The principal agent

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Abstract

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Title: The principal agent

Problem: How can segments on Aktietorget explain how a lemon market can not only survive but grow?

Purpose: The purpose is to try to explain how Aktietorget can grow under lemon market conditions by gauging investor groupings investment tendencies.

Method: Quantitative archival study regarding returns and price per share depending on investor identity.

Conclusion: Finance industry investor yields higher returns, which implicates the possibility of rational investing. This is attributed to either identity inherited capabilities or them being agents in the place of the principal. The private investor on the other hand is full principals and has a tendency towards low price per share. All other capital on Aktietorget conforms to the lottery characteristics of Aktietorget.

Keywords: low priced stocks, effective markets, lemon market
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1. Introduction

In this section we will introduce the subject and discuss the problem surrounding substandard markets with high risk and low return.

1.1 Background

From what’s been reported in the media the smaller lists of Nordic countries seem to be at best equal to keeping the money in the mattress or at worst playing the lottery (Lindblad, Himmel, 2011; Lindblad, Förlustbolagen, 2011; di.se, 2007; E24, 2007). The majority of the criticism and scandals seems to be directed at the marketplace Aktietorget, which is commonly placed as the lowest ranking exchange (E24, 2007). However the returns from Aktietorget based on index figures are lower than the bigger lists (E24, 2007). This is interesting since traditionally you would expect a premium on the small cap markets (Bauman, Conover, & Miller, 1998). It is one of the better known anomalies in stock market returns, the small cap out performs the large cap (Horowitz, Loughran, & Savin, 2000). This should be true for Aktietorget in relation to OMX, due to a return premium on risk. The reality of Aktietorget stocks is however not a premium on risk but negative expected returns (Lindblad, Förlustbolagen, 2011). The absence of this premium suggests that Aktietorget is what Akerlof (1970) calls a Lemon market.

In the US restrictions were put in to place after scandals in the 1980s of the like pictured in the movie “Wolf on Wall Street”. The law was named “the penny stock reform act” (PSRA) and was signed in to US federal law in 1990 and focused on stocks under 5 $ (Rhee & Wu, 2012). The vast majority of stocks at Aktietorget fall under this category (Aktietorget, 2014). The law was mainly set up to regulate listing criteria and to promote the upbringing of regulated online marketplaces rather than over the counter sales (Rhee & Wu, 2012). Aktietorget seems to conform to the ideas of the PSRA, in structuring a regulated platform for sales of penny stocks. However after several scandals in 2006 the CEO Patrik Engellau apologised for the enforcement of regulation not having been up to scratch in the vetting of new lists (Öhrn, 2006). In actuality since Aktietorget start in 1998 there have been a total 248 companies with stocks listed on Aktietorget but only 121 remain today (aktietorget.se). Carpentier and Suret (2012) suggest graduating to a larger market from a penny stock market.
is rare, this suggest a large number of companies delisted either due to defaulting, extreme underperformance or fraudulent activities.

Aktietorget was founded when the monopoly on stock exchanges in Sweden was disbanded in 1998. The list was a licenced exchange until 2007, when new regulation led it to become a Multi Trading Platform (MTF) (Finans Inspektionen, 2007). This suggests 15 years of lemons is not enough for investors to abandon the market, but gives an opening for behavioural finance to do something with the proverb “if you have lemons, make lemonade”. The possible rational behind the lemonade is a subset theory of behavioural finance; Lottery Stocks (Statman, 2002). The idea is that there is a segment of quasi intellectual younger middle class investors with no scientifically based knowledge, hoping to jump a class by winning what they consider to be a more rational lottery (Delong, Shleifer, Summers & Waldmann, 1990; Field & Lowry, 2009).

1.2 Problematization

Markets like Aktietorget which cannot yield competitive returns should not attract investors according to classical utility theory (Von Neumann & Morgenstern, 1947). The cause of a substandard market is according to lemon market research the occurrence of too many substandard items on the market. If too many lemons are introduced to a market, the general market price would drop due to buyers’ uncertainty of quality (Akerlof, 1970). This would in turn cause the circumstances where there would no longer be any reason for selling good quality items. There are stocks which conform or surpass expected return at Aktietorget; however the majority does not. Given these probabilities the rational investor would divest and the market would therefore fail (Akerlof, 1970).

While Akerlof (1970) sentence markets such as Aktietorget to their inevitable demise, Fama (2004) argues extreme risk markets which does not yield expected returns can be sustained within the hypotheses of the efficient market. In the argumentation he posits the possible occurrence of non-economic goals in the investor mix, as well as a change in the supply and demand curves of investment capital since the eighties. First off the non-economic goals might be seen as an extreme risk sharing by the market to yield products which might return utility for the investor outside of the money spectrum. Secondly the investment capital needed
per firm has decreased and the supply of capital has increased. This gives place for more firms to go public and thus worse firms being considered viable for investing in.

Behavioural finance deviates mainly in this respect due to rejecting classical utility theory. While classical linear utility theory suggests that every unit of return has an equal effect on utility; the relationship does not need to be 1 to 1 as in figure 1 but has to be linear (Bell, 1995). Prospect theory postulates that utility is a function of the current state (the x, y position) of utility/risk and the prospect of a new outcome. Figure 1 shows how losses are perceived as massive almost immediately to later plane out to where further losses are unimportant to perceived utility. The same relationship is true for positive returns but less extreme (Kahneman & Tversky, 1979).

The main rift between classical rational EMH and behaviourist like Kahneman, Tversky and Ritter boils down to whether there are any explanatory powers in how behaviour influences the market. While Fama (2002) argue that the irrationality of investors does not impact the EMH, the aggregated effect of under and overpricing does not equate to anything significant other than in specific cases. By this Fama (2002) make a hint towards irrelevancy in the literature he refers to as the anomalies literature.

A similar irrelevancy issue related to the owners/investors is the assumption in main agency theory of homogeneity within the population of principals. This can be shown with a quote from again Eugene Fama “the ownership of the firm is an irrelevant concept” (Fama E., 1980). However, studies have shown that not all principals act alike or have the same resources; thereby not all owners are the same, thus not homogenous (Field & Lowry, 2009; Bradley, Cooney, Dolvin, & Bradford, 2006; Rhee & Wu, 2012; Seguin & Smoller, 1997). Different investor groupings have been shown able to segment the market (Carpentier & Suret, 2012; Field & Lowry, 2009). The rift between the two camps is again not concerning
differences existing, but rather if there is a significant difference if differences are taken into account.

In a market bordering on anomalous, perhaps what Fama (2004) considers anomalies literature ideas could give an answer to why the buyers are so willing to invest in lemon market uncertainty. Can the investors be discriminated between to yield a segmentation of the market thru attributing abilities and behaviour to groups discriminated between. The issue centres on the buyer, i.e. the investor, which continues to invest in the market rather than the sellers, i.e. the founders, those supplying the market with investments objects, hence the focus being the investors rather than the founders. While founders are expected to fail in entrepreneurial endeavours (McGrath, 1999), investors in stock markets are expected to regress to the norm, i.e. beta equalling 1. Why are the investors not doing so by leaving for other stock exchanges, where expected returns are positive? Why are they investing in Aktietorget? Could it be because of abilities or behaviour attributed to different investor segments of the market?

1.2.1 Research gap
The research gap we’re pursuing is practically, how the specific market of Aktietorget can sustain investment capital. The theoretical gap is the disagreement or rift between classical rationality coupled with EMH and behavioural finance. This is a mapping of a specific market, a possible contribution to the anomalous literature, considering the anomaly which is Aktietorget and the investors which make it work.

1.2.2 Research question
Given that Aktietorget comparatively underperforms and thus should fail, our research question becomes: How can Aktietorget attract capital from investors?

1.2.3 Purpose
The purpose of the study is to explain how Aktietorget can sustain through attracting capital from investors, researched through investigating categories of investors on the market.
1.3 DISPOSITION

Section 1 – Introduction
This section consists of the background of Aktietorget as well as the problematization. The section concludes in the research purpose: through discriminating between investors, create segments which can discern why a market which should be failing is growing?

