn. &	75	76	59	62	54	79	67.5	-20.3	1.44	0.19	31
Hardware	(9.0)	(9.9)	(15.6)	(7.9)	(13.4)	(6.4)	(6.1)	(36.2)	(.53)	(.16)	
7-Insurance & spec.	76	66	95	69	52	77	72.3	29.5	0.89	0.33	31
fin.	(11.3)	(10.3)	(13.8)	(5.6)	(13.1)	(7.2)	(5.0)	(30.8)	(.42)	(.27)	
8-Media &	77	66	91	64	**48**	79	70.7	3.5	0.72	0.28	38
Photography	(12.7)	(10.9)	(23.2)	(10.7)	(14.7)	(6.6)	(8.6)	(29.2)	(.47)	(.96)	
9-Oil, Gas & Mining	77	69	60	63	56	73	66.6	11.7	0.89	0.60	22
	(11.7)	(10.9)	(18.2)	(8.2)	(7.9)	(6.9)	(6.2)	(42.1)	(.24)	(1.26)	
10-Pharmaceuticals	**73**	**50**	93	64	54	81	69.2	33.0	0.62.	0.14	19
	(9.6)	(19.3)	(17.9)	(9.3)	(14.5)	(8.3)	(7.1)	(30.0)	(.27)	(0.26)	
11-Retailers general	77	66	**54**	62	56	78	65.6	2.5	0.76	0.35	34
	(13.7)	(9.9)	(23.3)	(12.9)	(15.0)	(7.1)	(9.9)	(54.4)	(.36)	(0.66)	
12-Softw. & comp.	76	69	96	66	49	76	72.1	-17.3	1.11	0.07	28
Service.	(13.3)	(11.2)	(11.9)	(6.6)	(9.8)	(8.3)	(4.7)	(48.2)	(.78)	(0.22)	
13-Telecom	75	64	67	70	59	83	69.7	**- 41.3**	0.83	0.01	24
	(10.4)	(14.5)	(14.8)	(9.2)	(15.4)	(5.7)	(6.2)	(25.8)	(.52)	(0.43)	
14-Industrial diverse	78	65	63	60	52	76	65.7	15,5	0.78	0.30	23
	(13.8)	(10.9)	(30.6)	(10.6)	(14.5)	(7.6)	(10.3)	(32,2)	(.29)	(0.27)	
15-Miscellaneous	81	66	61	62	55	**75**	66.8	9.1	0.84	0.55	38
	(10.5)	(15.4)	(25.3)	(9.6)	(15.8)	(7.2)	(9.2)	(33.0)	(.37)	(0.87)	

1- bold values in a column represent the lowest value of a stakeholder, the highlighted values the highest.
2- See appendix 1 for detailed information on the division of the sectors

Grouped per sector, the 'banks' showed the best average sustainability score (74.5%), and the 'chemicals' the worst (64.5%). The pharmaceutical sector hits two bottoms (government disclosure and customers) and has therefore also a rather low average performance on sustainability. From the financial perspective, the sector 'Health' performed robustly in the year 2000 (+61.9%), whereas the 'telecom' sector was the major economic victim of that particular year (- 41.3%)[65].

65 Note that from March of that year worldwide stock market indices dropped substantially.

6.3.3 In search of the return-generating factors

In addition to the averages and standard deviations, the correlation between the distinguished variables reveals information about the sign of their mutual coexistence. Appendix 2 presents the results for the three-year average financial performance in relation to the year 2000 sustainability state of affairs. Two important conclusions can be drawn from the correlation matrix. First, it can be said that all six distinguished sustainability variables are statistically significant and positively interrelated. This implies that if a company is paying attention to one stakeholder, it often also has a good score for the sustainability of the other stakeholders. Secondly, apart from customer sustainability and beta, we observe a negative relation between the three-year total return of the company with all other variables. This suggests that a sustainable company has to make costs in order to invest in its stakeholder relations.

In an attempt to find blocks of stakeholders that may form a return generating factor, we apply factor analysis in order to find potential co-moving factors. Table 6.4 presents the results.

Table 6.4: The variance explained and the component matrix of the factor analysis by relating the year 2000 sustainability scores to the 1999-2001 financial performance

Panel A: Total variance explained

	Initial Eigenvalues			Extraction Sums of Squared Loadings		
Component	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	2,215	24,607	24,607	2,215	24,607	24,607
2	1,340	14,886	39,493	1,340	14,886	39,493
3	1,190	13,227	52,720	1,190	13,227	52,720
4	1,100	12,228	64,948	1,100	12,228	64,948
5	,819	9,105	74,052			
6	,777	8,630	82,683			
7	,629	6,994	89,676			
8	,588	6,537	96,214			
9	,341	3,786	100,000			

Extraction Method: Principal Component Analysis.

Panel B: Component matrix

	Component			
	1	2	3	4
COMMUN	,678	,110	-,237	,177
MANAGEM	,441	-,366	-,445	,337
CUSTOMER	,431	,268	,052	,515
EMPLOYEE	,823	,130	,025	-,294
ENVIRONM	,640	-,106	,386	,163
SUPPLIER	,517	,090	-,053	-,682
AVRETURN	-,087	,686	-,206	,268
AVBTM	,089	,023	,859	,152
AVBETA	-,071	,784	,016	-,133

Extraction Method: Principal Component Analysis.
a. Four components extracted.

The first panel of table 6.4 shows that 24.6% of the total variance is explained by the first component of the dataset. The next three components add 14.9, 13.2 and 12.2 percent, respectively, to the explained variance. The lower panel indicates that the first component exists for all six sustainability attributes by showing high factor loadings for these attributes. The second component is dominated by the total return and beta. The third component brings an unexpected but interesting quantitative relationship. High factor loadings are observed for the 'book-to-market value' and the environment in the positive sense, and 'corporate governance disclosure' in a negative relation. This indicates that companies with high book-to-market values (the so-called *value stocks*) also have high scores on 'environment' and low scores on GC-disclosure. Finally, the fourth component has high loadings on the combination of total returns, customer relations and GC-disclosure.

The most important conclusion of this subsection is that the various stakeholder sustainability attributes move together and perform rather independently from the financial indicators. This supports the normative choice of not excluding any stakeholder from the return-generating process. This idea will be elaborated upon in the next two sections, which develop sustainable portfolios as an instrument to measure the 'sustainability style' of a specific country or sector.

6.4 The multivariate investment model

The analysis starts off by presenting the general investment model (section 6.4.1) and two example portfolios (section 6.4.2). In addition, some shadow prices are presented in relation to an assumed increase of sustainability restrictions. The second step then (section 6.5) is based on the assumption that if sustainability aspects drive market returns, it will be possible to measure the theoretical sustainability style of any specific

portfolio. By creating specific sector or country portfolios, we then model the average sustainability style of the distinguished portfolio.

6.4.1 The model

The first step in the analysis is presenting a multivariate investment model. A socially responsible investor could use a so-called idealized decision model with a single goal, which is linear in all its constraints and objective function:

$$\underset{x}{Max}\ g = \sum_{k=0}^{n} c_k x_k \qquad [\ 6.1\ ]$$

$$s.t. \quad \sum_{k=0}^{n} B_k x_k \leq b \qquad [\ 6.2\ ]$$

where:

g : goal variable;
c_k : vector ($1 \times m_k$) of goal coefficients relating objective function to activities of the k-th sustainable investor;
x_k : vector of company sustainability scores for the k-th sustainable investor;
B_k : matrix of coefficients relating the activities of the k-th investor to the company's sustainability's constraints;
b : vector of allowed restrictions

The model presented above enables us to build any sustainable portfolio within the restrictions we impose on the minimum acceptable level of a company's sustainability score regarding a specific stakeholder.

6.4.2 Some examples

Two examples will be presented. The first represents an investor that simply maximizes the financial return in the year 2000, without restrictions on the other (sustainability) attributes of a company. The only additional restriction that was made is for diversification reasons. The maximum percentage allowed for investing in one stock in a portfolio is set to be 10%. This implies that at least ten stocks are required for a well-diversified portfolio. By creating this simple portfolio (taken out of the entire sample of 369 companies[66]), we find by definition the ten best performing stocks. Under these simple conditions, the resulting portfolio A has scores as reported in column (1) in Table 6.5.

66 Because of missing values of minimally one attribute of a company, the total number of companies used in this analysis is less than the total of 439 socially screened companies.

Table 6.5: Attributes of the example portfolios A (extreme return portfolio) and B (above average 'sustainable' portfolio)

Attribute	portfolio score* A:		portfolio B:
Return in the year 2000 (goal function)	127%	(7%)	27%
Community	77.0	(77.6)	87
Corporate Governance	72.0	(77.6)	90
Customers	61.9	(67.4)	80
Employees	65.7	(64.1)	75
Environment	50.3	(54.1)	75
Suppliers	85.8	(74.5)	90
Beta**	0.71	(0.88)	1
Book-to-market	0.41	(0.36)	0.75

* Between brackets are the mean scores of the dataset

** Contrary to the other variables that have 'greater than' restrictions, Beta has a 'smaller than' restriction (beta ≤ 1)

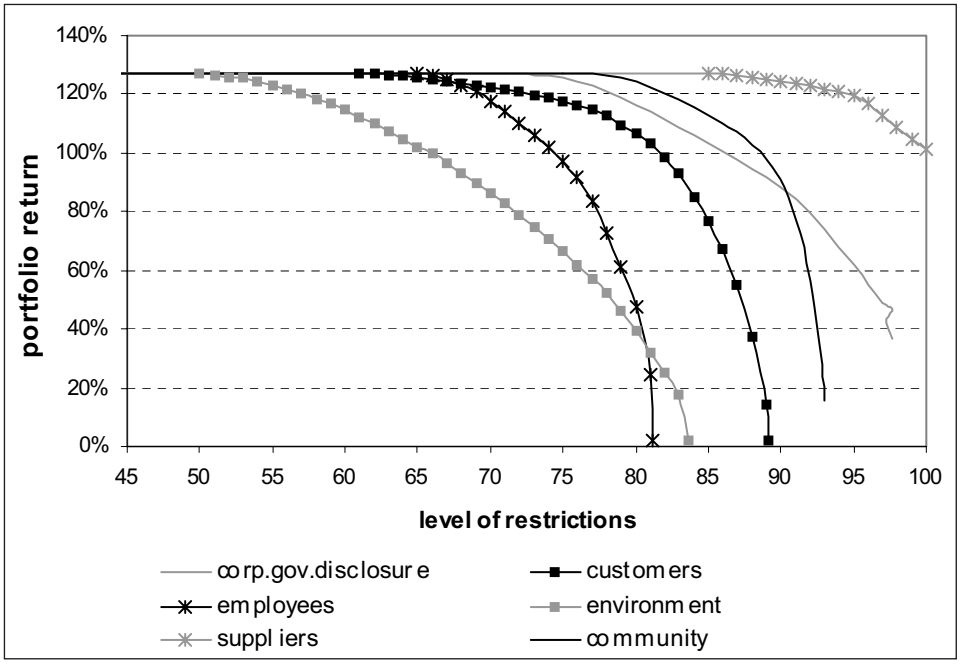
Portfolio A has a very high financial return in the year 2000 (127%), but the attributes of Community, Corporate governance, Customers and the Environment score below their average value. Suppose now that we increase the sustainability restrictions to a level of at least 'one standard deviation above average,' and create a much more demanding 'sustainable portfolio B'. The required restrictions are set in the final column of table 6.5. The only exception is the easy requirement on beta. For economic reasons, all betas smaller than 1 are accepted, implying that all companies with market risk and lower are acceptable for this virtual sustainable investor of portfolio B. The resulting portfolio is shown in Table 6.6.

Table 6.6: Selected 'sustainable' portfolio B

Stock	λ_i	Return	Mngmt	Custom	Suppl.	Empl.	Envir.	Comm.	Beta	B/M
Abbey National	0.10	30%	97	75	100	80	76	87	0.36	0.31
BAA	0.10	46%	97	80	100	74	71	89	0.30	0.53
Barclays	0.05	19%	95	82	100	81	75	79	0.72	0.20
British Telecom	0.04	-61%	97	73	79	73	82	92	0.61	-0.08
Centrica	0.10	48%	97	87	100	73	69	86	0.74	-0.01
Danske Bank	0.03	81%	65	68	100	75	63	79	0.53	6.67
Lloyds TBS	0.10	-5%	97	71	100	79	81	88	0.79	0.12
Nokia	0.02	6%	92	87	57	75	81	80	1.81	0.03
SCA B	0.05	-20%	75	75	63	56	90	72	0.77	5.26
ScottishPower	0.10	17%	95	91	100	78	71	88	0.24	0.24
Skandia	0.05	16%	72	67	100	56	85	88	0.88	0.83
Tesco	0.10	47%	95	80	64	79	83	86	0.44	0.20
Aetna	0.05	32%	68	84	100	77	57	94	1.20	1.20
Baxter International Inc.	0.10	59%	82	85	75	79	69	96	0.59	0.11
Portfolio score	1.00	27%	90	80	90	75	75	87	0.61	0.75
Shadow price			-1%	-10%	-2%	-4%	-13%	-13%	0%	-0.4%

It can be read that the return in the 'extreme return' portfolio A dropped from the astonishing 127% to a still attractive 27%, where all the required minimal levels of the sustainability scores were successfully set. In the final line of table 6.6 are the shadow prices, *ceteris paribus* the percentage change of the target variable (financial return) as a result of the increase of the required stakeholders' score. The example portfolio of table 6.5 shows that the scores on 'Community' and 'the Environment' are the most demanding with regard to that portfolio return (both -13%). Generalizing the shadow-price analysis, Graph 6.1 represents the sensitivities of the 'extreme return' portfolio with no restrictions on all the respective sustainability attributes.

Graph 6.1: Portfolio return as a function of the restrictions of the distinguished attributes



Graph 6.1 shows the trade-offs between each of the sustainability attributes and the financial return in that year. This model reveals that 'the environment' is the most restrictive attribute, followed by 'employees' and 'customers'. Least restrictive in the dataset are the 'suppliers', due to the relatively high average scores on this attribute.

The linear programming model opens the door to discerning all kinds of preferred portfolios. For example, a 'Greenpeace investor' will probably maximize the score on the environment under restrictions of all the attributes including yearly returns. A 'Labor

Union investor' would prefer maximizing the score on 'employees,' consumer organizations would emphasize customer relations, and so on.

6.5 The sustainability styles of country and sector portfolios of stocks

The investment model of the former section is primarily presented to illustrate the investment process that facilitates the sustainability analysis of the next section. Derived from the above general investment process we create portfolios that represent specific sectors of regions.

