



Mika Vaihekoski

History of finance research and education in Finland: the first thirty years



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The views expressed in this paper are those of the author and do not necessarily reflect the views of the Bank of Finland.

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The author of this article was accepted to the Graduate School of Finance and Financial Accounting (GSFFA) in 1995 among ten students in the second-ever admittance to the school. Hence I have first-hand memories of only the last ten years, and so most of this article is based on the recollections of others and documents provided to me. I am indebted to the following persons for interviews that provided me with the necessary information to write this article as well as for their comments: Matti Keloharju, Antti Korhonen, Johan Knif, Mikko Leppämäki, Eva Liljebloom, Anders Löflund, Minna Martikainen, Kim Nummelin, Jukka Perttunen, Timo Salmi, and Paavo Yli-Olli. This paper was partly written while I was visiting Bank of Finland in early 2008. I gratefully acknowledge their support. I am especially thankful for comments from Esa Jokivuolle, Tuomas Takalo, and Jouko Vilmunen.

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Abstract

This paper reviews the first thirty years of finance research and education in Finland, starting with publication of the first dissertation in finance in 1977. That was also the year when the first department of finance was established in Finland – among the first in the Nordic countries. This review shows how Finnish financial education and research developed from a humble beginning to a level that brought international acclaim. This can be largely attributed to a number of talented and hard-working individuals but also to the decision for collaboration among the Finnish universities, as a means to overcome some of the problems of a small country.

Keywords: financial education, research, graduate school, Finland, history, professors, dissertation

JEL classification numbers: A23, B25, G00

Rahoitustutkimuksen ja –opetuksen historia Suomessa: ensimmäiset 30 vuotta

Suomen Pankin keskustelualoitteita 18/2008

Mika Vaihekoski
Rahapolitiikka- ja tutkimusosasto

Tiivistelmä

Tässä tutkimuksessa tarkastellaan Suomen rahoitusalan tutkimuksen ja opetuksen historiaa kolmenkymmenen vuoden ajalta ensimmäisestä kotimaisesta rahoitusalan väitöskirjasta 1977 eteenpäin. Samana vuonna Suomeen myös perustettiin Pohjoismaiden ensimmäinen rahoituksen laitos. Tarkastelussa nousee esille, miten rahoituksen opetus ja tutkimus ovat Suomessa nousseet vaatimattomasta alusta huolimatta kansainvälisesti arvostetulle tasolle. Kehitykseen ovat vaikuttaneet luonnollisesti useat lahjakkaat ja kovasti työtä tehneet tutkijat, mutta myös yliopistojen päätös tehdä yhteistyötä pienen maan kohtaamien ongelmien voittamiseksi.

Avainsanat: rahoituksen opetus, tutkimus, jatkokoulutusohjelma, Suomi, historia, professorit, väitöskirja

JEL-luokittelu: A23, B25, G00

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1 Introduction

Finnish stock market was established in 1912, but for the most part of the 20th century it remained quite a small economic factor in the Finnish economy. Therefore, it may come as a surprise that Finland has been among the first countries to begin financial research and education in Europe. For example, one of the oldest departments of finance in the Nordic countries was established in Finland in 1977. In addition, Finland was also the first one to set up a nationwide graduate school in finance in the Nordic countries. Finnish researchers have also published actively in refereed journals. In fact, Finnish stock market was judged by Hawawini (1994) to be one of the most researched stock markets in the world considering its size.

There are various reasons behind this development in Finland. As always, the success can be attributed to certain individuals and their hard work. Namely, Finland has been fortunate enough to have several extremely active researchers who have made major contributions to the research. In addition, certain decisions have proved to be very successful. For example, the decision to collect stock market data for research was made in the early 1980s – years earlier than in many other countries. Furthermore, Finnish government and companies have actively adopted computer-based systems to minimize labor costs which have made the retrieval of the data easier and cost-effective. Finally, the decision to co-operate and to adopt the US style graduate school system in the mid-1990s has further accelerated the development.

However, there are no articles to the author's knowledge where this development and the persons behind it would have been recorded and presented. In fact, the literature on this topic is very scarce even in other countries.¹ It is the purpose of this article to review the first 30 years history of finance education and research in Finland from the publication of the first financial dissertation in 1977 to the end of 2006. The main focus is on the events that have shaped the history and on the professors who have influenced the development.² In addition, dissertations in finance and articles published in the top three journals are also

¹ Partial accounts of the development in the USA can be found eg from Brealey and Edwards (1991), Bernstein (1993), and Lehmann (2005).

² I also made a decision to review only the official appointments of the (associate) professors. In many cases, a person worked as an acting professor before being tenured. I did not make a difference between five year appointments or tenures as both require external peer review and both are entitled to use professor title according to The Finnish Union of University Professors. Note also that the Finnish Ministry of Education made a decision to abolish all associate professor positions in the late 1990s. Those who were tenured associate professors were given full professorship depending on the university some time during 1998–2001 (see, eg, Vaihekoski, 2005, for more information). A more complete review of each person's work history can be found eg from Professoriliitto (2008).

reviewed.³ Historical review is always interesting for those who have participated in the events, but hopefully this paper will be of interest to the younger generations as well. This review can also be interesting to (emerging) countries and universities who are currently going through the same kind of development.

The remainder of the paper is as follows. Section 2 reviews the early history until 1980s. Section 3 reviews the events taking place in the 1980s which contributed to the growth of research activity in the 1990s. Section 4 reviews the first growth period from the 1990 until the establishment of the Graduate School of Finance and Financial Accounting in 1994. Section 5 reviews the development since 1994. This period can be said to be the second growth period of financial education and research in Finland which still endures. Section 6 concludes.

2 Early history –1980

The higher education in business and economics in Finland can be said to start when the Swedish School of Economics and Business Administration (also known as Hanken) was founded 1909 (university status awarded 1927) for the Swedish speaking students in Finland.⁴ Helsinki School of Economics and Business Administration (later Helsinki School of Economics, henceforth HSE) was founded for the Finnish speaking students two years later in 1911. Finally, forty years later in 1950, a business school was established also in Turku (henceforth TSE). These three schools are the only business-oriented universities in Finland. However, many other universities have also realized the importance of business education and established either a faculty of business administration and economics or a business school within the university. One of them, University of Vaasa, was actually also founded as a business school in 1968 despite the name, but it soon expanded into other disciplines.

