

Ketchup Economics: The Methodology of Finance

This chapter contains an empirical investigation of the methodology of finance. An extensive sample, covering the entire history of the two leading journals in the field, the Journal of Finance and the Journal of Financial Economics, has been investigated in order to sketch 1) the development of subjects of research and 2) the approach used in tackling those subjects.

2.1 INTRODUCTION

Back in 1985 Larry Summers employed the metaphor of “ketchup economics” to illustrate the relationship and differences between economics and finance. He distinguished two groups of researchers: general economists who study the ketchup market as part of the broader economic system and so-called “ketchup economists”, located in the Department of Ketchup where they receive much higher salaries than do general economists⁸. “General economists focus on fundamental determinants of price and quantity of ketchup, the various supply and demand factors, and try to explain price fluctuations by examining various types of data and using models. Ketchup economists, on the other hand, reject this approach and its results. They point out that the aggregate data, used by general economists, are almost meaningless accounting entities which are not even accurately measurable in the first place. Instead they focus on studying the hard observable data of ketchup transaction prices and possible excess opportunities in the market. The lack thereof and the resulting efficiency of the ketchup market is regarded as the best established fact in empirical economics by ketchup economists” (ibid.)⁹. Translated, Summers states that general economists tend to focus on fundamental determinants of price and quantity, that is the various supply- and demand factors such as costs, wages, substitutes, income, etc., General economists do this in an attempt to explain price fluctuations, and they do so with mixed results. Financial economists reject the approach since it is based on useless accounting information and fraught with measurement problems. Instead they focus on observable transaction data. Financial economists are interested in the interrelationships of various prices and the existence of possible excess profit opportunities between those prices¹⁰.

Others have made comments about the relationship and differences between economics and finance (Gibbons, 1987; Ross, 1987 & 2005; Campbell, 1994, Harrison 1997, Jovanovic 2008 & 2012). Peter Bernstein (1992, 2007) argued from a historical perspective that finance has changed through the years from a descriptive, qualitative endeavor into a formalized quantitative one. This move, he claims, was fueled by theoretical innovation¹¹. The stories and comments mentioned above are to a large extent a claim about methodology: how the same phenomenon can be approached from various angles and with different methods.

8 Note that Summers’ remarks date from a period before the Nobel Prize in economics was to be awarded to a finance scholar. The first would be Harry Markowitz, William Sharpe and Merton Miller in 1990, followed by Robert Merton and Myron Scholes in 1997, Eugene Fama, Lars Peter Hansen and Robert Shiller in 2013 and Richard Thaler in 2017.

9 Summers’s remarks date back to the time period before the rise to prominence of behavioral economics and finance; a development in which Summers himself played a significant role.

10 Summers seems to focus mainly on asset pricing here. Of course finance is comprised of more subjects such as corporate finance and governance and banking.

11 See also Jovanovic 2008, 2012 & 2018.

But, given that there might be methodological differences between finance and economics in general, while a large literature exists today on the methodology and philosophy of general economics, there is not really such a thing in finance¹². Besides the scattered remarks above, there are papers and chapters on method and ways of doing research. These include the viability of certain statistical procedures, the proper use of data, and how (un)realistic certain assumptions are, but these are usually confined to a technical treatment (see for instance Cochrane, 2001, Harvey, 2017). Which least squares calculation is most appropriate? What distribution of returns fits best¹³? How are data collected and used?

Some literature exists on what has had impact in finance in terms of specific papers, specific scholars, and specific academic institutions (see Arnold et al., 2003, Keloharju, 2008). The research is based on citations and is usually limited to a particular time frame: Arnold et al. (2003) cover the 1990s while Keloharju (2008) investigates the new millennium. Kim, Morse, and Zingales (2006) have performed a similar study on economics at large, covering the period from 1970 till 2000.¹⁴

There would appear to be space for a thorough, fundamental treatment of the methodology of finance, which includes but is not limited to its connections with economics at large.¹⁵ A first step would be to investigate the ways of argumentation in finance. A sample from the entire history of editions of the *Journal of Finance* and the *Journal of Financial Economics*, the two leading journals in the field, has been examined in order to answer two basic questions. First, what are people writing about, and, second how do they write about it? In other words, what have been the subjects of the papers and what approach is used in tackling these various subjects: empirical, theoretical, or a mixture of both?

The aim is to empirically check the scattered notions that have been sketched above and gain insight from the bottom up in the ways of argumentation in finance. A longitudinal perspective is taken in order to track the developments through time, since scientific fields are hardly ever static and thus methodological remarks are bound to be context-sensitive. An attempt will be also made to connect the findings to familiar concepts in the methodology, philosophy, rhetoric, and history of economics.

12 For instance Reiss's 2013 textbook "Philosophy of Economics: a Contemporary Introduction" is an accessible and worthwhile example.

13 In the words of McCloskey: "small-m methodology".

14 Edwards, Giraud and Schinckus (2018) argue that similar attempts have had a long tradition since the 1960s.

15 De Scheemaekere (2009) has published a paper titled "The Epistemology of Modern Finance", which would suggest such an attempt. While interesting in many regards, De Scheemaekere's analysis is limited to the presence and use of mathematical models in finance. It will be shown that mathematical modelling is only a part of finance research.

The method of analysis employed in this chapter is inspired by the works of Deirdre McCloskey and Arjo Klamer. Klamer (2006) has described economics as “a bunch of conversations”. This chapter can be seen as an attempt to operationalize that notion in that it tries to map one of those conversations: finance. There are also similarities with McCloskey’s seminal work on the rhetoric of economics (1986, 1998) and on the use of statistics (1996, 2008), coauthored with Ziliak. While the analysis in this chapter is simpler and more superficial than McCloskey’s, it does have in common that what is considered, is what particular scholars actually do, not what they should do. Besides minimizing the normative bite, there is also no epistemic appraisal or deep reading in the “quick and dirty” approach used here. This may present advantages with regard to criticism of perceived subjectivism in interpretive studies. At the same time, I’m claiming that the bottom-up approach still brings out the grand plots and the crucial moves and twists, based on an empirical foundation.

2.2 VARIOUS PERSPECTIVES ON THE METHODOLOGY OF FINANCE

Let’s start by examining the claims about the methodology of finance in a bit more detail. Summers (1985) starts out with the observation that, while economics and finance are clearly allied and the latter undoubtedly has its roots in the former, increasingly two different cultures and unconnected literatures have emerged, even when the same issues are addressed. He claims that general economists ask the right questions but that they lack adequate data, theory, and empirical methods. Financial economists forego these more important questions on the fundamentals of asset prices in general, by exclusively focusing on hard pricing data¹⁶. In Summers’ opinion: “The increasing disjunction of the fields of economics and finance are obviously inefficient” (ibid.). It would appear then that Summers’ main point resides in a distinction in the level of detail in the analysis. The various differences in data, theory, and method can then regarded as a result of that difference in focal points.

Stephen Ross (1987) was in agreement with Summers that important differences have surfaced between finance and economics, despite the apparent interrelations, but he insists that there is nothing wrong with that. He pinpoints the distinction as essentially a methodological one. His considerations are the following, many of them not unlike those of Summers. First, in finance data are huge in quantity and of high quality. Second, “there is a strong and subtle pressure to build models that utilize the data within the financial database” (ibid.) leading to a focus on relative pricing based on risk-return characteristics. Third, the bulk of the data are price data rather than volume data: “finance theory is a theory of inelastic supply, and of price determination”. That may sound pragmatic but it is not the whole story.

¹⁶ Again Summers seems to limit his observations to asset pricing while foregoing others parts of financial economics.

For the purpose of price determination financial markets are assumed as good as perfectly competitive with unlimited liquidity available. Whether that is always the case in practice, and to what extent, can be debated, but it is true that money and capital fly over the world instantaneously twenty-four hours a day. Economics, according to Ross, is characterized by “the apparatus of demand and supply and the attendant notions of equilibrium” and that also applies to game theory. In contrast, “the focus of finance is micro theoretic and the intuition of finance is the absence of arbitrage”. Arbitrage can be defined as the possibility of simultaneous buying and selling of goods (securities, currency, commodities, etc.) in different markets or in derivative forms in order to take advantage of differing prices for the same asset¹⁷.

Demand curves in financial markets are horizontal because of the plethora of substitutes; supply curves are either perfectly elastic or inelastic depending on the situation (i.e. investing or financing). Their interplay is therefore only meaningful at the highest aggregate level and not in the analysis of specific assets and markets. Finance is characterized by the simple intuition that information is reflected in prices and that arbitrage opportunities are short-lived. Those intuitions have brought the field to great heights. According to Ross, different focus will give different insights, for example on a macro level, or on the level of agent behavior. Although Summers and Ross do not agree on the desirability of a disjunction between economics and finance there are some striking similarities in their assessments, in particular the top-down perspective used in economics versus the bottom-up approach used in finance.