Section 2 – Theoretical Framework
In this chapter we will review the literature needed to discriminate between investor/owners. In the theory section a discrimination is proposed based on abilities and the restrictions placed on agents, which leads to greater returns and a bias for low price per share.

Section 3 - Methodology
The Methodology chapter focuses on how the thesis will reach its conclusions. The first part consists of defining the studies general methodology, followed by the more precise definitions of the operationalization It will consider the validity and reliability of the sources.

Section 4 – Empirical findings
This chapter contain empirical findings from the hypothesis testing. To start we present the descriptive statistics of the variables and then the testing of the two hypotheses.

Section 5 – Results Analysis
The result analysis consists of the discussion concerning the empirical findings in regards to theory.

Section 6 – Conclusion
In the conclusion we will summarize and explain the findings possible relevance. Then shortcomings of the study will be presented, followed by suggestions for further research.
2. Theoretical Framework

In this chapter we will first show how previous literature has separated investors to discern differences in segments. Then to build a theory we utilize the parts of these discriminations in tandem with other sources to explain the investors' behaviour in why they invest at Aktietorget.

2.1 Literature

In researching ownership/investors discriminations, it is clear that the definitions of investors differ somewhat depending on the research field and the purpose of the study. The aim is to review literature that have segmented the market into different categories of investors. In this review, we will especially focus on the dimensions that create the different categories. This will be our focus since we will use these dimensions in order to build our own theory of investor categories in the following section.

A good starting point could be Keynes (1936) which derives the groups Industrial and Speculative based mainly on the dimension of trading strategy, i.e. long- or short hold of shares.

- **Industrial**
  
  The industrial investor is defined by the trading strategy dimension as long hold with the addition of the investments viability is based on future company value. Industrialists make money by investing in expected future production of firms (Keynes, 1936).

- **Speculative**
  
  The Speculative investor is the counterpoint with the trading strategy dimension being defined as short hold investing based on market behaviour. The speculator makes money by acting on stock market fluctuation (Keynes, 1936).

Keynes (1936) also attributes the Industrial trading strategy of long hold as being the more successful, thereby slightly condemning the speculative traders and encouraging the industrialists.
Another discrimination is the more obviously derogatory grouping of *Smart money* and *Dumb money* (Sørensen, 2007). This distinction is sometimes also named by simply stating whether the investor is considered experienced or inexperienced (Field & Lowry, 2009; Rhee & Wu, 2012)

**Smart Money (Experienced)**

The Smart money or experienced investor is defined only as belonging to the finance industry, the rational being that the affiliation suggesting higher education, knowhow and prowess at the stock market (Field & Lowry, 2009; Rhee & Wu, 2012; Sørensen, 2007).

- **The dimension of monitoring ability gives** smart money the attribute of having a better grasp of active and passive monitoring than the dumb money, due to both share size and . Monitoring being the activity of the principal in which they control the activities of the agents (Chen, Harford, & Li, 2007).

- **In the dimension of private information** their prowess is due to holding more information gathered at corporate events or through in-company contacts. Private information is the information which is not openly available to the market but exclusive to entities with insight (Lange, Bygrave, Nishimoto, Roedel, & Stock, 2010).

- **Their analysing of publicly available information is less flawed then the individual investors.** The dimension being information analysis which is the act of interpreting information to analyse probabilities of outcome is attributed as better in the smart money category (Field & Lowry, 2009).

**Dumb Money (Inexperienced)**

Dumb money is the negation of Smart money, simply put not financial industry and therefore not included in Smart Money. Hence they are attributed with the lack of prowess whichever the dimension, i.e. they are inferior in categories where as Smart money is superior (Field & Lowry, 2009; Rhee & Wu, 2012; Sørensen, 2007).

This superiority leads the Smart money to being more able to navigate the financial market for profits. This binary distinction focuses solely on the smart money category without defining the dumb money as more than the negation or lack of smart.
When gathering sources for the papers, it is noticeable that when literature focuses on owners rather than investors researchers tend to explicitly explain dimensions which earlier where implied as part of another dimension, this means that dimensions are more numerous. Due to the large amount of then pertinent dimensions and in the interest of making the content easily accessible to you the reader we will simply state the dimensions followed by brief explanation (if it has not been explained earlier) and value. The groups are divided into the groups:

- **Family, Corporations, Individuals (FCI); dimensions**
  - The wide generalization of FCI is them being the group containing the large size shareholders; they tend to be founders or other long hold strategy investors with close ties and expertise concerning the specific company. The dimensions which generalize the FCI into this group consisting of founders and other long hold strategy investors are:
    - *Investment strategy*, this is the same dimension used by Keynes (1936), which attributes the FCI with having a long hold strategy.
    - *Share size*, this dimension attributes the group with values to reflect their large share size in relations to other owners (Anderson, Mansi, & Reeb, 2003).
    - *Diversification*, this dimension is to discern how diverse the investment strategy is. The FCI have low diversification with the large share size in a specific company (Gedajlovic, Yoshikawa, & Hashimoto, 2005).
    - *Ties to the firm*, this dimension is a measure of the distance from the investor to major contributors within the company. For the FCI this distance is close (Anderson & Reeb, 2003)
  - Now the combination of these first dimensions is indicative of further dimensions which are more to the level of smart money dimensioning.
    - *Monitoring ability*, Monitoring incentives is expected to rise with share size and thus, attributing the FCI with utilizing a high degree of monitoring (Anderson, Mansi and Reeb, 2003; Goldberg & Idson, 1995)
    - *Private information*, these larger shareholders have access to more private information due to monitoring and close ties to the company either being the founder or a majority shareholder (Cheng & Firth, 2006).
- **Risk preference**, this dimension measures the groupings preference for risk in investments. The FCI are risk averse due to the large company specific investment and low diversification (Gedajlovic, Yoshikawa and Hashimoto, 2005).

- **Dividend preference** is a dimension which divides the groups by whether or not they have a preference of utility of the firm’s excess profit. FCI prefers high dividends rather than indirect returns attributed to stock quote increases, due to their long hold strategy they're not interested in selling their shares to access returns. Another reason for the preference is the issue of diversification possibilities granted due to high dividends (Gedajlovic, Yoshikawa and Hashimoto, 2005).

### Institutional investors

- Experts in diversified investments, generalized as purely financially motivated (Gedajlovic, Yoshikawa and Hashimoto, 2005).
  - **Investment strategy**: Their investment strategy is defined as diverse which does lead them closer to the speculative investor of Keynesian theory than FCI, but cannot be specified as a short hold investor (Fiss & Zajac, 2004)
  - **Share size**: While generally not being the majority owner they still have a larger share size than the private investor and are as such seen as the medium size investor.
  - **Diversification**: Being one of the fundamentals in risk management is to minimize the risk by diversifying the portfolio to eliminate the company specific risk. Thus they utilize high diversification (De Ridder, 2008)
  - **Ties to the firm**: Being a large contributor outside of the majority owners they tend to have less close ties in comparison with FCI, but still close.

- Now the combination of these first dimensions leads to the further dimensions level of smart money dimensioning.
  - **Monitoring ability**: they seek profit maximization through monitoring, their ability to influence relates to share size and is thus medium (Cheng and Firth, 2005; Goldberg, & Idson, 1995).
o \textit{Private information}: They have in comparison with the FEI group less private information, due to share size and monitoring incentives, if assigning a word as a value the word would be “some” (Cheng and Firth, 2005; Goldberg, & Idson, 1995).

o \textit{Risk preference}: The Institutional investors are indifferent to risk as long as it is matched with corresponding expected returns (Gedajlović, Yoshikawa and Hashimoto, 2005).

o \textit{Dividend preference} Indifferent to dividends since they have no attachment to holding the shares (Coffee, 1991)

- **Small private investors**
  - Is rather than a category influencing the firm by ownership a category which yields liquidity to the market. As such many of the dimensions are not specified, due to the diversity included in the identity. However some fundamental distinctions can be made from a few dimensions.
    
    o \textit{Share size}: Low share size per investor.
    
    o \textit{Monitoring ability}: Due to share size there is no significant monitoring ability (Goldberg, & Idson, 1995).
    
    o \textit{Ties to the firm}: Being one of many small contributors outside of the majority owners, with no significant monitoring ability they tend to have no ties to the corporation.
    
    o \textit{Private information}: The three above dimensions yields no connection to private information.