6.5.1 The applied style analysis model

To create a sustainability benchmark in order to evaluate specific country or sector portfolios, we apply a strong form of style analysis [DeRoon, Nijman and Terhorst (2004)] for modeling the sustainability factor relationships of the various portfolios. Suppose that K factor (mimicking) portfolios with sustainability score vector S_i drive the asset return score. In addition, there are N portfolios of sector or country selections with return vector r_i, for which we have the following linear factor model:

$$r_i = a + BS_i + \varepsilon_i \quad , \qquad [6.3]$$

where $E[\varepsilon_i] = E[\varepsilon_i S_{j,i}] = 0$ for j=1,…K. By using [1] as a style regression, we impose a constraint that the rows of B are positively weighted portfolios. If we define a_j as the *j* th element of a, and b_j as the *j* th row of B, then a_j and b_j are the solutions of the problem:

$$\min_{\alpha,\beta} E[(r_{j,i} - \alpha - \beta' S_i)^2], \qquad [6.4]$$

with

$$\sum\nolimits_K \beta'_K = 1$$
$$\beta \geq 0.$$

The strong style coefficients β' reflect the positively weighted portfolio of the sustainability benchmark indices, which mimics the modeled return-generating process of the selected country or sector portfolio. By buying a specific combination of stocks, an investor is able to replicate the combination of sustainability aspects that optimises his utility function. Alternatively, a specific company is able to calculate the average sensitivity of the specific portfolio to a change in one of the restricting variables. For example, bank X, located in France, can obtain information on the factor loadings of the distinguished portfolio that are relevant for its sector and region.

To validate the applied approach we need two basic assumptions:

- Assumption 1: in the long run, the level of sustainability of a company is the main driver of the return-generating process.
- Assumption 2: There is a quantitative (positive or negative) relationship between the level of sustainability and the performance of a company.

Assumption 1 is needed because we link financial performance directly to sustainability scores that are ultimately based on interpretations of rating agencies and not on realised market prices for sustainability. This assumption reduces the quantitative results to a relatively poor statistical robustness, because the financial literature indicates (e.g. Fama and French (1993)) that more relevant economic factors exist. We come back to this topic in section 6.5.3. The second assumption implies that sustainability can be achieved only through initial financial costs (positive relation). This is in accordance with the strategic approach, which specifies a quantitative relation between the two, but cannot determine in advance whether that relation is positive or negative in the longer run.

6.5.2 Application of the model: Sustainability styles

Despite the fact that the methodology is more important than the outcomes of the coefficients, this section presents as an example the estimation of the sustainability styles of stakeholder groups in portfolios of international stocks. By applying the model as presented above, we basically calculate sensitivity coefficients that minimize the distance between the stock return of each company and its sustainability score. This methodology emphasizes the 'strategic approach' of section 6.2.1, indicating that there is always a quantitative relation between financial return and sustainability efforts. Application of this relation to a specific region or sector then allows us to draw conclusions regarding the sustainability style of the selected portfolio of companies. Table 6.7 presents the results under the restriction that only positive sensibility factors are allowed ($b' \geq 0$). This restriction is based on the assumption that only long positions can be taken by the investor.

Table 6.7: Sustainability styles in % of total sensitivity of 100% for all seven attributes and calculated for geographical regions, based on average returns in the years 1999- 2001[57].

	Corp.Gov.	Cust.	Suppliers	Empl.	Environ.	Comm.	Beta	Adj. R-sq.	N
1-Europe	24	15	0	0	0	28	32	1.6	251
2-Cont. North/East	14	20	0	0	8	19	38	10.4	88
3-Germany	40	8	19	0	0	33	0	11.6	21
4-Benelux	0	0	0	0	0	0	100	46.0	25
5-Scandin.	13	0	0	0	19	29	39	48.9	25
6-Switzerl.	-	-	-	-	-	-	-	-	-
7-Cont.South	0	17	0	11	0	28	44	1.6	76
8-France	0	17	0	0	0	41	42	4.3	39
9-Spain	79	0	0	1	9	0	11	27.8	13
10-Italy	0	8	12	79	0	0	0	17.3	24
11-UK	-	-	-	-	-	-	-	-	-
12-US	3	2	4	0	0	48	44	6.1	142
Average value	17.3	8.7	3.5	9.1	3.6	22.6	35	17.6	

The economic implication of a high stakeholder score indicates that the sustainability style of that specific country portfolio is mostly related to these stakeholders. Table 6.7 shows, for example, that a portfolio of German companies is not related to the stakeholders *employees, the environment* and *beta.* German total returns are sensitive to the improvement of investments in the *community* (33% of the total sensitivity), the disclosure of *corporate governance* information (40%), the enhancement of *customer* sustainability (8%) and an upgrading of *supplier* relationships (19%). A look at the entire table reveals that US companies are the most dependent on *community* sustainability (48%) and beta (44%), whereas the sustainability style of European companies is more related to *corporate governance* disclosure (24%), *customer relations* (15%) and *beta* (32%). This is in accordance with the intuitive perception that the free US press continuously looks out for violations of the law, pursues fraud detection (corruption, tax evasions and accounting violations), and records high levels of charitable investments to influence the corporate image. Europe, on the other hand, features many different types of corporate governance systems that need a lot of disclosure in the investor relations. Other interesting results: in Italy the stakeholder *employees* is very important (79%), and *environment* has the highest score in the Scandinavian countries (19%). Again, these

67 For reasons of financial instability in the year 2000, we took the average total return for the three years period 1999-2001.

results are conform to expectations because Italy still has a strong labor tradition and Scandinavian countries have a stronger environmental engagement than other countries. If we consider the average value of the sensibility factors, we see that *beta* still has the most explaining power, followed by *community* and *corporate governance*. Finally, it must be noted that the model did not fit for the companies in the UK and Switzerland. Also important: the calculated F values for all the distinguished models are too low to allow us to draw statistically reliable conclusions. The model fails to be statistically robust.

A similar analysis can be applied to the companies if they are grouped into sectors. Table 6.8 shows the results.

Table 6.8: Sustainability styles in % of total sensitivity of 100% for all seven attributes and calculated for sectors, based on average returns of the years 1999- 2001.

	Corp.gov	Cust.	Suppliers	Empl.	Environ.	Comm.	Beta	Adj.R-sq.	N
1-Banks	0	0	0	59	22	0	19	35.8	45
2-Chemicals	74	0	24	0	0	2	0	47.8	15
3-Electricity	27	0	0	0	6	20	47	3.8	28
4-Food	24	13	8	0	17	0	38	10.9	27
5-Health	0	0	0	0	0	100	0	18.3	17
6-I.T & Hardw	15	12	7	0	0	0	65	0.1	28
7-Ins. &spec. fin.	3	27	27	0	0	0	43	0.6	27
8-Media & Photo	1	0	0	0	0	99	0	8.2	37
9-Oil, Gas& Min.	0	28	0	0	0	42	30	24.1	22
10-Pharmaceu.	0	18	6	0	0	50	26	22.2	16
11-Retail gen.	15	6	0	0	0	28	51	7.3	29
12-Softw&CoSe.	7	23	0	0	0	0	70	19.9	26
13-Telecom	0	0	0	48	36	0	16	42.9	20
14-Indus. diverse	32	36	0	0	0	0	32	3.9	19
15-Miscellaneous	-	-	-	-	-	-	-	-	-
Average value	14.1	11.6	5.1	7.6	5.8	24.4	31.2	17.6	25.4

The sectoral perspective reveals that Health (100%) and Media (99%) are almost entirely involved with *community* interaction. The stakeholder *employees* are primarily important for Banks (59%) and the Telecom (48%) sector. This can be explained by the crucial role of employee satisfaction, due to fierce competition in the labor markets of these sectors.

6.5.3 Theoretical pitfalls

The application of the style methodology on the sustainability dataset has clear flaws. Most important is that the calculated sensitivity is a theoretical relationship that indicates an *ex post* relative sustainability style. No valid judgments can be made on future relationships because, first of all, the numbers represent relative positions and therefore cannot be translated into direct financial returns. Secondly, there is no stable time-series estimation of both the sustainability scores and the financial variables. Finally, the return-generating process in financial markets is based on much more complex factors than the assumed sustainability scores including beta (the average R^2 of all analyzed models is only 17.4%). This reduces the value of the empirical results to an example of a virtual, sustainable, economic process. The major contribution of the introduction of the style methodology is that it connects theoretically the demand-driven SRI theory with the supply-driven and stakeholder-oriented policies of CSR companies.

6.6 Conclusions

This chapter presented a stakeholder model that included sustainability factors in the return-generating process of international companies. The results should assist companies that are looking for factor sensitivities to estimate their costs of improving stakeholder relationships. Preliminary conclusions indicate that US companies are more oriented toward community values such as fraud prevention, whereas European companies aim more at corporate governance disclosure and customer satisfaction. Further, employee sustainability is pursued assiduously by only the 'bank' and 'telecom' sectors, whereas 'media' and 'health' are predominantly community oriented. Although the results are in accordance with intuition, the dataset lacks the robustness necessary to statistically reliable conclusions. Such conclusions can be drawn only from a dataset with a higher level of public information on sustainability performance. The applied methodology has value, however, and could help companies gain insight into the sustainability style of their country or sector in relation to their financial performance. Style analysis can help CSR companies to optimize their stakeholder policy.

Appendix 1

Research companies of the SiRi Group (www:sirigroup.org)

AReSE	SA France
Avanzi, s.r.l	Italy
CaringCompany AB	Sweden
Centre Info SA	Switzerland
Fundación Ecología y Desarrollo	Spain
KLD Research & Analytics, Inc.	United States
Michael Jantzi Research Associates	Canada
Pensions & Investment Research Consultants Ltd.	United Kingdom
Scoris GmbH	Germany
STOCK at STAKE SA	Belgium
Sustainable Investment Research Institute P/L	Australia
Triodos Research BV	The Netherlands

Appendix 2

Correlations coefficients between all variables in the period 1999-2001

		COMM.	MANAG.	CUSTOM.	EMPLOY.	ENVIR.	SUPPL.	AVRET.	AVBTM.	AVBETA
COMMUN	Pearson Correlation	1	,249	,219	,413	,305	,143	,028	-,056	,058
	Sig. (2-tailed)	,	,000	,000	,000	,000	,003	,566	,269	,243
	N	428	428	428	428	428	428	413	393	405
MANAGEM	Pearson Correlation	,249	1	,131	,177	,159	,038	-,037	-,118	-,029
	Sig. (2-tailed)	,000	,	,007	,000	,001	,438	,450	,019	,555
	N	428	428	428	428	428	428	413	393	405
CUSTOMER	Pearson Correlation	,219	,131	1	,239	,155	,007	,083	,096	,115
	Sig. (2-tailed)	,000	,007	,	,000	,001	,886	,091	,058	,021
	N	428	428	428	428	428	428	413	393	405
EMPLOYEE	Pearson Correlation	,413	,177	,239	1	,422	,485	-,061	,043	,082
	Sig. (2-tailed)	,000	,000	,000	,	,000	,000	,215	,393	,100
	N	428	428	428	428	428	428	413	393	405
ENVIRONM	Pearson Correlation	,305	,159	,155	,422	1	,072	-,090	,221	,027
	Sig. (2-tailed)	,000	,001	,001	,000	,	,135	,067	,000	,591
	N	428	428	428	428	428	428	413	393	405
SUPPLIER	Pearson Correlation	,143	,038	,007	,485	,072	1	-,043	,020	-,067
	Sig. (2-tailed)	,003	,438	,886	,000	,135	,	,388	,687	,179
	N	428	428	428	428	428	428	413	393	405
AVRETURN	Pearson Correlation	,028	-,037	,083	-,061	-,090	-,043	1	-,028	,250
	Sig. (2-tailed)	,566	,450	,091	,215	,067	,388	,	,574	,000
	N	413	413	413	413	413	413	413	393	397
AVBTM	Pearson Correlation	-,056	-,118	,096	,043	,221	,020	-,028	1	-,018
	Sig. (2-tailed)	,269	,019	,058	,393	,000	,687	,574	,	,734
	N	393	393	393	393	393	393	393	393	378
AVBETA	Pearson Correlation	,058	-,029	,115	,082	,027	-,067	,250	-,018	1
	Sig. (2-tailed)	,243	,555	,021	,100	,591	,179	,000	,734	,
	N	405	405	405	405	405	405	397	378	405

** Correlation is significant at the 0.01 level (2-tailed).
* Correlation is significant at the 0.05 level (2-tailed).

Appendix 3

Number of companies per sector.

NR.	Main sector	Sub-sector	Sector code	Number of companies	Total
1	Banks	Banks	BANKS	50	50
2	Chemicals	Chemicals	CHMCL	16	16
3	Electricity	Electricity	ELECT	12	29
		Electronic & Electrical Equipment	ELTNC	9	
		Engineering & Machinery	ENGEN	8	
4	Foods Producers & Processors	Foods Producers & Processors	FOODS	12	30
		Food & Drug Retailers	FDRET	9	
		Beverages	BEVES	9	
5	Health	Health	HLTHC	12	21
		Personal Care & Household	PERSH	9	
6	Information Technology Hardware	Information Technology Hardware	INFOH	31	31
7	Insurance& special finance	Insurance	INSUR	15	31
		Special Finance	SPFIN	13	
		Investment banking	INVET	1	
		Investment Companies	INVSC	2	
8	Media & Photography	Media & Photography	MEDIA	28	38
		Life Assurance Media & Photography	LIFEA	10	
9	Oil & Gas & Mining	Oil & Gas	OILGS	15	22
		Mining	MNING	3	
		Steel & Other Metals	STLOM	4	
10	Pharmaceuticals	Pharmaceuticals	PHARM	19	19
11	Retailers, General	Retailers, General	RTAIL	17	34
		Leisure, Entertainment & Hotels	LESUR	8	
		Household Goods & Textiles	HHOLD	9	
12	Software & Computer Services	Software & Computer Services	SFTCS	17	28
		Support Services	SUPSV	11	
13	Telecom Services	Telecom Services	TELCM	24	24
14	Industrials-diverse	Sustainability industrial	UTILO	9	23
		Diversified Industrials	DIVIN	5	
		Innovative Industrial	UQEQS	1	
		Construction & Building	CNSBM	8	
15	Miscellaneous	Automobiles	AUTMB	12	38
		Aerospace	AERSP	6	
		Forestry & Paper	FSTPA	6	
		Transport	TRNSP	8	
		Tobacco	TOBAC	4	
		Real Estate	RLEST	2	
			Total	**434**	**434**

Chapter 7 A framework for managing aportfolio of socially responsible investments[68]

This chapter is an exact copy of Hallerbach, Ning, Soppe and Spronk (2004). The article contributes fully to sustainability in finance because it represents a pure example of a SRI application in finance. Although the previous chapter also used an investment model, and style analysis, it used the investment methodology to estimate companies' sustainability sensitivities in order to measure the financial influence of their CSR policies. Both approaches apply a capital-market methodology to measure either SCR financial sensitivity or SRI portfolios choices. The examples aim at showing the interrelation between CSR and SRI through finance theory.