Michael Gibbons (1987) provides an empirical perspective to the interrelations of economics and finance. As a starting point, for Gibbons finance is a field within economics that has borrowed from other fields in economics just as the rest of economics has borrowed from finance. The sharing of econometric methods is one case of such two-way traffic. Another is a common interest in certain asset prices, such as bond prices and interest rates. Here the difference in focus shows up again: macroeconomists are interested in policy issues and effects on the real economy while financial economists are interested in the market picture as a whole and price determination. Finance also provides an excellent laboratory for a number of other fields within economics through its huge database. Examples are economics of regulation and economics of information. Financial data are also frequently used for the measurement of unobservables, such as expectations about inflation, interest rates and earnings, which are of importance to economics and the economy in general¹⁸. And finally there are the empirical anomalies in finance which cast doubt on rational behavior and efficient

¹⁷ The notion of absence of arbitrage can be traced back to the Marshallian tradition in economics.

¹⁸ A famous example is the market in frozen orange juice. The expectations about the weather that are implicit to the prices have proven to outperform the forecasts of meteorologists (Ross, 2005).

markets. A famous example of these observed deviations from theoretical benchmarks is the so-called January effect: evidence that stock prices rise disproportionately in January (Thaler, 1987). Much of the impetus that behavioral economics has enjoyed has been fed by finance data.

Of more recent date are John Campbell's remarks about the New Palgrave Dictionary of Money and Finance (1994). His starting point is interesting in this context: why a separate Palgrave for money and finance besides the familiar one on economics, which dates back to the 1890s? Obviously there are commercial reasons given the size and importance of the financial services industry. But the question remains whether financial (and monetary) economics are somehow different from economics in general. Campbell points at the history of finance, developing from an obscure, lowly regarded subfield of postwar economics into a prominent, highly visible field with its fair share of Nobel accolades. Despite the contributions of "general" economists (for example Modigliani, Tobin, and Samuelson) modern finance has developed itself somewhat independently of the rest of economics. Campbell cites the distinct literatures on rational expectations in macroeconomics and finance as a case in point. Ross' arbitrage argument plays an important role in the distinctness of the two as well. But, like Gibbons, Campbell also argues that finance has been particularly successful in employing broader economic concepts: equilibrium theorizing in theoretical asset pricing, econometrics in empirical asset pricing, and game theory, agency theory, and information economics in corporate finance. As such, there is enough coherence and substance in financial economics to justify a separate standing (and thus a separate Palgrave).

Peter Bernstein has authored a couple of books (1992, 2007) about the subject. In his 1992 book he describes the coming about of the main theories in academic finance, what he calls the "Capital Ideas", and the enormous impact they had on the practice of financial markets¹⁹. Bernstein told the story of finance, growing from a descriptive, institutional discipline into a formalistic, quantitative one fueled by the breakthrough contributions provided by Markowitz, Tobin, Modigliani, Miller, Samuelson Sharpe, Fama, Black, Scholes, Merton, and others. In his 2007 follow-up book, Bernstein argued that these "Capital Ideas" still form the heart and soul of finance. Current research in finance is still mostly concerned with some form of application of those core theories.

Merton Miller has reflected (1999a, 1999b) on the history of finance as well. He sees a difference in perspective between finance and economics. Finance has a "micro-normative"

¹⁹ The latter is in itself interesting since it relates to the performativity issue of financial economics, as most extensively treated by Donald MacKenzie (2006). This issue is extensively treated in chapter 6, containing a critical appraisal of MacKenzie's analysis and argumentation.

approach, which he traces back to the business school roots which finance has²⁰. Economics, on the other hand, uses a “macro-normative” approach. Miller also confirms the change that Bernstein described from descriptive and institutional to formalistic and quantitative. He adds that “the typical paper in the *Journal of Finance* consists of two sections: the first presenting the model, the second an empirical part with real-world data which are usually consistent with the model” (which, in his opinion, is not surprising because had that not been the case, the author would not have submitted the paper in the first place, and the editors would never have accepted the article for publication!) (ibid.). He later adds that “the profession, from the outset, wholeheartedly adopted the Friedman positivist view: that what counts is not the literal accuracy of the assumptions, but the predictions of the model” (ibid.). This Friedman positivist view (see Friedman, 1953) translates in a primary concern with testable hypotheses (see for example Fama, 1998). However, the same is true for economics, in his opinion.

The claim that finance is characterized by positivism is also made by Sheila Dow (2016) although she may not mean the exact same thing with that label²¹. Predictions rather exist than explanations, empirical testing against “facts”, and a formal mathematical representation can be considered as the staple marks of this methodology (ibid.). She adds that behavioral finance is no different in this regard than neoclassical finance.

The point of departure for Paul Harrison (1997) is economics in general. He argues that arbitrage was the crucial concept that allowed economics to revolutionize finance. But it also ensured that finance became prominent within economics (and at the same time legitimized financial markets both in society and as an interesting research subject). Finance provided economics with rigorous methods and hard empirical research and thus became one of the pin-up girls of the neoclassical paradigm.

Based on the above there appears to be some general agreement about what finance is about and in what sense it differs from economics in general:

- 1) Finance focuses on the micro-level analysis of financial markets in a broad sense: it is mostly concerned with markets and firms, not with aggregate entities or individual behavior. Economics, on the contrary, uses more of a macro approach, even when the same subjects are analyzed, such as a particular financial market, or the same concepts are used, for example rational expectations.

20 Miller himself was at the University of Chicago's Graduate Business School.

21 Friedman's 1953 paper “The Methodology of Positive Economics”, popularly known as F53, has been and probably still is the most hotly debated paper ever written on economic methodology. Many varying interpretations exist; no general agreement is present. See Mäki, 2009, for elaborate discussions of F53.

- 2) Finance can be characterized as a thoroughly positivist discipline in the sense that testing of hypotheses and meaningful predictions matter; rigorous use of data is basic and theory follows. In comparison to economics, finance is more empirically inclined.
- 3) Finance, like economics, has changed and evolved over time, in particular fueled by a handful of major breakthrough contributions. Other methods and approaches have been the result.

2.3 RESEARCH DESIGN

The Journal of Finance (JoF) is published by the American Finance Association (AFA), which describes itself as “the premier academic organization devoted to the study and promotion of knowledge about financial economics”. First published in 1946, the JoF has grown into one of the most prominent journals in the field of business, finance, and economics. In terms of impact factor, it has been ranked consistently in the top ten of any ranking of economics journals, both in impact and number of citations. It is by far the highest ranked specialized journal. Nowadays six issues per year appear, growing from three editions in its first year of publishing.

The sample consists of the entire history of the journal, starting with volume one, issue one, from August 1946 running up to volume 72, issue four, August 2017. From each year one issue has been surveyed, starting with volume one, issue one from 1946. Next is volume two, issue two (1947), then volume three, issue three (1948), etc. There are two reasons for using this procedure. First, in this way the papers from the annual meeting of the AFA, which appear in a separate issue, are also included in the sample. Since those meetings are an important outlet for finance research, it was considered valuable to include these special issues. Second, to avoid “seasonal” effects: frequently papers with a similar subject are being published in one and the same edition. In total seventy-two years were covered, comprising 873 papers.

In order to categorize the papers according to subject, the JoF’s own categorization, which corresponds to the familiar household Journal of Economic Literature (JEL) classification, has been followed as much as possible. Between 1978 and 1999 the JoF published the distribution of sent and accepted papers among subjects in the annual report of the editor²².

²² This also provided a check for the representativeness of the sample; see paragraph 2.6.

To complicate matters, this classification has been changed on at least five occasions. The one from 1999²³ was used in the sample. The five main categories are:

- Global Financial Markets, which includes asset pricing, derivatives pricing, information and market efficiency, investor behavior and market microstructure;
- Corporate Finance & Governance, which includes capital budgeting and investment policy, financing policy, capital and ownership structure (incl. agency issues), financial distress, mergers and acquisitions, and dividend policy;
- Financial Institutions, which includes banking, insurance and other financial institutions and financial intermediation;
- Money and Interest Rates, which includes determination and term structure of interest rates, monetary policy and public finance and other macroeconomic and policy aspects of financial markets;
- Other, including academic institutions, academic publishing and academic education.

This categorization is of course not clear-cut. For example taxes and international finance can apply to more than one category. In the sample each paper has been assigned one or more tags after which it was assigned to one of the five categories. In the case of the first category, Global Financial Markets, the subdivision has also been analyzed, since there appeared some significant shifts there over time.

In order to categorize the papers according to approach, two questions were asked. First, is the central research question mainly theoretically or mainly empirically inspired? Second, are the arguments and evidence mainly theoretical or empirical? Based on the answers to these two questions, an article was either categorized as theoretical, empirical or a mixture of both. The last category comprises mainly papers that have a strong theoretical component in the research question and a strong empirical component in the nature of evidence. Well-known exemplars of purely theoretical papers are the ground-breaking papers of Sharpe (1964) which lays out the Capital Asset Pricing Model and Jensen & Meckling (1976) on agency theory.