All the discriminations in this section derive their names from the identity of the owner/investor, identity being the grouping based on who someone is (i.e. family, corporations, industrial, smart money) rather than on dimensions (i.e. monitoring ability, risk preference). To the identities are then added dimensions to attribute with generalized characteristics. The different discriminations have different levels and amounts of dimensions, likely due to more identities demands more dimensions to separate. The dimensions tend to either be or yield abilities then attributed to the identities such as monitoring ability, share size, ties to the firm.
2.2 Theory

Continuing from the literature review there is one major division of owners at the stock market: Buyers (Investors) and Sellers (Founders). Founders are not the interest of the study since they do not invest in the market, but offer investments opportunities through their company. By focusing on the buyers column we claim there is two owner/investor types of interest to our study: the financial industry investor (FII) and the private investor (PI).

To start with the two stage table below describes how FII and PI differ from each other. In the first stage we present the dimensions that define the abilities the two groups of investors have. These are the capacity to interpret information, to find information that is not well distributed on the market, i.e., more or less private information, and finally, their capacity and opportunity to influence the corporation through the voting rights of the shares they possess, i.e., to monitor the company.

These abilities are, however, restricted in use since the investors are influenced by either their own principals, if they have ones, i.e. accountability, or through regulations. These two stages, ability and restrictions, cause an investment behaviour, which in the case of FII is oriented towards risk, and in the case of PI is oriented towards uncertainty. Below follows description of each dimension.

<table>
<thead>
<tr>
<th></th>
<th>FII</th>
<th>PI</th>
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<tbody>
<tr>
<td>Information interpretation</td>
<td>More</td>
<td>Less</td>
</tr>
<tr>
<td>Access to private information</td>
<td>More</td>
<td>Less</td>
</tr>
<tr>
<td>Monitoring ability</td>
<td>More</td>
<td>Less</td>
</tr>
<tr>
<td><strong>Stage 1</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>The PII experience and capital advantage</td>
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<tr>
<td>Investment capital accountability</td>
<td>More</td>
<td>None</td>
</tr>
<tr>
<td>Regulations determining viable investments</td>
<td>More</td>
<td>None</td>
</tr>
<tr>
<td><strong>Stage 2</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Future predictions</td>
<td>Risk</td>
<td>Uncertainty</td>
</tr>
</tbody>
</table>

Table 1. The discrimination between PI and FII.

2.2.1 Information interpretation

EMH is about information availability at different market states, therefore the interpretation and analysing of available information is essential to pricing the asset correctly (Fama E. F., Capital Markets: A review of Theory and Empirical Work, 1970). By a better analysis of the
information, the viability in regards to risk and returns is more likely to be accurate (Fama E. F., Capital Markets: A review of Theory and Empirical Work, 1970). The distinction between the two investor types is a vague distinction of experience, a higher experience held by the FII (Field & Lowry, 2009; Lange, Bygrave, Nishimoto, Roedel, & Stock, 2010). The vague experience distinction which is used widely seems to imply that FII investors have:

1) The adequate education of the investor to hold such a position
2) The investors have been selected due to their education and being fit for the position, selected by a company which have an interest and competence in picking the right person for the job.
3) Over time they amass a track record and through their acting in the firms investing in the market, gained experience.

As experience is an implied dimension of experience itself perhaps it would be more accurate and to the point to while still using the above dimensions explicitly, change the term experience to competence. Thus, we claim that FII, being employed in financial organisations, will be able to better pick shares due to their superior capacity to analyse public information due not to vague experience but rather to competence consisting of the explicit dimensions of education, company’s selections of employees and market experience.

PI have access to the same public information, but due to the dimensions of less education, them being the default investor of their own capital, as well as being less acting on the market, they have less of the vague experience dimension, which all sum up to less capacity to analyse public information.

2.2.2 Access to private information

We claim that the category of FII will have an advantage due to them having more access to private information. One reason for this is that they are closer to key position holders of the firms. Another reason is that they can have large stocks holdings in a firm, which makes them even closer to the management of the firm, for example with enough votes due to share size they can have a seat at the board of directors. Through this vincinity, they get access to private information. PI, being solely small in investments, only acting on the market, only taking part of public information, will not have access to private information, thus having an informational disadvantage.
2.2.3 Monitoring ability

Monitoring is supervising: the practise of systematically reviewing the company. Active monitoring can also include giving inputs to what the monitor perceives as a direction for progress, it can stretch all the way to places on the board of directors and decision making. Monitoring is the principals controlling the agent, to review the status of the work they are doing in firm. The differences between the two Investor groups which yield the largest difference in the ability to monitor the agents are mainly down to the capital advantage a FII has compared to a PI. This capital advantage also gives FII according to agency theory

   a) A larger share more incentives to control the agents, due to the larger interests in outcome (Goldberg, & Idson, 1995).
   b) Also the share size conveniently gives the principal more weight towards the implementation of monitoring (Goldberg, & Idson, 1995).

Since FII are few or singular per company with a large number of shares, this in comparison with the numerous PI in which the capital is spread out, thus the FII has a larger interest and possibility of monitoring. To this advantage of share size of the FII there is an addition of FII experience. In influencing a company it seems size is not the only aspect, by FII having more experience and the underlying dimension of superior education in the field than the PI, they have alongside weight the necessary knowhow to utilize the position they are in. Obviously the less experienced and low weight PI could try influencing the company by the same means, though the impact would generally be far less than the more powerful FII.

2.2.4 The PII experience and capital advantage

The advantage in the above categories should lead to an advantage in returns as the below diagram shows, the diagram being a visualization of the table.

Diagram 1. The PII experience and capital advantage

[Diagram showing the relationship between FII and PI with Experience, Large share size, Monitoring, Greater stock pickning, Greater information analysis, Private information, Share return, Small share size, Inexperience, Arbitrary returns, Firm profit]
FII competence first leads to better analysis of available information and thus better stock picks. Secondly it also leads through closer connections with the firm and thus to private information, which due to information advantage leads to better stock picks. The third advantage is down share size advantage which in turn leads to better monitoring capabilities, which should lead to a further private information advantage, as well as positively effecting outcome towards firm profit maximization. Both the firm profit maximization and better stock picks due to information advantage and analysis should lead to better expected return.

The PI then is marginalised to be somewhat the opposite, mainly due to how the dimensions in literature does not focus on PI other than as being a bi-product, the standard, to which the more interesting variable is measured against. The inexperience has no clear effect, possibly due to arbitrary choices in stocks gives arbitrary returns. The PI small share size has no effect on the company in contrast to FII monitoring, but could be considered to give arbitrary returns if the impetration of small means financially negligible to the PI as well.

Thus - H1: increase of FII correlates positively with returns.

The literature is focused on the ability and how the investments create incentives for the investor to monitor. We posit however, that it tend to overlook one important set of characteristics of the investor, how the investor is regulated. We suggest that the behaviour of an investor is influenced by the situation if the investor is an agent or a principal. In the case of FII making investments, they are agents with accountability towards their principals. In the case of the PI investor they are the final principal, i.e., they invest their own money, which possibly could lead to a different behaviour.

2.2.5 Investment capital accountability

Accountability is where one person is accountable to another, someone will hold the person accountable for its actions; this is the agent to principal dynamic. As an agent you have to be able to defend decisions by explaining why they were made as well as being the subject of incentives with the aim of influencing your behaviour, whereas if you are the principal you are accountable to yourself only. We assume that FII principals in general are second order
agents themselves, i.e., belonging to organisations that are accountable to a principal, while PI, overall, are principals. Assuming that FII in general are agents make them accountable to their principals, their principals expect the returns to match the risk inherit in the investment.

