

# Who Holds Shares?

-Studies of Swedish Shareholders

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# List of Papers

This thesis is based on the following papers, which are referred to in the text by their Roman numerals.

- I Abrahamson, M. (2015) Rookies to the Stock Market. Previous version presented at 54<sup>th</sup> South Western Finance Association Annual Meeting, Houston and 51<sup>st</sup> Eastern Finance Association Annual Meeting, New Orleans.
- II De Ridder, A., Abrahamson, M. (2014) Strong CEOs and Ownership Structure. Previous version presented at SNEE in Mölle 2011.
- III Abrahamson, M. (2016) Rookies Attracting Rookies: IPOs and New Shareholders. Previous version presented at 52<sup>nd</sup> Eastern Finance Annual Meeting and 10<sup>th</sup> Annual London Business Research Conference. Awarded Best Paper.
- IV Abrahamson, M., De Ridder, A. (2015) Allocation of Share to Foreign and Domestic Investors: Evidence from Swedish IPOs. *Research in International Business and Finance*, 34:52-65

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# Introduction

This thesis aims to increase the knowledge about individual stock market investors, i.e. shareholders, and their stock market holdings. Knowledge about shareholders is limited and although firms have used shareholders as sources of equity for hundreds of years, there remain questions to be answered. First, the question of who holds shares, where there are only a few previous studies aimed at portraying shareholders, and these studies are mainly based on small samples. Consequently, the portrait of the shareholder showing the individual characteristics of the shareholder is rather unclear. Second, there are, to my knowledge, no previous studies of new shareholders (henceforth *rookies*). Finally, although the portfolio theory has been used and developed for decades, shareholders' portfolios have rarely been empirically studied. The previous studies of individual shareholders that do exist are generally small scaled with few respondents or accounts from single brokerage houses. In this thesis, I contribute to the knowledge about shareholders and address these issues, in four empirical studies in which I study the individual shareholder characteristics and portfolio holdings of individual shareholders in Sweden.

Investing in the shares of a firm is, in several aspects, different from investing in other financial products. Although the individual can compare and consider investments in a firm with any other investment alternatives, holding a share affects the investor in one manner that stands out compared to other investment alternatives. Investing in a share instantly makes the investor a shareholder, which entitles the investor to privileges and responsibility e.g., cash flow from firm earnings and the right to vote at general meetings. These entitlements are unique and reserved for shareholders; therefore, stock holdings are often studied separately. One of the possible additional responsibilities of shareholders is to decide on the compensation to the board of directors. In addition to the study of shareholders and their portfolios, I also study the compensation of boards of directors and chief executive officers (henceforth CEOs).

In Sweden, it is common to invest in the stock market, with a relative large proportion of the total population holding shares, compared with other countries. In addition to holding shares directly the individual can invest in the stock market through institutions, e.g., through a pension fund or mutual fund. Investing through a fund will enable the investor to benefit from cash flows from firms in the fund, based on the development of the fund and its

holdings but without a direct connection between the firm and the individual investor. Thereby, one could argue that investors who have directly held shares i.e., who are shareholders, have a stronger connection to the underlying asset and have the opportunity to rebalance their portfolios at any given point in time. In contrast with the investor in a fund, in which the fund is responsible for rebalancing the assets of the fund, in this case the investor can change the fund but not the assets within the fund. However, in this thesis, the focus is on directly held shares, and the investor consequently is a shareholder. Shareholders are regarded as being responsible for the content of their investments at any given point in time, and they are considered to have the opportunity to manage their stock portfolio. In this thesis, I show that approximately one fifth of the population of Sweden holds one or more shares. Consequently, 20 percent out of the Swedish population are shareholders by choice. Thus, holding shares is more common in Sweden than in most other Western economies, e.g., the UK and the US. According to Grout et al. (2009), only 5 countries in their sample (of 54 developed countries) had higher percentages of shareholders than Sweden. However, in this thesis, I show that the number of Swedes owning shares is gradually declining.

In Sweden, in oppose to the US, data on shareholders at the individual level are available to researchers. This availability combined with the large proportion of shareholders within the population makes Sweden and Swedish shareholders significant sources of new knowledge about individual investors in the stock market. The unique availability of data about shareholders in Sweden enables new questions to be asked and new areas to be studied. Therefore, in this thesis, I contribute to the existing knowledge by asking new research questions, but there is also the possibility of shedding light on previously unanswered questions about shareholders. These new questions make these studies rather explorative in nature because of the limited knowledge about individual investors. The studies undertaken move from descriptive questions about who invests in the stock market, toward more detailed data on shareholders' characteristics. Moreover, I use aggregated data on stock ownership and ownership structure to explain the allocation of shares, as well as stock portfolio holdings by individuals.

In this thesis I introduce a new investor group, rookies, and new variables. I define a rookie investor as a first-time stock investor, and this term can be addressed or used by any researcher in subsequent research. The rookies are investors entering the stock market, in which I explore and analyze their first stock portfolios. To find the rookies from 2004, I exclude all shareholders ever registered between 1999, when ownership data is first available, and 2003. To find rookies from 2005, I exclude all shareholders ever registered between 1999 and 2004, and so forth. To my knowledge there is already at least one subsequent study using my definition of first time stock investors. The strength of the CEO is introduced, which can be useful for researchers, especially within the compensation literature but also in a broader corporate

governance area. In the context used in this thesis, investors can use the strength of the CEO when studying the fairness of the level of compensation paid to CEOs. Thus, this strength can be used as a proxy for the risk of insufficient monitoring of the CEO and also for the risk of overpaying the CEO. Surely, most investors prefer not to overpay the CEO, because doing so would constitute a wealth transfer from the firm or shareholders to the CEO. The strength of the CEO is defined as a measure of the compensation of the CEO relative to that of the board of directors, i.e., the compensation paid to the CEO divided by the compensation paid to board of directors. Furthermore, breadth of ownership is introduced and is used as a measurement of ownership concentration. Breadth of ownership consists of holdings with long positions in the stock divided by all holdings with long positions in any stock on the same stock exchange.

In the US, in contrast to Sweden, it is common to study households instead of individuals. This is mainly because the data on the individual level are not accessible. However, on the household level the US conducts national surveys which are used for research. Household accounts do not reveal decision makers, nor do they show who the owner of a certain asset connected to an account is. When studying individuals instead of households, the data are more detailed. Even though the shareholder might be affected in his or her investment decisions by another individual, e.g., another individual within the household, the account and the actions connected to that account are linked to the legal owner of the share.

“The study of household finance is challenging because household behavior is difficult to measure, and households face constraints not captured by textbook models.” Campbell 2006, p. 1553.

The main objective of this thesis is to increase knowledge about individual shareholders. Therefore, I study shareholders with regard to their individual characteristics and their stock portfolio holdings. In the above quotation, Campbell (2006) expresses the limited theory of the behavior of households in finance textbooks. Consequently, this is also the case at the more detailed individual investor level, which is studied in this thesis. This thesis extends and adds to the knowledge about the behavior of shareholders, especially with regard to classic theories on agency, portfolio, and prospect theories.

The remaining parts of the introduction proceed as follows. I present some of the most essential theories to my understanding of the topic and the studies in the thesis. Thereafter a presentation of research questions, aims, methods, data, and results from the four empirical studies is provided. Finally, a discussion and conclusions of the thesis are presented.

## Theoretical Framework

Studying the owners of firms, and more specifically shareholders, the theoretical framework can contain quite a diverse collection of theories. However, in a thesis, there must be decisions made about where to position the thesis, as well as the manner in which the researcher, in this case myself, chooses to study the empirical surroundings.

The scientific field of finance has several central paradigms, whereas my thesis is related mainly to portfolio theory and agency theory, in which the focus on firm ownership is conspicuous. However, neither of these theories can fully explain why individual investors behave as they do on stock market. Therefore, in the following sections of the introduction, prospect theory and also the growing field of behavioral finance are also addressed. The framework used in this thesis mainly originates from within the classic corporate finance literature. However, I accentuate a few alternatives and critical texts among each of the chosen corporate finance theories. Coleman (2014) expresses a skeptical view of finance theory when applying it on empirical evidence. This thesis should not to be seen as expressing a massive critique of the theories within my field of research. However, I do recognize the need for empirical studies and the further development of corporate finance theory. Therefore, I also believe that the studies presented in this thesis can contribute to and increase knowledge about shareholders, their stock market holdings and their investment behaviors on the stock market.

In the studies in this thesis, I link commonly used corporate finance theories to actual investment decisions, i.e., the behaviors of individual shareholders. Through the empirical studies presented in the papers, I explore the manners in which individuals behave, rather than rational ways of behaving according to some of the existing theoretical models. In this thesis, the focus is on shareholders; thus, the theoretical framework contains theories with the same focus.