Purely empirical are for instance many of the papers of Eugene Fama and Kenneth French on asset pricing (e.g. 1992, 1993). Examples of papers which were considered as belonging to the mixed category are Lee, Shleifer & Thaler (1991) and Fama (1998).

23 Newer versions of the JEL classification do exist in which Global Financial Markets is changed to General Financial Markets. Money and Interest Rates has been removed from the Financial Economics chapter and Behavioral Finance and Household Finance were added.

In categorizing observations were made on specific method: formalistic or not, quantitative or not, theorem proof, statistical evidence, anecdotal evidence, experimental evidence, simulation, case study, survey, questionnaire, interviews.

In order to examine if the results of the JoF analysis carry over to the whole field of finance a look has also been taken at the Journal of Financial Economics (JFE). The JFE is the second highest ranked finance journal and in itself quite a prominent publication, also ranking consistently in the top ten of any ranking of economics journals, both in impact and number of citations. The same research procedure has been applied: one issue from each calendar year is analyzed in descending order starting with the most recent issue. Note that the sample is much smaller: 313 papers in total as compared to 873 for the JoF. The reason is that the JFE has only been in existence since 1974 and it publishes more issues per year with in general less articles per issue. The results for the JFE are analyzed by themselves and in comparison with the JoF for the matching period, i.e. the period between 1974 and 2018.

Finally, it has to be emphasized that epistemic appraisal of the papers itself has no part whatsoever in this analysis. Besides the enormous amount of time required to do so for almost twelve-hundred papers, this paper is strictly confined to methodology.

2.4 EMPIRICAL RESULTS SUBJECT OF RESEARCH

Figure 1 shows the data from the JoF on subject, summarized over five year intervals, in ascending order starting in 1946, going forward up to 2018.

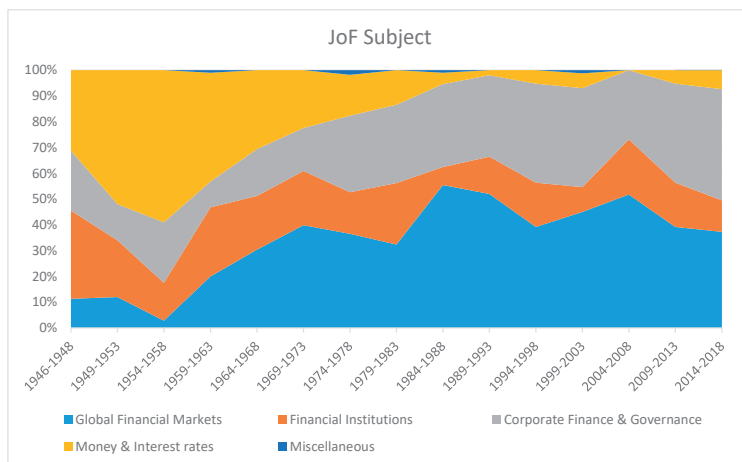


Fig.1. Journal of Finance subject 1946-2018

Most striking in the graph is the shift from typical subjects of general economics, money and interest rates, towards financial markets and corporate finance. Starting out on the left side of the graph, papers on money and interest rates gradually decline from over forty percent towards a level of around five percent in 1983 when it stabilizes. In that same time period, papers on corporate finance and on financial markets both grow from ten percent to the thirty percent range. After 1983, the share of corporate finance & governance stabilizes but the share of global financial markets increases even more towards the forty and fifty percent range. Contributions on financial institutions remain relatively stable, although in the first interval period its share was quite high. This could reflect attention for rebuilding a variety of institutions in the immediate post-war era.

What becomes clear from these data is the impact of the major theoretical breakthroughs in finance. It is not a stretch to assume that the work of Modigliani and Miller, dating back to the late fifties, and the work on agency theory by Jensen & Meckling (and Ross, 1973²⁴), have spawned an enormous amount of new research and the accompanying publications on corporate finance & governance. In the middle 1970s there appears to be a significant impetus which may well be attributable to the impact of the Jensen & Meckling (1976) JFE paper. Likewise for the area of global financial markets: Markowitz's work on portfolio theory in the fifties, but especially the Capital Asset Pricing Model (CAPM) by Sharpe and others, and the efficient markets ideas by Fama and others, both in the sixties, followed by option pricing theory in the seventies have propelled this area of research to a dominant position.

24 There has been some debate about who actually pioneered agency theory. In economics Ross (1973) is often acknowledged as the first one to explicitly address the principal-agent problem. In the same year political scientist Barry Mitnick (1973) published on the institutional theory of agency.

Six key finance concepts

Modigliani-Miller Theorem: states that the market value of a company is calculated using its earning power and the risk of its underlying assets and is independent of the way it finances investments (equity or debt) or distributes dividends. The reason being that investors are diversified and make adjustments to accommodate for varying risk and return characteristics. Given certain assumptions (most notably efficient markets) the implications are twofold:

- 1) in the absence of taxes, bankruptcy costs, agency costs, and asymmetric information, and in an efficient market, the value of a firm is unaffected by how that firm is financed.
- 2) When taxes are present and interest on debt is tax-deductible, using debt actually increases the value of the company.

The “M&M” theorem is one of the cornerstones of capital structure and corporate finance theory.

Modern Portfolio Theory (MPT): a theory on how risk-averse investors can construct portfolios to optimize or maximize expected return based on a given level of market risk, emphasizing that risk is an inherent part of higher reward. Based on statistical measures such as variance and correlation, an individual investment’s return is less important than how the investment behaves in the context of the entire portfolio. Put very simply, MPT embodies the idea that one shouldn’t put all one’s eggs in one basket.

Capital Asset Pricing Model: a model (commonly known as CAPM) that describes the relationship between the expected return and risk of investing in a security. It shows that the expected return on a security is equal to the risk-free return plus a risk premium, which is based on the asset beta of that security, i.e. the volatility of the security relative to the market as a whole. Put very simply, the model implies that in order to achieve higher expected returns on an asset, one should expect more risk. Market efficiency is a core assumption.

Efficient Market Hypothesis: the hypothesis that states that asset prices reflect all available information. A direct implication is that it should be impossible to outperform the market consistently and systematically on a risk-adjusted basis since market prices should only react to new information. Closely related is the random walk concept: market prices evolve according to a random walk (so price changes are random) and

thus cannot be predicted. In an efficient market prices should follow a random walk. However, while a random walk pattern can be seen as evidence for market efficiency, it is not a definite proof.

Agency Theory: a principle that is used to explain and resolve issues in the relationship between principals and their agents. For instance, the relationship between shareholders, as principals, and company executive, as agents. Principals delegate decision-making authority to agents. Because many decisions that affect the principal financially are made by the agent, differences of opinion and even differences in priorities and interests can arise, which can lead to conflicts of interest and may induce moral hazard. This is sometimes referred to as the principal-agent problem. Agency theory (also called Principal Agent Theory) is a core concept in the area of corporate governance, corporate finance and the theory of the firm.

Option Pricing Theory: the theory which enables theoretical valuation of options and other derivatives using various variables (underlying value, exercise price, volatility, interest rate, time to expiration, dividends, etc.). The breakthrough insight of option pricing theory is that the value of options and other derivatives is independent of risk and return characteristics of the underlying asset. Rather, the value of an option other derivative crucially depends on the volatility (standard deviation) of the underlying asset. Within Option Pricing Theory there are various models, which can be used for calculation of the value of a particular option or derivative, for instance the Black-Scholes model and the Cox-Ross-Rubinstein model (also known as the binomial model).

If one distinguishes within the category global financial markets between asset pricing and other subjects the impact of novel theory becomes even more clear: see figure II. “Other subjects” includes topics such as market structure, market analysis and investor behavior, including tests of market efficiency and rationality.

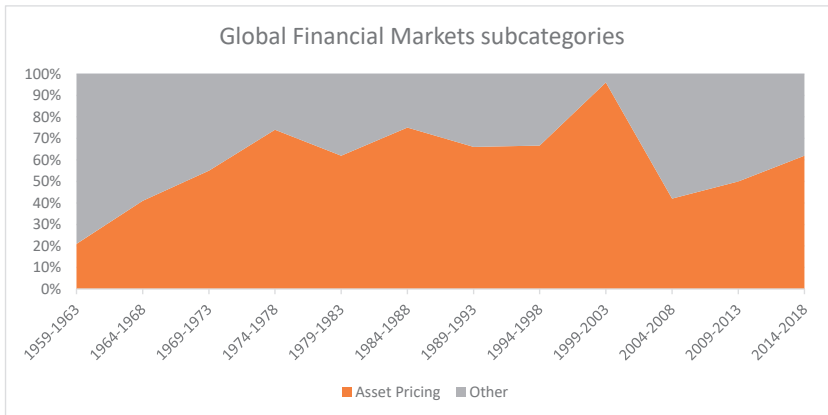


Fig.2. Journal of Finance subject 1959-2018²⁵

From the 1960s onwards the share of papers on asset pricing rose steadily to approximately two-thirds of the total number of papers within the category global financial markets during the 1970s²⁵. Fueled by CAPM, the variety of successors it has spawned, and numerous empirical tests on those models, the share of asset pricing contributions peaked during the turn of the century, followed by a noticeable drop-off. This drop-off coincides with the rise to prominence and recognition of behavioral finance. Most of the behavioral finance papers fall in the subcategories investor behavior and market analysis. A final observation can be made on a possible impact of the 2008 great financial crisis. The impact of the crisis on finance will be discussed more elaborately later on in this chapter, but it would appear that the crisis, amongst other things, has resulted in renewed interest in asset pricing. Given the fact bubbles in certain asset prices are seen as one of the causes of the crisis, that should not come as a surprise.