This relationship gives the FII incentives to react in accordance with classical proven theory to be able to excuse possible losses with an explanation of the rationality of risk and returns. On the other hand the PI has no accountability issues, since the money used is their own. This means that while the investor behaviour of the FII should be limited to proven rationality due to accountability, the same is not true for PI.

2.2.6 Regulations determining viable investments
Regulations inhibit freedom and are given by all corporate or societal instances above the investor to which all has to yield. As opposed to accountability, regulations are borders which you may not cross; while accountability is the reason for having to being able to explain why you crossed. Both investor types have to adhere to market regulations and international/national law. However the FII also have investment guidelines and company/industry specific regulations to take into account before an investment is viable (Cantor, Gwilym, & Thomas, 2007). As in the previous accountability segment the difference between the investor types is a function of being an agent. FII is inhibited by the rules and regulations of the firm the agent is working for, while the PI has no such constraints. This inhibition should give FII fewer possibilities to stray towards the utility function of prospect theory and therefore keep at least their actions classically rational.

2.2.7 Future predictions
Future predictions are meant to draw distinctions in the differences in how to predict the future returns on an investment. There are different ways of calculating future returns within economic theory. These predictions give a likely return spectrum based on risk through variance.

Future predictions classically depend on risk, however contrary to the FII the PI does not have to incorporate risk and therefore we label their future predictions as uncertainty. This since the classical difference in prognostication is risk and uncertainty, the difference being risk is calculated whilst uncertainty is not (Knight, 1921). It has been shown that people rather than assessing risk are assessing possible gains; this is utilizing uncertainty rather than risk since it regards possibilities rather than probabilities (Kahneman & Tversky, 1979). The FII role as an
agent forces it through accountability to invest through correlating the return of the share with the risk. Therefore there is a correlation between risk and return in the case of FII, but not with PI. By not being an accountable agent, the PI future predictions should tend towards uncertainty. This restriction whether it is followed due to accountability or inherit rationality could yield similar results to those found in the Fields and Lowery (2009) study. The study describes how FII due to information analysis, have greater returns due to not investing in the stocks with worst performance. This all points to our H1, that FII is positively correlated with positive return. But the reason now is not their competence, but the restrictions put on their possibility to assume extreme risk.

Thus - H1: FII ownership correlates with positive returns.

The PI on the other hand not being restricted can freely make worse investments decisions and should thus be random. The label of uncertainty as prediction instrument can be considered somewhat rash since the behavioural finance evidence is only being pointed to segments of PI and therefore not enough to actually label their future predictions as generally being due to uncertainty. However, it’s clear that if it is risk calculations which are being done by PI, they are inept in using the techniques. Also the market being within what could be called a lottery market (Statman, 2002), the investors taking part can be considered being a part of one of the segments less prone to utilize risk but using possible rewards, a sort of utility of hope rather than expectations.

It has been suggested that inexperienced investors such as the PI are easier persuaded that a stock with a price of 0.5 $ per share can reach 10 $ then a stock costing 50 $ reaching 1000 $ (Carpentier & Suret, 2012; Rhee & Wu, 2012). This is due to the perceptual difference being smaller at smaller prices and larger at larger prices, while in actuality it is equal whichever the price point, as long as the quota is the same. If you pair this with their principal positions yielding no accountability or investment guidelines, PI should be more prone to irrational decisions. If popular fiction, Rhee and Wu (2012) and the larger probability for worse decisions are correct, then PI should be easier persuaded to invest in low price per share rather low market value. Being their own principal there is no regulations or principal to hold them accountable, thus they it should be more likely that they tend towards low price.

Thus - H2: Private investors tend to invest in lower price per share
In sum, we claim that the lemon market consist of two sets of investors, FII and PI. FII will be able, due to competence and monitoring capacity, to reach higher returns than PI. On the other hand, due to differences in regulations and accountability, PI (principals) will be less prone to rationality as suggested by Von Neumann and Morgenstern (1947) in their investments, but investing due to possible outcomes rather than probable, investments made due to utility of hope. This, while FII (agents) have to adhere to the accepted standards of rationality, which makes them invest through calculus of correlation risk and return, but also thru avoiding very high risk investments due to in-company restrictions. We believe that we have an explanation of the existence of the living lemon market based on the fact that the lemon markets consists of agents and principals, a fact neglected, according to our knowledge, by earlier studies.
3. Methodology

The Methodology chapter focuses on how the thesis will reach its conclusions and how reliable and valid they can be considered.

3.1 Research Philosophy

In research, the philosophical mind set of the authors or the different viewpoints of the world influences papers to a large degree. Classically the two opposites in research philosophy are positivism and hermeneutics. Positivism builds on existing theory by reviewing it by quantifiable data to yield wide generalisations about the world. Hermeneutics focuses on the understanding of a phenomenon, giving deeper understanding for a specific case, but yielding a less generalizing outcome (Bryman & Bell, 2007).

The research philosophy of the authors could have a big influence in the choice of the papers methodology. However in the stock market research reviewed for this paper the use of historical data to give generalizing conclusions is by far the most common practise. It follows that when researching a field where there is an abundance of available numerical data, the studies carried out will reflect this. It would therefore be wrong to simply call this paper positivistic due to the data used, but even so we tend to agree more with measurable findings. Furthermore, since our aim is to find indications of different investors and their behaviour on a market, and not to gain an understanding of the individuals acting on these markets, our approach is more towards positivism than hermeneutics.

3.2 Form of Research Purpose

Our aim is to find indications if the market is divided into two major investor categories, PI and FII, which are characterised by different behaviours, due to their characteristics. Thus, our nearest aim is to find out if we can describe the market in terms of categories of investors. But our claim is, if possible, it could be the explanation why the market exists, thus our final aim is explanatory, to find one, of certainly several, reasons why a market exists that, according to some should not exists.

In the division of research purpose, as suggested by Jacobsen (2002), explorative, descriptive and explanatory, we make the claim that if we can identify two investor categories, i.e.,
descriptive, we offer an opportunity of explanation. However, our empirical tests are tests of correlations, not causalities, since it is not possible to directly explain the existence of a market because it would logically demand the existence of a non-market.

### 3.3 Quantitative or Qualitative

To collect, analyse and then present results are what constitute a scientific study. The two counterpoints in empirical research is qualitative and quantitative research methodology. Qualitative research has a hermeneutics angle and is useful for interpreting variables containing words and pictures. The quantitative research model tends towards positivism and is useful in the cases where the need is to exactly describe or explain quantifiable questions. Both have their pros and cons, while qualitative is better at understanding and gauging during an explorative state, quantitative is far better at quantifying data and giving definitive statistical answers in a descriptive or explanatory studies (Jacobsen, 2002).

We follow the tradition in the field, as has become clear from our hypotheses, which make us believe that we can fulfil our aim by finding correlations between quantitative measures. Thus, our data are quantitative and our analytical techniques will be those using quantitative data.

### 3.4 Operationalization

In the operationalization we will try to establish the different variables and their functions in the testing of the hypothesis, this to such extent that reproducing our findings should be straightforward.

#### 3.4.1 Dependent variables

The dependent variables in the study consist of returns, default dummy and listing price.

##### 3.4.1.1 Returns

We have predicted in H1 that FII will outperform PI when it concerns return. Return can be observed in many ways. We have chosen to observe return in the traditional way, as annual return, measured continuously and as a dummy variable, but also as probability of default. Below we explain those variables.
3.4.1.1 $RE_C$: Annual Returns continuous variable

The most common way in the research reviewed for the paper is annual returns, for example Fama & French (2004) calculate average annual returns for the purposes of comparing firms typical returns of one year. This is done due to each value of firm specific total returns also come with a time aspect, the number of days traded, a measuring the lifespan of the firm. It would be misleading in a comparison not to take the time factor in to account. By this reasoning we choose to time normalize returns into a annual average return variable, derived from the data as follows:

$$RE_C = \frac{(End\ price - Adjusted\ start\ price)}{Adjusted\ start\ price \cdot days\ traded} \cdot 252$$

This yields a ratio scale variable which thus can be tested by linear regression to discern correlation, as well as explanatory powers.