At first finance was not included in the curriculum in any of the schools even though financial issues and investing was not unknown to people in Finland as Nyberg and Vaihekoski (2005) state on the basis of the review of the literature from the early 20th century. However, slowly, but surely, financial issues were also introduced especially in the accounting courses to the students at the HSE in the 1970s as a result of few newly appointed professors (especially by Eero Artto

³ All Finnish doctoral dissertations in finance are listed in the Appendix. The list is hand-collected by the author. A number of dissertations from other disciplines, most notable from economics and accounting, are also included on the list if the analysis of financial markets has played a major role in the thesis or out of historical reasons. To keep the list manageable, dissertations in economics that analyze central bank policy decisions, exchange rates, and banking sector from a macroeconomic point of view, are excluded.

⁴ Finland has officially two languages, Finnish and Swedish. Swedish speaking population represent six percent of the population.

who was named as associate professor of finance in 1971). Towards the end of the 1970s also Jarmo Leppiniemi and Markku Koskela, who had written dissertations in financial accounting, taught courses that at least partially dealt with financial questions (cf, Honko, 1997). However, it was not until early 1980s that the financial courses were taken into the curriculum separately.

Even though finance did not have a major role in any of the schools, there was one researcher who decided to write a dissertation in pure finance.⁵ Antti Korhonen from the HSE became the first one in Finland to write a financial dissertation. He had completed his MSc degree at the HSE and decided to continue studies abroad after the suggestion and encouragement of Veikko Jääskeläinen who worked at that time at the Department of Accounting (later became professor of systems analysis). Korhonen received the Ford scholarship for studies in the USA and he ended up spending two and a half years at the University of Chicago in the early 1970s learning firsthand of the new research conducted there. Especially the lectures and recent research by Eugene Fama inspired Korhonen to study later the efficiency of Finnish stock market in his dissertation.

After returning to Finland, Korhonen began working on his doctoral dissertation. However, doing empirical stock market research in Finland at that time was not a walk in park. To get the data, he contacted SYP Bank and used tried and true method of penciling down the stock prices from the bank's printouts. Luckily, HSE had a computer which he could use to do the statistical tests, but using punching cards to get the computer do something was painstaking. Korhonen defended his dissertation in accounting successfully in 1977.⁶ It was based on a collection of ten published papers in the Finnish Journal of Business Economics between 1974 and 1977. In most papers he studied the efficiency of the Finnish stock market. After receiving the PhD degree, he decided to pursue career in the banking sector, but he also continued with research (see eg Korhonen, 2001) and taught many financial courses at the HSE and the University of Vaasa until the 1980s.⁷

However, the first major watershed on financial education and research in Finland was the decision to establish a department of finance at the Swedish School of Economics and Business Administration (henceforth Hanken). The idea of the department was born around 1976 and it was mainly an idea by Hanken's rector Lars Wahlbeck, who was back then also working as professor at a

⁵ Dissertations by Eero Artto in 1968 and Jouko Ylä-Liedenpohja in 1976 from the HSE and Reino Majala in 1975 from the TSE can also be said to deal with financial issues, but not to the same degree as Korhonen's.

⁶ To value this achievement, we have to remember that financial research was very scarce in Europe at that time. As an example, there was some research activity in Norway by Jan Mossin who had returned to Norway in 1968. Mossin is often contributed as being one of the researchers who independently derived the CAPM.

⁷ Korhonen remembers seeing many of today's well-known professors in the lectures he attended.

department whose focus was a bit unclear as Hanken had recently renewed its departmental structure. Wahlbeck and Björn Wahlroos, who at that time was acting professor at the Department of Economics, made a decision to rename the department and redefine the discipline of the professorship at the department to finance. After some bureaucratic battles, the Department of Finance was established in 1977. This decision must have been quite revolutionary at that time as the department was the first one in Nordic countries (or even in Europe) to be named as such.

However, during the first years, the department did not have any notable research activity. Only the dissertation of Bo-Göran Ekholm (1978) can be said to deal partially with financial issues, although the accounting point of view was prevailing as it has been later in his career. The only other place where financial issues were studied in the 1970s was the University of Vaasa, where Paavo Yli-Olli defended his dissertation on the investment and financing behavior of Finnish firms in 1978. Another person that would later have an impact on the financial education and research was Timo Salmi (originally PhD⁸ from the HSE 1975). He was appointed as associate professor of accounting to the University of Vaasa in 1977 and full professor of accounting and business finance in 1985. However, it was the next decade that would prove to be the period when the research in finance would really start to take off.

3 First steps in research – the 1980s

After the establishment of the Department, finance became quickly one of the popular majors at Hanken. The first master's theses in finance were approved in the early 1980s. At first the members of the faculty changed quite a lot and the faculty in general remained very small throughout the 1980s consisting of one full (vacant until 1990), one associate, two assistant professor positions, and two assistantships. However, the first persons to make a lasting impact were Tom Berglund, a recent graduate from the University of Helsinki, and Eva Liljebloom, who had started her studies at Hanken 1976.

Liljebloom was hired as an assistant to the department in spring 1980. Berglund was at that time working at the Department of Economics, but later in 1982 he moved to the Department of Finance. From the very beginning, they were expected to write a doctoral dissertation. And as we all know, in retrospect the choice of research topic is up to some certain point in time. For example, Tom Berglund states in his dissertation: “... *fall of 1981, at a lunch with Prof.*

⁸ Note that in most cases Finnish researchers have actually received a D.Sc. degree in Economics. In this paper, the PhD degree is used for simplicity.

Wahlroos, he convinced me to do empirical research in finance".⁹ As a result, at the beginning of the 1980 Berglund, Liljebloom, and Wahlroos¹⁰ began working on a financial database of the stocks listed in the Helsinki Stock Exchange. The data was stored originally on mainframe computers in Otaniemi and over the years several persons have contributed to updating the database (which has been stored on personal computers for years now).

The decision to collect the data proved to be a successful as the database was a source for a number studies conducted at that time. The database also allowed the researchers to calculate a new, total return index for research purposes that would replace the price index calculated by SYP (see Berglund, Wahlroos, Grandell, 1983). This value-weighted total return index that started from January 1970 was to be used in several studies later on. It was ultimately replaced by the index calculated by the stock exchange itself in the early 1990s (see Nyberg and Vaihekoski, 2005).