7.1 Introduction

Socially responsible investment is attracting more and more attention, both in practice and in academia. A growing number of fund managers do invest while taking account of the societal effects of the companies they are investing in. Although regular financial textbooks do not yet pay attention to socially responsible investments (SRI), the first articles do appear in the financial literature. One example is a special issue of the Journal of Banking and Finance (Vol. 26, no 9, September 2002) on Managing Ethical Risk: How Investing in Ethics Adds Value. Another example is a recent article by Jensen (2001) in the Journal of Applied Corporate Finance in which he discusses the relation between Value Maximizing and Social Welfare. Opinions do differ widely. When focussing on the corporation some argue that management should strive for the maximization of the financial value of the stocks of its current shareholders. Others add that under certain conditions this would lead to maximization of social welfare. A different view focuses on the need for the firm to take account of the interests of a variety of stakeholders other than shareholders alone, in order to be able to maximize the value of the shares. One step further are those who argue that the firm has to deal with

68 This chapter is published before in Hallerbach, W., H. Ning, A. Soppe, and J. Spronk, 2004, A framework for managing a portfolio of socially responsible investments, *European Journal of Operational Research* 153, 517-529. I want to thank my co-authors for allowing me to include this paper in my dissertation.

a dynamic goal complex in its own right (i.e. not as conditions for value maximization).

At this place we do not elaborate on the discussion what corporate firms should do. Instead, we concentrate on the role of investors trading in shares of these firms. In financial textbooks the standard assumption is that investors do have only one objective, being the maximization of their future expected wealth. Apparently, the practice of socially responsible investing shows that there are growing numbers of investors who want to take account of more objectives than future wealth alone. Because of the assumption of one objective only (although translated into the familiar bi-objective risk-return framework), the standard textbook solutions only partly provide guidance to the socially responsible investor.

Here we try to fill this gap by presenting and illustrating (using real-life data) a framework for managing an investment portfolio in which the investment opportunities are described in terms of a set of attributes and part of this set is intended to capture the effects on society. Given the multi-attribute descriptions of the individual investment opportunities we show how these can be combined into portfolios with the same attributes at the portfolio level. Also we show how a manager can systematically be supported in the choice between different portfolio profiles.

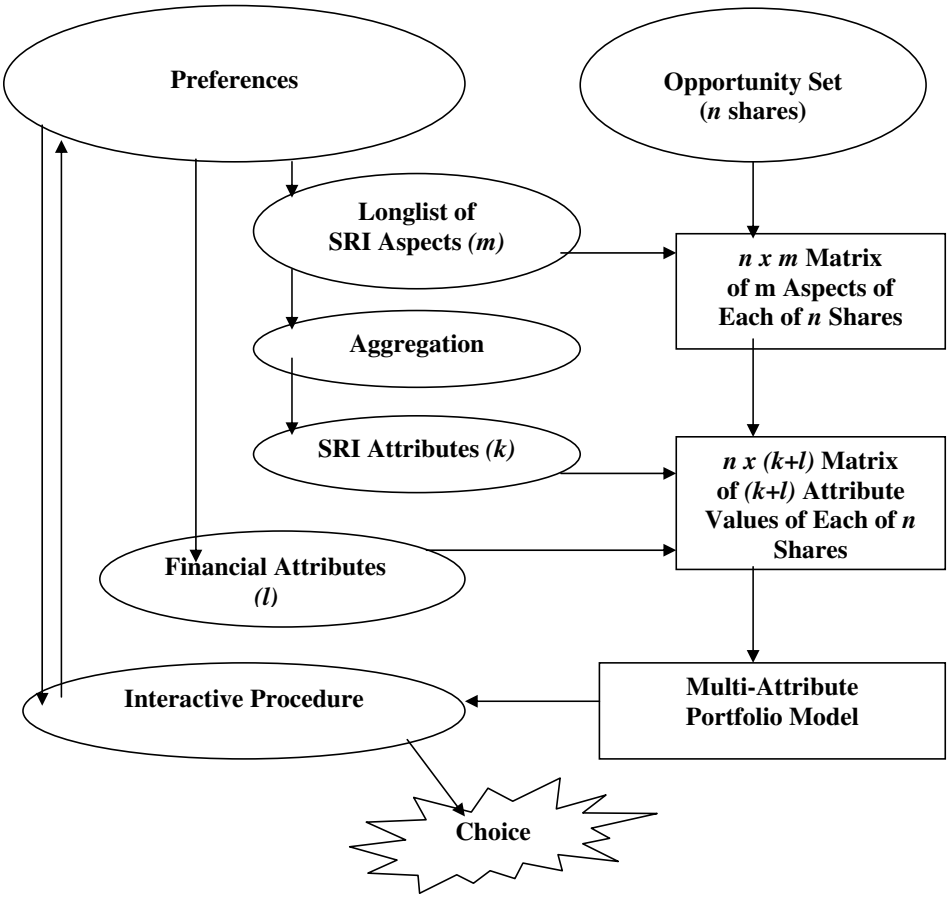
The overall framework is described in the next section. In Section 7.3 we describe the data reduction process, subsequently section 7.4 focuses on the formulation of the portfolio model and section 7.5 explains and illustrates the portfolio selection process. We conclude with a discussion on the potential use of our framework.

7.2 Framework

We start from the position of a socially responsible investor who wants to select a portfolio in which the social effects of the underlying firms are taken account of. This raises a series of problems. One of the first is how to define (and measure) the degree of social responsibility of individual investments. It is clear that there is nothing like a social welfare function, which includes all social aspects and the trade-offs between them. On the contrary, each portfolio manager may have different views on what impacts on society are important, how to measure these impacts and how they rank in relation to each other. However, we may assume that a long list of societal impacts can be defined from which an individual investor can select those that he or she finds important. In the practical application we will be referring to in the following sections, such a long list is indeed available. Another problem is how to combine the shares of different firms into a

portfolio that best meets the preferences of the investor. In the application at hand there is a long list of social impacts for each of more than 400 individual stocks. Figure 7.1 summarizes how this highly complex problem can be structured.

Figure 7.1: A framework for selecting a portfolio of socially responsible investments



Our framework assumes that a firm's effect on society can be expressed and measured in terms of a series of characteristics (also labelled attributes). These characteristics have to be constructed through aggregation of different impacts in the long list and, in addition, are assumed to be relevant for the individual stock as well as for the portfolio level. For example, one could start with a list of environmental impacts of a company and combine these into an aggregate attribute that represents the overall environmental impact of the firm. Next the environmental impact of a portfolio of individual stocks can be defined as a weighted average of the impacts of the individual firms, where the

weights are the fractions of the portfolio invested in each of the individual stocks. Subsequently, our framework supports the portfolio manager to find a balance between the different characteristics at the portfolio level. This is achieved by formulating a multi-attribute portfolio model in which the fractions invested in each of the individual stocks are instrumental variables, there is a budget constraint and possibly other constraints (depending on the specific problem setting; e.g. some investors are not allowed to invest more than 5% in a single stock) and there are (k + l) goal variables (the k + l attributes at portfolio level) to be maximized. Normally, these goal variables cannot be maximized simultaneously. Choices have to be made in one way or another. In our framework we propose to make these choices in a systematic and interactive manner. By interactive we mean that the manager who is responsible for the management of the portfolio can steer the portfolio selection process on basis of decisions that can be based on results and feedback generated on basis of earlier choices. The role of the manager is not limited to the process of finding compromises between the portfolio attributes. Also during the aggregation stage of the framework (i.e. aggregating the long list of SRI Aspects into a manageable set of SRI attributes) the manager has to make trade-off choices. The different stages of the framework will be discussed in the following sections while referring to an actual case in practice.

Two observations can be made. One is that the two stages of the framework, aggregation of aspects and the portfolio selection process, are like communicating vessels. One can put more emphasis on the aggregation stage, resulting in fewer attributes and thus a less complicated portfolio selection process. Alternatively, less aggregation will lead to a more complicated selection process. Another observation is that the choice for specific aggregation procedures and for a specific interactive procedure is not crucial for the use of the proposed framework. Depending on the specifics of a given SRI portfolio problem, also other aggregation tools and or other interactive procedures may be considered.

7.3 From raw data to security attributes

7.3.1 Description of the data [69]

Our example dataset consists of quantitative scores on the sustainability performance of 273 European corporations of the FTSE-300 index and 166 US companies as quoted on respectively the London Stock Exchange and NASDAQ. The scores of these 439 companies are based on questionnaires gathered by the SiRi research

69 The dataset used in this chapter is identical to the one as used in chapter 6.

group based on the year 2000. SiRi is a cooperation of 12 European Social research companies (see Appendix 1) that developed an identical research questionnaire for analysing companies. The sources of information for the analyst are: 1) companies documents that are publicly released 2) national and international press articles 3) Associations, non-profit and non-governmental organizations and 4) contacts between SiRi group members and the company. On top of the yes/ no answers of the SiRi research, the Triodos bank in the Netherlands developed a quantitative interpretation. They distinguished 6 stakeholder groups represented by 41 issues measuring a specific sustainability aspect of the company. The stakeholder groups distinguished are: *Management, Customers, Vendors and Contractors, Employees, Environment and Community*. In Table 1 we list all the attributes as distinguished per stakeholder group. Every attribute consists of four categories of questions: a) Public reports and communications, b) Principles and policies, c) Management systems and d) Impact and key data. Public reports and communication aim at measuring the degree of disclosure of information. Principles and policies represent the written results and communication of the companies' sustainability intentions. The questions on management systems address the organizational structure and the control of the sustainability intentions of the company. Finally, the impact and key data refer to the facts of the sustainable behaviour intentions as formulated in former questions. For example, in the latter category: *Impact and Key data,* the analyst checks whether the good intentions and management structures do or do not lead to public controversies regarding marketing, product safety and quality certification.

The entire score list is based on altogether 223 yes/no questions and some additional texts according to a fixed format for every analysed company. "Yes" is awarded one point and "no" zero points. Next the questions are grouped according to the topics listed in Table 1 and the corresponding points are added. Finally, scores are computed as the percentage of the difference between the maximum and minimum attainable number of points. For example a score of 40 indicates that a company reached 40% of the maximal sustainability score of 100. The higher the score, the better the company satisfies the sustainability requirements of the SiRi analysts.[70] In the next stages of data processing and portfolio optimization we assume that the scores are measured on an interval scale. Table 7.1 summarizes the attributes on sustainability.

70 If not all relevant information could be found or was not disclosed by the company, SiRi used two codes: NA (not available) and ND: not disclosed. NA is awarded if the effort made by the analyst to answer a specific question was found insufficient; this resulted in a score of 0.5 points. In the quantitative analysis the ND got a score of zero points.

Table 7.1: Sustainability attributes, scheduled per stakeholder group

1-CORP. GOVERNANCE	**2-CUSTOMERS**	**3-VENDORS & CONTRACTORS**
8-Directors remuneration	11-Product quality	38-Principles & Policies
9-Board structure	12-Anti-trust	39-Management & organisation
10-Voting rights	13-Marketing	40-Impact contractors
	14-Customer satisfaction	41-Reports & communication
4-EMPLOYEES	**5-ENVIRONMENT**	**6-COMMUNITY**
15-Health & safety	28-Legislation & damage	1-Corruption
16-Discrimination	29-Principles & Policies	2-Dictatorial regimes
17-Forced labour	30-Management & organisation	3-Accounting
18-Child labour	31-Genetic modification	4-Tax
19-Unions/employee participation	32-Reports & communication	5-Other legislation
20-Working hours	33-Energy & water use	6-Community involvement
21-Compensation	34-Emissions	7-Beneficiary products
22-Labour legislation	35-Waste & recycling	
23-Reports & communication	36-Transport	
24-Management & organization	37-Product' impact on environment	
25-Financial participation		
26-Personal circumstances		
27-Training		

The financial data are retrieved from Datastream International and represent yearly observations. Both the *Total returns* and the *Book to market value* concern the research period of the year 2000. Growth figures are calculated from end of year prices or accounting indicators.

7.3.2 Data reduction process

The first step was calculating the descriptive statistics. It turned out that 24 observations were invalid (0.13%) and hence removed from the dataset. Next we eliminated all attributes that showed extremely skewed distributions. The lack of variability of these attributes was supposed to be uninformative for our problem setting. Following this procedure we eliminated 11 attributes. Table 7.2 represents the remaining attributes together with two financial variables: the *Total return* of the company and the *Book to market* value.

Table 7.2: Descriptive statistics of portfolio attributes. N indicates the number of available observations (missing values are due to data errors).

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
1-Corruption	438	25	100	77	13.8
2-Dictatorial Regime	439	0	100	74	18.1
6-Community Involvement	439	0	97	47	27.1
8-Directors' Remuneration disclosure	439	0	100	62	21.1
9-Board Structure	439	19	100	79	14.7
11-Product Quality and Safety	438	0	100	51	15.3
14-Customer satisfaction	439	0	100	40	20.1
15-Health and Safety	439	0	91	58	15.3
16-Discrimination / Diversity	437	27	100	68	19.7
17-Forced Labour	438	56	100	83	18.5
18-Child Labour	439	56	100	84	18.5
19-Unions / Employee Participation	435	0	100	65	14.9
20-Working Hours	439	22	100	83	18.9
21-Compensation	439	22	100	82	19.9
23-Reports & Comm. on Employees	439	0	100	47	21.5
24-Man. & Organization on Employee	439	0	100	54	19.8
25-Financial Participation	439	0	88	37	19.5
26-Personal Circumstances	439	0	100	49	26.7
27-Training	439	0	75	34	15.9
29-Principles&Policies on Environm.	438	0	100	55	33.4
30-Man. & Organization Environment	438	0	100	47	23.7
32-Reports & Comm. on Environment	436	0	100	54	35.5
33-Energy and Water Use	439	0	100	19	22.4
34-Emissions	439	0	100	43	33.2
35-Waste and Recycling	439	0	100	46	25.1
36-Transport	437	0	100	47	34.2
37-Products' Impact on Environment	436	0	100	44	17.8
38-Principles &Policies on Contractors	439	0	100	68	35.2
39-Man. &Organization Contractors	437	0	100	70	33.3
41-Reports & Comm. on Contractors	438	0	100	67	37.7
42-Total return 2000	429	-.89	3.96	.062	.43
43- Book to Market Value 2000	403	-1.54	100	0.68	5.2

In order to reduce the number of variables further we aggregated attributes by using hierarchical cluster analysis in combination with factor analysis (viz. unrotated orthogonal factor solution for factors with eigenvalue exceeding unity). The remaining attributes were clustered conform the stakeholder approach. Because of the substantial number of attributes related to employee relations, this stakeholder group was split up into three different subgroups. Table 7.3 summarizes the remaining factors and the corresponding attributes. A factor is calculated as the un-weighted average value of the attributes involved.