The data is gathered directly from Aktietorget in the form of stock quotes with the latest quote being the actual price and earlier quotes being adjusted for dividends, issues, splits and reverse splits. The data ranges from 2000-06-26 to 2014-04-24 and has been spot checked by corresponding data gathered from SIXedge\textsuperscript{1} to rule out faulty second hand data. The end price is the last stock quote available from the data range attributed to the specific company and the adjusted start price is the first quote available in the data range. The start price is subtracted from end price and then divided by start price to yield a product which we can call total returns. Total returns are then divided by the number of days traded as counted by a MS Excel function from the historical quotes. The reason for then multiplying it by 252 is to yield annual returns from daily returns to match the annularity in methodology of previous research.

As shown later in the descriptive statistics section, the Annual returns turn out to contain impossible negative returns of more than – 100 %. This is due to the calculation normalizing all returns to annual returns, which if the firm has few days traded and high negative returns yields an extreme negative product. While the product is in extreme cases unrealistic it does preserve the continuity of returns over time and as such the validity in comparability between

\textsuperscript{1} Six.com - SIX Financial Information
cases, which had been lost by capping the variable at – 100 %. By the continuity of returns over time we mean that the ratios within a ratio scale should remain the same whichever the time perspective might be.

3.4.1.1.2 \textit{RElog}_C: Annual Returns log-normal distribution variable

The distribution of the annual returns variable is skewed towards the positive, due to the theoretical minimum being limited to – 100 %, while the maximum is unlimited. While the theoretical limit has been breach as previously stated, the maximum is a far larger number than the minimum. When dealing with such distribution patterns you could by shifting the entire spectrum to only natural numbers and using their Log10 equivalent decrease the occurrence of outliers in a linear regression.

\[ \text{RElog}_C = \text{Log}10 (\text{N}at\text{ural numbers adjusted } \text{RE}_C) \]

This is called a log-normal distribution variable and is used to normalize positive skews. In the case of the annual returns while not making the variable statistically normally distributed the skew is reduced to some extent.

3.4.1.1.3 \textit{RE}_D: Annual Returns dummy variable:

Another transformation is the dummy variable, which the continuous variable was recoded into since two of the previous studies referenced in the paper give qualitative claims which can be interpreted as binary definitions (Carpentier & Suret, 2012; Field & Lowry, 2009). They both find that experienced investors (FII) have a tendency to avoid the worst performers, this rather than being positively correlated with a continuous return variable.

The variable is coded with positive returns as 1 and negative returns as 0. The recoding is to distinguish positive from negative. While a linear regression will yield a linear correlation between variables, a binary regression will show if a variable is more likely to lead to one or the other, thus, the technique of analyzing will be logistic regression.

3.4.1.1.4 \textit{DE}_D: Default dummy variable

Default occurs when a company no longer can be perceived as able to ever pay their debts, the company then dismantles and ceased to be. This is the extreme failure of a company and as FII according to literature should avoid the worst performers, default should be a category which they avoid. The data is gathered from an online resource named Retriever Business²

² http://www.retriever-info.com/
provided by the university library. Retriever Business is a resource containing annual reports, key figures and firm status from firms. The status of default was found by searching the company identification number and checking the status of the firm. If the search returned a defaulted company this was coded as 1, any other return was coded as 0.

### 3.4.1.1 \( LP_C \) and \( LP \log_C \): Listing Price continuous variables

Listing price is the dependable variable in H2 concerning PI investing behavior being drawn towards low prices. Listing price is defined as the stock quote at IPO, at the moment of listing, hence listing price. The IPO listing date is important to several studies referred to, i.e. Loughran and Ritter (1995) The IPO puzzle as well as Fama (2004), which both use it as the start point for the continuous returns variable. There are two major reasons for us using IPO listing price as the variable to discern if there is a PI bias toward low price per share. The first is the certainty of liquidity and at which price the PI bought their shares at, as if an arbitrary date was picked there might be no liquidity and the investor would be harder to discern. The second reason is ease of access to most information regarding new issues and therefore more data.

The data used to gather listing price for each company was first the earlier gathered historical adjusted stock quotes to reference the first day of trading, which then was used to access the raw data (not adjusted, but actual price) for each corresponding date from Aktietorget. However due to companies existing beyond the searchable data, 10 values are missing from the sample. As later depicted in the descriptive statistic section there is prevalent positive tail and thus the variable is normalized with a \( \log_{10} \) to yield a lesser skew.

\[
LP_{\log_C} = \log_{10} (LP_C)
\]

### 3.4.2 Independent variables

In the independent variables consists of the two different investor categories FII and PI. The data is gathered from ownership structures contained in IPO memorandums and annual reports. The ownership compositions shall thereby correspond with the IPO listing date. The PI variable is only defined as a ratio scale variable, whereas the FII variable is both a ratio scale variable which is also transformed into a dummy variable.

Ownership composition data was more problematic in the gathering face; we contacted companies which hold the pertinent information, without gaining access. The ownership composition is gathered from mainly new lists memorandums from company websites.
through web searches and to some extent Aktietorget historical news feed continuing links to such documents. In the case of them not being available we have used annual reports from the same year as the new list. This has led to missing values (32/248), which does impair the use of the variable slightly. Both memorandums and annual reports are reviewed by outside sources which give them reliability. Also, the annual reports while having no real reason to lie about ownership composition, does not either need to showcase ownership composition or get it reviewed. All things considered it does not lead to the data being untrustworthy.

3.4.2.1 \( FII_C \): Financial industry investor continuous variable

The definition of FII is an investor which is employed by a company in the financial sector. The FII definition is essentially the same as smart money or experienced investor referenced in the literature review (Field & Lowry, 2009; Sørensen, 2007). FII is usually coded by use of different readily available lists to the researcher. We did not have access to such a list and therefore had to create our own and then recode ownership structures gathered, singling out the percentage of FII votes in every case. We choose voting rights instead of capital right since our reasoning concerns monitoring, which is a function of voting rights, i.e., the power in the ownership. The FII variable is coded as the percentage of FII ownership votes in relation to total ownership votes. We decided to include the actual coding process as used by us to ensure reliability and reproduction ability.

The coding process of \( FII_C \): Financial industry investor continuous variable

The coding process after the first step: finding ownership structure table in memorandum or annual report.

i. First exclude all which clearly states to be private investors, founders or employees which are either privately owning shares or owning shares through a company.

ii. Then by making an internet search on each name of the major shareholders, include in FII variable if any of the following is found
   a. It states they are venture capital
   b. It is a fund handled by a bank
   c. It is an organization which invests in promising new businesses

iii. Make an input which reflects the percentage of votes held by the FIIs.
3.4.2.2  \( FII_D \): Financial industry investor dummy variable

There are two tests which can be carried out, either the share of FII effect on dependable variable, or the simple occurrence of FII correlation on a dependable variable. The test for occurrence is relevant due to us having suggested that FII avoid extreme corporations, thus they will keep out of certain corporations. It could also be seen as the difference between monitoring (share size dependent) and data analysis (not share size dependent) made in the FII chapter. That is why we chose to have one variable that simply observe the occurrence of FII. The dummy was recoded from the \( FII_C \) by recoding any occurrence as 1 and the lack of occurrence as 0.

\[
FII_C > 0 \rightarrow FII_D = 1; \text{ else } \rightarrow FII_D = 0
\]

3.4.2.3  \( PI_C \): Private investors continuous variable

PI is the investor category which contains the average self-investor. We defined PI as the owners’ which are not FII or Founders, in concurrence with the theory section. While the major shareholders contained in a memorandum or annual report could contain investors which could be considered PI, they are more likely Founders through the founder subgroup of Individual investors which due to their large share size as defined in the theory section.

\[
PI_C = \text{Total vote share size} - \text{Founders} - \text{FII}
\]

3.4.1  Inter-rater reliability

The ownership variables are manual input variables, the researcher having to rate the major owners based on information gathered for every single one. While not having done an actual inter-rater reliability test due to time constraints, under the process of coding the variable both authors were under close contact with each other and any cases of uncertainty was documented for the other to comment on. During the review of the material and the comments two cases were found which we disagreed on, both being funds set up by universities. Due to the disagreement they were both rejected as FII.