The research activities lead to the publication of articles in international journals. Berglund, Wahlroos, and Örnmark (who worked as their research assistant) were the first ones to publish the first international research article in finance 1983 in the *Scandinavian Journal of Economics* (Berglund et al, 1983). A few years later, in 1986, Berglund defended his doctoral thesis. Eva Liljebloom did the same in 1989. She was to become the first, but not the last, female doctor in finance in Finland. Year 1988 witnessed the first article by Finnish researchers (working in Finland) in the *Journal of Finance* (Berglund and Liljebloom, 1988).¹¹

The 1980s was to become a period when the first steps towards the internationalization of the research were taken. Wahlroos visited Brown University in 1980–1981 and Northwestern University (NWU) three years later in 1983–1984. Liljebloom visited NWU in spring 1984.¹² In addition, some students decided to pursue their doctoral studies abroad. A good example is Pekka Hietala, who went to Stanford after receiving MSc degrees both from the HSE and the Helsinki University of Technology in Finland. After earning his PhD, Hietala moved to INSEAD in France and soon afterwards published an article in the *Journal of Finance* (Hietala, 1989).

⁹ Shortened by the author.

¹⁰ Wahlroos had earned his PhD in economics 1979.

¹¹ As an anecdote related to this article, Liljebloom remembers how they decided to celebrate the publishing decision. She went to local liquor store, Alko, and took a bottle of Dom Pérignon champagne from the shelf. She asked the sales clerk whether it was any good. The sales clerk answered: "Yes, it is very good. It is drunk by me or at least James Bond".

¹² One should also mention Professor Pentti Kouri from the University of Helsinki even though his background is in economics. His article (1982) is still a frequently cited paper in its field and in general one can say that he made a lasting impact on the research. As an anecdote related to Kouri, one cannot pass by the extraordinary period in the early 1990s when he became deeply involved in the Finnish financial markets. Kouri wrote an interesting book titled "Owner of Finland" where he reviews the colorful events taking place in Finland. During that time he arguably owned, among other things, the majority of Nokia Corporation.

However, with the exception of Hanken, the development of finance in Finnish universities was slow. In fact, the early history of finance in other universities is interwoven with accounting as finance typically became an offspring from accounting. At first, the distinction was very narrow and many professors were appointed to financial accounting and finance at the same time. However, the separation was becoming wider. In education, financial courses found their way into the curriculum – first at the HSE – even though at first the courses were typically taught by the faculty of economics. For example, at the HSE Urho Lempinen (PhD from Princeton) and Reija Lilja (PhD from London School of Economics 1986) taught portfolio theory in the late 1980s. On the other hand, as far as the research activity goes, it can be said to be even more modest than the educational efforts in the early 1980s.¹³

For most part of the 1980s, the doctoral studies were more or less organized in an ad hoc manner in all Finnish universities – at least when compared to the graduate schools today. However, a major step forward was the establishment of two doctoral programs at the end of 1980s. Namely, SYP (Suomen Yhdyspankki, Union Bank of Finland) established sponsored a doctoral program (lasted 1986–1992) and a few years later KOP (Kansallisosakepankki) did the same (1990–1992).¹⁴ The idea of creating a financial doctoral program at SYP with foreign guest lecturers can be attributed to professor Wahlroos, who was working as a director at SYP at that time.¹⁵ KOP's program was basically more or less a reproduction of the SYP program, arguably born due to the competition between the largest two banks of that time in Finland (both later merged into present day Nordea).¹⁶

Both programs were totally new in the doctoral education in Finland and a major step forward; they would have a lasting impact for the years to come. They were well organized, well funded, and instead of sending individual students

¹³ One reason for the lack of international publications can be attributed to the somewhat negative attitude towards international publications championed by some professors. The first ones to publish in international journals in accounting were Timo Salmi and Eero Artto, both independent of each other in 1980. Following their example, researchers slowly started to aim for international publications. One also has to remember that 1980s were also a time of many clashes among professors in terms of correct research methodology and proper research questions in Finland.

¹⁴ Markku Kallio (professor of management science at HSE) acted as the academic director of the SYP program. Professors Seppo Honkapohja from University of Helsinki, Tom Berglund from Hanken, and Paavo Yli-Olli from University of Vaasa formed jointly the academic board of the KOP program. Yli-Olli acted as the first chairman of the board.

¹⁵ Wahlroos has continued his career in the banking sector while retaining close connections to the academic world. He is currently the CEO and one of the biggest owners of Sampo, which recently sold its banking operations to Danske Bank in the largest transaction in Finland (and Nordic countries) of its kind (valued €4.050bn, paid in cash).

¹⁶ In fact, it was close that the KOP program would not have been started at all as Finland was hit by the banking sector crisis in the early 1990s. However, the funding for the program had already been sent to the foundation that was responsible for the program and thus the program could be organized. There were even plans for a third program financed by Postipankki Oy. However, the program was never materialized.

abroad, the funding allowed many renowned scholars to be invited to Finland.¹⁷ The programs contributed in a major way to the doctoral studies of the participants.¹⁸ They were able to speed up their doctoral studies and receive comments from renowned professors all around the world. Another benefit of the programs was that they laid the foundation for further co-operation between the schools in financial research. For example, the co-operation allowed students to take doctoral courses from other schools. In Helsinki, HSE doctoral students started to take part in Hanken's finance seminar which had been organized over there since 1988.

The programs also contributed to the establishment of the Finnish Doctoral Programme in Economics (FDPE) jointly by the Finnish departments of economics in 1990. FDPE organized a number of courses in finance throughout the years, which were also available for students majoring in finance. More importantly, within the FDPE, a special workshop and research group, Capital Markets and Financial Economics (CMFE), was established. CMFE was centered around researchers in economics studying financial issues. It organized workshops that offered a place for financial researchers to present their papers and offered much needed supervision for PhD students.

During the 1980s, there were only a few researchers outside Helsinki region who studied financial issues. The most notable exception was the University of Vaasa in the western part of Finland. Paavo Yli-Olli was named the first associate professor of accounting and business finance in 1981 (full professorship 1990). Together with Osmo Kolehmainen (lecturer in mathematics) they also published an international article in *European Journal of Operational Research* (1983). From the beginning Yli-Olli worked actively to put finance in the University of Vaasa's curriculum and towards extending academic research and international connections at the department (then called the Department of Accounting, Business Finance, and Methodological Sciences) and with considerable success. The number of students, amount of research, and international connections increased. Personally, he worked eg as the director of the European Institute for Advanced Studies during 1987–1988. He also visited University of Louisiana and was named as the first non-American associate editor for the *International Review of Financial Analysis* in 1990.