Table 7.3: Factors implemented in the portfolio optimisation.

Factor name	Attributes involved nr:	Mean score	Standard deviation
1-Community	1, 2, 6	66	13.8
2-Corporate governance	8, 9	70	15.3
3-Customer relations	11, 14	46	16.8
4-Employee: contractual relations	17, 18, 20, 21, 38, 39, 41	77	22.4
5-Employee: Labour rights	15, 16 19	64	12.7
6-Employee: Labour care	23, 24, 25, 26, 27	44	13.3
7-Environment: Principles & Policies .	29, 30, 32	52	27.1
8-Environment: Facts & results	33, 34, 35, 36, 37	40	17.1
9-Total return	42	6.2%	43.3%
10-Book to market value	43	0.68	5.2

The ten resulting factors of table 7.3 are used as input for the multi- attribute portfolio procedure.

7.4 The multi-attribute portfolio approach

The traditional Markowitz (1959) approach to portfolio selection assumes that the opportunity set of securities can be fully characterized by the joint distribution of their returns. More specifically it is assumed that the probability distribution of the portfolio return can be fully described by means of its locus and its shape, measured by the mean and the variance. Experiences from practice, however, reveal that not all relevant information is captured by these two explicit return and risk attributes. In this section we first discuss the choice of characteristics that describe the securities in the opportunity set. Next we discuss the selection of a portfolio on the basis of this information.

7.4.1 Multi-attribute representation of securities

Various extensions to the mean-variance model were proposed. The uni-dimensional risk measure variance, for example, can be replaced by a set of multi-dimensional risk measures. These risk measures comprise higher order statistical moments of the return distributions, or are based on a multi-factor risk model (see e.g. Elton and Gruber (1995),). Other attributes can be considered important because they represent 'anom-

alies'[71]. For common stocks, 'firm size' is a long-time notorious variable. Other examples are price ratios as indicators for fundamental firm value like earnings/price, book/price (book value of common equity per share divided by market price per share), cash flow/price, sales/price and dividend/price. In the context of 'value investing' there is great-renewed interest in these long time familiar attributes[72].

In the view of (descriptive) financial theory, an attribute's ability to contribute to the explanation of cross-sectional return differences appears to be a convincing criterion for the selection of relevant attributes. An attribute will only carry a significant premium when it is 'priced' in the market. However, a non-average investor can face a set of investment opportunities that is different from the market (i.e. the average investor). Hence this investor is only interested in the relevance of this attribute in his opportunity set. Furthermore, partly connected to the former argument, the reward that an investor attaches to the exposure to an attribute (a 'subjective' premium) may well be different from the premium that the market as a whole attaches to that attribute (the 'objective' premium). So despite the official view of general financial theory, security attributes that are relevant because of idiosyncrasies in the investor's personal decision context may well exist. In this case, the incorporation of additional attributes can be motivated from the specific tastes and desires of the investor, from specific investment constraints he faces, or from distinctive characteristics of the investment alternatives. In the framework of this chapter one naturally thinks of sustainability performance characteristics as discussed in section three. In short, it is up to the investor to decide which variety of attributes helps to decide between the various securities.

The formulation of a multi-attribute representation of securities as outlined above is the first stage in a general framework for portfolio analysis and selection, as proposed by Hallerbach and Spronk (1997). This stage comprises a detailed and investor-specific security analysis. Preference information is used to demarcate the set of k attributes that an investor considers important. For the investor, a financial security then represents a basket of, say, k attributes and can fully be characterized by a k-tuple of attribute scores. In this view, when buying a security, an investor is actually buying an exposure to various attributes. The selection of relevant attrib-

71 An attribute is an anomaly with respect to an asset pricing theory when that attribute possesses power to explain cross-sectional variation in expected returns in addition to the risk measures as specified by the pricing model at hand. An attribute is an anomaly with respect to the efficient market hypothesis when it can be used to forecast future returns. Detailed overviews are provided by Fama, E.F., 1991, Efficient capital markets: II, *The Journal of Finance* 46, 1575-1617. and Hawawini, G., and D.B. Keim, 1995, On the predictability of common stock returns; Worldwide evidence, in R.A. Jarrow, V. Maksimovich, and W.T. Ziemba, eds.: *Finance* (North Holland).

72 Seminal papers on value investing are Fama & French (1992, 1993) and Lakonishok, J., A. Schleifer, and R.W. Vishney, 1994, Contrarian investment, extrapolation and risk, *The Journal of Finance* 49, 1541-1578.

utes is no 'once and for all' activity. The investor's decision context and the securities' economic environment may change over time and may become 'better understood' because of 'learning effects'. As a result, the set of relevant attributes may change over time.

The second stage of the framework is the analysis of feasible portfolios and the selection of a final portfolio. The issue of multi-attribute portfolio selection is to balance the attributes of the individual securities on the portfolio level. That is, given the security attributes and the investor's profile (personal context), the attributes of his portfolio must be fashioned in a way that suits his particular circumstances and preferences best. This stage is discussed in more detail below.

7.4.2 Choosing between attribute exposures

The step from securities to their representation in terms of attribute scores can be justified by referring to consumer theory, where 'characteristics models' have been developed for describing consumer behaviour. In this respect we especially note Lancaster (1966) p.133, whose contribution is "breaking away from the traditional approach that goods are the direct objects of utility and, instead, supposing that it is the properties or characteristics of the goods from which utility is derived". For a detailed discussion and review of characteristics models, we refer to Deaton and Muellbauer (1980). These implied characteristics models opened the way for a theory of multi-attribute choice. Transposed to the investment decision, we can assume that investors buy securities for the attributes they offer and that different securities are essentially different packages of attributes. Hence, we can specify a mapping of the securities in the space spanned by the attributes:

$$\text{security } i \rightarrow \{ a_{i1}, a_{i2}, \ldots, a_{ij}, \ldots, a_{ik} \}, i \in N \qquad [7.1]$$

where a_{ij} is the value that attribute j takes for security i. Likewise, when composing a portfolio, the investor is actually composing an appropriate portfolio exposure to the various attributes:

$$\text{portfolio } p \rightarrow \{ a_{p1}, a_{p2}, \ldots, a_{pj}, \ldots, a_{pk} \} \qquad [7.2]$$

Hence, an investor's preference functional is directly specified in the multi-dimensional terms of relevant security attributes. For a given portfolio, its exposure to a certain attribute can be calculated as a weighted average of the attribute exposures of the individual securities contained in this portfolio. The fractions invested in each of these securities can thus be treated as instrumental variables. Therefore, the attribute exposures can be seen as goal variables that are linear in the portfolio hold-

ings[73]. Often, the investor will try to either minimize or maximize each of these goal variables. Alternatively, the investor may strive to attain a target level or desired score on some attribute(s). Depending on the investor's insights and preferences, the relative importance of each of these goals may vary. Generally, no portfolio can be found for which each of the goal variables reaches its optimal value or for which all criteria are met. As a consequence, the investor has to evaluate the trade-offs between the various goal variables.

There are several routes leading to the selection of a portfolio, depending on the amount of information available on the investor's preference structure. Assuming a large amount of preference information, the traditional utility framework could be extended to a multi-dimensional context by casting a utility function in terms of multiple portfolio attributes. Consequently, the mean-variance preference functional $Z(Ep,\sigma^2p)$ is replaced by a 'Lancaster (1966)-type' function $Z(a_{p1},...,a_{pk})$. In that case, an explicit optimisation problem can be formulated and solved. Unfortunately, the complexity of specifying a multi-attribute preference functional is enormous and not likely to be overcome in practice. In multi-attribute utility theory, this complexity is reduced by assuming (strong) separability of the preferences. When this assumption is satisfied, a series of uni-dimensional (i.e. single attribute) utility functions can be assessed, where after these component functions are combined (in a linear, multiplicative or other fashion), using information about attribute trade-offs. In this way, the exposures are evaluated attribute by attribute and then combined to obtain an overall measure of desirability. Still, this places a heavy information burden on the investor. The problem here is to ex ante specify the uni-dimensional preferences for each of the attributes as well as the overall preference functional that incorporates the evaluation of a combination of attribute exposures and their trade-offs.

Another route is to cast the multi-dimensional preference functional in the form of a (linear) programming model. One way is to maximize the portfolio's exposure to one attribute (expected return, e.g.) subject to restrictions on the other attribute scores (cf. Sorensen and Thum (1992). The problem with such a specification is that it is intrinsically uni-dimensional: only one attribute is optimised, while the other attributes only serve as constraints. Another way to extend the linear programming formulation to a multi-dimensional context is to use a weighted average of the various attributes as the objective function (one example is Arthur and P.Ghandforoush (1987). A linear pro-

73 Some attributes can cause problems. For example, individual securities' price/earnings and market-to-book ratios must be aggregated in harmonic form in order to obtain portfolio value ratios. It is then simpler to consider the securities' earnings/price and book-to-market ratios, which can be aggregated in a linear fashion to a portfolio ratios.

gramming formulation like this can only be employed when the trade-offs between the attributes can be specified properly.

In formulating priorities and targets with respect to attributes and attribute exposures, goal programming offers more flexibility. The applicability of multiple goal programming to the portfolio problem was recognized at an early stage. In the traditional mean-variance context, we have Lee (1972), Lee and Lerro (1973), Kumar, Philipatos and Ezell (1978), Lee and Chesser (1980), Spronk (1981) and O'Leary and O'Leary (1987). Aside from expected return and risk, some other attributes (notably dividend yield) are specified, but a truly multi-attribute representation is not pursued. But of course, the number of attributes could easily be extended. Multiple goal programming indeed has some attractive properties. It shows a close correspondence with decision making in practice, the goals are formulated as aspiration levels and there is always a solution for a well-defined problem (with a non-empty feasible region), even if some goals are conflicting. An important drawback of multiple goal programming, still, is its need for fairly detailed a priori information on the decision-maker's preferences.

Interactive programming methods, in contrast, neither require an explicit representation or specification of the decision-maker's preference function nor an explicit quantitative representation of the trade-offs among conflicting goals. By its nature, an interactive procedure progresses by seeking this information from the investor, removing the need to make the preference structure more explicit. For the investment problem as sketched in this chapter, we propose Interactive Multiple Goal Programming (henceforth IMGP), as developed by Spronk (1981). In this procedure, the investor reduces the set of alternatives interactively and systematically, thus conditioning the quality of the remaining portfolios.

In broad lines, IMGP works as follows. Given a set of (investment) alternatives and a set of goal variables (attribute exposures), IMGP starts formulating minimum requirements for each of the goal variables, leaving a set of alternatives meeting the requirements. (For the ease of exposition, we assume that all goal variables are to be maximized.) This vector of minimum goal values is presented to the investor, together with a set of indicators of the potential improvements of these minimum goal values, within the set of feasible portfolios. In the first iteration, very low minimum goal values are chosen (viewed by the investor as absolute minimum conditions or even worse) in order to be sure that no potentially acceptable portfolios are excluded. Next, the investor has to indicate whether or not the portfolios meeting the minimum requirements are satisfactory. If so, he can choose one of these portfolios. If not, he has to indicate which of the minimum goal values should be increased. The constraint on the value of the corresponding goal variable is then reformulated.

On the basis of the resulting new vector of minimum goals values, a new set of indicators of the potential improvements of these values is calculated and presented to the investor. The investor has to indicate whether the shift in the indicated minimum goal value is outweighed by the shifts in the potentially attainable values of the other goal variables. If so, the investor has the opportunity to revise his earlier wishes with respect to the changed minimum goal value. If not, the change of the minimum goal value is accepted and the investor can continue to raise any of the other or even the same minimum goal value. Of course, by successively raising the minimum goal values from iteration to iteration, the set of feasible portfolios is gradually reduced by keeping only the portfolios that meet the higher standards. Each iteration produces indicators showing the 'price' of the higher standard, so the investor can evaluate the trade-offs between the goals (attributes).

The investor has several options. He can continue until the remaining set of feasible portfolios becomes very small. The convergence of the procedure, which is discussed from a theoretical point of view by Spronk (1981, pp 147-150), is achieved within a small number of iterations. (Our many experiences in applying the procedure are completely in line with the theoretical findings). Another possibility is to select a suitable portfolio from the set of portfolios satisfying the minimum requirements. In this respect, IMGP produces at each iteration a set of non-dominated portfolios. Finally, a set of feasible portfolios satisfying the minimum conditions on the goal values can be subjected to a second analysis by the investor. In his decision context, the investor may wish (or need) some elbowroom, thus requiring more than just one portfolio. The procedure then offers adequate flexibility to incorporate other, hard to quantify, criteria into the decision making process. IMGP incorporates all the advantages of 'traditional' goal programming, while circumventing the unnecessary burden of obtaining a 'complete' picture of the investor's preference pattern. In our opinion, this approach offers the desired degree of flexibility to be fruitfully applied to the multi-attribute portfolio selection problem. By tuning the attribute exposures, a specific portfolio profile can be obtained that matches the investor's profile. In contrast to traditional approaches, the stages of portfolio analysis and portfolio selection are no longer treated separately but are integrated. The interactive method then is no optimiser, but can better be described as a 'combiniser': it allows systematic scanning of the set of feasible portfolios and the selection of an optimal portfolio via an interactive process. In the interactive decision process, a learning process is embedded. By scanning the feasible portfolios, the investor first gets a feeling for the trade-offs that exist in the opportunity set between the exposures to the various attributes. Second, the investor can shape and adjust his preferences when confronted with the trade-offs between the attributes. It is in no way required that the investor performs the interactive process only once. He can explore the opportunity set in all dimensions, and is even advised to do so in order to get insight into the prop-

erties of the opportunity set at hand. Since the interactive procedure is path-independent, no desirable (feasible) alternatives can be missed, only insight can be gained. The proposed approach is illustrated by means of the results of our worked example in the next section.

7.5 Selecting a Portfolio: An illustration

Now we are able to present the results of an imaginary social responsible investor within our multi-criteria framework. We start with imposing the restriction that a maximum of 5% of the portfolio can be invested in one stock; this ensures some level of diversification. By applying the methodology of section 7.4, Table 7.4 renders the starting iteration of our ten-factor model. The first row shows the attribute scores of the portfolio for which the *community* factor is maximised (at a level of 90.1). Because of the 5% restriction on the weights, the portfolio consists of the top-20 *community* stocks. From this first row we can also read that this portfolio brings a *Total return* of 17.6% and a *Book to market valu*e of 0.29. The next rows of table 4 refer to the nine other portfolios where each time another factor is maximised. The bold diagonal entries of the table represent the maximum value of the corresponding attribute obtained over all portfolios. The potency matrix summarizes the attribute scores in the solution space after the first iteration. The "Max" row contains the maximum attainable attribute scores whereas the "Min" row shows the minimum scores.