### Portfolio Theory

Markowitz (1952a-b, 1956) are probably the first researcher (papers) that come to mind when we think about portfolio theory. With articles on portfolio choices, he set the scene for the way we think about investments- not as several single investment projects but as part of an investment portfolio. Even though Roy (1952) presented ideas about diversification at the same time as Markowitz, the latter has obtained most of the attention. Markowitz showed that investors, through diversification, can minimize their portfolio risk close to systematic risk, and maximize returns. This is the notion of differences between efficient portfolios and non-efficient portfolios. Where the efficient portfolio minimizes risk with the desired expected return or maximize return with desired level of risk. Comparing the normative model,

in which every investor ought to choose a portfolio that is efficient, to empirical data I find the same results as several previous studies; that investors are more irrational than the efficient model would stipulate. Not all investors appear to seek mean-variance efficiency. However, Markowitz's research on portfolio selection, as well as that of other researchers who followed him, and its importance for academic financial research have been truly substantial and set the ground for the manner in which investors think about their investments. Rubenstein (2002) goes even further in his praise of the work of Markowitz, making a comparison with the Roman emperor Augustus:

“Near the end of his reign in 14 AD, the Roman emperor Augustus could boast that he had found Rome a city of brick and left it a city of marble. Markowitz can boast that he found the field of finance awash in the imprecision of English and left it with the scientific precision and insight made possible only by mathematics.” Rubenstein, 2002, p.1044.

Markowitz noted that he was far from the first person to address risk diversification; nevertheless, he is considered to have built the foundations of portfolio theory.

Elton and Gruber (1997) address modern portfolio theory as mostly a concern for academics and portfolio managers of institutional investors. However, they identify the key issues for institutions when they serve individual investors i.e., their customers. According to Rubenstein (2002), institutional investors have used portfolio theory for decades, but currently even individual investors use it for their portfolio choices. In papers I and III, I study the portfolios of individual investors and present empirical evidence of the composition of the investor portfolios of new shareholders in Sweden.

Through empirical studies of individual investors' portfolios, I extend the knowledge about portfolio theory and contribute to it with a portrait of rookies. Furthermore, I extend the previous literature with empirical evidence from a truly large sample of shareholders, consisting of all of the shareholders in a country, rather than being based on shareholders of a chosen a brokerage firm.

## Agency Theory

In 1973, Steven Ross was the first within the economic disciplines to introduce the theory of agency. Although similar ideas had been expressed far earlier, and related disciplines also used the concept of agency theory and undertook alternative development of the theory, e.g., Mittnick (1975). Ross (1973) advocates that examples of agency are universal.

“...an agency relationship has risen between two (or more) parties when one, designated as the agent, acts for, on behalf of, or as representative for the oth-



er, designated the principal, in a particular domain of decision problems.”  
Ross, 1973, p.143.

He also shows the connection to the company and the agency relationship between shareholders and managers.

When Jensen and Meckling published *Theory of the Firm: Managerial Behavior, Agency Costs and Ownership Structure* in 1976, it was not the first paper with a comparable title. Nor were these authors first to use agency as to describe the relationship between the firm and its owners. However, the influence of their paper on researchers still remains substantial today. Especially, in the way we think of and describe the relationship between the owners and management of a firm. Jensen and Meckling (1976) combined previous theories of agency, property rights and finance to develop a theory of ownership of firms. Agency theory, further developed after Jensen and Meckling (1976), still influences today’s researchers and the manner in which we consider principals and agents. Despite critical voices that have been raised, e.g., Eisenhardt (1989) and Shapiro (2005), agency theory is used and is further developed.

In related academic fields the focus and attention have turned from shareholders to stakeholders developing other theories on the possible relationships that are important for firms to address. Recently, management researchers have contributed to behavioral agency theory. Pepper and Gore (2015), based on thoughts of Gomez-Meija and Weisman (1997), express their critique of agency theory, considering agency theory too simple in regard to what motivates an agent. Pepper and Gore suggest behavioral agency theory, which is more closely related to prospect theory than classic agency theory, based on Jensen and Meckling (1976). Although agency theory is almost 40 years older than the critique expressed by Pepper and Gore, it remains used and developed. However, the empirical link to prospect theory seems reasonable, and in this thesis, both agency theory and prospect theory are used. During the studies performed in this thesis, the link between the two theories was recognized and both were useful in my analyses. However, I mainly relate the studies to agency theory, especially when CEO compensation is studied.

Ang et al. (2002) link agency costs to ownership structure in their study of the levels of agency costs and ownership structure, especially CEO holdings, in small firms in the US. In paper II, a similar study as Ang et al. (2002) is performed, although with a focus on CEO strength. Linking shareholders to CEOs using the term *agents* for the latter has become common in academic studies in recent decades, because of the tension that arises when investors expect agents to work in the investors’ best interests.

From textbooks, we learn that agents assumedly shall act in the best interest of the shareholders at all times. However, this assumption can be questioned and empirically tested. Therefore, academics have addressed this is-

sue, whether agents actually act in the best interests of shareholders or not. Working with someone else's best interest in mind clearly has to be compensated, although the question is consequently which compensation is fair to all parties. In this thesis, questions regarding the actions of the agents and the compensation paid to CEOs for acting in the interest of shareholders are raised. The results from this thesis show that CEOs with relative strength compared to the board of the firm and firm management also receive greater monetary compensation than those with weaker positions.

I contribute to the extensive literature on agency theory, with regard to ownership structure. Specifically, I add to the knowledge about the relationships among CEOs, boards of directors, and shareholders. Especially, with regard to the compensation CEOs receive for acting as agents in firms.

## Prospect Theory

Kahneman and Tversky (1979) show how individuals make decisions under risk. They framed their theory in contrast to the expected utility theory, which was commonly used at the time. In expected utility "the prospect, where the overall utility of a prospect, is the expected utility of its outcomes." Furthermore, "a prospect is acceptable if the utility resulting from integrating the prospect with ones assets exceeds the utility of those assets alone". Kahneman and Tversky (1979, p 264).

Through several experiments with students, Kahneman and Tversky (1979) discovered how individuals overweight outcomes that are certain relative compared to probable outcomes, i.e., the certainty effect. They also show how individuals address the risk of losing. In an experiment with negative and positive prospects, Kahneman and Tversky found the reflection effect. They claim that certainty increases aversiveness to losses and the desirability of gains. Kahneman and Tversky also discuss reference points, which I believe are highly relevant to the behavior of individuals and their investment choices. On the one hand, they have expectations toward their respective investments in comparison to the risk, but on the other hand, there is also an expectation on the basis of the performance of their previous investments and the stock market.

Shefrin and Statman (2000) further developed the ideas of Kahneman and Tversky, as well as of Lopes (1987), along with the foundation of portfolio theory laid by Markowitz (1952,1959), when they introduced the behavioral portfolio theory (BPT). They present the theory in two models (BPT-SA, BPT-MA) with single or multiple mental accounts. Shefrin and Statman (2000) claim that BPT investors are both risk averse and risk seeking simultaneously.

I study the portfolio holdings of shareholders and contribute to prospect theory through the empirical evidence of the individuals' portfolio choices. All new shareholders decide to accept unique firm risk simultaneously with

their first investments on the stock market. Through the focus on new shareholders and the composition of their first stock portfolios, I contribute to theory with a portrait of rookie investors and their first stock portfolios. I study rookie investors during a rise and fall of the stock market, therefore the expectations should be different during these different stock market conditions. However, I show that rookies enter the market over the whole sample period. Thus, there is reason to believe that rookies have expectations that the stock market will deliver positive returns, or at least be a better investment opportunity than other alternatives, even when stock market prices are falling.

## The Behavior of Individual Investors

Behavioral finance has grown as a reaction to the rational choices assumed in more traditional finance models and theories. Shiller (2003) entitled his article “From Efficient Markets Theory to Behavioral Finance” and stated that academic finance has evolved since the efficient market theory was considered to be true. Shiller, alongside with other researchers, e.g., Barberis and Thaler (2003), sought answers from empirical research on behavior, rather than rational models. Previously, most of the focus had been on institutional investors and more rational models. Around the turn of the millennium, the behavior of individual investors was gaining interest, and more attention has been paid to individual investors and their economic behaviors.

The availability of data on the portfolio choices of individuals has long been a limitation for researchers. Nevertheless, there have been several contributions by distinguished researchers in the area of individual investors, mainly using US data; e.g., Barber and Odean (2001) study differences in trading behavior based on gender, Barber and Odean (2000) on the overtrading and overconfidence of households, Kumar (2009) on investors of low priced stocks, and Goetzmann and Kumar (2008) showing portfolio composition of households. Barber and Odean (2011) present a review of the behavior of individual investors, in which they state that individual investors generally lose money due to a lack of timing in transaction decisions and overtrading, even when transaction costs are omitted from the equation. Kim and Nofsinger (2007) study a large sample of 22 000 Japanese investors during 1984-1999. They show differences in trading behavior under different market conditions from studying trading behavior and risk preferences during bear and bull markets. Although I study investors during a time period including both bear and bull market conditions, I do not focus on changes in risk preference or on day-to-day trading behavior but rather on the entry behavior among rookies under different stock market conditions.

The lack of data for performing research on individual investors is probably the main reason why research on individuals lags far behind studies on institutional investors, for which the availability of data to researchers is

greater. However, outside the US, Grinblatt and Keloharju have made several considerable contributions using Finnish data, e.g., Grinblatt and Keloharju (2000), Grinblatt and Keloharju (2001a), which present an explanation for why investors trade, and Grinblatt and Keloharju (2001b) on the topic of investors and their home bias. Finland appears to have similar availability of ownership data for research as Sweden does.