¹⁷ For example, professors Ray Ball, Nai-fu Chen, Robert Jarrow, Robert H. Litzenberger, Stephen A. Ross, Campbell Harvey, and Khrisna Palepu gave lectures in the programs, just to name a few. As a matter of fact, Litzenberger lectures were based on his brand new book (Huang and Litzenberger, 1988) which is still used by the graduate school. The visitors had sometimes various reasons for their visits. Some invited speakers said flat out that you cannot afford my normal rates, but they still wanted to come as they wanted to visit Finland.

¹⁸ Eg, Anders Löflund, Matti Keloharju, Krister Rindell, Teppo Martikainen, and Kenneth Högholm, just to name a few participants in the SYP program, and Vesa Puttonen in the KOP program, were all later named as professors.

Hanken had also established a campus to Vaasa in 1980. Johan Knif from Åbo Akademi got a position over there, first in statistics, but later in finance. His dissertation (1990) used financial data, although the PhD degree earned was in statistics. Knif started to work towards extending the financial research and education also in Vaasa campus. He was appointed as associate professor in finance 1995 (full professor 1999) and has ever since done an extensive career in financial research.

4 Pre-graduate school era – 1990–1994

However, it is fair to say that most of the systematic research activity at that time took place in Hanken. The development of financial research and education at the Helsinki School of Economics and Business Administration was surprisingly slow considering its recent success. This can be at least partly attributed to internal dispute over the future strategy of the whole school. Some professors favored US-style business school strategy whereas others supported more universal Humboldt-type ‘everything-goes’ style of university which was prevailing in most of the Finnish universities. Slowly but surely the US-style took hold at the HSE and finance as a separate subject was given more resources.

The first professor of finance (as we understand finance nowadays) was appointed to the Department of Accounting in 1990 with the help of funding from the Finnish Bankers’ Association. The position was granted to Eero Kasanen (tenure awarded later in 1996) who had earned PhD from Harvard 1986.¹⁹ Following the nomination of the new professor, the name of the department was changed to Department of Accounting and Finance. A new program in finance was established for the students and the first group of students started their studies in fall 1991.²⁰

Kasanen was the first member of the finance faculty until Matti Keloharju started as an assistant at the department in January 1992. Vesa Puttonen joined the faculty in 1993. Keloharju defended his dissertation in December 1992 and was named three years later as associate professor of finance 1996 (full professorship 2001). Professor Keloharju was the first Finnish researcher to get an article published in the *Journal of Financial Economics* (Keloharju, 1993). The

¹⁹ Kasanen had already earned PhD from the Turku School of Economics and Business Administration four years earlier. He was named as the associate professor of economics in the University of Oulu (1987) and two years later as the associate professor of accounting and computer application in the HSE (1989).

²⁰ Initially, there was some disagreement over whether financial research and teaching should take place in the accounting or in the economics department as they both can claim close ties with finance. Ultimately, even though most of finance was placed together with the accounting, part of the financial research activity at the HSE has also taken place in the department of economics and also within the faculty of quantitative methods of economics and management science.

refereeing process is typically not a walk in a park, but even less so in this case. As an anecdote, Keloharju remembers that the editor was favorably to the publishing but one of the referees less so. In fact, the referee required additional tests which ultimately lead to a situation where he had to wait another two years for the data to gather in before he could do the required tests and resubmit the paper.

At Hanken, the research activities continued to grow. Liljebloom moved to the Stockholm School of Economics in 1990–1992 where she was given a position as post doc researcher. At same time in 1990, the professorship in finance was opened for applicants.²¹ Both Tom Berglund and Marianne Stenius (from the University of Helsinki) applied but after Berglund's decision to withdraw his application, Stenius was appointed (later she was appointed as the rector of Hanken). Berglund was later appointed as professor of economics at the Department of Economics in 1992. While still in Stockholm Liljebloom was named as associate professor of finance at Hanken in 1991 (full professorship 1998).

The year 1994 also proved to be very success in terms of doctors at Hanken Helsinki campus. Namely, four dissertations, by Krister Rindell, Kaj Hedvall, Kim Nummelin, and Anders Löflund, were approved the same year. The timing was not an accident – Hanken had a highly respected academic promotion for doctorates (among others) who had graduated during the previous five years, and typically doctorates were eager to participate. Anders Löflund was named professor of finance in 1997, Krister Rindell, Kaj Hedvall, and Kim Nummelin continued their careers in the private sector.

In University of Vaasa the research activities in finance increased and slowly brought them international attention.²² As always, at first the bigger role of finance at the University raised some concerns. For example, it was argued that the finance sector would not offer enough workplaces for the students. However, slowly but steadily finance gained momentum at the University and become one of the key areas. The department was renamed as the Department of Accounting and Business Finance in 1992. The development led to several new doctorates. Teppo Martikainen earned his PhD in 1990. He was later in 1992 named as

²¹ One has to remember that in Finland it is common that many professorships are announced open for competition among all qualifying applicants. In many cases the competition between the applicants has been fierce especially in the 1970s and 1980s as the positions were tenured and very scarce. In the 1990s universities started to appoint increasing amount of professors for fixed term (typically for five years) without open competition but subject to external review of the qualifications.

²² In fact, Yli-Olli remembers that during 1989–1993, he also worked on a project to teach banking and financial theory in the Soviet Union and other former Soviet States. The project was funded by the Finnish Ministry of Trade and Industry. One of the most memorable situations happened in 1991 when Yli-Olli was driving to Finland from St. Petersburg in his car. He was stopped by a tank in a middle of the road. It was steered by the communist supporters of the Soviet coup d'état attempt. Fortunately, the coup lasted only three days, and he managed to return to Finland safely a few days later.

associate professor. Vesa Puttonen and Markku Malkamäki defended their dissertations in 1993. Another person in Vaasa, who would have an impact especially on financial econometrics, was Seppo Pynnönen (PhD in statistics in 1988). He joined the University in 1992, and was appointed as associate professor of statistics in 1995 (full professor 1998).

At the same time, faculty at Hanken's Vaasa campus also intensified their teaching and research efforts in finance. For example Johan Knif published several articles in international journals. Kenneth Högholm defended his dissertation in 1994. Both units in Vaasa also started to collaborate more. For example, Seppo Pynnönen and Johan Knif found it easy to study common topics together in part by their common background in statistics. As a result of the research efforts, collaboration, friendly competition and increased number of international publications, especially by Teppo Martikainen, Vaasa region gained the status as the third center of financial research in Finland.