What about the Journal of Financial Economics? Figure 3 displays the graph for the JFE for its entire period of existence, i.e. from 1974 up until 2018.

²⁵ For the sake of clarity, option pricing theory was included in the category of asset pricing. Developed in 1973, option pricing theory has been a highlight of theorizing in finance. For a relatively short period there has been considerable research interest in it which explains some of the spike in the share of asset pricing. Nowadays pure theory of valuation of options has become a specialized and highly quantitative and mathematical endeavor. That is probably why a relatively general journal such as the JoF doesn't carry many papers on the topic anymore.

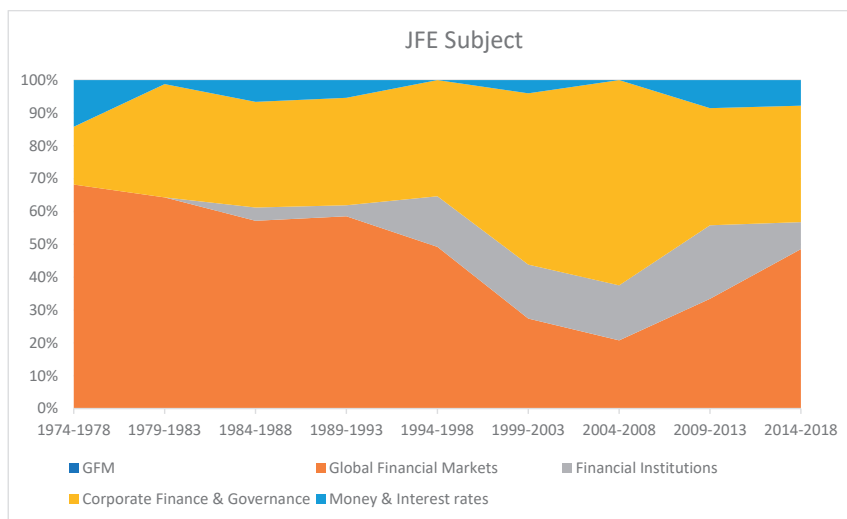


Fig. 3. Journal of Financial Economics subject 1974-2018

In order to compare the two journals, in figure 4 the graph for the JoF is shown for the corresponding period 1974-2018.

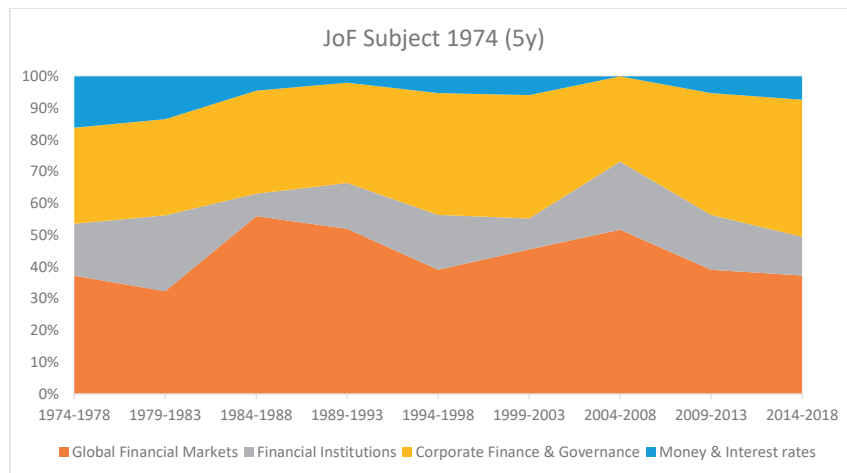


Fig. 4. Journal of Finance subject 1974-2018

In both journals the categories corporate finance & governance, and global financial markets are dominant. But whereas in the JoF the share of GFM steadily rises with time, initially it falls in the JFE at the expense of CFG. This might have been just a matter of division of territory: journal specializing in a certain area. It is probably also attributable to the longstanding

involvement of Michael Jensen with the JFE, having been one of the founders of the journal and its managing editor for close to twenty-five years. His work is mainly concerned with corporate finance and governance²⁶. The share of papers on financial institutions is comparable, as is the minor share of entries on money and interest rates.

If we delve a bit deeper inside the categories for the JFE, once again asset pricing, market analysis, and corporate finance are the most prominent subcategories, displaying roughly the same tendencies through time as the JoF. What is different from the JoF, is the significant share in the more recent periods of papers on corporate governance. This is not surprising given the increased attention this topic has received in the form of public debates about the interests of various stakeholders, sustainable and responsible business, and compensation issues. The JFE, specialized on corporate finance and governance, is clearly the preeminent academic outlet for these topics.

Some observations can be made. First, the revolutionary developments in theory have clearly changed the field and shaped finance's somewhat distinct identity. The resulting increased attention for corporate finance and financial markets has come at the detriment of traditional economics. Moreover, the breadth of the range of subjects has changed dramatically as well. In the early days one could find papers on disarmament, post-war reconstruction, urban development, real estate, even philanthropy. Much of the work was explicitly relevant to economic policy making. The macro and welfare perspectives have given way to micro analysis. Nowadays it is about specific markets or asset categories, compensation, tax and dividend issues, or even narrower, about isolated phenomena such as the (in)famous anomalies. That is not to say that finance has removed itself further from economic reality. Rather it is concerned with a different, and perhaps narrower, part of economic reality. Academic finance has not been an isolated intellectual endeavor, but has clearly been shaped by the world out there, from thinking about the challenges for the financial system that the world faced after WW II, to the questions that society poses more recently, for instance with regard to governance.

The great financial crisis can be regarded as a gamechanger in the financial markets: an event which affected and altered thinking on financial markets as well as establishing and providing a set of new, unique data. Below is plotted how the division of subjects developed in three year intervals in the period 1997-2017, i.e. ten years before the crisis started and ten years onwards.

²⁶ Though not exclusively; see for instance Jensen, 1978.

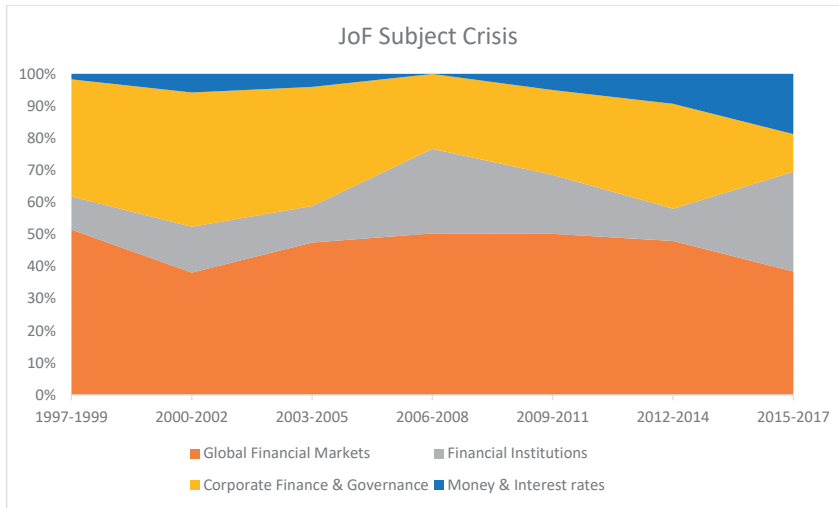


Fig. 5. Journal of Finance subject 1997-2017

The impact of the crisis appears to become somewhat visible in the JoF from 2011 onwards. Since then every journal from the analyzed sample contains crisis-related articles. Given that the average time between acceptance and publication for the JoF is almost twenty months (Holden, 2017), that's not surprising. Regarding the subject categories some renewed interest in the categories FI and MI is visible since the crisis, mostly at the expense of CFG.

In the JFE crisis-related articles appear a year earlier, in 2010. That corresponds to the average time between acceptance and publication for the JFE of almost ten months (Holden, 2017). From 2010 onwards, a large majority of the journals from the analyzed sample contain crisis-related articles, the first one being a special issue entirely devoted to the crisis (Vol. 97:3 "The 2007-8 financial crisis: Lessons from corporate finance", dated September 2010).