During my search for studies of individual investors I found a few claimed portraits of individual investors, none of which focus on first time stock market investors. Using Australian survey data, Durand et al. (2008) present an “intimate portrait of the individual investor” based on 18 individual stock market investors. De Bondt (1998) presents a study entitled “A Portrait of the Individual Investor”, based on 45 selected respondents recruited from a shareholder investments club. Even though the previous attempts to generalize a portrait of the individual investor, the number of observations in these studies show the difficulties that previous research encountered in searching for data on shareholders. To me, both of these studies show the need for a larger, more generalizable study of individual investors. I contribute to the studies of individual investors by studying all shareholders in a country, with data from approximately two million unique shareholders. Thereby, a more generalizable portrait of the individual investors can be made. In addition, the previously overlooked rookies are portrayed. Apart from the number of observations in the data, I also contribute to the knowledge about shareholders through the questions asked and answered in the empirical studies.

To contribute to the literature portraying the individual investor I focus on the attraction of new investors “rookies”. Merton (1987) shows the importance for a firm to have a large shareholder base. With most of the shareholders being individual investors, the necessity for a firm to attract attention from individual investors seems immense. Through the rookies, we can learn about what attracts them to the stock market. What triggers the individual to enter the stock market? Considering prospect theory, it would be reasonable to believe that the expectations of potential investors would differ depending on the overall stock market conditions. Are there certain market conditions under which the rookies select to enter the market? Do the stock market conditions affect the decision to enter the market, or is it more connected to the individual? Are the rookies young investors buying shares with their first salaries or are they retired people seeking the excitement of stock market trading? The list of interesting questions could continue, although to the best of my knowledge none of them have previously been empirically tested on a large scale, and my contribution must be limited to a few research questions.

## Research Questions

To contribute to knowledge about shareholders and the understanding of their actions and conditions on the stock market, the overall aim is divided into several empirical research questions, all with focus on individual shareholders. The previous empirical literature shows the results of studied firm ownership in terms of institutional investors to a great extent, but less is known regarding the individual investors.

Shareholders are investors who, for some reason, have pursued an investment in a certain firm. Instead of investing in any anonymous financial product they choose to become owners of a firm, i.e., shareholders. Even though their share of the firm might be small, they have chosen this investment over alternative investments with less direct connections to the firm.

Once, a great man told me that on average everyone is average. However true this statement is, my first questions to explore in the thesis regard a broad generalization: Who becomes a shareholder? Additionally, I chose to study the compensation paid by shareholders to agents, with regards also to the shares held by agents. I divided the thesis into four studies and several research questions.

## Allocation of Shares to Shareholders

On the stock market, most investors are eligible to purchase any share at any point in time, as long as the stock market is open for trade. Naturally, there are exceptions, mostly referring to inside trading, lock-up periods or certain firm constraints. However, in general, the stock market is open for trade to any investor. This availability is not the case with an IPO, in which the firm can allocate its shares to presumptive shareholders immediately before entering the stock market for the first time. Therefore, IPOs are of particular interest considering ownership structure, because they perhaps constitute the time when firms can choose their ownership structure with greatest certainty. After the IPO, the firm has more passive control or even no impact on the decisions made by investors regarding the holding of shares in the firm. The general shareholders are free to trade the shares as they please, without the interference from the firm, on the stock market.

Depending on the demand for shares, assuming the demand for shares is greater than the supply, the shares will be allocated to new shareholders by the firm before the share is available for trade on the open stock market. Thus, there is a possibility for the firm to prioritize certain shareholders on behalf of others, although the book building process and regulations differs between stock markets and between countries. Even though the shares offered in an IPO generally are over-subscribed in Sweden, at least for firms that complete the IPO process, firms have the opportunity to affect the ownership structure during the IPO process. In paper IV, the focus is on return

and allocation, more specifically whether the allocation of shares is different depending on the initial return (IR) of the IPO. In an IPO, the board of directors commonly holds shares before the IPO, and they are normally restricted from selling their shares over a time period (lock-up period) after the IPO. Therefore, it is interesting to study the shareholdings of boards and their changes in ownership after the lock-up period (the compulsory holding period). We study inside shareholders (CEOs and boards of directors), and outside shareholders, institutions as well as individuals with regards to changes in ownership structure following the IPO. Previous literature has shown that underpricing of the shares of IPO firms is common. This leads to IR and a wealth transfer from old shareholders to the IPO investors, if they sell the shares once they are publicly traded. Based on previous research on investor sophistication and information asymmetry, there is reason to believe that the ability to identify high IR IPO firms is disparate between potential investors. Furthermore, institutional investors are generally believed to monitor firms better than individual investors. The research questions addressed in paper IV being: Are institutional investors able to identify underpriced firms to a greater extent than individual investors? Where have the IPO related wealth transfers gone, to institutions or individuals?

## Individual Stock Market Investors

Previous research has shown that, in the US, the number of individual investors investing in the stock market is declining, e.g., Rydqvist et al. (2014), and Davis (2009). Davis (2009) even states as the very beginning of the paper that “the American Retail investor is dying.” The consequences of such a state is not yet studied or even forecasted. Nor is the trend of declining individual shareholding studied in other parts of the world. Whether the declining number of individual shareholders is a condition exclusive to the US or if it is a broader development must be addressed. If individual investors are indeed having a declining stock market future, one of few things to prevent or at least mitigate the number from decreasing is obviously whether there are new investors (rookies) entering the stock market. In two of the studies of this thesis, attention is paid to these rookies.

If the number of shareholders is in fact steadily declining over time, it would be reasonable to believe that the investors are the same, but over time, they exit the market due to age, better investment alternatives or budget constraints. Based on these considerations the first question is:

Are there any new investors entering the stock market?

Given that I find new investors entering the market, the next step is to exploit the investors, their stock portfolio and the effect they might have on the declining trend. Therefore, the next question is:

Who are the rookies and could they contribute to rejuvenating the shareholders on the stock market?

These two questions are addressed in paper I. The study establishes that, despite the support for previous studies the declining number of shareholders, there are rookies entering the stock market. This denotes that rookies are attracted to the stock market even though individual investors as a group are diminishing as shareholders. However, the reasons for entering the market are remain unsolved. Consequently, the question of stock market attraction draws my attention.

Although the rookies as a group could not be called to account for the reasons of their stock market entry, it would be interesting to study potential events that attracted the investors to the stock market. One event that drew my attention was IPOs, where firms are entering the stock market. The saying “birds of a feather flock together,” became the working title of paper III. Studying IPOs provides specific times when shares are open for purchase for shareholders. Thus, the date can be used also as starting point in a study of rookies to determine whether rookies might enter the stock market close to the times of IPOs or not. Studies of IPOs have shown that individual investors seldom are the investors who earn the highest IR. Furthermore, previous studies have also shown that IPOs perform worse than firms with longer stock market history during the first years following the IPO of the firm. Although these previous academic results might be known to most shareholders, it might not be known to rookies and even if they do know, they might feel tempted by the IR. The research question for paper III is:

Are rookie shareholders attracted to the stock market via IPO firms?

Finding rookies and their entries into the stock market, I am curious about the attraction of the stock market. Because of the constraints of the ownership data I am restrained from any direct contact with the shareholders, based on my knowledge of each individual, regarding their stock market investments. However, it is legitimate to test hypotheses based on events which have an overrepresentation amongst the rookies. Therefore, I use the IPO event to study one possible reason for rookies to invest in the stock market. In order to increase the number of events I use IPO data from three Swedish market places, rather than the main market, Stockholm Stock Exchange (SSE), alone.

## Shareholders Compensating Their Agents

Based on the knowledge of agency theory and understanding of CEO compensation, the studied questions regard the relative strength of the CEO and

its implications for the monetary compensation received. Previous studies have shown that there are mixed results regarding whether the CEO is compensated for luck or performance. Whether the level of the compensation granted to the CEO by the owners is in proportion to the perceived performance, made by the CEO, or not has been shown to be difficult to measure. As an alternative, to measure the achieved or perceived performance in connection with the compensation paid to the CEO, the focus could be on other aspects or relationships in order to better understand the level of compensation. Therefore, attention is rather directed toward the position in which the CEO is and the importance that the CEO as a person might have on the level of compensation received. Thus, it is reasonable to pay greater attention to the position and the possibility that the CEO has to empower the compensation level. We therefore ask:

Can the monetary strength of the CEO explain the level of compensation?

Moreover, we address whether compensation is connected to the ownership structure of a firm through the question:

Whether CEO compensation is affected by the ownership structure of the firm?

In papers II and IV, we especially study the effects of foreign (non-Swedish) investors compared to papers I and III, which focus on Swedish investors.

## Research Design

This thesis emphasizes individual shareholders and their stock market investment decisions. Therefore, the characteristics, behavior and actions of the investor are central, reflecting the character of the thesis, which is primarily based on empirical research. Although the affiliation of this thesis to the academic field of finance is perhaps axiomatic, interests to individual decision-making, behavior and characteristics can be studied within various alternative fields. First, this thesis focuses on individuals as shareholders, rather than any individuals, rendering the connection to firms and business studies obvious. Second, the shareholders are studied in their capacity to hold shares and not in general decisions or everyday life. This focus, together with my interest in corporate finance and stock market decisions, framed the thesis within the academic field of finance.

Previously, little was known about the characteristics of individual shareholders due to data limitations. In cases in which data were available, it has been limited to small samples of shareholders. Although researchers and practitioners have shown interest in the investment decisions of individuals,



there has been very limited academic research on individual shareholders, because of the lack of data available to researchers. Therefore, a previously unexplored area will receive greater attention through this thesis. Consequently, the design of the empirical studies was in several senses exploratory in nature because of the lack of previous research on individual shareholders and the non-existent academic knowledge about rookies and their characteristics.