The research activities in other universities were relatively modest as universities aimed more and more to narrow their focus around their areas of expertise. Few exceptions of this era are Ralf Östermark from Åbo Akademi and Seppo Ikäheimo from Turku School of Economics. Östermark had already published some papers in the 1980s, but he earned his PhD in 1990. He has pursued a career in Åbo Akademi. Ikäheimo defended his dissertation in 1996 at TSE, but later he moved to the HSE. They both have later made their major research contributions in other research areas.

5 The era of the graduate school and internalization 1994-present

The HSE had joined the European Institute for Advanced Studies in Management (EIASM) network already in 1973 and other schools a bit later, but it was in the 1990s that the students started to utilize the course offering organized by the EIASM. Typically the courses took place in Brussels and the teachers were well-known scholars in their field. These courses become quite popular and many future colleagues met for the first time in the EIASM courses and seminars. However, individual courses taught abroad were not the best solution for doctoral education and alternative solutions had to be sought. As the collaboration with the bank funded doctoral programs had proven to be successful, the decision to take the collaboration to higher level was easy to take.

The establishment of the Graduate School of Finance and Financial Accounting (GSFFA) in 1994 can be said to mark a second watershed in the history of financial education and research in Finland contributing to major growth in the number of doctors and publications. The idea of graduate schools

was due to the Ministry of Education who invited universities to apply for funding for graduate schools in May 1994. Graduate schools allowed participating schools to increase their co-operation and to invite the best foreign professor to teach – something that would have been too costly for individual schools.

It is a bit difficult to figure out who was the first one to come up with the idea that a graduate school is also needed in finance. It is clear, however, that the persons who signed the application from finance were professors Eva Liljebloom from Hanken, Teppo Martikainen from University of Vaasa, and Eero Kasanen from HSE. At first the graduate school was planned to be just a co-operation between Hanken and Helsinki School of Economics and only in finance. As it happens, Timo Salmi and Teppo Martikainen were visiting the HSE at that time and they heard about the plans and asked if Vaasa could join the application. So, the decision was made to set up the graduate school as a co-operation between the three schools.²³

In the initial planning meeting between the professors of finance, a further decision was made to augment the original application with accounting so that the school would reach enough critical mass. At this point the name of the school was decided. Professors of finance also made a decision to continue the collaboration even if the funding was not given. Liljebloom was selected to make the actual application following the guidelines she had drafted during the summer of 1994. She was also elected as the chairman of the consortium.

Around the same time, in fall 1994, Hanken and HSE also started a joint finance research seminar (which is still called the Joint Finance Research Seminar, JFRS – hence the somewhat peculiar name) for their faculty members and doctoral students. This seminar became a good place for researchers to present their work to a wider audience, although at first the presenters typically got criticism only from the faculty of the other school as the schools' views often collided. Currently, the JFRS is the best known financial research seminar in Finland and frequently visited by many well-known foreign researchers.

The curriculum of the GSFFA was set up from the very beginning similar to the US graduate schools with the difference that it was a joint program of the three schools. The graduate school changed completely the doctoral studies and how the dissertations were written. Students were now expected to finish their studies in four years and aim directly for the doctoral dissertation, both of which were aims unheard before. Namely, it was common even in the 1990s to consider the doctoral dissertation as the culmination of one's research activities. In addition, it was very common for the students to write a licentiate thesis before (if ever) defending their dissertation. Thus, many defendants were rather old when

²³ Again one has to remember that the idea of working together was not much short of revolutionary even though now commonplace. For example, back then the street between Hanken and HSE was known as the widest one in Finland.

they earned their degree. The graduate school changed the situation and the age of new PhDs from the GSF was eg in 2006 on average 29 years.

The open positions at the GSFFA were announced for students in fall 1994 and the first group of fourteen students started their studies in the graduate school.²⁴ The first GSFFA workshop for the students' papers was held in May 1995. Professor G. Geoffrey Booth gave the plenary lecture on PhD education in the US followed by Director Wahlroos' lecture on the PhD education from the investment community's point of view. This ongoing workshop has proved to be major milestone for generations of students. First, it has been always organized outside the safety of classrooms and the audience includes faculty members from other universities who do not know you or your research. Second, the presentation had to be given in English, which was not the first language to most of the students.

Research wise, one of the culmination points in this era can be said to be the tenth anniversary symposium for Suomen arvopaperimarkkinoiden edistämissäätiö / Stiftelsen för främjande av värdepappersmarknaden i Finland²⁵ held in June 1997 at the UNITAS Congress Center, Helsinki. The purpose of the symposium organized and chaired by professor Berglund was to survey the research done in the Finnish financial markets so far. One researcher at each participating university was asked to prepare a survey paper on their research. The papers presented in the workshop were later published in a special issue of the Finnish Journal of Business Economics (1997).

Professor Edwin Elton gave a lecture in the symposium on promising areas for empirical research in Finance. Professor Eero Kasanen, who conjectured (with a bit of humor) whether the top-journals show some kind of *tundra-bias* in their publishing decisions, asked Elton, then newly appointed editor of the Journal of Finance, '*What are the chances that Finnish researchers would get their articles published in the Journal (of Finance)?*'. Professor Elton's response was '*What do you want me to say? It is zero*'. And he continued '*Unless you can study something you cannot study on US data*'. This comment proved to be very important and far-sighted as the articles to be published in the top journals by Finnish researchers indeed used data not available in the USA, at least not at the time of the publication.

There was also another route for Finnish researchers to publish in top journals. Namely, increasing number of Finnish student went to the abroad to get

²⁴ Eight students out of the fourteen graduated as doctors. They were Benny Jern, Juha-Pekka Kallunki, Janne Lehtinen, Minna Martikainen, Mervi Niskanen, Timo Rothovius, Hannu Schadewitz, and Janne Viitanen. In addition, Antti Hakkarainen, Timo Ihamuotila, and Miikka Taurén graduated as licentiates of science. Taurén doctorated later from the Indiana University. Jussi Keppo did not graduate from this graduate school but he later got a PhD from the Helsinki University of Technology (and has continued his career in the USA). Many of the graduates have stayed in the academia but several have successfully pursued a professional career.