Table 7.4: Starting iteration; ten different portfolios

	1-Comm	2-Govern.	3-Cust.	4-Emp.-contr. Rel.	5-Emp2-labor rights	6-Emp3-labor care	7-Env. - P&P	8-Env2-F&R	9-TR 2000	10-BtMv
1-Community	**90.1**	80.2	59.4	85.0	78.0	54.2	67.6	48.7	17.6	0.29
2-Governance	73.5	**96.6**	44.9	80.0	69.9	43.7	61.4	41.9	4.5	0.19
3-Customers	74.2	70.8	**78.5**	75.5	68.7	53.2	61.0	50.5	1.4	0.19
4-Employees-contractual relations	64.8	79.1	43.9	**100.0**	58.7	39.9	31.1	44.8	16.8	0.29
5-Employees-labor rights	78.4	75.1	55.8	80.7	**86.6**	55.3	74.8	48.5	19.8	0.19
6-Employees-labor care	69.5	69.3	55.0	79.6	69.8	**67.8**	61.7	53.7	10.6	0.23
7-Environment-Principles&policies	67.6	70.0	54.3	68.3	70.5	54.7	**93.1**	53.4	1.5	0.34
8-Environment2-Facts&results	66.8	73.2	41.6	87.5	64.3	46.5	66.2	**76.7**	-3.9	0.19
9-Total returns 2000	68.4	63.7	48.8	86.8	65.9	46.6	43.7	39.3	**73.7**	0.24
10-Book to Market value2000	63.9	67.6	42.9	66.8	57.4	40.1	58.4	38.1	-2.4	**0.82**
Potency Matrix										
Max	90.1	96.6	78.5	100.0	86.6	67.8	93.1	76.7	73.7	0.82
Min	63.9	63.7	41.6	66.8	57.4	39.9	31.1	38.1	-3.9	0.19

Suppose now that our imaginary investor is primarily interested in the so-called 'growth stocks'. Economic theory indicates that stocks with relative high *Book to Market* ratios are undervalued and therefore promise some upward growth potential. For this reason we start the second iteration in which we impose an additional restriction, setting the minimum acceptable value for the *Book to market value* to 0.5. This narrows the space of feasible portfolios. The impact of the additional restriction on the other nine portfolios is summarized in the second column (labelled "1") of the potency matrix in Table 7.5.

Completely depending on our virtual investor's preferences a set of additional minimal values can be imposed on the optimisation problem. In our application we make the subjective choice to set seven consecutive additional restrictions on the sustainability scores, yielding in total eight iterations. The only necessary check was whether the level of the attribute restriction was within the remaining feasible solution space as based on the potency matrix in Table 7.5. This resulted in the following additional portfolio requirements (with the average sample score between parentheses):

a) Customers relations >= 55 (46)
b) Governance openness >= 75 (70)
c) Community >= 75 (66)
d) Environmental Principles & Policies >=70 (52)
e) Environment Facts & Results >= 56 (40)
f) Employees Labour care >= 55 (44)
g) Employees contractual relations >= 98 (77)

The attribute scores of the ten portfolios after iteration 8 is summarized in column 8 of Table 7.5; for detailed information on the attribute scores we refer to Appendix 2. Every portfolio reflects a combination of stocks that clearly scores above average on all indicated attributes. A final choice could be to buy the portfolio that maximised the return in the year 2000. The resulting portfolio then has the following ten respective attribute scores (see row 9 of iteration 8 in Appendix 2): 76, 75, 55, 98, 71, 55, 71, 58, 21 and 51. So in economic terms we selected a portfolio with a *return* of 21%, a *book to market value* of 0.51 and eight above-average sustainability scores.

Table 7.5: The potency matrix reflecting the solution space after every iteration.

	Iteration:	Start	1	2	3	4	5	6	7	8
1-Community	Max	90.1	88.3	88.3	88.3	88.3	88.0	87.0	86.7	78.5
	Min	63.9	63.9	63.9	63.9	*75.0*	*75.0*	*75.0*	*75.0*	*75.6*
2-Governance	Max	96.6	92.7	91.8	91.8	91.8	91.8	91.0	90.9	78.4
	Min	63.7	63.6	63.7	*75.0*	*75.0*	*75.0*	*75.0*	*75.0*	*75.0*
3-Customers	Max	78.5	74.0	74.0	72.9	72.9	72.9	71.2	71.1	57.0
	Min	41.6	41.6	*55.0*	*55.0*	*55.0*	*55.0*	*55.0*	*55.0*	*55.0*
4-Employees-contractual relations	Max	100.0	100.0	100.0	100.0	100.0	100.0	99.9	98.3	98.3
	Min	66.8	66.7	69.9	69.9	69.9	69.9	75.6	75.6	*98.0*
5-Employees2-labor rights	Max	86.6	81.5	81.5	81.5	81.4	81.4	80.3	80.2	72.3
	Min	57.4	57.4	57.4	57.4	65.6	65.6	66.8	68.6	69.4
6-Employees3-labor care	Max	67.8	64.1	64.1	64.0	63.9	63.9	63.3	63.3	55.5
	Min	39.9	39.9	43.1	43.6	43.6	44.1	48.5	*55.0*	*55.0*
7-Environment-Principles&policies	Max	93.1	91.6	91.4	90.9	89.4	89.4	89.1	88.3	71.3
	Min	31.1	31.1	31.1	31.1	44.7	*70.0*	*70.0*	*70.0*	*70.0*
8-Environment2-Facts&results	Max	76.7	70.9	69.0	69.0	68.2	68.1	68.1	67.2	58.6
	Min	38.1	38.1	38.1	38.1	38.0	45.4	*56.0*	*56.0*	*56.0*
9-Total returns 2000	Max	73.3	54.7	52.4	48.2	47.7	45.1	42.1	41.0	21.1
	Min	-3.9	-3.9	-3.9	-3.9	-3.9	-3.9	-3.9	-3.9	11.2
10-Book to Market value2000	Max	0.82	0.82	0.78	0.76	0.76	0.76	0.70	0.67	0.51
	Min	0.19	*0.50*	*0.50*	*0.50*	*0.50*	*0.50*	*0.50*	*0.50*	*0.50*

Finally, Table 7.5 shows that the proposed eight iterations have narrowed the solution space considerably. Column 8, representing our final iteration, clearly indicates the restrictions on the factors *3-customers*, *4-employees contractual relations, 6-employees labour care, 7-environment P&P* and *10 the book to market value. Total returns* is the only attribute that shows considerable room for improvement. Our investor can now select one of the 10 portfolios, or any linear combination of them. Each choice will satisfy the constraints that have been added in the interactive process.

7.6 Summary and conclusions

In theory as well as in practice there is increasing interest in the issues of sustainability and social responsibility. Given this development the question arises how these issues can be incorporated in the investment decision process. In this chapter we presented a complete framework for selecting a portfolio of socially responsible investments. Characteristic ingredients of the framework are: (i) a multi-dimensional description of the investment opportunities (together with the prior stage of data reduction), (ii) the measurement of attributes on the portfolio level, and (iii) a flexible procedure supporting the decision-maker in evaluating the trade-offs between the selected portfolio attributes and choosing a final portfolio that satisfies his goals and constraints. The multi-

criteria character is inherent to the studied decision problem. In addition we impose the restriction that the procedure should not require detailed a priori preference information from the decision-maker. In particular, the investor should be able to evaluate the attribute trade-offs offered by the opportunity set so that he can shape his preferences in this respect. For satisfying this high degree of flexibility we propose implementing interactive multiple goal programming.

We illustrated the framework with a real-life example. For some hypothetical investor we outlined the decision process and showed how the feasible set of portfolios is reduced. We acknowledge that there are alternative ways to fill in the framework. However the outstanding features of the proposed approach are (i) it offers insight into the trade-offs between the attributes considered, (ii) traditional one-step portfolio selection is substituted by combining the stages of portfolio analysis and selection, which allows the decision-maker to gradually reduce the set of feasible portfolios on the basis of the observed trade-offs, and (iii) the stepwise decision-process together with the explicit attributes allows for easier communication of the decision process and the final results.

Some important issues are left for future research. For example, the data reduction process as briefly mentioned in section 7.3. Questionnaires on sustainability typically consider many aspects and as a result information on sustainability performance is of great diversity. The question arises how the abundant data can be summarized and compressed in terms of only a limited number of attributes. It is desirable that attributes are not redundant and that the selected attributes can explain most of the variation in the data set. Another issue is portfolio diversity. The scores on the sustainability attributes are evaluated on the aggregate portfolio level. The portfolio score is a weighted average of the scores of the individual securities comprised in that portfolio. Given some sustainability attribute, the specific score of the portfolio can be generated by a diversity of security attribute scores. So the dispersion in security scores underlying a portfolio attribute score can be very large or very small. Although we assume that the attributes are measured on (at least) an interval scale, it is questionable whether an investor would be indifferent between a large and only a small degree of underlying dispersion in the scores. When the assumed substitutability between attribute scores is limited, additional attributes can be incorporated in the decision process, indicating the spread of underlying attribute scores.

Appendix 1

Research companies of the SiRi Group (www:sirigroup.org)

AReSE	SA France
Avanzi, s.r.l	Italy
CaringCompany AB	Sweden
Centre Info SA	Switzerland
Fundación Ecología y Desarrollo	Spain
KLD Research & Analytics, Inc.	United States
Michael Jantzi Research Associates	Canada
Pensions & Investment Research Consultants Ltd	United Kingdom
Scoris GmbH	Germany
STOCK at STAKE SA	Belgium
Sustainable Investment Research Institute P/L	Australia
Triodos Research BV	The Netherlands

Appendix 2

Iteration 8:
Employees-contractual relations >= 98

	1-Com.	2-Gov.	3-Cust.	4-Empl. C R	5-Empl. LR	6-Empl. LC	7-Env. P&P	-Env-F&R	9-Total returns	10-BtMt value
1-Community	79	77	55	98	72	55	70	56	15.7	0.50
2-Governance	78	78	55	98	72	55	70	56	13.1	0.50
3-Customers	78	75	57	98	71	55	70	56	14.9	0.50
4-Empl. contractual relations	76	75	55	98	71	55	70	56	12.8	0.50
5-Employees-labor rights	77	75	55	98	72	55	70	56	12.8	0.50
6-Employees-labor care	76	75	55	98	71	55	70	56	12.3	0.50
7-Env.P.&P	76	75	55	98	71	55	71	56	11.2	0.50
8-Env.-Facts&results	76	75	55	98	69	55	70	59	12.8	0.50
9-Total returns	76	75	55	98	71	55	70	56	21.1	0.51
10-BtMvalue	76	75	55	98	71	55	70	56	12.7	0.51

Chapter 8: Summary, conclusions and reflections

This concluding chapter presents an overview of the entire study on sustainability in finance and aims at answering the main problem setting and its deduced questions. Occasionally, I shall take the liberty of extending lines of arguments that have been developed in the preceding chapters. The sections in this chapter deal with the recurrent themes throughout the study. First, attention will be paid to the history and development of the sustainability concepts in finance and their contribution to SRI and CSR (section 8.1). Then, section 8.2 focuses on the consequences for the corporate governance of companies that choose to be sustainable. Section 8.3 presents the results of three empirical studies, based on a sustainability dataset gathered by the Triodos Bank in the Netherlands. The overview of the presented applications, together with their attractions and weaknesses, is particularly relevant for further research projects. Section 8.4 answers the main problem setting of the study, makes final conclusions and presents some reflections on potential future developments.

8.1 Sustainability concepts in finance

Sustainability, in its traditional financial perspective, is restricted to a stable growth rate of financial variables. It is defined as *the rate a firm can grow while keeping its profitability and financial policies unchanged*. This strict starting point of sustainability in finance nicely represents the character of the finance discipline in the second part of the 20th century. In that timeframe, sustainability has only a financial dimension and is focused on stable (in terms of not deteriorating) ratios and performance measures such as profit, return on equity, liquidity, solvability and other specialized financial measures. In the centuries before, the 18th and 19th centuries, scientists with an open mind for the social perspective of the economic process dominated economic science. Adam Smith, Karl Marx and John Maynard Keynes, to name a few, all based their theories on moral perspectives and collective and social goals of the society. In the 20th century (especially in the second part), finance became a specialized branch of economics. Pioneers such as Markowitz, Modigliani, Miller and Sharpe leaned heavily on the neoclassical microeconomic equilibrium models, where human behaviour is based on rational economic man, assuming self-interest as the dominant motivating factor. Then, in the 1970s,

agency theory became the dominant paradigm in business economics. This theory basically assumes that different stakeholders have different interests (e.g. shareholders versus management), and that each stakeholder primarily optimizes his (her) own utility function under the assumption of value additivity (Pareto optimality). For optimal corporate results, agency costs (monitoring, bonding and residual costs) have to be made in order to prevent agents from shirking and engaging in purely selfish behaviour. The alignment of interests then arises as a method to reduce agency costs. Based on the assumption of the selfish behavior of agents, agency theory implies a theoretically accepted change from moral collective and social human behavior in the past, to a strictly individual approach to human behavior today (individuals defined as economic agents)[74]. The assumed and actual behaviour of economic agents in financial theory is one of the core elements of sustainable development.

Sustainable development today is too urgent a matter to be left to environmental lobbyists or activists protesting against economic globalization. Increasingly, scientific evidence has been gathered that indicates that the earth is warming up and that individual and global measures are needed to change that trend. Additionally, the economic gap between the rich and the poor is widening – not only between countries but also within countries. In other words, economic structures and financial institutions are needed in order to sustain both the environmental and the social infrastructure. As Lélé (1991) already noticed, the verbs 'to sustain' and 'to grow' (or to 'develop') are contradictory in themselves, and may therefore need another context than the traditional competitive market economy. Fergus and Rowney (2005b) argued on a philosophical basis that new insights and perspectives are both needed and necessary. Sustainable development in finance aims at rebalancing the relationship between individual interests and collective or community interests through financial policy. The way in which people and organizations deal with money and finance reflects their deeper interests for sustainable development. For example, macro- and micro-economic savings and direct investment behaviour reveal the controversy between present consumption versus the development of the social and physical infrastructure of future generations. At the level of the firm, market competition – between the providers of risky capital, the providers of labor and the general community interest (e.g. protecting environment) – is biased in favor of the providers of capital. Unbalanced social positions cannot be sustained for a long time. Sustainable development in finance, therefore, must find roads and vehicles to restore this unsustainable position.