The thesis focuses on increasing knowledge about shareholders and on exploring the characteristics of the individual shareholders. The thesis explores and portrays the shareholders of Swedish firms in four empirical studies. Because of the ultimate ownership data containing all of the shareholders of publicly traded Swedish firms, the studies in this thesis are based on all of the shareholders in Sweden. Although the population is divided into samples depending on the research questions of the four empirical studies.

With the aim to contribute to the existing literature on shareholders, to me, it has been prioritized that the results shown in the studies can be used to generalize better understanding of individual shareholders. The research questions asked in this thesis focus on generalizability and on extending knowledge about all individual shareholders, rather than shareholders of a specific firm. Consequently, I turn to quantitative research methods and search for data that can be used although the data is unique. With the data at hand I utilize these extensive data through quantitative methods to be able to generalize the results. The methods used in this thesis are previously well established and standardized within the field of finance. I use descriptive statistics, univariate analysis and multivariate regression models for all of the studies in the thesis. I use standard methods of managing extreme values when appropriate and several robustness tests are used, mainly to strengthen the results of the OLS regression models used in the studies. For further reference on the methods used for the different research questions, the respective papers provide more information.

The thesis is compiled from four studies of shareholders. They are separated in time and use different datasets. However, all of the studies also use the ownership dataset, which contains all shareholders in Sweden from the year 2000 to present. Joining the studies together is obviously my driving force for better understanding shareholders and the investment decisions that the investors make. Although the studies also use samples, depending on the research questions in each study, the advantage of a dataset with all shareholders of a country is uncontested and opens opportunities to generalize the results even more than studies based on chosen small scale samples.

## Data

Under what conditions are the individual investors shareholders and in what manner can corporate finance theory, mainly based on US market conditions, be applied to the shareholders of Sweden? It is necessary to bear in mind that most of the research within the finance area is based on data from the US, with US stock market conditions. Therefore, previous studies ought to be adapted with caution, and the contributions of research based on non-US data might not always be directly referable to US stock market conditions. Given the limited research being performed on Swedish data compared to US data, the questions and results made on Swedish data has by default more uniqueness build into it, however to be able to publish academically on studies using Swedish data the questions has to be more unique than using the more established US data. Furthermore, I believe that it is expected that the research questions cannot be answered with US data, or there is a specific reason why US data are not used, e.g., due to lack of accessible US data. In my case I was driven by questions mainly referring to individual investors, and large scale US data on individual stock ownership are non-accessible to researchers. Hence, data from Sweden are used in this study.

The data in this thesis are based on unique data, either hand-collected or compiled through publicly and non-publicly available databases. All of the papers presented in the thesis focus on the ownership of publicly traded Swedish firms. The detailed data on stock ownership are unique because they are non-publicly available in the form used in this thesis. However, information about larger shareholders is generally publicly available in Sweden, but not necessarily identified with the personal identification number (*personnummer*) which enables researchers to connect data from different sources to contain a more complete picture of the individual investor throughout all authorities and most of society. In this thesis, the key to being able to create a portrait of the individual stock market investor is the shareholder database retrieved from *Euroclear Sweden*. However, the thesis also contains hand-collected data from several other sources.

## Chief Executive Officers

The data on CEO compensation are a hand-collected data set of compensation paid to Swedish CEOs, derived from annual reports of the 30 largest firms publicly traded in Sweden, Together these 30 firms constitute more than 80 % of the total market cap of Stockholm Stock Exchange (SSE) during the sample period.

In contrast to the ownership data base, the information on compensation is connected to each CEO at a given time according to source of the data, i.e., the annual reports. Thus, the CEOs are easily identified, which we attempt to avoid with the ownership data base. For this reason we hand-

collected all of the data on CEO compensation instead of using the income and ownership data used in other studies. Even though this is more time-consuming, it was necessary in order to assure that we do not use the ownership database to identify any individual investors, even if it is publicly available information in the annual reports.

## Income

Data on the income of all shareholders are retrieved from the Swedish Tax Agency (Skatteverket). In Sweden the data on income for all Swedish citizens are publicly available, by request. The Swedish Tax Agency is a governmental organization; hence, the information in their data is based on “personnummer”. Because the data on shareholders contain the personnummer of every shareholder, the request to the Swedish Tax Agency was based on all shareholders. Due to the “personnummer” the income information can be merged with the ownership data of the investor.

The data compiled from the Swedish Tax Agency contain information about taxable income, capital income and income from employment for all shareholders, approximately 2 million shareholders, during the years 2004–2010. Therefore, the data used in this thesis include shareholder information based not only on their stock portfolios but also on income. Income statements of foreign individuals trading on the Stockholm Stock Exchange are unfeasible for me to obtain, due to the regulations in all countries represented through the foreign investors (in total 180 country codes are included in the database, with at least 1 shareholder from each country). Thus, this study of individual investors is limited to all Swedish stock market investors.

## Initial Public Offerings

I hand-collect the data on Swedish IPOs from press releases, annual reports, year-end reports, and prospectuses. The recent data are mainly from the Webpages of IPO firms. In some cases, e.g., if the firm no longer existed, the documents were collected from Swedish Tax Agency or the Swedish Financial Supervisory Authority (Finansinspektionen). For the earlier IPOs in the study, data were collected from the printed prospectuses and annual reports from the archives at the Swedish Corporate Library (Svenska Företagsbiblioteket) at Uppsala University/Campus Gotland. I consider the data to contain all IPOs on the chosen stock exchanges for the chosen time periods. Furthermore, I hand-collect the inside ownership by board members and management for all of the IPO firms on the Stockholm Stock Exchange (SSE). I collect inside ownership and firm information before, during and three years after the IPOs, from prospectuses and annual reports.

I hand-collect the first day trading data and historical stock prices from the Nasdaq OMXS Webpage. The sample contains information about the 105 firms, introduced on the SSE from 1996 to 2011.

The IPO data used in the thesis also contain information about two alternative stock exchanges. The first alternative chosen is the First North exchange, which also belongs to the Nasdaq group and is the exchange for smaller firms with more lenient regulations than the main market, SSE. The second alternative Aktietorget is a marketplace (Multilateral Trading Facility, MTF) with focus on entrepreneurial businesses. I hand-collect the data from First North and Aktietorget in similar manners to SSE. The sample from First North contains 52 IPOs during the time period of 2004–2010. For Aktietorget the sample contains of 67 IPOs from 2007 to 2010.

## Shareholders

Sweden and the opportunities in data availability are particularly favorable for stock market research, especially, if a researcher is interested in shareholders and the ownership of publicly traded shares. Euroclear Sweden holds information about all shareholders and the shares held in publicly traded Swedish firms. This arrangement is quite unique for Sweden and even more so considering that the shareholder data are available for use in this thesis. As researcher, it is a common task to clean and explore the dataset available to the researcher; however, in this case there were no manuals or Internet tips on how to best sort out the data. It was challenging, interesting and useful to start with a blank canvas and to explore the raw data. Exploring completely new data somehow makes all observations interesting, but in this thesis, the focus is on exploring individual shareholders.

All of the papers presented in this thesis use the ownership database collected from Euroclear Sweden. The data currently comprise the ultimate holdings of all publicly traded firms in Sweden from 1999 to 2014. The companies report the ultimate ownership twice per year; hence, the data are semi-annual. However, since 2006 they report at the end of every quarter; consequently the database contains quarterly records from 2006. The data contain information on every publicly traded share in Sweden at those given points in time. For every share, the owner is identified either by the “personnummer” if it is an individual or the “organisationsnummer” if it is a non-individual holding the share.

The “personnummer” is an identification number given either at birth or with residency and it is permanently linked to the individual. The “personnummer” is used all throughout society and is, thereby, useful for research on individuals. In this thesis, the “personnummer” is used to identify the income of every shareholder through the Swedish Tax Agency. The numbers in themselves reveal when, with which gender, and where the individual was

born, although the whereabouts are only provided for individuals born between 1946 and 1990.

An “organisationsnummer” is registered to a company much like the “personnummer” for an individual, but it can change over time, e.g., through mergers and acquisitions. The ownership database is accessible for researchers connected to Uppsala University, Campus Gotland. A similar database is available to researchers at the University of Gothenburg School of Business, Economics and Law (Handelshögskolan i Göteborg). In Finland there is also a similar database with shareholders on the Helsinki stock exchange, used by researchers in Finland.

## Stock Prices

In order to calculate the portfolio value of the investors at all recorded dates in the ownership database, the closing prices of the stock exchange are used. For the studies of individual investors these stock prices are used for this purpose, to calculate the portfolio value of each investor at these record dates. The price information for stocks traded on Aktietorget, this is hand-collected. The price information for SSE and First North is obtained from NasdaqOMXS. However, it does not apply to the prices used in the IPO studies. For the IPOs, the stock prices and trading information are hand-collected from the Web pages of each stock exchange and from prospectuses, as well as from press releases surrounding the IPOs.

## Summary of the Empirical Studies

Although all four studies in this thesis focus on shareholders, there are four somewhat separate studies. Along with previous research, I find that owners and ownership structure have effects on firms. Moreover, firms affect the investors and their behaviors through corporate actions. The most obvious interaction between owners and the management of the firm would probably be through monitoring and annual meetings. Nevertheless, the firms also compete for the attention of shareholders to finance their activities. Thus, the firms seek individuals not only as customers of their manufactured products but also with the share as a product to sell, especially in IPOs in which the IPO firm must attract shareholders.