²⁵ Author's translation: Foundation for promoting Finnish securities market.

their PhD after completing their master's degree in Finland or Sweden.²⁶ These persons include, among others, Yrjö Koskinen (MSc from U of Helsinki, PhD from Insead 1991), Antti Ilmanen (MSc from U of Helsinki, PhD from U of Chicago 1994), Tuomo Vuolteenaho (MSc from the HSE, PhD from U of Chicago 2000), and Timo Korkeamäki (MSc from Umeå Universitet, PhD from U of South Carolina 2001), all of which have published articles in the *Journal of Finance* or *Journal of Financial Economics* (cf, Ilmanen, 1998; Bris and Koskinen, 2002; Korkeamäki and Moore, 2004; Vuolteenaho, 2002, as the first of many).²⁷

The GSFFA also contributed to the international contacts as many professors were asked to teach a course in Finland. Just to name a few, for example professors Espen Eckbo, George Frankfurter, Campbell Harvey, Piet Sercu, and Tuomo Vuolteenaho were among the first ones to visit Finland and give courses in the GSFFA. At the same time many Finnish professors visited US universities. Again just to name a few, Jukka Perttunen and Teppo Martikainen visited both University of Louisiana (Perttunen 1994, Martikainen 1995 and 1996–1997), Krister Rindell and Matti Keloharju both visited UCLA (1994 and 1997–1999, respectively), and Tom Berglund the Hong Kong University of Science and Technology (Fall 1996). In addition, even though not necessarily required, it was also strongly supported that the graduate school students spent a year abroad (eg Markku Kaustia went to UCLA and Mika Vaihekoski to Northwestern University).

The research activities at the HSE started to grow considerably in the 1990s. On average, one dissertation was approved each year (see Appendix). Teppo Martikainen was recruited from the University of Vaasa and named as the professor of finance in 1998. Around the same time professor Puttonen left the HSE for a career in the private sector. After a successful career, he later returned to the HSE as the professor of finance in 2001.

Professor Martikainen deserves a special mention in the history of Finnish financial research. He can be said to be one of the most productive researchers not only in Finland, but also internationally. Before his untimely death in 2000, he published more than one hundred refereed, international journal articles, several

²⁶ A number of students left Finland after high school and did their master's degree at Swedish universities.

²⁷ Bengt Holmström is also born in Finland and he has published two articles in the *Journal of Finance* (Baron and Holmström, 1980; Holmström and Tirole, 2001), but he got both his MSc and PhD degrees from Stanford. Patrik Sandås got his BSc from Hanken and PhD later from Carnegie Mellon University in 1998. He has published two articles in the *Review of Financial Studies* (Sandås, 2001; Foucault, Röell, and Sandås, 2003) and one in the *Journal of Finance* (Hollifield, Miller, and Sandås, 2006). Similarly, Risto Karjalainen (MSc from Helsinki University of Technology) has published an article in the *Journal of Financial Economics* (Allen and Karjalainen, 1999). Esa Jokivuolle (MSc from University of Helsinki, PhD from University of Illinois at Urbana-Champaign) was the first Finn to publish an article in the *Journal of Financial Quantitative Analysis* (Jokivuolle, 1995).

books and reports. He played a major role in the expansion and internationalization of the Finnish financial research.

At Hanken, even though a number of good publications were made, after the several dissertations published in 1994, the next five years did not witness any new PhDs – it was clearly a period of building for a new generation.²⁸ In 1999, the first students from the GSFFA finally started to graduate.²⁹ The first two Hanken students to graduate from the GSFFA were Aarni Pursiainen and Mika Vaihekoski, who actually defended their theses the very same day. Since then Hanken has had a constant stream of new dissertations most years. At the same time the number of professor positions has increased.

At the University of Vaasa, the number of new PhDs started to grow once their students at the GSFFA started to graduate in latter part of the 1990s. The department was renamed as the Department of Accounting and Finance in 2001. The size of the finance faculty has also increased even though many graduating doctors have moved to other universities over the years. Petri Sahlström (PhD 2000) and Jussi Nikkinen (PhD 2001) were appointed as professors of finance in 2003. Sahlström later moved to the University of Oulu. At the Hanken Vaasa campus, the collaboration with the University continued, but it was also extended to the local companies, especially to Estlander & Rönnlund, which later recruited many PhDs who graduated from Hanken. In addition, the new Master of Science program in Computational Finance was started in 1999.

In University of Oulu, financial issues were originally taught within courses offered in economics and financial accounting. However, after Jukka Perttunen (originally a PhD from Vaasa in operational research 1993) was named as the first professor of finance in 1998, the Faculty of Economics started to consider offering finance as a major to the students. Finance became available to students in 2002, first within economics. Beginning fall 2004, finance became available separately as a major offered by the Department of Accounting and Finance and it quickly became very popular among the students.

The research efforts and the number of doctors in finance have also increased in Oulu. The first dissertation that deals with financial issues is by Larkomaa (1999). It has been followed by several other dissertations with more or less financial focus (see Appendix). The faculty has also grown although no new professors in finance have been named. However, Juha-Pekka Kallunki and Petri Sahlström, who were named as professors of financial accounting (in 1999 and 2005, respectively), have extensively studied financial issues as well.

The internationalization of the Finnish research was also reflected in the organization of international conferences. Professor Teppo Martikainen was the

²⁸ With the exception of Monica Ahlstedt from Bank of Finland who earned her PhD in 1998.

²⁹ Again the timing was not an accident as Hanken's academic promotion ceremony (commencement) was to take place in 1999. In the ceremony, the first (and so far the only) Finnish honorary doctor in finance was awarded to Professor Campbell R. Harvey.

first one to organize a full international financial conference in Finland. Namely, the 5th Annual Conference of the Multinational Finance Society, MFS, in 1998 was held in Finland. The European Finance Association, EFA, organized its 26th Annual Meeting in Helsinki the next year in August 1999 (chaired by Tom Berglund and coordinated by Professor Minna Martikainen). A few years later, the European Financial Management Association, EFMA, held its 12th Annual Meeting in Helsinki in 2003 (organized by Professor Eva Liljeblom).

The beginning of the 21st century can be named as the final breakthrough for Finnish researchers. More and more of their articles were published in international journals, and increasingly in the top journals. Matti Keloharju published together with Mark Grinblatt several articles in the *Journal of Financial Economics* (2000, 2004) and in the *Journal of Finance* (2001a,b).³⁰ All of these studies followed the advice from Edwin Elton – they were based on a database that was not available in the USA at that time, namely the Registry of Share Ownership in (Finnish) Companies.