74 Agency theory as based on Jensen and Meckling (1976) mathematically developed and introduced agency costs (monitoring-, bonding- and residual costs) as a necessary instrument to cope with shirking behaviour of economic agents in the market economy. This concept, which does not allow for cooperative human behaviour, dominated the finance literature many decades, whereas traditional work of Smith and Keynes had a more enlightened approach of human behaviour.

Sustainable corporate finance may be one such road. It is defined as 'a multi-attribute approach to finance the company in such a way that all the company's financial, social and environmental elements are interrelated and integrated'. It is built on four pillars. First in the row is the *mission statement of the company*. In the modern 'theory of the firm' it is acknowledged that a company needs a balanced position between all relevant stakeholders instead of approaching the company as a set of technocratic direct investment projects that are primarily generating cash flows. Reputational risk has become part of the company risk and financial risk. A company that is financed in a sustainable way makes a normative choice in the mission statement to ascribe a 'fair' interest to all relevant stakeholders. The second pillar concerns the *assumed behavior of the company's economic participants*. Rather than assuming and encouraging agency relationships, sustainable finance features cooperation and trust as the key elements for human behavior. Stewardship relationships could be encouraged, for example, by developing a remuneration policy where market salaries for CEOs are not just considered in relation to an international labor market for CEOs, but also in relation to nearby stakeholders of the company such as clients and other employees. A more sustainable solution at the company level could be a salary construction in which management remuneration has a fixed relation to the salaries of other company workers. The third essential element of sustainable corporate finance concerns the *ownership of the company's equity*. This study proposes the stakeholders' equity model, in which the major stakeholders of a company hold the majority of the company's equity. In that concept, the reduction of long-term governance costs should outweigh the potential increase of agency costs. The fourth and final pillar of the concept of sustainable corporate finance is the *assumed ethical framework*. A company that is financed in a sustainable way builds on virtue-ethical and integrative human behavior instead of the typical utilitarian approach in traditional financial theory.

The final sustainability concept, **sustainable finance,** embraces the above-mentioned concepts together with Social Responsible Investing (SRI), Corporate Social Responsibility (CSR) and sustainable banking. Sustainable finance deals with institutional policies, or systems of analysis, where all finance decisions aim at an integrated approach to optimize a firm's social, environmental and financial mission statement. An essential element of the sustainable finance concept is the three-dimensional goal function, where finance primarily has a signalling function in the economic allocation process (rather than being a goal in itself). Sustainable finance connects SRI with CSR because the underlying idea of integrating social, environmental and economic analysis is similar to the point of departure of accepted concepts such as SRI and CSR in financial markets. The current problem with SRI and CSR is that both concepts belong to different academic realms. SRI is an investor activity applying both moral and financial market rules, whereas CSR uses financial instruments and corporate communication to obtain

a balanced stakeholder image. Sustainable finance offers concepts which enable socially responsible investors to actively encourage a corporation's sustainable development. The concept of sustainable finance is needed in the financial literature because SRI and CSR both represent niche markets only in the global financial setting. Both concepts are successful and persistent – although for reasons other than economic efficiency[75]. Empirical research is therefore deemed to be too partial and insufficiently robust to find a scientific answer to the crucial question whether sustainability in firms pays off in the long term. Robust integrated empirical research can be successfully executed only if the information market of social and environmental performance is sufficiently developed. However, financial academics will also need to develop models that restore the connection between social sciences (e.g. philosophy, psychology, sociology and environmental studies). This counters the trend of today, where the finance literature becomes more and more specialised and focused on one of the many market details[76]. To summarize, this study distinguishes sustainable finance from traditional finance by focusing on the development of integrated models and theories to explain financial economic behavior.

The above summary of the sustainability concepts in finance actually serves to answer the first deduced question of the problem setting. The different sustainability concepts are presented above and connected through the four pillars of sustainable corporate finance[77]. Sustainable finance and sustainable corporate finance represent the core elements of the required exchange syntax that is used to develop financial research one step further. Although not yet part of the current technical jargon, the financial sustainability concepts contribute to a continued exploration and integration of financial research with social and environmental research.

8.2 Implications for corporate governance

Pushing the terminology above one level further, chapter 1 defined a *sustainable market economy* as a market economy in which major stakeholders hold a proportional financial responsibility for the residual risk of their own company by being both stakeholder and shareholder. Companies that choose to be financed in a sustainable way, try to

75 Because of the persistent supply of socially responsible investors in the market, without scientific evidence of structural financial outperformance of these type of investments, it is argued that only moral reasons legitimise the existence of SRI funds (see Haigh, M., and J. Hazelton, 2004, Financial markets: A tool for social responsibility?, *Journal of Business Ethics* 52, 59-71.

76 Behavioural finance can be mentioned as an exception because human behaviour is explicitly modelled as an explanatory variable.

77 For a graphical representation see graph 8.1.

reduce governance costs in the long run by creating a monitoring platform where the most relevant stakeholders are directly involved. Only then will the monitoring power be distributed equally, thereby enabling more stable social processes – instead of today's unequal power relations. Also in figure 3.4, representing the key elements of sustainable corporate finance, it was argued that 'a portfolio of stakeholders' should hold the ultimate claim of the public company. This normative concept of a sustainable market economy was deduced from a production function that included capital, labor and nature[78]. Nature as production factor is approached as being both productive and restrictive: productive in the sense that environmental innovations need to be developed and produced, and restrictive in terms of environmental damage and waste of all other products. The long-term interaction between labor, capital and environment is crucial for a sustainable development of welfare. Whereas labor was the crucial production factor at the end of the 19th and at the first half of the 20th century, capital became the dominant production factor at the end of the former century. Today's global economy is capital driven, with increasing signals that the environment is becoming the next scarce resource. Together with increasing differences in income distribution at the macro-, the meso- and the micro-economic levels, sustainable development needs instruments and an infrastructure to restore the current unequal power distribution in the economic process.

Because corporate governance structures represent the heart of the organization of the market economy, this section describes some implications of sustainable finance for corporate governance structures. First, attention is paid to the stakeholder equity model which is proposed to be an instrument to bridge the gab between economic, social and environmental interests (section 8.2.1). Then, section 8.2.2, summarizes on the relevance and importance of corporate governance transparency.

8.2.1 Stakeholder equity

The stakeholder equity model (as developed in chapter 4) does not reject the shareholder model. On the contrary, it builds completely on shareholders as the ultimate claimants of the public company results. The crucial difference is with regard to the ownership of the shares. Managing a sustainable company implies emitting equity in such a way that the majority of the general 'one share one vote' capital is owned by the major stakeholders in the company. Or, in other words: with stakeholder equity, the company that is financed in a sustainable way takes the initiative to change the governance so that the monitoring control of the company is not restricted to the providers of capital alone, but is distributed among the major stakeholders. The stakeholder eq-

78 See section 1.3.4.

uity model encourages stakeholders other than capital providers (e.g. individual employees, labor unions, suppliers, trade associations, NGOs etc.) to hold shares in the company in order to create a dual economic interest. The advantage is that financial motives are aligned with stakeholder-specific motives, triggering a broader and therefore more sustainable view on the company's goals[79]. Theoretically, stakeholder equity has the potential to reduce agency costs between stakeholders, just like the well-known reduction of agency costs cited in the traditional relation between shareholders and management. The solution of this agency problem is found in the performance-dependent remuneration structure of managers by means of option and stock programs in addition to the fixed salaries. Why shouldn't this model be extended to other stakeholders? The market for labor, suppliers or environmental NGOs is at least as risky as financial markets. Sustainable development includes the interest of future generations, which implies that sustainable finance needs a balanced growth model of all stakeholders instead of focusing exclusively on the interests of the providers of risky capital. Traditional economists argue that (venture) capital is like water flowing to the lowest point. In other words: an efficient market of corporate control encourages operational efficiency of the real economic production process through the financial return requirements of shareholders. The problem, however, is that the motivation and driving force behind this real economic process is based on the purely financial interest of the provider of only one production factor: the provider of risky capital. From a theoretical perspective it can be argued that because only pure shareholders[80] have ultimate control over the residual claims of the company, this unbalanced motivational drive of one production factor is a major source of excessive agency costs.

The stakeholder equity model is proposed as a theoretical example where sustainable finance may reduce agency costs. There are two major arguments for a reduction of agency costs. First, since today's markets are *not* most severe for shareholders in relation to other stakeholders (see chapter 4, graphs 4.1 until 4.5 representing the shareholders, management, suppliers, employees[81] and government), other stakeholders will theoretically be more efficient monitors. Second, the dual interest of stakeholders owning equity will lead to a different alignment of primary stakeholder interests, and will there-

79 A real-life example: the employee investments of Arcadis, an international company that provides consulting, engineering and project management services for infrastructure, environment and facilities. Arcadis is quoted on the Euronext and the Nasdaq, and refers explicitly to sustainability in their mission statement. The company has a Foundation called 'Lovinklaan', governed by five employee representatives, that owns 21% of all Arcadis shares. The aim of the foundation is representing the interest of employees by creating all kinds of facilities (source: Menno Tamminga, *NRC Handelsblad*, March 7, 2006).

80 Pure shareholders are distinguished from other shareholders that have a dual stake in the company, such as employees with shares of the company or NGOs holding shares.

81 An example that already exists in the market is the so-called ESOP Association in the United States. This private organization coordinates all legal complications concerning employee ownership through employee stock ownership plans.

fore reduce agency costs. There is, however, a risk of increasing communication costs that may be caused by less efficient decision making if the ultimate ownership is not exclusively dependent on shareholders with one identical goal function: maximizing financial returns. Communication processes between stakeholders with different goal functions are time-consuming and therefore incur costs. For the ultimate choice, the hypothesis needs to be tested whether the long-term reduction of agency costs (as caused by a stakeholder equity model) is greater than a possible increase of agency costs caused by increasing information costs. Further research is necessary to answer that question.

Another governance instrument that can be used to change control rights of the company is by changing voting rights, implementing anti-takeover measures and other protective governance rules. Although frequently applied in the corporate society all over the world, this policy is opposite to the current trend of opening up local markets and encouraging a level playing field in both European[82] and other developed markets of corporate control. Today's international market of corporate control needs heavy regulating power because of the huge financial interests involved. Changing voting rights is not studied here because it is not considered to be an element of sustainable finance. A balanced and equal interest of all stakeholders starts off with a 'one share one vote' position. Splitting voting rights from ultimate financial claims and economic responsibility creates market distortions and non-democratic power relations, and is therefore not considered sustainable. Stakeholder equity has the potential to align financial, social and moral positions and paves the road to create an equal platform (level playing field) between stakeholders. Only then can sustainable development be called sustainable development.

8.2.2 Governance transparency

A second substantial element of sustainable finance is the current attention for governance transparency. Transparency is closely linked to sustainability. Wade (2005), p.196-197 argued that Shell after the Brent Spar case had no other choice than to get sustainable development into the company's systems and processes *and* into the customers hearts and minds. Shell made a business case for sustainable development by changing the corporate policy from 'risk and reputation management' to what is called 'business value through competitive edge'. The latter strategy contained, among other things, attracting and motivating top talent, reducing costs through eco-efficiency, influencing product and service innovations, attracting more loyal customers and enhancing rep-

82 See the so-called 13th Company Law Directive 2003/0239. In the Netherlands it is applied in: Richtlijn 2004/25/EG van 21 april 2004.

utation. A major condition for such a policy is organizational transparency. According to Wade, society changed the expectation from a 'trust me', via a 'tell me', to a 'show me' world. Wade explains that as trust diminishes the demand for transparency increases. Sustainable finance is built on cooperative behaviour of economic agents (stewardship relationships)[83] which theoretically implies that monitoring costs could be reduced. Transparency therefore can be considered as an indicator of trust.

Against this background, chapter 5 of this study centers on corporate governance transparency in relation to monitoring power and financial performance. International studies distinguish in general between mandatory and voluntary disclosures. Sustainability and sustainable finance concern voluntary disclosures and procedures and are considered as instruments for creating value through 'good governance'. This empirical chapter interpreted companies with 'good governance' as those with (among other things) highly transparent board- and stock-ownership information, together with a clear and published set of corporate governance principles and policies. In that research, CEO monitoring signifies extensive public board information with independent audit and remuneration procedures. Theoretically, companies with strongly monitored CEOs are expected to have lower agency costs and hence lower costs of capital. From that perspective, we may expect an improvement of the company's performance. In order to conclude on the financial performance of these types of basic corporate governance attributes (see Fama and French (1996), Carhart (1997)), we apply a capital market model. This model is used as a robust financial benchmark that allows us to draw conclusions on the performance of governance attributes.

The results in table 5.3 showed a clear positive relation between corporate governance transparency and financial performance as measured by weekly returns of the company. The international portfolio of the most transparent companies performed relatively best (a yearly average return of minus 1.1% in the period from January 2002 until December 2004; see table 5.3), with a statistically significant positive contribution of the transparency proxies on financial performance. The portfolio of the least transparent companies contributed statistically negatively to financial performance, with an average negative return of 1.84%. The obvious conclusion here is that governance transparency pays off. Concerning CEO monitoring and the ownership structure of shares (high- or low free-float of stocks), the conclusion of the empirical result is less clear-cut. Both the highest and the lowest quintiles of CEO monitoring show a statistically significant negative result on financial performance. Only the fourth quintile, with few monitoring institutions, shows a positive relation to financial performance. Also the results

83 See chapter 3.3 and graph 8.1.

on ownership structure are less straightforward than the transparency results. Nevertheless, table 5.3 shows in general that a higher concentration of stock-ownership implies a positive contribution to financial performance, but not to higher average financial results. Other factors are more dominant in that relation.

8.2.3 How can sustainable finance lead to a sustainable market economy?

After stressing the role of governance transparency and proposing stakeholder equity as an instrument of a sustainable economy, we are now poised to answer the broader deduced question 2 of the problem setting in chapter 1: *how can sustainable finance lead to a sustainable market economy?*. By positioning the question in this section on the consequences for corporate governance, we indicate that corporate governance policies offer the first opportunity for the society to change. Basically, it is argued that a sustainable market economy is created initially at the company level, based on voluntary and free economic choices. CSR and sustainable (corporate) finance involve mission statements at the micro-economic level, and choices made by managers and boards of companies. Together with socially responsible financial institutions and SRI investors, the market economy gets the infrastructure it needs to create the sustainable market economy. Through a policy choice of financially and morally innovative institutions, mostly triggered by developments as perceived in today's financial markets, total market sustainability will be encouraged.