## Paper I, Rookies to the Stock Market

In paper I, the study aims at exploring new individual shareholders, investing in the stock market for the first time, “rookies”. There is, to my knowledge, no previous study conducted on rookies of the stock market. With that in

mind I got the idea early on and was convinced that it was viable to undertake such a study. The study is a study of all Swedish rookie stock investors in Sweden, during a time span of seven years where data were available due to my definition of rookies. The ownership data, from Euroclear Sweden, are used together with income data, obtained from Swedish Tax Agency. I define and create a dataset consisting of first time investors (rookies). Univariate and multivariate tests are used in the analysis. I use Ordinary Least Square-regressions (OLS) to show investor characteristics and explain variation in investor portfolio characteristics. The same definition of rookies is used in paper I and paper III. The population of rookies consists of 241 893 investors during the sample years. This was reduced to 228 694, due to data limitations on annual income and characteristics of foreign investors. However, the data contains all Swedish stock market rookies with holdings in any publicly traded firm, on any Swedish public market place for shares, recorded by Euroclear Sweden.

Paper I, shows that despite the ailing trend of individual shareholders, there are rookies entering the stock market. I give ample evidence of rookies investing in Swedish firms and thereby, mitigating the ailing trend. Moreover, I portray the individual investor by showing individual investor characteristics and present a regression model to explain the variation in portfolio holdings. The study shows signs of rejuvenation with 12% rookies during the 7 years studied. I provide evidence of new younger shareholders entering the stock market, but also a decline in the total number of shareholders. The results also present evidence of a far more balanced gender composition of shareholders than previously shown (and used as proxies) in US studies. In addition, I show gender differences in among rookies, where female investors are older, invest larger portion of their income and hold more firms than their male counterparts.

## Paper II, Strong CEOs and Ownership Structure

In paper II, the study aims at explaining the importance of ownership structure and strength of the Chief Executive Officer (CEO), in order to explain the variation in CEO compensation between firms. We use a hand-collected data set of compensation to Swedish CEOs, derived from annual reports of the 30 largest firms publicly traded on the Stockholm Stock Exchange (SSE) every year during the sample period. Although 30 firms per year is a low number, together they constitute more than 80 percent of the total market cap of Stockholm Stock Exchange during the sample period. We match the data on compensation with ultimate ownership data from Euroclear Sweden. We use regression models to explain the variation in CEO compensation across firms over the sample period 1999–2008. This study needs to be seen in the light of other studies from other countries and settings. However, in order to

enlighten the case for Swedish CEO compensation contracts the data used in the study benefitted from being Swedish.

Paper II, shows a positive relationship between compensation levels to the CEO and foreign institutional investors. In addition, evidence is presented showing that foreign institutional investors reduce the strength of the CEO. When we control for ownership structure, used as proxy for monitoring, the regression model explains 30 percent of the variation in CEO strength. The results suggests that foreign institutional investors monitor closer and that the CEO has less opportunity to allow exaggerated compensations contracts, based on the reduced strength of the CEO.

### Paper III, Rookies Attracting Rookies

In paper III, the study aims at exploring the role of IPOs in connection with new shareholders. I use hand-collected IPO data from the main market Stockholm Stock Exchange (Nasdaq OMXS), but also from alternative market places; their growth market First North and from Aktietorget (a Multilateral Trading Facility). The IPO data are hand-collected from press releases, webpages of the IPO firms, Swedish Tax Agency, annual reports and prospectuses. I also collected information on historical prices from the respective stock exchanges. Data on ownership are from Euroclear Sweden, based on the population of individual shareholders. The identification from the ownership data were used to obtain income data from the Swedish Tax Agency. The sample of rookies was reduced as all shareholders with non-positive income (29 671 investors) are excluded. Furthermore, investors younger than 18 and older than 99 are excluded, which reduced the sample by 16 690 and 4, respectively. Hence, the final sample for paper III consists of 182 429 rookie investors. The sample for all investors with the same restrictions on sample consists of more than 11 million investor record date observations based on approximately 1.9 million individual investors.

Paper III, shows the fraction of rookie investors that hold shares in IPO firms are twice as high as the fraction of non-rookie shareholders. Hence, I state that not only do IPOs bring new firms to the stock market, but they also attract new investors to the same. The portfolio model first developed in paper I, is tested on the sample used in paper III, the results from the smaller sample supports the findings from paper I. The model, based on individual characteristics of the shareholders, explains approximately a fifth of the variation in portfolio value.

## Paper IV, Allocation of Shares to Foreign and Domestic Investors

In paper IV, the study aims at explaining the allocation of shares to different owners. At the Initial Public Offering (IPO) the firms will allocate shares to new shareholders either from existing shareholders and/or through issuing new shares. Paper IV, shows the breadth of ownership in IPOs for three investor groups, individual investors, domestic institutional investors and foreign institutional investors. Empirical evidence is presented that institutional investors and foreign institutional investors in particular are superior in selecting the IPOs with the highest initial return. This supports previous research on information asymmetry between investor groups, where institutional investors possess superior information in contrast with information possessed by individual investors. Thereby, we strengthen previous research showing information advantages for institutions as opposed to individuals, but also showing allocation patterns that benefits the institutions. Additionally we show differences in price preferences between foreign and domestic institutions, where foreign institutions seem to prefer shares with a high nominal price. Furthermore, we report the holdings by board of directors and the development of their holdings during the IPO process and until 3 years after the IPO.



**Table 1 Summary of Studies Conducted in Paper I-IV**

Paper/Title/Data	Sample Period	Main Results
I/ Rookies to the Stock Market/ 1.Ownership data 2.Income data 3. Stock Prices	2004–2010	Despite the trend, of individuals leaving the stock market, I show evidence of new shareholders. A model that explains variation in portfolio value is introduced. A portrait of the rookie shareholders is presented; it shows an even gender balance. Female shareholders enter later in life but with larger portions of their income invested in their stock portfolios, compared to their male counterparts.
II/ CEO Strength and Ownership Structure/ 1. CEO compensation 2. Ownership data	1999–2008	CEOs with relative strength receive greater compensation than CEOs with weak positions. Ownership structure affects CEO compensation and strength compared to that of boards of directors.
III/ Rookies Attracting Rookies/ 1. IPO data for SSE, FN, AT. 2. Ownership data 3. Income data 4. Stock Prices	2004–2010	IPOs attract twice the proportion of rookies, compared to the proportion of non-rookies. Thus, IPOs are shown to play a previously unknown role of attracting rookies to the stock market.
IV/ Allocation of Shares to Foreign and Domestic Investors/ 1. IPO data for SSE 2. Board and management characteristics, inside ownership. 3. Ownership data	1996–2010	We show signs of information asymmetry, in which institutions, rather than individuals, hold firms with high IR. We support previous studies and show that IPOs are generally underpriced.

## Discussion of Swedish Individual Shareholders

The importance of ownership structure and even ownership management for publicly traded firms is debated not only academically but also as an issue for society. For decades, science has shown differences in monitoring and accordingly in actions among different owner types. Institutions such as investment funds, pension funds, hedge funds, etc., have been studied in their actions toward their investments/holdings. Sometimes, as large blockholders, the institutions play active roles on the boards, on other occasions, they follow their investment more passively. Individual investors have been more academically overlooked, as individuals more seldom take on large positions in a firms (if not founders etc.) than institutional investors. Moreover, the opportunities for researchers to obtain data on individual stockholdings have been limited. In this thesis, I study inside holdings by board of directors, CEO compensation, and holdings by outside shareholders. Although the studies concern the complete ownership structure, the focus of the papers has shifted between investor groups, with the most emphasis on the sought after individual investors.

Approximately 20 % of all Swedes own one or more shares (between 13.2 % and 22.6% during the last 15 years, according to Statistics Sweden, however they exclude all shareholder holdings with fewer than 501 shares in each firm). Compared to the information from Statistic Sweden which holds only the largest shareholders, the dataset used in this thesis holds approximately 2 million stock market investors which can be compared to 9.8 million inhabitants in Sweden (Statistic Sweden end of September 2015), regardless of number of stocks per firm. According to Grout et al. (2009), the percentage of the population holding shares in the UK, Germany, France, and the US is approximately 15, 4, 11 and 13%, respectively. In comparison to these countries, Sweden has a large proportion of its population owning shares.

To the best of my knowledge, there are no previous studies on rookie shareholders. I developed the idea of studying rookies early and was convinced that it could be accomplished. However, at this point I am delighted to have inspired colleagues to undertake studies with first time investors as well. I was genuinely interested in who the investors were who entered the stock market. Especially, because most research colleagues (e.g. Rydqvist et al., 2014, and Davis, 2009) have indicated that, at least in the US, individuals are generally leaving the stock market in favor of institutions. Although I study a limited time period, the results support the ailing trend of individual investors. To extend the time period, to best describe the declining trend in Sweden, the complete database was used to describe the development of all shareholders foreign and domestic during all available years. Hence, figure 1, shows the number of all individual investors in Sweden. As shown in figure 1, the number of individual investors decreased in Sweden. Thereby, the

ailing Swedish trend of individual investor on the stock market is similar to the trend reported in the US studies (e.g., Rydqvist et al., 2014, and Davis, 2009). The reasons for the ailing trend of shareholders are not studied in this thesis. Although, one possible explanation for Sweden could be the increase in the Swedish housing market, including investment opportunities as an alternative to holding shares or rising market prices limiting the amount available for investments in the stock market. However, evidently finding reasons for the ailing trend are suggested for future research.