The first time Keloharju heard about this database was in late spring 1996. It was Timo Löyttyniemi who mentioned that the Finnish Central Securities Depository had a database of share ownership in Finland. Keloharju remembers how excited he got when he heard that the database could be available for research. He remembers realizing the full research potential of that database when he was on a bus ride from work to home one day. When he finally got home, he had formulated in his head a number research questions that could be studied using the data.

Later in 2005, the *Journal of Finance* published once again an article by Matti Keloharju, written this time together with Kjell Nyborg and Kristian Rydqvist.³¹ Again the article is based on a unique database of the Finnish treasure auctions. The idea of the article, though, was much older. In fact, Keloharju remembers that the first time he heard about it was in 1999 from Kjell Nyborg. The data they used in the study was later derived with the help of Markku Malkamäki from the Finnish State Treasury.

The last one of the top three journals, the *Review of Financial Studies*, was finally conquered in 2002 when the paper by Professor Teppo Martikainen (together with Booth, Lin, and Tse) was published posthumously. And judged by the lists of forthcoming articles in the journals at the time of writing this, more articles from Finnish researchers in the top journals are on the way.

³⁰ The 2001a article ultimately won the title of distinguished paper Breeden prize. As an anecdote, the paper was first accepted as a shorter paper and as a result, the authors were required to shorten it considerably. However, the editor of the journal changed and the new editor upgraded the paper to a normal one. However, the length of the article could not be increased and as Keloharju itself puts it: ‘in the end, a lot of interesting results had to be left out of the paper’.

³¹ This article was also nominated for the Breeden prize, but this time it was not awarded.

The increased number of qualified professors and increased competition among schools has also been reflected on the job market. Universities started to recruit people from other universities. Some professors were also recruited abroad, eg, Matti Suominen to the HSE in 2003 from INSEAD. This demand for professors in finance has continued partly by the establishment of new positions in business colleges (polytechnics) and schools even though the job market in general is much more rigid in Finland (and in Europe) than in the USA. This is partly due to the fact that Finnish universities have a tradition of offering positions for their own graduates unlike the US universities.

As the number of graduating finance PhDs grew in Finland, some people have raised concerns for their placement.³² Luckily, finance has been one of the disciplines which have seen the demand for the PhDs to explode not only in Finland, but all around the world. This has meant that doctoral graduates do not necessarily aim for the academic career but for the professional one. And in many ways, their employees have been able to benefit from their knowledge. In fact, finding and recruiting students for the PhD programs has become a permanent problem for the universities. As a result, Finnish universities have started to recruit more and more students abroad.

Fall 2004 marked big changes for the GSFFA. With the help of major financial support from the Suomen Arvopaperimarkkinoiden Edistämissäätiö (SAE; Foundation for promoting Finnish securities market), a decision to name the first full-time director for the graduate school was made. Mikko Leppämäki (PhD from London School of Economics and former director of the FDPE) was elected for the position in fall 2004. The financial support from the SAE also made possible to extend the school's annual course offering from two to five. In addition, the GSF started to organize two annual research workshops instead of one.

At the same time, a decision was made to separate the accounting part of the GSFFA as they decided to establish their own graduate school (Graduate School of Accounting, GSA). As a result, the GSFFA was renamed as the Graduate School of Finance, GSF. Concurrently, University of Oulu and Lappeenranta University of Technology (LUT) were accepted as new members in the GSF. LUT's School of Business is a newcomer in financial research and education. LUT started to offer business studies in their curriculum fairly recently, since 1991. A few years later the department of business administration was established. As the number of students grew, the department was reorganized as a faculty and later in 2005 as a separate business school. Finance has been available as a major for students since 2001. Mika Vaihekoski was the first appointed

³² During 2000 and 2006, close to 40 new PhDs in finance graduated, ie, on average, almost six new PhDs every year (more if financial dissertations from other, closely-related disciplines are included).

professor of finance at the LUT. He joined the faculty in September 2004 and Minna Martikainen as professor of finance a year later.

The GSF has also made important steps in increasing co-operation between different parties. For example, from beginning 2005, Finnish Doctoral Program in Economics and GSF decided to increase their co-operation in education and organization of workshops. Beginning 2006, the GSF took the initiative to create the Nordic Finance Network (NFN). NFN is a co-operation program of two national Doctoral Programs in Finance and four Finance Departments in the Nordic countries. NFN complements the national universities' own doctoral programs in finance with the aim of increasing the quality and diversity of research and research training via cooperation. NFN also promotes mobility and cooperation between Nordic doctoral students in finance and faculty members. In total the Network consists of 14 Universities in Denmark, Finland, Norway, and Sweden.³³

Besides the five universities reviewed above, financial issues have also been taught and studied in other universities. In some universities a professor has also been appointed with a specialization area that is at least partly in finance. In Turku School of Economics, Hannu Schadewitz was named as professor of accounting and finance in 2001. Markku Lanne was named professor of finance and economics in 2003 at the University of Jyväskylä (later in 2007 he was named as professor of macroeconomics at the University of Helsinki). Markku Maula was named as professor of venture capital in 2004 at the Helsinki University of Technology.

A number of dissertations with financial focus have also been approved from disciplines other than finance from other universities (see Appendix). Examples include eg Mangelaja (2001) from the University of Jyväskylä, and Jauri (1995), Maula (2001), Töyli (2002), and Tuukka (2003) from the Helsinki University of Technology. Several dissertations with at least partial focus on financial issues have also been approved in the University of Helsinki. These include eg Sierimo (2002), and Peura (2003).

Finally, many people besides those mentioned earlier have also contributed to the development of financial research in Finland. Again just to mention a few, eg, professor Antti Kanto from University of Tampere as well as professors Ilkka Virtanen and Martti Luoma from University of Vaasa have participated in many financial research projects and co-authored many papers during the last couple of decades as an econometricians. Professors Pertti Kettunen from University of Jyväskylä and Paavo Okko from Turku School of Economics have also had an impact on the early development of the academic finance profession in Finland. In addition, there are several researchers at Bank of Finland and the Helsinki Center

³³ A somewhat similar co-operation takes place in Switzerland within the Swiss Finance Institute initiative.

for Economic Research (HECER) as well as within the Finnish Doctoral Program in Economics (FDPE) who study financial issues among other things.