In the JFE initially there is also some additional attention for the categories FI and MI, though less pronounced than in the JoF and subsiding recently. One could conjecture that the fallout of the financial crisis on the economy (and economics) at large has given rise to this renewed attention for the categories FI and MI, which relate more to economics in general than the two "supers-specialties" of Finance, being GFM and CFG.

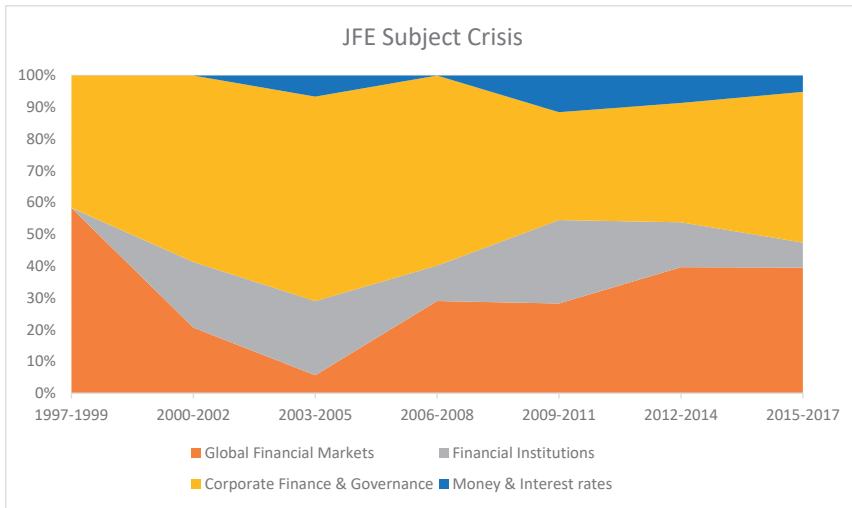


Fig. 6. Journal of Financial Economics subject 1997-2017

2.5 EMPIRICAL RESULTS RESEARCH APPROACH

Below in figure 7 are the data on the approach used towards the various subjects, again summarized over five years, in descending order starting in 2008 going backward to 1959.

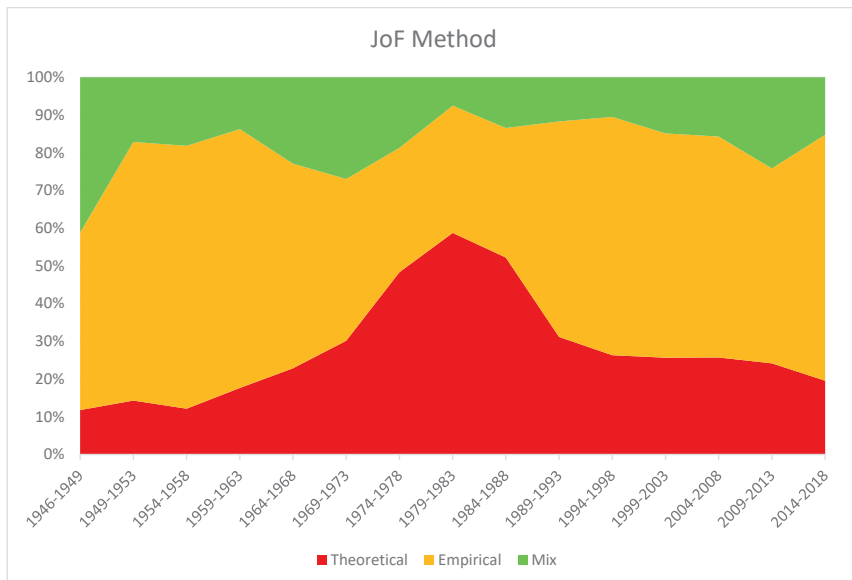


Fig. 7. Journal of Finance approach 1946-2018

Most striking in this graph is the rise in theoretical work in the late sixties, seventies up until the middle eighties. The early majority of empirical inquiry gives way to a majority of theoretical research, only to become dominant again at the end of the 1980s. Once again the consequences of the major theoretical breakthroughs can be inferred. In particular the formal, mathematical approach, initiated by Markowitz in the 1950s, picking up steam with all the groundbreaking work on CAPM by Sharpe, Lintner, Mossin, and Treynor, culminating in the development of Option Pricing Theory by Black, Scholes, and Merton. In contrast, the Modigliani-Miller propositions on capital structure and the Efficient Market Hypothesis lend themselves better to empirical investigation. The formal and mathematical approach spurred on theoretical research until the late 1980s. What happened after that was not that the theory was simply finished, although there is a good case to be made that the major theories developed in the 1960s and 1970s still form the backbone of finance (see Bernstein, 2007). But besides that, it was the proliferation of information technology and computers which made both gathering and analyzing data so much easier, thus stimulating empirical work and methods like bootstrapping and (Monte Carlo-)simulation.

Today's empirical work is vastly different from that of the late 1950s, 1960s and even early 1970s. Whereas the current strand consists for the overwhelming majority part of statistical data analysis, going back in time from 1980 we find more and more varying and non-quantitative forms. Empirical research in those days used a host of different methods to provide arguments: anecdotal and historical evidence, case studies and illustrative examples, surveys, questionnaires and interviews, and plain verbal logic. These methods are of course familiar to other social sciences. Today's empirical work is predominantly statistical with some occasional experimental research.

As far as theoretical work goes, a distinction can also be drawn, but it is less pronounced. Up until the middle 1970s non-formalistic theoretical papers show up occasionally. There is also made use of geometry in the form of graphs in the Marshallian fashion, for instance in Jensen & Meckling (1976). After that period, but also overlapping, we can distinguish between a brand using axioms, lemmas, and theorem proof (e.g. Merton, 1973) and a form of model building using simulation which often is game theoretical by nature (e.g. Grossman & Stiglitz, 1977).

Figure 8 show the data for the JFE; figure 9 the data for the JoF for the corresponding period.

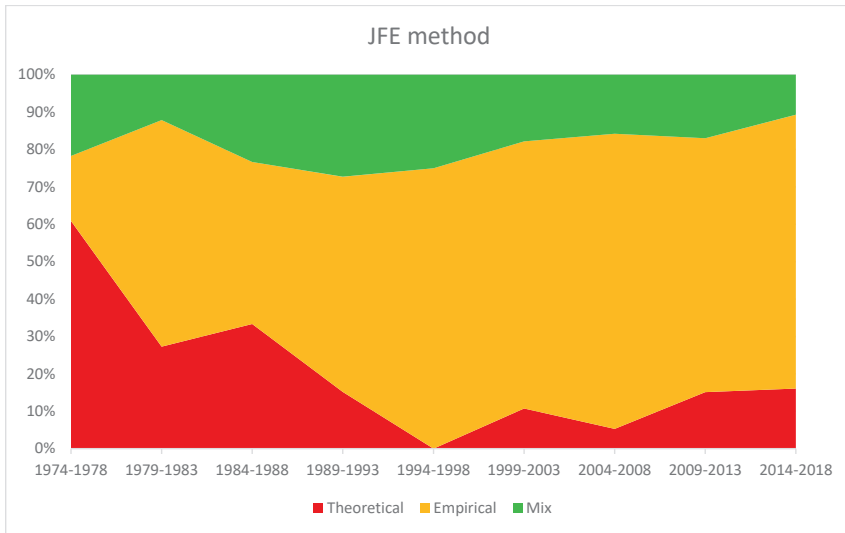


Fig. 8. Journal of Financial Economics approach 1974-2018

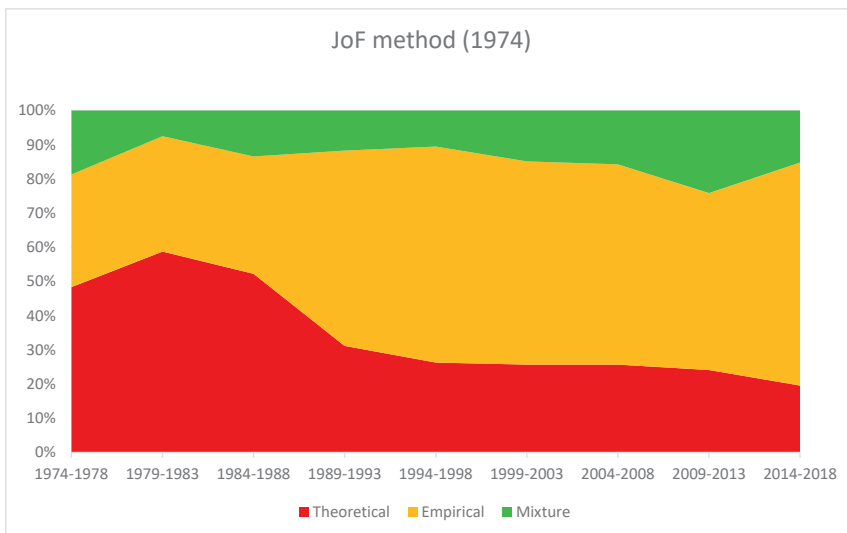


Fig. 9. Journal of Finance approach 1974-2018

As far as approach goes, the shift from theoretically inclined to empirically inclined work is even more pronounced in the JFE than in the JoF. The JFE in general seems to be more empirically oriented which shows not only in a higher percentage of purely empirical work but also in a larger number for mixed papers. This may be partly attributable to the JFE's focus on corporate finance and governance, areas which may lend itself particularly well to practical analysis.