3.4.2  Control variable

The use of control variables in research is due to unrelated variables explaining variance through another variable. At the stock market it is problematic to find control variables to control a variable which measures the ability to analyze all such variables, especially in the case of FII being theorized as being superior in such analyses. Therefore it is hard to consider them unrelated in the case of controlling FII.
3.4.2.1 $MC_c$: Market capitalization at IPO

Market capitalization is the total value of the stock shares as valued by the market. Carpentier & Suret (2012) use the market capitalization as a major part in their model evaluating risk for default in IPOs. As such the implications being that higher market capitalization leads to less extreme risk. There is a chance of experienced investors knowing this rather well know correlation and therefore rendering the control variable obsolete in H1 testing.

When it comes to controlling for low price rather than low price per share it is a good control variable, for explaining the variance as a result of market capitalization and as such not neceserily due to low price per share in the H2.

To calculate market capitalization we used the listing price variable $LP_c$ and multiplied it by the number of shares at listing. The number at shares at listing can be found by the same raw data used in gathering listing price.

$$MC_c = LP_c \times \text{number of shares at listing}$$

3.5 Empirical models

In the testing of quantitative data there are several models to choose from for the testing phase of the study. The use of a specific model is defined by the variables, the hypothesis and therefore possible outcomes. We have two types of dependant variables, binary and continuous. The hypotheses reflect linear relationships between independent and dependent variables, although the theory also implies binary relationships. These characteristics and the hypotheses descriptive stance drive the selection of empirical models towards correlations. While a correlation study would capture the correlation a regression would give more reliable outcomes. Regressions can also incorporate control variables in hierarchical testing to show the difference between the control and the actual model. If control variables were not used or no extreme residuals having to be accounted for, simple correlations would be sufficient.

3.5.1 Binary regression (Logistic regression)

When the dependent variable is binary we will use binary regression, this due to the binary frequency of the variable; the outcome is either 1 or 0. The binary regressions will account for
misclassified cases. A binary regression also yields a more qualitative output since it is either or not rather than a linear rate. The pertinent information stated in the printouts are:

- **Kvasi R square (Nagelkerke)** - Has a 0-1 variance which indicates explanatory strength.
- **Beta** - Showcases the gradient of the correlation.
- **Wald** - Indicator of individual variables contribution to the model
- **Sig.** - Indicates the significance of the variable

### 3.5.2 Linear regression

The linear regression is used to yield linear correlations between variables with a continuous form. While more susceptible to non-normal distribution, it gives a quantitative output as the beta of the relation, i.e. the correlations effect.

- **R square** - Has a 0-1 variance which indicates explanatory strength.
- **Beta** - Showcases the gradient of the correlation.
- **Standard error** - Measures mean of errors in the prediction
- **Sig** - Indicates the significance of the variable

### 3.5.3 Sample

To start we must consider what would have been the theoretical sample. Our aim was to collect data from alive and defaulted companies at Aktietorget during the total timespan of Aktietorget existence (1997 to present), this was to form the entire history of Aktietorget.

Historical stock quotes where gathered using data directly gathered from Aktietorget to claim all companies, alive and defaulted. Aktietorget only have data from 2000-06-26 and forward available which means we lose all the data from the theoretical sample between 1997 and 2000. This is in itself not a big issue due to the small number of companies during this time period, and the close to 14 year sample gathered. The actuality being this will not be a complete study of the entirety of Aktietorgets history, but the last 14 years.

### 3.6 Reliability

Reliability of a study questions the trustworthiness of the methodology surrounding the collection, processing and use of data (Saunders, Lewis, & Thornhill, 2009). The statistical models used in the study are well established in methodology and the regressions and correlative statistics done in SPSS are sound.
The historical stock quotes and listing prices were gathered from Aktietorget directly. We found no in discrepancies by spot checking the material against quotes gathered from SIXedge. Rather than going to an independent source, we found the reliability of Aktietorget due to regulations and scrutiny being more than enough to be considered trustworthy.

The one reason we notice for non-significance could be the subjectivity of the ownership variables. By them being subjective they could misclassify cases and thus fail to grasp the true categories, which yield low reliability. While the reliability is helped somewhat by the inter-rater reliability of noting uncertain cases and through discussion classify these cases. The inter-rater reliability test of comparing coding done by both researchers individually, would yield higher reliability as it would test the usability of the coding conceived in the operationalization.

**3.7 Validity**

Considering the validity of the variables it is mainly in the ownership variables in which there are notable validity issues. These are due to mainly the FII variable being interpreted by us rather than just transferred from one database to ours.

The FII variable contains all financial industry investors; however there are parts of the financial industry which lend their name due to ISK, capital insurances accounts or pension accounts to whomever are eligible to open such an account. While such accounts are mainly private investor accounts, pension funds might be managed by FII. Luckily the occurrences of this problem was very limited and only the pension funds of Avanza bank\(^3\) and Nordnet\(^4\) was found in the major shareholders, funds which are attributed to private investors.

**3.8 Methodology critic**

Firstly the choice of a purely quantitative study can be questioned as a qualitative element could have helped if supported by the quantitative data. The two different research methods

\(^3\)Avanza pension insurance, www.avanza.se/kontotyper/pensionsforsakring/information

\(^4\)Nordnet pension insurance, https://www.nordnet.se/tjanster/pension/pension-for-privatperson.html
could have yielded deeper understanding, reliability and validity. In hind sight it should have definitely been a good way of bridging the gaps created by insignificance in the proposed model.

We could also have considered asking for more help in maybe acquiring a list of what could be considered FII. Such a list would distinguish all form of reliability issues due to subjectivity or mistaken identity. The counter argument being most lists of the sort, only considering the reviewed articles, seems to be aimed at the American or wider European market.

We use only one control variable, and even in that usage, we claim that it runs the risk of controlling for the very thing we would like to test, the behaviour of the investor. Another variable that could have been used is industry. But it is conceivable that both considerations of market size and of industry are included in the investment strategy of the investors. If that is the case, then we would rule out part of the strategy of the investor, which is the very thing we study. One possible control variable would be year of introduction, with the rational being that performance success could depend on the position of the economic cycle when introduced. The introduction date is more decided upon by the Founders. However, timing is a central part of an investors strategy, at least the buying action, while the selling action, at least for FI, could be driven by their personal need of liquidity. Thus, we decided to not include time, in order to not rule out timing as part of an investment strategy.

3.9 Ethical Considerations

In the acquiring of data from internet resources there have been no ethical or moral dilemmas. The closest we come to ethics or morals is the use in literature of the word “dumb”, it can be seen as derogatory towards inexperienced investors.
4. Empirical Findings

The empirical findings chapter will first showcase descriptive statistics regarding Aktietorget and the variables for hypotheses testing. Secondly it will conduct the tests of the hypotheses and give our interpretation of their outcome.

4.1 Aktietorget: Descriptive statistics

In the study Aktietorget has been assumed to be a lemon market which had lottery stocks. Through data about annual return we can investigate if these characteristics can actually be applied on Aktietorget.

4.1.1 Annual returns

The yearly return average is used as both a continuous variables ($RE_{C}$,$RE_{Clog}$) and a dummy variable ($RE_{D}$). Below are tables describing the variables.