Besides the universities, there are obviously a number of other organizations and companies that have contributed to the development in Finland. First, Bank of Finland has contributed to the development by inviting many well-known researchers to Finland to present their work. Furthermore, it has offered opportunities for researchers to conduct their research and write their doctoral dissertations while working at the Bank. Second, a number of not-for-profit organizations, especially many foundations have participated in financing research projects and doctoral studies of many Finnish students. These include eg the Yrjö Jahnsson Foundation, Finnish Foundation for Share Promotion, OP Bank Foundation and the Foundation for Economic Education. In addition, the Fulbright program has given many students the opportunity to visit US universities. Finally, a number of companies have also invited US professors to give lectures in Finland.

6 Conclusions

This paper has surveyed the first thirty years of financial research and education in Finland until the end of year 2006. The last couple of decades have witnessed huge changes in academic research and education worldwide, and finance has been on the forefront of this change. The number of researchers and research papers in finance has exploded. It is also much easier for researchers to conduct research, stay connected and informed of each others' work. And at same time the demand for financial education has also multiplied due to huge growth in the financial industry.

The same has happened in Finland. The beginning of the financial research and education can be said to be traced to the end of 1970s, but the real growth started several years later with the decision to co-operate in the research and doctoral education. This process was further extended with the establishment of the US-styled graduate school to finance in 1994. At present day, the number of students graduating from finance is higher than ever. For example, the number of students with a master's degree in finance was more than 200 in 2006.³⁴ Similarly, the number of PhDs in finance has grown.

³⁴ The total number of students choosing finance as their major in the Finnish universities has during the last years been close to 230 when it was approximately a half ten years earlier. Hanken (Helsinki and Vaasa campus) accepts yearly approximately 65–70 students, HSE 60–65 students, University of Vaasa 35–40 students, University of Oulu 30 students, and LUT 25-30 students. This is a very conservative estimate as many students other universities majoring in economics or accounting and other subjects have very similar orientations.

In addition, the demand for financial skills in the private sector has boomed. Increasing number of finance doctors nowadays continue their career in the private sector. Finance professors are also becoming common in companies' boards. Researchwise the number and quality of the articles and the recognition of the Finnish researchers have grown. As always, many events and people were left out and many stories untold. Hopefully, there will be other studies to complement this one – also from other countries.³⁵

It is clear that a lot of work, talented individuals, and financial support have been needed to get where we stand right now in Finland. If one were to draw some kind of synthesis from the development, it is that the decision to co-operate is crucial for a small country like Finland with relatively small finance departments.³⁶ Finally, one should always remember that the development is not always straightforward: the researchers have experienced many successes as well as disappointments along the way, but I am sure we can all agree that what a ride it has been!

³⁵ Ylä-Liedenpohja (2006) provides a short review of the history of economics and business education in Finland.

³⁶ One can eg compare the total number of professors in finance in Finland at the end of 2006 (approximately 20) to the number of associate and full professors Harvard alone lists on their website (<http://www.hbs.edu/units/finance/faculty.html>) as members of their finance unit in December 2007: 26.

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Appendix

List of accepted financial doctoral dissertations in Finland until the end of 2006

Financial doctoral dissertations accepted in Finnish Universities and Business Schools are listed below. The list is hand-collected by the author and the choice of including a certain dissertation on the list is based on author's subjective assessment and in many cases on the discussion with the people from the university in question. Dissertations approved in other disciplines other than finance are marked at the end of the reference. University of Vaasa does not make the distinction in official records between finance and accounting.

HANKEN, Swedish School of Economics and Business Administration

(in order of publication; includes dissertations both from Helsinki and Vaasa campus)

Ekholm, Bo-Göran (1978) Determinants of transaction behaviour on the stock market [translated from Swedish]. Publications of the Swedish School of Economics and Business Administration, No 27. *Dissertation, accounting.*

Berglund, Tom (1986) Anomalies in stock returns on a thin security market. Publications of the Swedish School of Economics and Business Administration, No 37.

Liljebloom, Eva (1989) Stock price reactions to financial decisions some results on data for the Stockholm stock exchange. Publications of the Swedish School of Economics and Business Administration, No 43.

Nummelin, Kim (1994) Expected asset returns and financial risks some empirical evidence on Swedish data. Publications of the Swedish School of Economics and Business Administration, No 51.

Högholm, Kenneth (1994) Essays in the market for corporate control corporate acquisitions and stock market introductions. Publications of the Swedish School of Economics and Business Administration, No 54.

Hedvall, Kaj (1994) Essays on the market microstructure of the Helsinki stock exchange. Publications of the Swedish School of Economics and Business Administration, No 56.

Löflund, Anders (1994) Fundamental sources of risk and expected returns on Swedish assets. Publications of the Swedish School of Economics and Business Administration, No 59.

Rindell, Krister (1994) Essays on contingent claims pricing. Publications of the Swedish School of Economics and Business Administration, No 60. *Dissertation in Economics and Mathematics*.

Ahlstedt, Monica (1998) Analysis of Financial Risks in a GARCH Framework. Bank of Finland Studies E:11.

Pursiainen, Aarni (1999) <https://linda.linneanet.fi/cgi-bin/Pwebrecon.cgi?v1=143&ti=126,143&SAB1=Ekonomi%20och%20sanh%C3%A4lle&BOOL1=all%20of%20these&FLD1=Sarja%2FSerie%2FSeries%20%28SERI%29&GRP1=AND%20with%20next%20set&CNT=25&REC=0&RD=0&RC=0&PID=18830&SEQ=20061012091538&SID=4> Price and volume effects of foreign investors empirical evidence from the Helsinki stock exchange. Publications of the Swedish School of Economics and Business Administration, No 79.

Vaihekoski, Mika (1999) Essays on international asset pricing models and Finnish stock returns. Publications of the Swedish School of Economics and Business Administration, No 80.

Jern, Benny (1999) Essays on the microstructure of the German market for stock options. Publications of the Swedish School of Economics and Business Administration, No 81.

Hansson, Mats (1999) Market microstructure effects of share distributions. Publications of the Swedish School of Economics and Business Administration, No 82.

Söderman, Ronnie (2001) Essays on derivatives risk management. Examining the pricing and monitoring processes of financial derivatives. Publications of the Swedish School of Economics and Business Administration, No 91.

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Sandvall, Thomas (2001) Essays on mutual fund performance evaluation. Publications of the Swedish School of Economics and Business Administration, No 97.

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