Did the crisis have an impact on the approach contributors to these two journals employ? Like it was done for the subject categories the two following graphs display the type of contribution in the ten-year period before the crisis and the ten-year period after the crisis (three year intervals):

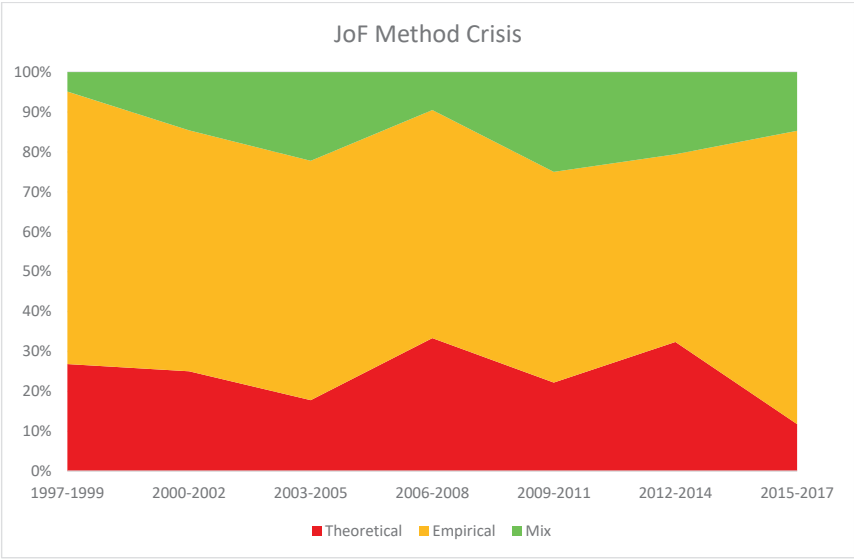


Fig. 10. Journal of Finance approach 1997-2017

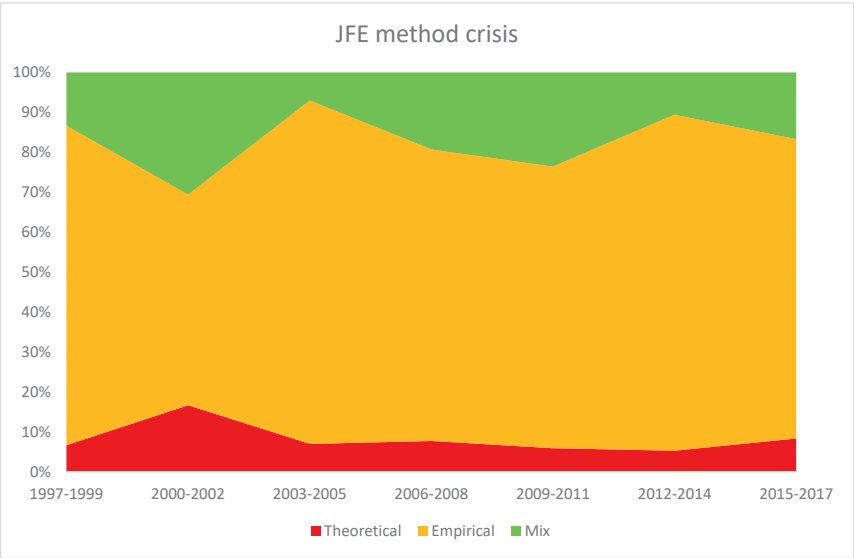


Fig. 11. Journal of Financial Economics approach 1997-2017

Besides a slight dip in the percentage of empirical work around the time of the crisis, there do not appear to be significant changes in the approach taken by both contributors to the JoF and the JFE. It was however noticeable in the editions used in the sample, in particular within the JFE sample, that since the crisis within the empirical part other methods than the traditional statistical data analysis show up more. Examples of what may be deemed historical (Calomiris & Carlson, 2016), sociological (Tahoun, 2014) and institutionalist (Eun, Wang, & Xiao, 2015) approaches were found.

The shift from theoretical to empirical work is not unique to finance. Kim, Morse, and Zingales (2006) try to map what has impacted economics in general between 1970 and 1999 by taking the most cited articles and then identify field, author, institution, and type of contribution. The last item is particularly interesting in this context. They report a steadily falling amount of theoretical contributions from over 75 % in the 1970-1974 interval to a little more than 10 percent in the period between 1995-1999. At the same time empirical work rises from some 10 % in the 1970s to 60 % by the end of the millennium. And more recently Backhouse & Cherrier (2017) conjectured a shift towards applied work in general economics at the expense of theoretical work from the 1970s onward. Others have also noted the so-called “empirical turn” in economics (see for instance Davis, 2019b). That would match the findings in this chapter.

Assessing the type of claim being made (prescriptive, descriptive, normative, explanatory, predictive, etc.) was problematic. That shouldn't come as a surprise since the aims of social scientists are plural and it is often not possible to draw a clear-cut line between those various aims²⁷. A few observations can be made though. Most claims can at the least be characterized as explanatory. A typical empirical paper where a hypothesis is formulated, data are analyzed and the significance, statistical and economic, is determined, is saying something about the past. It shows ex-post how X was related to Y. In many cases the result is then used to postulate the relation as relevant for the future. So in such cases we can add “predictive” as a characteristic. The importance of predictions as outcome of academic research has been mentioned earlier as a hallmark characteristic of finance. But the predictions are usually non-quantitative²⁸. Still, the typical modern empirical finance paper makes explanatory and qualitatively predictive claims.

Older empirical work from the 1950s and 1960s was quite different, as was explained above. Institutional finance, as it was called, made use of qualitative methods in addition to the

27 See Reiss (2009) for an extensive treatment.

28 There are a few exceptions. See for example Harvey & Whaley, 1992.

quantitative ones, which were much less sophisticated anyway²⁹. The lack of “hard numbers” led to a different kind of argumentation and a different type of claims being made. Explanation is again present but here it is often accompanied by description instead of prescription. And in the case where the analysis was concerned with policy making this would often translate in a kind of normative claim as well.

Theoretical papers were also deemed mostly explanatory: a stylized representation of an assumed causal relation between certain variables. Sometimes predictions are derived, but these generally have a normative character since a theory is usually constrained by assumptions. So, a typical theoretical paper in finance can be deemed to make explanatory and normative claims.

2.6 VALIDITY AND ROBUSTNESS

There are at least two question marks to be put behind an exercise such as performed above. First, an analysis like this has some degree of subjectivity. The author has made the call on how to categorize and how to characterize a total of 1186 papers with wide-ranging subjects, spanning more than seventy years. Second, like in any sample the question has to be asked if it is a representative one.

As I see it, an advantage of the approach taken in this chapter is that it is not solely interpretation³⁰. The assignment of papers in the sample to categories according to subject matches well for the period between 1978 and 1999 when the JoF published the distribution of received and published papers according to JEL categories in its annual report of the editor. These numbers and the numbers of the sample compare quite well to each other. However, there will remain some overlap and grey areas between categories. This is also acknowledged by studies on impact and citations (see Arnold et al., 2003, Kim, Morse, and Zingales, 2006, Keloharju, 2008).

Regarding the assessment of papers as theoretical or empirical, two questions were asked: one about the approach taken towards the central research question, and one about the nature of the arguments provided. Of course, deep down, all research, at least in the social sci-

29 As indicated earlier in this chapter, there are signs that a kind of institutional finance, or heterodoxy in general, is on the rise again.

30 In the recent literature on the use of quantitative analysis in methodology and history of economics, most contributors advocate quantitative analysis next to and in addition to qualitative approaches (Düppe & Weintraub, 2018, Edwards Giraud & Schinckus, 2018, Cherrier & Svorenčík, 2018, Jovanovic, 2018). Jovanovic's work is of particular interest in this context because it uses the case of the history of the Efficient Market Hypothesis.

ences, starts with the goal of saying something about a phenomenon, and is thus empirically grounded. But there is a big difference between data analysis and axiom building. Sometimes the demarcation is less clear cut, reason why some articles are classified as mixed. In other cases either the theoretical or the empirical part clearly dominates³¹. Fortunately, the authors themselves indicate frequently if theirs is a theoretical or an empirical paper. Kim, Morse, and Zingales (2006) use a similar approach, basing their judgment on “the authors’ collective familiarity with the articles or a quick reading”.

Two issues need to be addressed here, regarding representativeness. First, is the sample representative of the population, i.e. all JoF and JFE articles? Second, are the JoF and JFE representative for the bulk of finance research? The sample consists of about twenty percent of all JoF articles since 1946, and slightly less than fifteen percent of all JFE articles since 1974. Moreover, the problem of clustered articles on the same subject in one issue was addressed by summing up over longer intervals of five years which accidentally is the same interval length that Kim, Morse and Zingales (2006) use. Finally, the correspondence of the distribution of subjects between the sample and the JoF’s own data between 1978 and 1999 suggests that at least for that time period the sample provides an accurate picture.