<table>
<thead>
<tr>
<th>Table 2. Aktietorget Returns Descriptive Statistics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Valid observations</td>
</tr>
<tr>
<td>Missing</td>
</tr>
<tr>
<td>Returns (Annual) $RE_{C}$</td>
</tr>
<tr>
<td>Mean</td>
</tr>
<tr>
<td>Median</td>
</tr>
<tr>
<td>Minimum</td>
</tr>
<tr>
<td>Maximum</td>
</tr>
<tr>
<td>Standard deviation</td>
</tr>
<tr>
<td>Positive returns</td>
</tr>
<tr>
<td>Negative returns</td>
</tr>
<tr>
<td>Kolmogorov-Smirnov Z</td>
</tr>
<tr>
<td>Asymp. Sig. (2-tailed)</td>
</tr>
</tbody>
</table>

The descriptive statistic shows all 248 observations to be accounted for in all three variables. The annual returns minimum might be the first at – 388.64 % to be questioned since technically there is no more value to loose below – 100 %. The extreme minimum returns of $RE_{C}$ can be explained to be a product of companies which has delisted with extreme negative returns within a year of listing i.e. a company which has delisted after 10 days with a negative return of -100 % would be given the annual return of -25200 %. We keep the extremes to sustain comparability between studies, this is explained in the operationalization in greater length.
The mean return is positive at 5.1% while the median is -12.4%, coupled with the spread of returns (-388.64% - +1537%) indicates a long positive tail. It should also be noted that only 28.4% is in the category of the dummy variable which indicate positive returns. This is in line with the characteristics of a lemon market; more losing stocks than winners, a market where the median stock returns -12.4%. The returns are also consistent with the characteristics of lottery stock behaviour; investing in one stock gives the likely outcome of negative returns and the unlikely scenario of the few returns which are very positive (+1537%). Thus Aktietorget appear to be a lemon market with the return skew indicative of lottery stocks.

The Kolmogorov-Smirnov Z test indicates that no variable have a normal distribution, however the transformation through log10 have decreased the rate of abnormality as shown by the shift from 4.646 to 3.828 in Z value.

### 4.1.2 Default

The variable default $DE_{D}$ is a dummy variable which should be able to discern the extremes of failure on the market. The failure lies in defaulting which is the ultimate failure of a company.

<table>
<thead>
<tr>
<th>Table 3. Default and Relisting Descriptive</th>
</tr>
</thead>
<tbody>
<tr>
<td>Default $DE_{D}$</td>
</tr>
<tr>
<td>Valid observations</td>
</tr>
<tr>
<td>Missing</td>
</tr>
<tr>
<td>Mean</td>
</tr>
<tr>
<td>Median</td>
</tr>
</tbody>
</table>

The rate of defaults are 0.3589 which due to the 0 to 1 of a dummy variable implies 35.9% of all companies listed on Aktietorget defaults. While a rate of more than one in three companies listed at Aktietorget defaulting might be explained by the time period containing the great crash and worldwide recession as well as exchange specific scandals. All observations are accounted for.
### 4.1.3 Ownership distribution

Ownership distribution is two continuous variables PI ($PI_e$) and FII ($FII_e$) and one dummy variable for FII ($FII_d$).

<table>
<thead>
<tr>
<th>Table 4.</th>
<th>Table 5. Ownership variables Statistics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Private investors $PI_e$</td>
<td>Financial industry investor $FII_e$</td>
</tr>
<tr>
<td>Valid Observations</td>
<td>246</td>
</tr>
<tr>
<td>Missing Observations</td>
<td>2</td>
</tr>
<tr>
<td>Mean</td>
<td>30,03 %</td>
</tr>
<tr>
<td>Median</td>
<td>28,48 %</td>
</tr>
<tr>
<td>Standard Deviation</td>
<td>23,23 %</td>
</tr>
<tr>
<td>Minimum</td>
<td>,00</td>
</tr>
<tr>
<td>Maximum</td>
<td>96 %</td>
</tr>
</tbody>
</table>

In general the PI is rather frequent with a median of 28,48 %, while FII is infrequent with a median 0 %. The means tell a similar story of low FII involvement with a mean of 4,67 % while PI has a share per company average of 30,03 %. This indicates that FII capital is not available to most companies at Aktietorget while PI is almost everywhere, as well as the founders keeping most of the shares for them self.

The FII variables transformation to a dummy variable ($FII_d$) is to discern differences between the implications of FII ownership size and the simple occurrences of FII ownership. The mean has been gone from 4,67 % to 28,63 % by giving every instance of FII the binary value 1 rather than a value between the min 0 and max 0,7 of the continuous variable. FII being present only in 29% of the cases indicates that they are very selective in their choice of investment, which could support our overall idea of FII being stronger in competence, while assumingly the PI are everywhere, without being led by strong information analysis.
4.1.4 Listing price

The continuous listing price variable $LP_C$ and the log10 $LP_{logC}$ descriptive statistics.

<table>
<thead>
<tr>
<th></th>
<th>$LP_C$</th>
<th>$LP_{logC}$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Valid</td>
<td>238</td>
<td>238</td>
</tr>
<tr>
<td>Missing</td>
<td>10</td>
<td>10</td>
</tr>
<tr>
<td>Mean</td>
<td>7,31</td>
<td>0,45</td>
</tr>
<tr>
<td>Median</td>
<td>3,92</td>
<td>0,59</td>
</tr>
<tr>
<td>Minimum</td>
<td>0,02</td>
<td>-1,70</td>
</tr>
<tr>
<td>Maximum</td>
<td>160,00</td>
<td>2,20</td>
</tr>
<tr>
<td>Kolmogorov-Smirnov Z</td>
<td>4,854</td>
<td>1,583</td>
</tr>
<tr>
<td>Asymp. Sig. (2-tailed)</td>
<td>.000</td>
<td>.013</td>
</tr>
</tbody>
</table>

There is a quite a variance in listing price the minimum being 0,02 kr and maximum being 160 kr. Once again a variable has a lower median than mean indicating a longer positive tail. Trying to normalize the variable through log10 transformation to eliminate outliers does not yield a normal distribution according to the Kolmogorov-Smirnov Z test. As in the return log10 transformation however the log10 transformation does yield a less abnormal distribution.
4.1.5 Variables correlations

First we start with two comments on the design of the correlation matrix. First the black numbers indicate significance. Secondly the black boxes indicate significance which is trivial. The marked box in the upper left hand corner of the correlation matrix constitutes the correlations due to the variables being inherently based on returns or firm profitability. They are all used to support a single hypothesis by being able to discern success and failure of the firm. The two smaller boxes mark correlations due variable transformation.