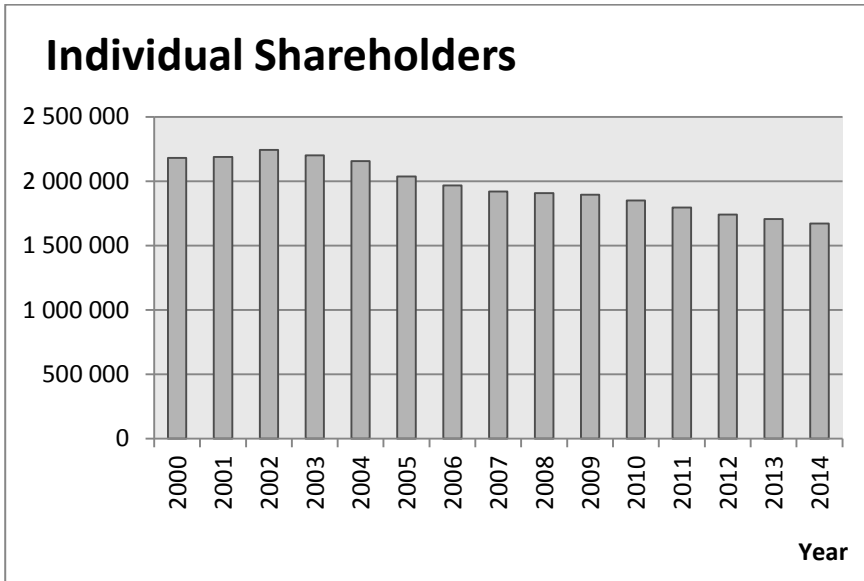


Figure 1, Total Number of Individual Shareholders in Sweden

My studies of the Swedish stock market show no different trend than what has previously been reported from the US. Nevertheless, I show ample evidence of rookies entering the stock market. During the 7 years sample period approximately 12% of the investors are rookies. These rookies mitigate the decrease, meaning that the decrease among shareholders is even larger than previously reported. The focus on rookies opened up the opportunity to consider the entry into the stock market as an event and thereby relax the difference in the time at which the investors enter the market. The single authored papers (I, III) are both based on the interest determining who the rookies of the stock market are. Although I control for rookie year, I treat the rookies the same regardless of the year when they entered the stock market. In a different manner, paper IV also studies stock market rookies, but with firms entering the stock market rather than investors.

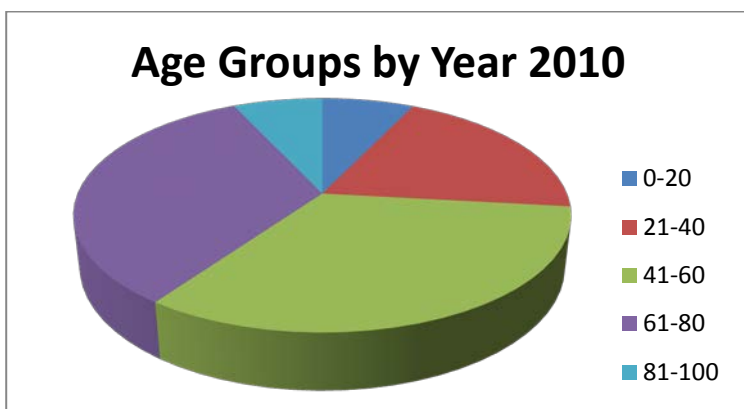
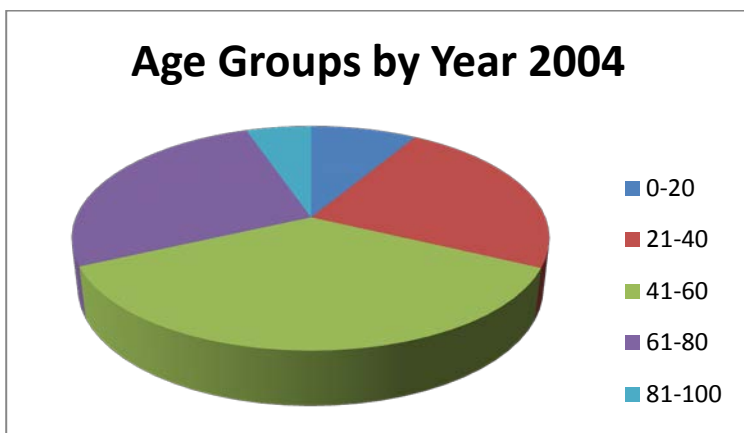


Figure 2, Age distribution among shareholders in Sweden

Figure 2 shows the age distribution of all shareholders in Sweden in Year 2004 and 2010. Figure 2, shows support for Evans (2009), and shows that Swedish individual shareholders are aging similar to US shareholders. Although the results presented in paper I shows that the stock market attracts rookies, and that most of them stay in the stock market as shareholders, the aging trend among shareholders is apparent. In addition, the average age for all shareholders increased during the sample period 2004–2010.

To assess the contribution, of this thesis one would have to forecast the future. However, there are several original contributions presented throughout the thesis. I would like to emphasize the difference in between studying a population of individual investors, compared to studying a selected sample, when portraying the individual investor. Previous studies often use small samples and/or survey data rendering the researcher unable to make clear

generalizations. Obviously, a small survey can ask more personal questions and questions about the moods or emotions involved in investments decisions, while I cannot answer these kinds of questions. Instead, I detect the all stock market investment actions undertaken by all individual investors, recorded as shareholdings by the year end. Depending on interest these differences and the answers it can give attracts different readers, but I do believe that the knowledge I can offer about shareholders and ownership of shares is will create a more complete portrait of individual shareholders than previously reported (e.g., De Bondt, 1998, and Durand, 2008). In addition, the previously overlooked rookies receive a definition and recognition through this thesis. When portraying the average individual shareholder there seems reasonable to believe that a study based on all shareholders of a country would serve as a good sample to study rather than extracting an average from a few investors.

A study using data of all shareholders in a country, rather than smaller sample data results in both opportunities and problems. On the one hand, the researcher does not have to bother too much about sample selection and whether the data are representative or not. On the other hand, the question of outliers becomes more troublesome. In paper I, the study explores all Swedish rookies this includes a few extreme values; hence, in the analyses the data were winsorized at the 1% level due to extreme values on income and portfolio value.

In paper III, a sample is used including only investors with income between the ages 18 and 99. Using the same regression, of portfolio value dependent on investor characteristics and doubled the R-square value compared to the analysis of all rookies in paper I. Thus, my regression model based on individual investor characteristics explains approximately one fifth of the variation in portfolio value. The results are obtained despite having rookies arriving during different market conditions and without restrictions on the level of the invested amount. Nevertheless, I pursued paper I as a full sample (or population) study and thus, contribute with a portrait of rookies based on all stock market investors in a country and not based on only small samples.

When I apply the OLS regression model used in papers I and III to the whole population of more than 11 million investor record observations, the model explains even more of the variation in portfolio value. Table 2 shows a combined OLS regression model, used in papers I and III to explain the portfolio value of rookies, applied to all of the shareholders. The focus is not on the constant but rather on the effect that the independent variables have on portfolio value, both size and sign. All under aged investors are excluded, i.e. exclude the observation if the owner is under the age of 18. Furthermore, portfolio value and income are winsorized at the 1% level, to mitigate extreme values. Overall, the results for the population show similar patterns to those in papers I and III. The independent variables affect portfolio value in

similar manners, i.e., they are positively correlated for the population compared to the samples used in the papers. However, the gender effect is smaller, with limited contribution to the R-square and the effect size for the whole population, compared with the studies on rookies. For the all shareholders, the largest effects come from investor income and the number of shares in the portfolio. Intuitively, the positive effect from income is easily accepted and seems to follow logical reasoning in which investors with more economic input can hold larger valued portfolios. The number of shares or in fact the number of firms in the investor portfolio is also reasonable, although a larger portfolio need not indicate that the investor holds shares in more firms. However, the finding that having the eggs in more than one basket can be profitable, is consistent with previous research, e.g., because it reduces risk without an simultaneously reducing returns. Hence, explain a larger portfolio value over time. An even simpler explanation can be transactions costs where a low portfolio value consists of only one share due to the cost of each transaction.

As alternative to OLS, a GLS regression with random effects and two fixed effects regressions are used. Using year fixed effects affect age to become negative, most likely because of the development of the stock market during the sample period. Using individual fixed effects omits the gender dummy variable, because the gender of each individual is assumed to be the same for the whole sample period. For the other variables all regression models returns similar results, in which all control variables are highly significant, although the large sample size contributes to the significance level.. However, for the control variable in focus in paper I, number of shares, and paper III, IPO, their impact on the regression models are substantial and support the results in the respective papers.