Regarding the second issue – representativeness of the JoF and JFE –, a caveat is in order. Financial economists have also published in general economic journals, producing research of broader economic interest. Examples are Black and Scholes seminal 1973 paper which was published in the *Journal of Political Economy* and Modigliani-Miller 1958, published in the *American Economic Review*. The results of the studies of Arnold et al. (2003, and Keloharju (2008) are useful in this regard. Arnold et al. (2003) find that, while a significant amount of the most highly cited papers in finance has come from non-finance journals like the *American Economic Review*, *Econometrica*, and the *Journal of Political Economy*, “the JoF and JFE have unambiguously had the most impact on finance research”. Keloharju (2008) reaches a similar conclusion.

2.7 DISCUSSION

Back in paragraph 2.2 three characteristics of finance, in relation to economics in general, were formulated: 1) focus on micro-level analysis in finance, 2) “positivism” and 3) development through time fueled by breakthrough theorizing. How do the empirical results measure up? The first observation was concerned with the level of analysis. It would indeed seem that most attention has been increasingly directed toward market and firm behavior,

31 Good examples here are the two seminal papers on option pricing, Black & Scholes (1973) and Merton (1973) are both highly theoretical papers but there is attention for applications of the theory.

looking at the dominance of the categories Global Financial Markets, and the subcategories market analysis and asset pricing in particular, and Corporate Finance & Governance. But it is also clear that this hasn't always been the case. The focus of analysis in finance, at least in the journals analyzed here, has gradually moved through time towards an increasing micro-perspective. Originally macro issues, such as public policy and welfare implications, were high on the research agenda. Moreover, such issues were typically of a more economic nature: monetary policy, public finance, fiscal policy. When the focus became narrower, the subjects were to a large extent lost or migrated to other branches of economics.

So Summers' complaint that finance is not concerned (anymore) with the bigger picture and issues seems to have substance. Ross, Campbell, and Miller have made a similar assessment but for them it is simply a natural consequence of the progress made in finance. An important part, maybe the most important part, of that progress has been the development of the hallmark finance theories: Modern Portfolio Theory, the Modigliani-Miller propositions, CAPM, Efficient Market Hypothesis, Agency theory, Option Pricing Theory. Indeed, the impact of these major theoretical breakthroughs is clearly visible in the analysis.

Of course something has changed since the time of Summers' remarks, but it has not been a move back towards the grander issues of the olden days. The advent of behavioral economics has brought a strand of research in finance where the focus of analysis is even narrower. Instead of aggregates such as markets and firms in behavioral finance the emphasis has turned towards the behavior of individual agents. In the graph this can be tracked by the rising share of papers on market analysis and on investor behavior. Since the debate between neoclassical and behavioral finance is far from settled, there is no telling what the future will look like.

The narrowing of focus is also visible in the rise of the amount of applied, empirical work, as mentioned by Bernstein (2007). He suggests that the core body of theory, dating back to the 1960s and 1970s, still forms a fundament in finance. Today's research, both in academia and on Wall Street, therefore is aimed at looking at the fringes of established theory in the quest to find something new and interesting. That includes possible behavioral biases but also institutional issues such as inefficiencies arising from transaction costs and liquidity constraints.

That leads to a second observation. The analysis of hard price data indeed has a very important place in modern finance. Summers' suggestion in that direction was only the beginning; the move has proliferated since 1985, as can be seen in the graphs. This has led to a bottom-up approach in finance as suggested by Ross and Campbell: first check the data, then work out the theory. The word "theory" may have become an inappropriate characterization in this context. A typical empirical paper in modern finance, neoclassical

and behavioral, states a hypothesis which is then checked by the data³². This approach can lead to an ad-hoc character of the hypotheses. Indeed, Fama (1998) condemns much of the criticism on established finance theory for this reason. It takes a theory to beat a theory, he says, not a loose collection of observations and anomalies.

The abundance of available data has been frequently mentioned as an advantage that finance researchers enjoy over other economists. Indeed, if a comparison is made between the results here and those of Kim, Morse, and Zingales (2006) similar patterns show up in the type of contribution. The numbers differ however: finance has always been more empirically oriented than economics in general (with perhaps some exceptions such as economic history and labor economics)³³. But there is a drawback to all that empirical work: the danger of data-snooping. In other words, if one looks carefully he or she may find data on a specific market in a specific market to match any hypothesis about prices and/or market behavior (see Lo & MacKinlay, 1998). Especially when the level of detail in the analysis increases more and more, this may lead to trivial and meaningless results.

So finance can indeed be regarded as a positivist discipline in that it occupies itself with testing, rigorous or not. What about that other trait of Friedman inspired positivism: meaningful predictions? It was mentioned above that these predictions were overwhelmingly qualitative in the sense that no precise numbers are predicted but rather a tendency or a cause-effect relation. But shouldn't one expect from research on financial markets that it leads to a form of forecasts which can then be used in the market itself and found valid or not³⁴? This is what McCloskey (1990), tongue-in-cheek, calls the "ultimate persuasive test" for a theory. Predictions in such sense are very rare, at least in the sample. It must be said that much of this kind of research does address the question whether the results are not only statistically but also economically significant, i.e. the monetary effect is checked. But hardly ever is an author tempted to postulate that money can be made on the basis of his hypothesis or model³⁵. That also applies to those who do not take market efficiency for granted, such as many behavioral economists. So what is actually done is back-testing: testing a predictive model on historical data. Back-testing is common practice in the real world of money and investment management, but there successful back-testing usually leads to implementation. In the academic arena there is apparently less place or interest for this ultimate test of reality: real-life application of predictive models.

32 Which is slightly different from Miller's assertion of a typical JoF paper; see paragraph 2.2.

33 Keloharju (2008) finds that the most-cited papers in finance show a larger percentage of empirical contributions, compared to the numbers of Kim, Morse, and Zingales.

34 De Scheemaekere (2009) treats this issue in a somewhat philosophical manner.

35 Many finance scholars do have links to, or are themselves active in professional money management. Their performance in the practice of financial markets is the subject of the following chapter.

The second observation, “positivism” then seems to have been confirmed, with qualifications, by the analysis. But also in this case things have been different in the past. After WW II, finance had a distinct institutional flavor, the analysis being broader, more qualitative and descriptive, using a whole range of methods of the social sciences. Then in the 1960s the formalization and quantification of finance took place bringing about the present orthodoxy.³⁶ Formal theory and quantitative empirical testing of that theory took center stage. This fundamental change is also documented in a paper in the *JoF* by Robert Kavesh: “(D)isciplines change, new thinking evolves, controversies flair. In finance one can almost sense the shifts by leafing through the volumes. The early years were filled with descriptive articles, with a heavy “institutional” flavor—largely reflecting the type of research being carried out in those days” (Kavesh, 1970). Kavesh’s article includes an exchange from 1967 between old-school financial economist Harry Sauvain and a new-school financial economist J. Fred Weston. Both emphasize that there ought to be space in finance for both the mathematical model-building approach and the institutionalist perspective. It turned out otherwise, although, as mentioned earlier in this chapter, recently there have been some signs of renewed room for institutionalism and heterodoxy.

In the 1980s finance really developed into the modern version, facilitated by the growth of information technology and computing power, enabling easier and more extensive gathering, treatment and analysis of data. Theoretical work took a backstage position again compared to empirical work. Harrison (1997) has noted this as well: “The pace of innovation in finance, for instance, seems to have slowed and the new sparks now come more from the tinder of inductive observation than from deductive “core” theorizing”. Again, this movement is not unlike what might have happened in economics at large. Davis (2019a) raises the question if, as a result of increased specialization and fragmentation within economics, the field has become increasingly data-driven and more agnostic about underlying theory. While that might be regarded as a undesirable “less-scientific” development, it might also have led to creating a bit more space for heterodoxy, for instance behavioral, experimental, institutional, and evolutionary elements. So indeed a lot has changed in finance over time as was suggested.

2.8 CONCLUDING REMARKS

The major findings were a shift in the subjects of the writings over time and two major changes in approach. The former can be categorized best as a narrowing of the scope of analysis. From a broad, descriptive, qualitative perspective, the analysis has become ever

³⁶ This was also noted by Davis, 2012.

more focused, first towards market and firm behavior and now increasingly towards behavior of agents and single phenomena. The first move can for a large part be attributed to the development of groundbreaking theory in the 1960s and 1970s, which enabled a more precise and detailed analysis. The second move was due to the firm embedding of that theory and the increasing availability of ever more fine grained data and ways of working with those data. There have been no such spectacular advances in theory since the 1980s. Researchers were led to a more applied, empirical approach, working on the periphery of that established theory, looking with ever more detail to certain assumptions, institutions, anomalies, etc.