The second way of developing a sustainable market economy is through the moral development of the market and its participants. In chapter 3 it is argued that the virtue-ethical approach that underlies the ethical framework of sustainable finance needs to be extended and absorbed by the market. This individual ethical framework is extended to an institutional structure by emphasizing the importance of deontological and teleological ethics into an integrity approach of the company[84]. By defining the company as an autonomous moral entity that rids the company of its classical amoral or functional status, one of the pillars of sustainable finance (the ethical framework) extends the mission statement of the company from a purely utilitarian towards a more principle-based institutional structure. Integrity concerns a disposition that is aimed at holding on to values, norms and ideals. Integrity necessarily involves all stakeholders of the company, embodied in the corporate governance structure as the heart of the sustainable market economy. Sustainable finance is a bottom-up financial innovation that is complementary to the traditional top-down political processes of governments, and has the stated goal of protecting social cohesion. Innovative corporate governance structures are thus needed in order to secure sustainable development.

84 Kaptein, M., and J. Wempe, 2002, *The balanced company,* (Oxford University Press, Oxford).

8.3 Surveying the applications and examples

The second part of this study provides some examples and empirical applications of the sustainable finance concept. Chapter 5 empirically measures governance transparency and monitoring power in relation to financial performance, which is already summarized in subsection 8.2.2 on the consequences of sustainable finance for corporate governance. Chapters 6 and 7 have a more experimental character and deal, respectively, with the CSR and the SRI sides of the market.

One experimental application of the sustainable finance approach, as presented in chapter 6, concerns a quantitative method to proxy the financial sensitivity of companies in their efforts to attain a sustainable relation to their stakeholders. This model is theoretically inspired by the enlightened value maximization of Jensen (2001), which treats investments in social activities as normal direct investment projects that make a strategic deliberation between optimal amounts of (in this case) stakeholder sustainability. The model is experimental because only systematic risk (in terms of beta) and sustainability factors are used to estimate a quantitative relation between financial performance and the sustainability effort of stakeholders in international companies. Due to the lack of time-series data on sustainability, a cross-sectional one-period model is estimated to find financial sensitivities of sectors or geographical regions in relation to stakeholder sustainability. The most important conclusion from this experimental model is that theoretical investment analysis (e.g. style analysis) enables us to make quantitative estimations of the sensitivity of CSR companies that aim to specialize in stakeholder sustainability. Further, the underlying linear programming model allows us to select many different kinds of sustainable portfolios, dependent on the sustainability preferences of the investor. We distinguished six different stakeholders (management, employees, suppliers, customers, the environment and the community) and presented an example 'sustainable portfolio' that maximized the financial return under the condition that all other sustainability scores are at least 'one standard deviation above the average score'. The average financial return dropped in that example from an astonishing 127% to a still impressive return of 27%. But once again, the short research period undermines the robustness of the model, so that these results can only be qualified as experimental.

Another application of sustainability in finance is presented in chapter 7, and concerns a specific investment model for socially responsible companies. In that chapter, social responsibility is interpreted as a 'best in class' approach of sustainability attributes, implying that all socially rated companies are analyzed in relation to other companies. That chapter doesn't apply a stakeholder model, but starts off with the analysis of 43 independent attributes of companies. Factor analysis and cluster analysis are applied to re-

duce these elements to ten factors that are co-moving statistically and can be interpreted economically and or socially. Then, portfolios are interactively selected, completely dependent on the preferences of the (SRI) investor. This flexible model enables investors to optimize all kinds of portfolios on the factors as chosen before. The key element, however, is that the attributes on sustainable and social activities of the companies are available and published.

Summarizing the applications and examples of sustainable finance in this study, the former two paragraphs described a pure investment approach (the multi-attribute framework), on one side, and a CSR approach (as represented by the style analysis model measuring sustainability styles), on the other. Together with the stakeholder equity model of chapter 4, which is proposed as a corporate governance model for sustainable companies, we provided applications of sustainable finance from various angles. Crucial in all examples is that financial policy is not aimed primarily at cutting costs or maximizing returns; sustainable finance also refers to the consequences of financial decisions for production factors labor and the environment. Sustainable finance has multifaceted dimensions in all its managerial decisions.

8.4 Conclusions

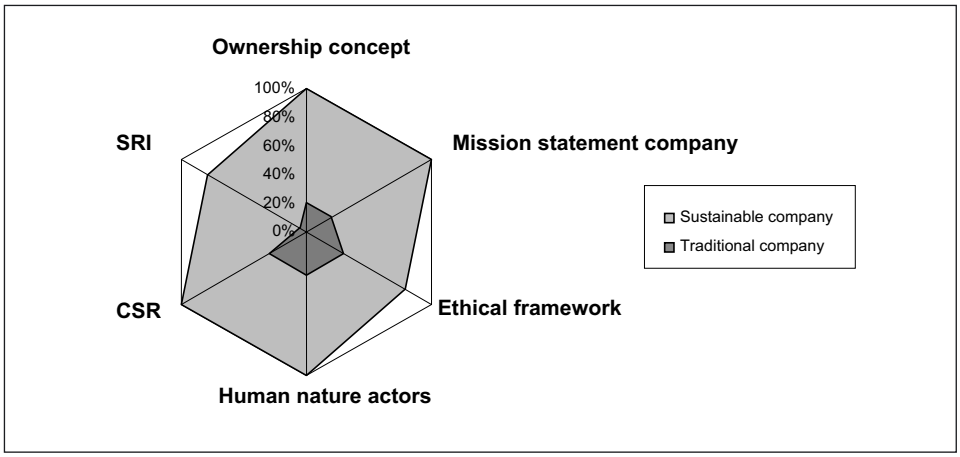
Let's first recall the central research question as stated in chapter 1:

> ***Considering the well-developed streams of literature on corporate social responsibility (CSR), on the one hand, and the literature on socially responsible investing (SRI), on the other, how can finance contribute to sustainable development in society?***

Graph 8.1 represents the connection between sustainable finance, as defined in chapter 1, with the SRI and CSR concepts in literature. The radar chart scores the elements of corporate sustainable finance (as presented in chapter 3): ownership concept, mission statement, ethical framework and assumed human nature of the economic subject together with the CSR and SRI concepts for both a traditional- and a sustainable company. The six axes of the graph represent the percentage of commitment that a company has to one specific element of sustainability. The *ownership concept* ranges from the pure shareholder model to the pure stakeholder model, *the mission statement* depends on the extent of explicitly referring to the three-layered company goal setting, the *ethical framework* diverges between strict act-utilitarianism up to an integrity approach, and the assumed *human nature* of economic actors varies between strictly selfish behaviour to optimal stewardship relations. The CSR and SRI concepts are basically derived from similar

values. Graph 8.1 shows a theoretical example of a traditional and a sustainable firm, as represented by the chosen points on the six distinguished axes. The graph depicts a pure company perspective.

Graph 8.1 Theoretical elements of the sustainable company *



* The axes of the graph represent the percentage of commitment that a company has to one specific element of sustainability. The *ownership concept* ranges from the pure shareholder model to the pure stakeholder model, *the mission statement* depends on the level of explicitly referring to the three-layered company goal setting, the *ethical framework* diverges between strict act-utilitarianism until an integrity approach, and the assumed *human nature* of economic actors varies between strictly selfish behaviour to optimal stewardship relations. The CSR and SRI concepts derive from similar values.

A CSR company, as generally portrayed in the literature, clearly approaches the market from a stakeholder perspective, which has immediate consequences for managerial policy. The intensity and the number of stakeholders that can be addressed vary between every company and sector. The percentage on the '**ownership concept**' axis can therefore be positioned between 0% (pure shareholder model) to attention for just the environment and customers (say 50%) up to care for all relevant stakeholders, including the community (100%). The axis represents a theoretically continuous sustainability score. The **mission statement** of the CSR company is crucial in communicating a sustainable (finance) policy, but is as such an insufficient infrastructure to measure the company's performance from that perspective. Window dressing is a well-known phenomenon in e.g. environmental management control (see Parego (2005)) or in general reporting of CSR companies (Idowu and Towler (2004). However, communicating a triple bottom line is an intentional start and a crucial condition for stakeholder awareness and sustainable finance. Concerning the **ethical framework**, the traditional company differs from the CSR company in the sense that the organization's moral character

changes from an amoral institution to a company that pursues organizational integrity as a necessary condition (see chapter 3). The strictly utilitarian approach of the traditional company evolves via the more individual responsibility of the virtue-ethical approach to a communitarian approach of the CSR company. The ultimate sustainable company could be based on the integrity approach as proposed in the 'balanced company' of Kaptein and Wempe (2002). In that theory of corporate integrity, the company is considered an autonomous moral entity. Then there is the axis of the assumptions on the **human nature of actors**. Where all finance theory on the traditional firm is based on the assumptions underlying the agency theory (the strictly selfish behavior of rational economic man), the sustainable company relies on a stewardship theory of management (Davis, Schoorman and Donaldson (1997). In stewardship theory, the model of man is based on a steward whose behavior is ordered such that pro-organizational, collectivistic behaviors have higher utility than individualistic, self-serving behaviors. This model is the complete opposite of rational economic man. The 100% score of the CSR company on this axis is therefore merely a theoretical position assuming cooperative human behaviour of the economic agents involved instead of the selfish point of departure of human behaviour in the traditional company. Summarizing the CSR company, we find that this type of company, which distinguished itself from the traditional company, can be explicitly defined in terms of the building blocks of sustainable finance.

The SRI concept makes use of sustainable finance elements similar to the ones described above. Socially responsible investors are also searching for stakeholder care, sustainable mission statements, honorable governance relations and a cooperative attitude of economic subjects in general. SRI activities, however, are situated on the supply side of the capital markets. From the latter perspective it can easily be seen that the CSR and SRI concepts have been developed relatively independently from each other. SRI is investor-driven; CSR is company-driven. Finance is by definition the connection between supply of financial instruments and the demand of companies for such products. Sustainable finance, therefore, is suitable for combining both strands of literature. A CSR company may use SRI capital, if it is available in the market – although this is not a necessary condition for sustainable finance.

Summarizing the question on the contribution of finance to a sustainable society, we find that both CSR and SRI can be reduced to (at least one of) the building blocks of sustainable finance as represented on the axis of the above radar chart. Theoretically, a continuous spectrum of each element of sustainable finance is distinguished between the traditional firm and the sustainable firm. It is crucial to realize that finance decisions are the foundation of managerial policy in general. Funding a company's activities or deciding on the capital structure of the company implies structuring the control rights

and establishing the monitoring positions. Within the limits of the legal conditions of a country, any participant of the economic process can freely develop corporate governance structures in a market economy. The ultimate answer, therefore, on the question of how finance can contribute to sustainable development in the economy can be found in the 'power of free choice'. Just as Hayek and Friedman already argued in classical economic thinking: freedom and morality are two sides of the same coin. In a free society, economic agents choose their own values, one of which could be sustainable finance. From a practical perspective, this could involve shareholders or boards of companies that decide that the mission statement of the company should explicitly refer to the interests of all production factors: capital, labor and the environment. From a scientific-theoretical perspective, the 'power of free choice' implies that sustainable finance deserves and requires more attention in the academic literature and in economic education. This study hopes to trigger that discussion.

8.5 Future research

A great deal of research remains to be done. This study represents merely the first steps of a sustainability approach in finance. Due to the holistic character of the sustainable finance concept, further development and deepening of the applied terminology, concepts and relevant syntaxes are needed. In addition, the empirical approach needs to be extended into a time series analysis (instead of the applied cross section approach in this study). The availability of time series datasets is still limited, despite the rapid development of social ratings agencies all over the world. In pursuit of statistically more robust answers, models proposed and implemented in chapters 5 through 7 deserve to be recalculated.

With regard to the stakeholder equity model, two lines of additional research ought to be developed. First, empirical tests on the risk- and return graphs on the risk profiles of each distinguished stakeholder, as presented in chapter 4, could be initiated. Are the coefficients, as generally observed and theoretically explained in this study, in accordance with the reality in markets? What are the influences and differences between sectors, countries and regions? Second, despite the numerous examples of employee participation all over the world, the stakeholder equity proposal needs institutions and more organizational specifications to realise a balanced control function of stakeholders in the company. Especially the organization of environmental and supplier institutions is weak or barely in evidence.

Finally, consider the major hypothesis in chapter 4 – that agency costs decrease as a result of multi stakeholder ownership. The increasing information and governance costs

may outweigh the expected company gain coming from better-motivated and integrated stakeholders. The ultimate answer remains an empirical question because a general theory on the efficiency and productivity of the market economy in the long run will not easily, if at all, be developed.

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Samenvatting (Summary in Dutch)

Financiering als instrument voor een duurzame onderneming

In dit proefschrift wordt de rol van de financiering- en beleggingstheorie onderzocht voor een duurzame onderneming. Het doel van deze studie is de ontwikkeling van terminologie over, en het verwerven van inzicht in het duurzaamheidconcept, zoals toegepast op de theorie en de praktijk van de financierings- en beleggingsleer. Het containerbegrip duurzaamheid is een concept dat vooral is ontstaan in de milieueconomische discipline. Pas de laatste decennia is het belang van duurzaamheid eveneens goed doorgedrongen in de bedrijfsethische- en management literatuur. Moderne ontwikkelingen op de financiële markten tonen weliswaar een toenemende belangstelling voor bijvoorbeeld maatschappelijk verantwoorde beleggingen en duurzame ontwikkeling als metabegrip[85], echter op het gebied van het financierings- en beleggingsbeleid is dit concept matig ontwikkeld. Maatschappelijk verantwoord beleggen is een concept dat in Nederland al zo'n 20-25 jaar bestaat en wordt toegepast (tegenwoordig beleggen zelfs pensioenreuzen als het ABP en PGGM een klein gedeelte in maatschappelijk verantwoorde beleggingen), maar het aandeel in de totale beleggingen in Nederland is nooit boven de 4% uitgekomen (zie Scholtens (2005)). Deze studie beoogt een aanzet te geven aan de ontwikkeling van duurzaam financieren als concept én als instrument en tracht tevens de duurzame ondernemingsfinanciering in de literatuur te plaatsen.

In **hoofdstuk twee** wordt kort een ethisch raamwerk gepresenteerd als achtergrond voor de rol van duurzaamheid in de financieringsliteratuur. Er wordt geconcludeerd dat het utilitaire karakter van de traditionele financiële theorie, met de nadruk op de scheiding tussen economische en ethische aspecten van economisch handelen, ongeschikt is voor de ontwikkeling van het concept duurzame ondernemingsfinanciering. Vooral het aandeelhoudersparadigma dat gebaseerd is op de normatieve veronderstelling dat de factordienst kapitaal (de aandeelhouder) bij uitstek geschikt is om het management te disciplineren, is gebaseerd op de veronderstellingen van de strikt rationeel handelende mens (*rational economic man*). Dit mensbeeld kan relevant zijn voor de bezitter van de

85 Zie Rapport nr. 62 van de Wetenschappelijke Raad voor het Regeringsbeleid (WRR: Duurzame ontwikkeling; Bestuurlijke voorwaarden voor een mobiliserend beleid, Den Haag, 2002, p 15 e.v.

factordienst kapitaal, maar speltheoretisch onderzoek van onder andere, Simon (1997), Kahneman and Tversky (1979), Tvede (1990), Sheffrin (2000) en vele anderen toont aan dat economische subjecten lang niet altijd rationeel handelen en hun keuze afhankelijk maken van vele omgevingsvariabelen. Vooral de deugdenethische aspecten met de nadrukkelijke intentie om persoonlijk handelen in dienst te stellen van hogere collectieve doelen worden in dit onderzoek cruciaal geacht voor de ontwikkeling van een duurzaam gefinancierde onderneming. Bedrijfsethische aspecten zoals het behartigen van de belangen van het milieu, de sociale aspecten van de onderneming, en aandacht voor een rechtvaardige verdeling van de opbrengsten van de onderneming spelen een nadrukkelijke rol in de ontwikkeling van duurzame ondernemingsfinanciering.