## Table 2 Regression results

The table reports results from regressions, where the natural logarithm of portfolio value is dependent on income, age, gender, diversification and the average price of the shares for all individual shareholders in Sweden during 2004–2010. Portfolio value is defined as the total value of the portfolio for each investor, calculated at the end of December for each calendar year. Data on stock ownership is obtained from Euroclear Sweden. Income is the annual income, in thousand SEK, for each investor, the income data are obtained from the Swedish Tax Agency (*Skatteverket*). To mitigate the impact of outliers income is winsorized at the 1% level. Age is the age of the investor in years, where minor investors (age under 18) are excluded. Gender is a dummy variable with 1 for male investor and 0 for female. Number of Shares in Portfolio reflects the number of firms held in the portfolio. High Price is a dummy variable where 1 refers to the investor average share price in the portfolio being higher than the average share price for the sample period and 0 otherwise. Avg. Price is the average price calculated as portfolio value divided by total number of shares across all firms in portfolio. IPO is a dummy variable where 1 refers to the investor holding at least one IPO firm and zero otherwise. \*\*\* denote significance at the 1 % level. N shows number of observations. The *t*-value (z-value in model 2) for the coefficient estimates are reported in parentheses in model 1,3, and 4. Model (1) is an OLS regression with White robust standard errors. Model (2) is an GLS regression with random effects. Model (3) and (4) are fixed effects regressions, in which the individual and year are fixed.

Regression Model	Portfolio Value (ln)			
	(1)	(2)	(3)	(4)
Variable				
Constant	8.2132*** (2642.52)	9.27052*** (1987.59)	9.72792*** (1685.20)	9.72099*** (1663.81)
Income	0.00062*** (61.56)	0.00008*** (17.92)	0.00005*** (37.22)	0.00005*** (36.33)
Age	0.01327*** (410.14)	-0.00399*** (-61.72)	-0.00447*** (-41.81)	-0.00505*** (-46.63)
Gender	0.05465*** (40.79)	0.10322*** (43.61)		
Number of Shares	0.23954*** (273.47)	0.17877*** (147.29)	0.15685*** (1306.32)	0.15558*** (1269.22)
High Price	0.56542*** (499.47)		0.32940*** (583.16)	
Avg. Price		0.00406*** (528.15)		0.00207*** (497.13)
IPO	0.40397*** (83.32)	0.05657*** (15.78)		0.16589*** (124.49)
Investor, fe			Yes	Yes
Year, fe			Yes	Yes
N	11 685 274	11 685 274	11 685 274	11 685 274
Adj. R <sup>2</sup>	0.337			
R <sup>2</sup> within			0.328	0.323
R <sup>2</sup> overall		0.297		

As much as the data in my thesis are unique and population based, rather than based on a small survey, the study still has limitations with regard to the data. Even though the thesis is based on ownership data that contain more than 13 million observations, there are concerns regarding how to generalize the results, especially in comparison to US studies. I struggle with similar limitation as to those of, e.g., Grinblatt and Keloharju, in that my data are from one single country, not the US, and the results have to be in contrast to previous research based on information from the US. Thus, arguments of why the results are interesting for anyone outside Sweden and how the results might be applicable in a US setting are done with questions previously unanswered and with data that are more detailed than data available in the US. This is seldom the case for US based finance research. In this case the interest for shareholders and their stock market portfolios makes it necessary to study investors outside the US, since there are no data available on individual stock market holdings. Consequently I turned to Europe and Sweden where the data on stock holdings are available. I think that the data used and the questions that I ask, study and answer are a significant contribution to the scientific community, even though it is of Swedish origin. Especially since the data used are for a whole country rather than a selected group of investors.

Even though previous studies of single brokerage houses and surveys had presented ideas of individuals being under diversified, it took me by surprise that almost 50 % of the individual investors only hold one share. Figure 1 shows the population of individual shareholders and the number of shares they hold in their portfolio.

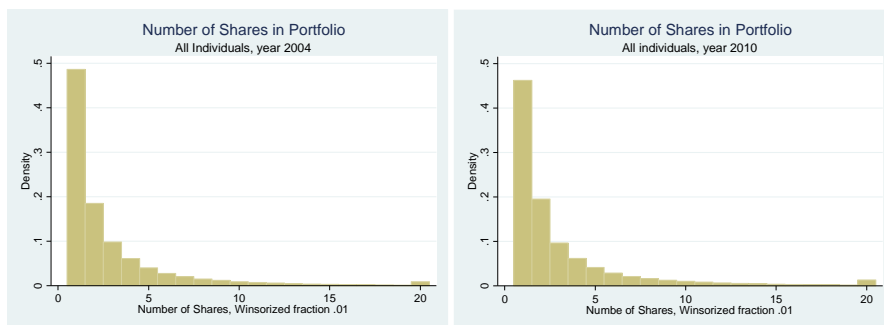


Figure 3, Number of Shares in the Investor Portfolio

Figure 3 shows the number of shares per investor portfolio for the population. To mitigate for outliers, and improve presentation of the figure, the number of portfolios was winsorized at the 1% level. Hence, figure 3 presents 20 as the highest value of the number of shares in the investors' portfolios. Therefore, the observations at 20 shares, in Figure 3, is also contains all



portfolios with more than 20 shares. Although, the portfolio with the greatest number of shares holds 355 Swedish shares, the mean (median) value is only 3.06 (2) shares per portfolio over all of the sample years and individuals.

According to Campbell (2006), a central issue to study is connected to his assumption that poorer and less educated households are more likely to make investment mistakes, than wealthier and better educated households. Although the data used in this thesis contain no information on education or wealth of households, the level of detail is even higher regarding income because it is constructed on the individual level.

### Table 3 Shareholder Characteristics based on Income

The table reports descriptive statistics of all Swedish investors above the age of 18 with positive income during 2004-2010. The investors are divided into deciles based on level of income. To mitigate the impact of outliers portfolio value and income are winsorized at the 1% level. Income is the annual income for each investor where data is obtained from the Swedish Tax Agency (*Skatteverket*). For each investor group the mean Portfolio value and mean number of shares in the shareholder portfolio is reported, both variables are expressed in fixed prices, year 2010, to adjust for inflation Data on ownership are obtained from Euroclear Sweden. Number of shares in Portfolio is the mean number of different firms held by the individual investors. Number of investor year observations = 11 685 274.

Income (decile)	Number of observations	Income min	Income max	Portfolio Value mean	Number of Shares in Portfolio mean
1	1 168 521	0	86 009	80 915	2.99
2	1 168 531	86 009	145 339	81 435	2.59
3	1 168 529	145 339	188 869	83 995	2.68
4	1 168 527	188 869	226 110	91 335	2.84
5	1 168 520	226 111	261 716	98 385	2.91
6	1 168 520	261 717	298 669	109 650	2.96
7	1 168 539	298 669	339 191	128 588	3.11
8	1 168 532	339 191	397 673	167 579	3.34
9	1 168 527	397 673	515 678	241 565	3.68
10	1 168 532	515 678	1100980	1 556 083	4.46

I contribute to the research area addressed by Campbell (2006) through the individual shareholders and the income levels of the individuals. In table 3, the observations are ranked according to their total annual income. Thereafter, they are divided into ten evenly distributed groups. I find empirical support for the assumption in Campbell (2006), that investors with larger income are more diversified in the sense that their portfolios hold larger number of stocks, in the sample used in this thesis. Considering the number of stocks in each portfolio as a proxy for sophistication Campbell's assumption of US shareholders appears to apply also in Sweden, where those with larger incomes hold more diversified portfolios, measured in number of stocks/firms invested, than those with smaller incomes.

Table 3 contains all individual investors with an income in Sweden, where the investors are older than 18 years of age. However, the results still hold when based on all Swedish shareholders. Table 3 also shows the need for dealing with extreme income values, shown at the maximum value of group 10. When studying the population, which consequently does not contain outliers per se because all values are within the population, there is still need for exploring the data and considering extreme values and how they affect the mean values of the population. However, in studies, when the population is divided into samples, there is also a need to consider outliers.

In table 4, a univariate test of the individuals' characteristics and the portfolio holdings of non-rookies and rookies is presented. In table 4, all investors younger than 18 years old are excluded. Consequently, the mean age is higher compared to the study of rookies, in which all investors regardless of age are included. The other variables also show changed mean values but only small effects after the exclusion of minors, compared to the results in the papers. Apart from the results, I show the effects on income and portfolio value when winsorizing the sample at the 1 %-level. Without winsorizing the mean value income for non-rookies (rookies) is 328 298 (302 426), and the portfolio value for non-rookies (rookies) is 273 884 (81 160). This shows the effects of positive outliers in the sample, in which all investors are included. Moreover, without winsorizing the sample,  $t$ -statistics is 10.62 for income and 2.80 for portfolio value. The results show the statistically significant difference between the two investor groups in all of the chosen investor characteristics variables.

### Table 4 Characteristics of Non-Rookies vs Rookies

The table reports results from univariate analysis on characteristics based on rookie or non-rookie investor. Age is the mean age of the investors. Gender is based on a dummy variable where 1 is male and 0 is female. Income is the annual income for each investor where data is obtained from the Swedish Tax Agency (*Skatteverket*). Portfolio value is defined as the total value of the portfolio for each investor. Portfolio value is calculated at the end of December for each calendar year. Data on ownership is obtained from Euroclear Sweden. All minor/under aged investors (age under 18) are excluded. To reduce the impact of outliers, portfolio value and income have been winsorized at the 1% level. Number of shares in portfolio is the number of firms in the portfolio. Average price/share is calculated as portfolio value over total number of shares across all firms. Difference in mean test is a *t*-test allowing unequal variance. The median values are presented within parenthesis. As alternative to *t*-test a non-parametric test, Wilcoxon (Mann-Whitney) rank sum test is used. The value is presented in local currency, *Swedish Krona*, (the average daily exchange rate over the sample period 2004-2010, SEK 7.20 corresponds to \$1).