In terms of “Big-M Methodology” one could regard the first move as the establishment of a Lakatosian hardcore, followed up by increasing work in the protective belt (see also Harrison, 1997, for a similar line of thought). Lakatos’ idea was that the identity of an individual research program could be understood in terms of core and periphery elements, where the former is stable and relatively unchanging and the latter is adjusted to accommodate explanations of phenomena in terms of that set of core elements. Inspired by the work from and on Lakatos, Davis (2008, 2019a) has attempted to apply this idea to specific fields and disciplines, economics in particular, and it appears to be applicable to finance as well.

The changes in approach cannot be seen separate from the developments described above. In fact it is quite conceivable that the changes in approach have enabled the breakthrough theoretical work in the first place. Two things stand out. First, there is formalization and quantification which takes place in the 1950s and 1960s leading to the development of that hardcore body of theory. It is the rise of the mathematical model-building approach in economics that made the development possible of modern portfolio theory in 1952 (see also Kavesh, 1970). The Modigliani-Miller propositions, while not so much the product of a quantitative approach, were the result of rigorous formal logic. On these two pillars the remainder of the body of main theories in finance was built. Second, there are the technological advances of the middle 1980s that propelled the rise of empirical data analysis. This gave rise to a frenzy of testing and inspection of ever more detailed cases; in other words, an increasingly micro-oriented perspective. To use the terminology of big-M Methodology again, it is these two changes in approach that can be labeled as the true scientific revolutions in finance.

How do these developments compare to economics in general? Is finance profoundly different from economics? Milton Friedman appeared to think so in the 1950s when he said he had problems with granting Harry Markowitz his PhD in economics, stating during the defense that his work was “not economics, not mathematics, not even business science!”³⁷ It

37 Transcript interview with Harry Markowitz. Jacob Marschak, Markowitz’s thesis advisor subsequently added: “It’s not literature”. See also Pistorius (2015) for an elaborate account of Markowitz’s work.

is evident that the fields are linked. Finance came relatively late to the wave of formalization in economics, but when it did, it used those tools well. Arguably, the various asset pricing models are the most practically relevant applications of equilibrium theorizing that can be found in economics. Nowhere is econometrics used more than in applied, empirical work in finance. On the other hand, finance may have led the way with its micro-focus³⁸. Fueled by game theory and experimental work, today economics also engages more and more in the kind of detailed applied work that has characterized finance for a while. Finance, Harrison (1997) writes, “has become the “proving ground” for new price theory and econometric technique. Innovations in finance found their way back to the “rest” of economics, in particular statistical and computer techniques”.

Finance may also provide some insights for a more pluralist type of economics (Davis, 2007, 2008). While the core of finance is arguably staunchly neoclassical, the field has incorporated somewhat heterodox strands of thoughts, such as agency theory and behavioral economics. In fact, these hardly can be labeled heterodox anymore in this context and have more or less become part of the hardcore. One of the striking advantages that finance perhaps enjoys over economics in general is the incredibly strong monetary incentives that are provided by the financial markets. Given that proximity of theory and practice and the empirical prowess of finance, it is quite conceivable that finance will function as a battle ground for new ideas again.

38 Take for instance the clearly related ideas of the Efficient Market Hypothesis and rational expectations: Fama and Samuelson predate Robert Lucas' seminal work.

APPENDIX

Sample composition.

Journal of Finance:

- Volume 72, no. 4, August 2017;
- Volume 71, no. 3, June 2016;
- Volume 70, no. 2, April 2015;
- Volume 69, no. 1, February 2014;
- Volume 68, no. 6, December 2013;
- Volume 67, no. 5, October 2012;
- Volume 66, no.4, August 2011;
- Volume 65, no. 3, June 2010;
- Volume 64, no. 2, April 2009;
- Volume 63, no. 1, February 2008;
- Volume 62, no. 6, December 2007;
- Volume 61, no. 5, October 2006;
- Volume 60, no. 4, August 2005 (AFA annual meeting);
- Volume 59, no. 3, June 2004;
- Volume 58, no. 2, April 2003;
- Volume 57, no. 1, February 2002;
- Volume 56, no. 6, December 2001;
- Volume 55, no. 5, October 2000;
- Volume 54, no. 4, August 1999 (AFA annual meeting);
- Volume 53, no. 3, June 1998;
- Volume 52, no. 2, April 1997;
- Volume 51, no. 1, February 1996;
- Volume 50, no. 5, December 1995;
- Volume 49, no. 4, September 1994;
- Volume 48, no. 3, July 1993 (AFA annual meeting);
- Volume 47, no. 2, June 1992;
- Volume 46, no. 1, March 1991;

- Volume 45, no. 5, December 1990;
- Volume 44, no. 4, September 1989;
- Volume 43, no. 3, July 1988 (AFA annual meeting);
- Volume 42, no. 2, June 1987;
- Volume 41, no. 1, March 1986;
- Volume 40, no. 5, December 1985;
- Volume 39, no. 4, September 1984;
- Volume 38, no. 3, June 1983;
- Volume 37, no. 2, May 1982 (AFA annual meeting);
- Volume 36, no. 1, March 1981;
- Volume 35, no. 5, December 1980;
- Volume 34, no. 4, September 1979;
- Volume 33, no. 3, June 1978 (AFA annual meeting);
- Volume 32, no. 2, May 1977 (AFA annual meeting);
- Volume 31, no. 1, March 1976;
- Volume 30, no. 5, December 1975;
- Volume 29, no. 4, September 1974;
- Volume 28, no. 3, June 1973;
- Volume 27, no. 2, May 1972 (AFA annual meeting);
- Volume 26, no. 1, March 1971;
- Volume 25, no. 5, December 1970;
- Volume 24, no. 4, September 1969;
- Volume 23, no. 3, June 1968;
- Volume 22, no. 2, May 1967 (AFA annual meeting);
- Volume 21, no. 1, March 1966;
- Volume 20, no. 4, December 1965;
- Volume 19, no. 3, September 1964;
- Volume 18, no. 2, May 1963 (AFA annual meeting);
- Volume 17, no. 1, March 1962;
- Volume 16, no. 4, December 1961;
- Volume 15, no. 3, September 1960;

- Volume 14, no. 2, May 1959 (AFA annual meeting);
- Volume 13, no. 1, March 1958;
- Volume 12, no. 4, December 1957;
- Volume 11, no. 3, September 1956;
- Volume 10, no. 2, May 1955 (AFA annual meeting);
- Volume 9, no. 1, March 1954;
- Volume 8, no. 4, December 1953;
- Volume 7, no. 3, September 1952;
- Volume 6, no. 2, June 1951 (AFA annual meeting);
- Volume 5, no. 1, March 1950;
- Volume 4, no. 4, December 1949;
- Volume 3, no. 3, October 1948;
- Volume 2, no. 2, October 1947;
- Volume 1, no. 1, August 1946.

Journal of Financial Economics:

- Volume 128, no. 2, May 2018;
- Volume 124, no. 1, April 2017;
- Volume 119, no. 3, March 2016;
- Volume 115, no. 2, February 2015;
- Volume 111, no. 1, January 2014;
- Volume 110, no. 3, December 2013;
- Volume 106, no.2, November 2012;
- Volume 102, no. 1, October 2011;
- Volume 97, no.3, September 2010 (The 2007-8 financial crisis: Lessons from corporate finance);
- Volume 93, no. 2, August 2009;
- Volume 89, no. 1, July 2008;
- Volume 84, no. 3, June 2007;
- Volume 80, no. 2, May 2006;
- Volume 76, no. 1, April 2005;
- Volume 71, no. 3, March 2004;
- Volume 67, no. 2, February 2003;
- Volume 63, no. 1, January 2002;
- Volume 62, no. 3, December 2001;
- Volume 58, no. 1-2, October/November 2000;
- Volume 54, no. 1, October 1999;
- Volume 49, no. 3, September 1998;
- Volume 45, no. 2, August 1997;
- Volume 41, no. 3, July 1996;
- Volume 39, no. 2, June 1995;
- Volume 35, no. 2, April 1994;
- Volume 33, no. 1, February 1993;
- Volume 31, no. 1, 1992;
- Volume 30, no. 2, December 1991;
- Volume 28, no. 1-2, November/December 1990;
- Volume 24, no. 2, 1989;

- Volume 21, no. 2, September 1988;
- Volume 18, no. 2, June 1987;
- Volume 16, no. 1, May 1986;
- Volume 14, no. 1, March 1985;
- Volume 13, no. 1, March 1984;
- Volume 11, no. 1-4, April 1983;
- Volume 10, no. 4, December 1982;
- Volume 9, no. 3, September 1981;
- Volume 8, no. 2, June 1980;
- Volume 7, no. 1, March 1979;
- Volume 6, no. 4, December 1978;
- Volume 5, no. 2, November 1977;
- Volume 3, no. 4, October 1976;
- Volume 2, no. 3, September 1975;
- Volume 1, no. 2, July 1974.