In **hoofdstuk drie** wordt duurzame ondernemingsfinanciering gedefinieerd als een multi-attribute-financieringswijze, waarbij zowel de financiële aspecten, de sociale aspecten alsmede de milieuaspecten van de onderneming in onderling verband worden geanalyseerd en geïntegreerd. De duurzaamheidsaspecten worden verankerd in vier criteria. Allereerst dient duurzaamheid in de *mission statement* van de onderneming expliciet te worden opgenomen. Ten tweede kent een duurzame onderneming een participanten benadering in plaats van de pure aandeelhoudersbenadering van de traditionele onderneming. Verder ziet de duurzame onderneming zichzelf als een autonome morele organisatie met eigen cultuur en traditie in tegenstelling tot de amorele of functionele benadering van de reguliere morele concepten van de onderneming. Tenslotte worden de gedragsveronderstellingen van de betrokken economische agenten niet benaderd vanuit de agentschaptheorie maar vanuit *stewardship* relaties die gebaseerd zijn op samenwerking in plaats op individuele nutsmaximalisatie. Wanneer we het concept duurzame ondernemingsfinanciering op zijn beurt verbreden naar duurzame financiering, dan worden tevens welomschreven concepten als duurzaam beleggen en duurzaam bankieren geïntegreerd en toegevoegd aan het ruimere financieringsbegrip. Tegen deze achtergrond komen we tot de navolgende definitie: duurzame financiering omvat een geïnstitutionaliseerd beleid, of een methode van analyse, waarbij alle financiële beslissingen tot doel hebben om tot een geïntegreerde benadering van de financiële, sociale en milieudoelstellingen van de onderneming te komen.

Het laatste kernbegrip van een duurzaam gefinancierde onderneming wordt behandeld in **hoofdstuk vier** en heeft de naam 'participanten aandelen' (*stakeholder equity*) meegekregen. Er wordt betoogd dat in het aandeelhoudersmodel niet *a priori* vaststaat dat de verstrekker van de factordienst kapitaal de meest geëigende houder is van het residuele risico van een onderneming. Dit is gebaseerd op een studie van Hansmann (1996), p.21. Hij stelt dat de theoretisch optimale positie voor eigendom van een onderneming die groep van beheerders (*patrons*) moet zijn, waarvoor geldt dat de marktomstandigheden het zwaarst zijn. Daardoor hoeft er voor de onderneming als geheel

minder agentschapkosten gemaakt te worden om de marktimperfecties te reduceren. De vraag die nu rijst is of de markt waar de aandeelhouder in opereert nu zwaarder en lastiger is (en dus lagere agentschapkosten met zich meebrengt) dan de markten waarin andere participanten zoals bijvoorbeeld werknemers of crediteuren opereren. Op basis van een theoretische beschouwing wordt geconcludeerd dat dit zeker niet voor alle sectoren altijd het geval hoeft te zijn. Op basis daarvan wordt vervolgens voorgesteld dat een duurzame onderneming een meerderheid van zijn aandelen onderbrengt bij de belangrijkste participanten groepen van de onderneming. Dit kan een aantal belangrijke crediteuren (leveranciers) zijn, het personeel van de onderneming of een milieubeweging die zeggenschap in, en rendement uit, die onderneming wil halen. Het voordeel van deze 'participanten aandelen' is dat de belangen van de duale participanten gestroomlijnd zijn. Werknemers bijvoorbeeld, hebben behalve een eenzijdig belang in loonontwikkeling en werkgelegenheid tevens belangstelling voor de rentabiliteit van het aandeel. Dat geldt eveneens voor crediteuren of een milieufonds. Zoals het motiveren van het hogere management door het verstrekken van aandelenpakketten en opties in de eigen onderneming tegenwoordig veelvuldig wordt toegepast, zou de duurzame onderneming haar vermogens- en beheersstructuur zodanig kunnen inrichten dat de belangen van de belangrijkste *stakeholders* meer op één lijn komen, waardoor agentschapkosten kunnen worden bespaard en de stewardbenadering wordt versterkt.

Deel twee van dit proefschrift presenteert empirische modellen gebaseerd op een dataset met duurzaamheidscores zoals verzameld door het SiRi en aan ons verstrekt door de Triodos Bank uit Zeist. In dit deel worden voorbeelden gegeven van duurzaamheidanalyses en daarbij wordt vooral de relatie tussen duurzaamheid en financieel rendement als uitgangspunt genomen. Deel twee beoogt derhalve toepassingen en voorbeelden van duurzaamheid te ontwikkelen terwijl in deel één de begripsontwikkeling en theoretische achtergrond centraal stond. Het eerste onderzoek, in **hoofdstuk 5**, test of de transparantie van de managementstructuur (*corporate governance*), de concentratiegraad van het aandelenbezit en de mate van toezicht op de CEO's, een invloed heeft op het rendement van de onderneming. Een belangrijke conclusie uit dit onderzoek is dat internationale beursgenoteerde ondernemingen met transparante *governance* structuren in de periode januari 2002 tot december 2004 een statistisch significant beter rendement behaalden dan ondernemingen met een slecht georganiseerde en niet transparante bestuursstructuur. Bestuurstransparantie wordt als een belangrijk element van financiële duurzaamheid beschouwd.

In hoofdstuk 6 wordt een typisch financieel beleggingsmodel (*style-analysis*) toegepast met het oogmerk om de duurzaamheidstijl van een land of sector te meten. Een stijlanalyse model is oorspronkelijk bedoeld om de performance van fondsmanagers te meten waarvoor het noodzakelijk is om de beleggingsstijl van een bepaalde portefeuille

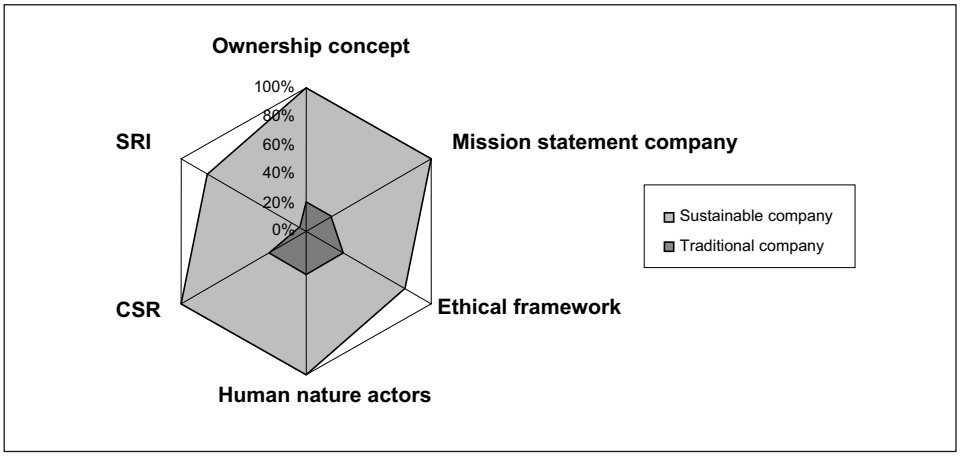
te kennen. Deze methodologie is in dit onderzoek gehanteerd om de duurzaamheidstijl van een portefeuille met beursgenoteerde fondsen van een bepaalde sector of in een bepaald land vast te stellen. Op deze wijze kunnen referentiewaarden (schaduwprijzen) afgeleid worden die voor maatschappelijk verantwoorde ondernemingen een indicatie geven op welke *stakeholder* men het best zijn duurzaamheidbeleid kan richten onder de veronderstelling dat het rendement indicerend is voor het gewenste duurzaamheidbeleid. Algemene conclusies zijn dat succesvolle Amerikaanse ondernemingen meer gericht zijn op gemeenschapswaarden zoals liefdadigheid en de preventie van fraude, terwijl Europese ondernemingen meer gericht zijn op transparant ondernemingsbestuur en klantgerichtheid van de organisatie. Bovendien wordt gevonden dat duurzaamheid gericht op de participantengroep personeel vooral wordt doorgevoerd bij de sectoren banken en telecommunicatie. De beperktheid van de dataset gebiedt ons in dit onderzoek te concluderen dat de robuustheid onvoldoende is om over statistische significantie te kunnen spreken. Hoewel de modelspecificatie veelbelovend is, is de gehanteerde dataset ontoereikend voor wetenschappelijk verantwoorde conclusies.

Waar hoofdstuk 6 volledig gericht is op het vinden van informatie voor de duurzame onderneming (de vraagkant van de duurzame financiële markt), wordt in **hoofdstuk 7** een beleggingsmodel gepresenteerd dat volledig is gericht op de duurzame belegger (de aanbodkant van duurzaam vermogen). In dit model wordt uit een veelheid van informatie over een bepaalde onderneming een beleggingsmodel geformuleerd dat veel flexibiliteit biedt aan de duurzame belegger. Gegeven de multi-attribute dataset (oorspronkelijk 43 attributen) van beursgenoteerde ondernemingen voor het jaar 2000, zijn met behulp van clusteranalyse en factoranalyse uiteindelijk 10 factoren afgeleid die voor de duurzame belegger als relevant keuzecriterium kunnen worden ingezet. De belegger kan vervolgens de minimumscores aangeven van elk van deze factoren en de methode zoekt via een iteratief optimaliseringmodel de haalbaarheid van een specifieke duurzame portefeuille. Door zelf steeds verschillende beperkingen op te leggen aan bepaalde factoren (duurzaam of financieel) kan de belegger zijn of haar ultiem gewenste eisen opleggen aan de door hem of haar beoogde duurzame portefeuille.

Hoofdstuk 8 tenslotte, gaat dieper in op de terminologie betreffende duurzaamheid en geeft antwoord op de onderzoeksvragen. Het onderzoek is vooral een aanzet voor een verdere discussie over duurzaamheid in de financieringsliteratuur en in de financieringspraktijk. Het duurzaamheidconcept is volop in ontwikkeling en de in deze studie gepresenteerde voorbeelden en antwoorden zijn niet uitputtend. De belangrijkste vraag in deze studie was of de financieringsliteratuur kon bijdragen aan de verbinding tussen de literatuur met betrekking tot de maatschappelijk verantwoorde onderneming enerzijds en de literatuur op het gebied van sociale (of duurzame) beleggingen anderzijds. Het antwoord wordt gepresenteerd met behulp

van het spinnenwebdiagram in grafiek 8.1., zoals eerder afgedrukt in hoofdstuk 4.

Grafiek 8.1 Theoretische elementen van de duurzame onderneming *



* De assen van de grafiek representeren het percentage betrokkenheid dat een onderneming heeft m.b.t. een bepaald element van duurzaamheid. Het eigendomsconcept loopt van het pure aandeelhoudersmodel tot een volledige participantenbenadering, de *mission-statement* representeert de mate waarin de onderneming expliciet refereert aan de drievoudige doelstelling, het ethisch raamwerk divergeert tussen een utilitaire en een integriteitbenadering, en het veronderstelde mensbeeld van de actoren varieert tussen strikt eigenbelang en verhoudingen op basis van *stewardship* relaties. De concepten: duurzaam beleggen en maatschappelijk verantwoord ondernemen zijn van dezelfde waarden afgeleid.

Omdat financiële markten per definitie verbindingspunten zijn tussen reëel economische processen is het financieringsbeleid uitermate geschikt om vragers naar duurzaam kapitaal samen te brengen met aanbieders van duurzaam vermogen. Duurzaam beleggen en maatschappelijk verantwoord ondernemen laten zich eenvoudig uitdrukken in het mensbeeld van de actoren, het ethische raamwerk van de onderneming, het relevante *mission statement* en het eigendomsconcept van de onderneming. De duurzaam gefinancierde onderneming streeft naar een 100% score op de zes onderscheiden assen. De traditionele onderneming hecht hier veel minder of zelfs geen waarde aan. De vermogensstructuur van een onderneming bepaalt niet alleen het risico van de onderneming maar is tevens bepalend voor de eigendomsverhoudingen en daarmee voor de organisatie van de toezichthoudende en democratische instituties binnen de onderneming. Binnen de grenzen van de wetten van ieder land, kan elke onderneming zelf zijn bestuursmodel bepalen in de markteconomie. Het ultieme antwoord op de vraag hoe ondernemingsfinanciering kan bijdragen in de ontwikkeling van duurzaamheid in de economie, kan derhalve worden gevonden in : '*the power of free choice*'. Of, zoals Hayek (1948) en Friedman and Friedman (1980) reeds beweerden in hun klassiek economische denken: vrijheid en moraliteit zijn twee kanten van dezelfde munt. In een

vrije samenleving kiezen economische agenten hun eigen waarden, waarvan er één duurzame financiering zou kunnen zijn. Dit impliceert in de praktijk dat een onderneming ervoor kan kiezen dat de meerderheid van de uit te geven aandelen expliciet refereert aan de belangen van de klassieke productiefactoren: arbeid, milieu én kapitaal, in plaats van aan de verschaffers van kapitaal alleen. Met andere woorden, dit zou kunnen betekenen dat de meerderheid van de aandelen, en daarmee de zeggenschap over de onderneming, in handen zou kunnen zijn van andere participanten in de onderneming (bijvoorbeeld werknemers, milieuorganisaties en/of leveranciers). De inherente duale belangen van deze participanten (bijvoorbeeld hogere lonen voor werknemers die tevens door hun aandelenbezit een belang hebben in de rentabiliteit van de onderneming) zouden theoretisch tot lagere agentschapkosten kunnen leiden door het stroomlijnen van de belangentegenstellingen in de onderneming. Er is nog veel onderzoek op dat terrein te verrichten, echter vanuit de wetenschappelijk theoretische optiek verdient het aandelenparadigma en de duurzame ondernemingsfinanciering meer belangstelling in de wetenschappelijke literatuur, de politieke discussie en in het wetenschappelijke onderwijs. Deze studie beoogt een bijdrage te leveren aan dat debat.