Variable	Non Rookies		Rookies		Diff. mean test	Wilcoxon (Mann-Whitney)
	Mean	Median	Mean	Median	<i>t</i> -stat [p-value]	<i>z</i> -stat [p-value]
Age	55	56	45	44	384.37 [<0.001]	243.77 [<0.001]
Gender	0.58	1	0.55	1	53.81 [<0.001]	53.80 [<0.001]
Income	289 976	261 327	279 553	268 675	40.78 [<0.001]	13.37 [<0.001]
Portfolio Value	151 202	23 241	68 072	13 355	159.19 [<0.001]	243.79 [<0.001]
Number of Shares in Portfolio	3.2	2	2.4	1	136.79 [<0.001]	184.99 [<0.001]
Average Price/Share	80.4	59.23	77.5	60.75	32.15 [<0.001]	51.66 [<0.001]
Number of Observations	11 083 196		602 078			

The results of the univariate test, presented in table 4, show that the rookies as a group on average are younger and have a more even gender balance than the non-rookies. Rookies on average earn less, which possibly could be explained by their younger ages. As expected, rookies hold smaller portfolio

os, measured in nominal value and in the number of shares. Furthermore, rookies on average hold shares with slightly lower nominal prices, which might be explained with the price of IPO stocks, since I show that rookies participate to a greater extent than non-rookies in investing in IPO firms. Considering the median for each variable in table 4 all variables are significant and age, gender, portfolio value and number of shares in portfolio all show the same pattern as the mean values. However, for income and average price the difference is still significant but reversed for the median. Although we can learn a lot from rookies, the results in this thesis show that it is clear that the rookies stand out as a group from the non-rookies. Taking previous studies, e.g., Campbell (2006), Goetzmann and Kumar (2008), and Kumar (2009), under consideration these results show that rookies on average are less sophisticated stock market investors than non-rookies, which seems reasonable also from a pragmatic and intuitive standpoint.

T.ex.

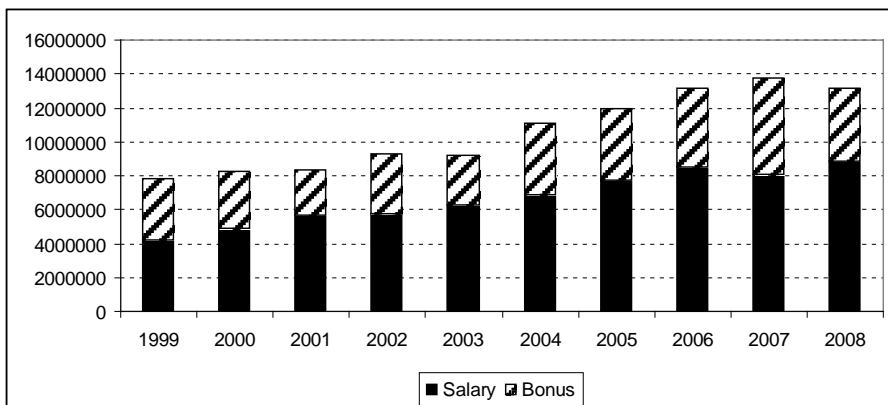


Figure 4. Structure of compensation to CEO

Figure 4 shows the mean level of salary and bonus (in SEK) for the CEO in the 30 largest firms listed on the Stockholm Stock Exchange (SSE) in Sweden over the sample period 1999 to 2008. All data have been hand collected from the annual reports. The figure shows two compensation parts, salaries and bonuses. All compensation data are adjusted for inflation and reported in 2008 purchasing power. Despite the discussion on bonuses and compensation levels our study on CEO compensation shows that bonuses and fixed salary have been increasing in the largest Swedish firms. The shareholders have seen more and more of the funds of the firm being allocated to the CEOs. The empirical results in paper II, show no support of compensation being related to firm performance (ROA) or growth opportunities (M/B). The ownership structure play an important role in CEO compensation studies. Moreover, we show that large holdings by foreign investors are associated with larger CEO compensation. However, at the same time the strength of the CEO is weakened by foreign investors. Indicating that foreign investors monitor the CEO and restrict the possibilities for the CEO to affect their own compensation plan. In addition, our analysis indicate that large holdings by foreign institutional investors are associated with lower strength of the CEO suggesting a transition of power from the CEO to the chairman of the board. We study inside holdings of the CEOs, Chairmen and Boards of Directors, but without conclusive evidence of the relation to CEO compensation.

## Conclusion

Individuals obviously have various reasons for placing their money in whatever source of investment they find suitable, some of them decide to invest in the stock market. Furthermore, some of them invest in shares of one or several firms. In this thesis, I show that, in Sweden, approximately one in five people choose to invest in publicly traded shares. Some of shareholders are experienced traders, but some of them are stock market rookies, i.e., invest in the stock market for the first time. Some of them are given the shares because they come with a job, or must invest in the firm after being appointed a job in the firm, but some of them have waited for years to invest in a certain firm to finally become a shareholder. In this study, I have attempted to describe these shareholders, especially those entering the stock market for the first time.

I contribute to research and the knowledge about individual shareholders in several ways. Through the empirical studies, I define the stock market rookies and show the inflow of these new investors to the stock market. I explore and portray the rookies. In addition, I describe shareholder characteristics based on all shareholders in Sweden and compare these to the characteristics of rookies. The warning signs projected by previous research of individuals leaving the stock market are addressed and compared to the situation in the US. The data contribution of the thesis includes a hand-collected dataset on initial public offerings in Sweden, on the main market and on alternative markets. In addition, information on compensation to chief executives and board members is also collected and studied.

Theoretically, I present a model that explains the variation in portfolio value among rookie shareholders. A new variable was introduced to explain CEO compensation, when we presented the strength of the CEO. In paper I, we show that CEOs with strong positions toward the board and firm management also have greater compensation than if the relationship is opposite. I present gender differences in holdings, as well as strong reasons for not using unbalanced gender proxies for decision making in households.

For the broader public, figure 3 shows the under diversification of the stock portfolios of individual shareholders, where approximately 50 % the individual investors own shares in only one firm. The strength of the CEO is a means for even the presumable shareholder to understand the possibility that the CEO of the firm might be in a good position to negotiate compensation terms. The variable might then serve as a warning bell for individuals, and possibly also institutions, in their investment decisions.

Future research could follow up on individual investors and track their behavior over time, both for rookies and for more experienced investors. While I show a portrait of rookie investors and the portfolio choices made by them, it would be interesting to study the development of their portfolios over time.

## Limitations and Directions for Future Research

When investing in funds, i.e., through an institution, the investor trusts the institution to allocate the invested capital into underlying financial products. In return the institution will charge the investor for the service of investing the capital. The investors have little or no possibility of affecting the underlying financial products or the transactions made within the fund. However, the investors have several institutions and funds to select from, and in most cases, the capital invested can be transferred to other institutions or funds simply by request. Thereby, the investors put their faith in the hands of the institutions by trusting the funds and fund managers to provide the best possible returns given the risk agreed upon through the descriptions of the invested funds. This thesis focuses on shareholders and their investment decisions on the stock market. Thus, investments through institutions are excluded from this thesis. Rather, the focus is on investments controlled by the shareholder, and where the investment decision can be referred to the individual, i.e., responsible for its own decisions.

Despite the efforts undertaken in this thesis to extend our knowledge on shareholders, there are infinite demands for more knowledge on the subject. For instance, portfolio rebalancing and the investments made over long time horizons, including the investor's youth, work life and retirement would give a sharper and more detailed portrait of the shareholder. Furthermore, it could show the individual as investor over a life time and not only as a shareholder over a limited time period. However, the data collection and endurance of the researcher will be thoroughly tested in such a study. In order to direct the research in smaller steps, I still believe it is worth tracking the shareholder over time, especially considering large impacts or even life-changing events, e.g., large income shifts, marriage, retirement or changes in accommodation. Property investments and the development of the last 30 years or so in the property market, compared to the stock market, would also be interesting. Using data on shareholders, compared to data on property holders, could be an interesting setting to study the investments made during the life cycle of the individual.

The ownership data available to me begin at the turn of the millennium. Therefore, no historical overview or larger patterns extended over generations are included in the thesis. Moreover, the Euroclear data on shareholders are recorded on specific dates, thereby, I am unable to trace and study any day to day trades. However, on the recorded dates, the records hold all shareholders in all publicly traded firms in Sweden.

Although I contribute to the literature portraying the individual investor I focus on the attraction of new investors, "rookies". Through the rookies, we can learn about what attracts them to the stock market. Questions such as what triggers the individual to enter the stock market can be asked, which could also be asked under different market conditions. In paper I, differences

in the inflow of rookies are detected during bear and bull stock market conditions, which could be explored further. Furthermore, seeking reasons for entering the stock market this type of study could benefit from a more qualitative approach, with interviews or surveys conducted with rookies. Given the constraints on data usage, I had to withhold any contact with the rookies in the studies performed. However, in other studies with cooperation within, e.g., banks it would be interesting to pursue.

Based on the similarities in the overall trends regarding number of stock market investors, there seems to be reason to believe that it could also be the case in other countries. Although my thesis shows a substantial number of rookies entering the stock market in Sweden, it would be interesting if it could also be empirically tested in other countries.



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