Table 7. Pearson Correlation All variables

<table>
<thead>
<tr>
<th></th>
<th>REc</th>
<th>REClog</th>
<th>REd</th>
<th>REd</th>
<th>FICc</th>
<th>FICd</th>
<th>PICc</th>
<th>LPCc</th>
<th>LPClog</th>
<th>MCc</th>
</tr>
</thead>
<tbody>
<tr>
<td>REc</td>
<td>1</td>
<td>.926**</td>
<td>.554*</td>
<td>-.224**</td>
<td>.056</td>
<td>.060</td>
<td>.073</td>
<td>.013</td>
<td>-.036</td>
<td>.008</td>
</tr>
<tr>
<td>Sig.</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.386</td>
<td>0.344</td>
<td>0.254</td>
<td>0.842</td>
<td>0.585</td>
<td>0.900</td>
</tr>
<tr>
<td>REClog</td>
<td>.926**</td>
<td>1</td>
<td>.486**</td>
<td>-.197**</td>
<td>.071</td>
<td>.087</td>
<td>.107</td>
<td>.028</td>
<td>.010</td>
<td>.014</td>
</tr>
<tr>
<td>Sig.</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.264</td>
<td>0.171</td>
<td>0.094</td>
<td>0.663</td>
<td>0.879</td>
<td>0.830</td>
</tr>
<tr>
<td>REd</td>
<td>.554**</td>
<td>.486**</td>
<td>1</td>
<td>-.290**</td>
<td>.216**</td>
<td>.244**</td>
<td>0.018</td>
<td>0.006</td>
<td>-.050</td>
<td>.037</td>
</tr>
<tr>
<td>Sig.</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.783</td>
<td>0.933</td>
<td>0.445</td>
<td>0.559</td>
<td></td>
<td></td>
</tr>
<tr>
<td>FICd</td>
<td>-.224**</td>
<td>-.197**</td>
<td>-.290**</td>
<td>1</td>
<td>.019</td>
<td>-.090</td>
<td>-.061</td>
<td>-.085</td>
<td>-.112</td>
<td>.032</td>
</tr>
<tr>
<td>Sig.</td>
<td>0.00</td>
<td>0.02</td>
<td>0.00</td>
<td>0.00</td>
<td>.769</td>
<td>.159</td>
<td>.344</td>
<td>.191</td>
<td>.085</td>
<td>.611</td>
</tr>
<tr>
<td>FICc</td>
<td>.056</td>
<td>.071</td>
<td>.216**</td>
<td>.019</td>
<td>1</td>
<td>.672**</td>
<td>.048</td>
<td>-.019</td>
<td>.057</td>
<td>.156</td>
</tr>
<tr>
<td>Sig.</td>
<td>.386</td>
<td>.264</td>
<td>.001</td>
<td>.769</td>
<td>0.00</td>
<td>0.00</td>
<td>.455</td>
<td>.775</td>
<td>.387</td>
<td>.014</td>
</tr>
<tr>
<td>FICd</td>
<td>.060</td>
<td>.087</td>
<td>.244**</td>
<td>-.090</td>
<td>.672**</td>
<td>1</td>
<td>.149</td>
<td>.046</td>
<td>.086</td>
<td>.092</td>
</tr>
<tr>
<td>Sig.</td>
<td>.344</td>
<td>.171</td>
<td>.000</td>
<td>.159</td>
<td>0.00</td>
<td>0.00</td>
<td>.020</td>
<td>.480</td>
<td>.188</td>
<td>.148</td>
</tr>
<tr>
<td>PICc</td>
<td>.073</td>
<td>.107</td>
<td>.018</td>
<td>-.061</td>
<td>.048</td>
<td>.149*</td>
<td>1</td>
<td>-.057</td>
<td>-.156*</td>
<td>.084</td>
</tr>
<tr>
<td>Sig.</td>
<td>.254</td>
<td>.094</td>
<td>.783</td>
<td>.344</td>
<td>.455</td>
<td>.020</td>
<td>.383</td>
<td>.016</td>
<td>.189</td>
<td></td>
</tr>
<tr>
<td>LPCc</td>
<td>.013</td>
<td>.028</td>
<td>.006</td>
<td>-.085</td>
<td>-.019</td>
<td>.046</td>
<td>-.057</td>
<td>1</td>
<td>.577**</td>
<td>.310**</td>
</tr>
<tr>
<td>Sig.</td>
<td>.842</td>
<td>.663</td>
<td>.933</td>
<td>.191</td>
<td>.775</td>
<td>.480</td>
<td>.383</td>
<td>0.000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>LPClog</td>
<td>-.036</td>
<td>.010</td>
<td>-.050</td>
<td>-.112</td>
<td>.057</td>
<td>.086</td>
<td>-.156</td>
<td>.577**</td>
<td>1</td>
<td>.183**</td>
</tr>
<tr>
<td>Sig.</td>
<td>.585</td>
<td>.879</td>
<td>.445</td>
<td>.085</td>
<td>.387</td>
<td>.188</td>
<td>.016</td>
<td>.000</td>
<td></td>
<td>.005</td>
</tr>
<tr>
<td>MCc</td>
<td>.008</td>
<td>.014</td>
<td>.037</td>
<td>.032</td>
<td>.156</td>
<td>.092</td>
<td>.084</td>
<td>.310**</td>
<td>.183**</td>
<td>1</td>
</tr>
<tr>
<td>Sig.</td>
<td>.900</td>
<td>.830</td>
<td>.559</td>
<td>.611</td>
<td>.014</td>
<td>.148</td>
<td>.189</td>
<td>.000</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

** Correlation significant at the 0.01 level
* Correlation significant at the 0.05 level
4.1.5.1 Correlations

There is good news for hypothesis testing in the form of some correlations. There are correlations indicating that both the hypotheses can be substantiated to some extent. In the case of H1 there are correlations between both iterations of the FII variable and the returns dummy. While significance towards the continuous variables would yield a more quantifiable output, any significance is a step towards success. Similarly there is also a significant correlation between PI and the logarithmic iteration of the listing price variable which suggests that lower price does explain PI investing. However the control variable correlates with both FII and Listing price, a correlation which might be unfortunate. It can be argued to be a inherit reason for FII to invest and thus a part of FII competence rather than a control of the test itself. Further the market capitalization correlation with listing price suggests that in acting as control in H2, it might reduce the significance of independent variable. There is also a correlation between PI and FII which perhaps could be construed as heard behaviour, however due to our hypotheses is of no relevance to us.

4.2 Hypothesis testing

By using the variables from the previous section, the tests of the initial hypotheses will now be carried out. The test and the hypothesis will first be explained, and then the test statistics and implications will follow.

4.2.1 Hypothesis 1: FII’s effect on returns

Here we will test the hypothesis that FII correlates positive with returns. Through the variables which are synonymous with success or failure we are first measuring returns. Then through the variable which measures the extreme of failure at a lemon market, we will test if FII abstains from investing in firms which eventually default. All of the return variables will be used due to their inherit differences yielding different output meanings. The independent variable FII will also be utilized in the same way, thus we have 6 iterations of the hypothesis, shown below.

Hypothesis 1 iterations

\[ a: \overline{RE}^+_C = \overline{FII}^+_C \]
\[ b: \overline{RE}^{+_C \log} = \overline{FII}^+_C \]
\[ c: \overline{RE}^+_D = \overline{FII}^+_C \]
\[ d: \overline{RE}^+_C = \overline{FII}^+_D \]
\[ e: \overline{RE}^{+_C \log} = \overline{FII}^+_D \]
\[ f: \overline{RE}^+_D = \overline{FII}^+_D \]
Due to the many iterations we have divided the testing into two tables. The first is in which the $FII_c$ variable tries to explain the effect of both occurrences of FII as well as the size of the occurrence, while the second table only explain returns by the occurrence of FII and disregard size due to the dummy variable inherit binary characteristic.

<table>
<thead>
<tr>
<th>Table 8. <strong>Hypothesis 1: Model Summary</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>N = 246</td>
</tr>
<tr>
<td>Iteration</td>
</tr>
<tr>
<td>Variables</td>
</tr>
<tr>
<td>Beta</td>
</tr>
<tr>
<td>Sig.</td>
</tr>
<tr>
<td>Wald/STD. error</td>
</tr>
<tr>
<td>Sig</td>
</tr>
<tr>
<td>R Square</td>
</tr>
<tr>
<td>Binary regression</td>
</tr>
<tr>
<td>Actual model predictions</td>
</tr>
</tbody>
</table>

Hypothesis iteration $a$ and $b$ is neither significant or have any predictive powers while $c$ can explain 10,2 % of the variance (Kvasi R Square) with a sig 0,000. While it has explanatory powers the predictive capabilities of the actual model in comparison with the naive model are higher but only just, from 72,5 % of the naive model the actual model can predict 73,3 %. The beta gives FII a correlation with positive returns, significance and Wald suggest that FII has the largest explanatory power in the model. According to the model FII correlates with positive returns. The model is significant and FII is positively correlated to returns accordance with the hypothesis. Thus the hypothesis is accepted. The control variable has on its own no explanatory powers.
The iterations $d$, $e$ and $f$ which incorporate the dummy variable instead, tells much the same story. Only iteration $f$ has explanatory powers and yields significance, it does however predict one case wrongly and has a lower R square, this leads to $c$ iteration $\hat{RE}_D = \hat{FII}_C$ being the most successful iteration of the hypotheses.

The implication of the empirical finding is that FII are either better at finding companies which yield positive returns and/or that FII can through monitoring help companies achieve better returns. The difference between iteration $c$ and $f$ should suggest that the part of the thesis which incorporates monitoring gets some credence. This due to the higher R square of the variable which incorporates the effect of ownership size and thus monitoring ability, in comparison to the dummy variable which does not discriminate due to size of share size.
4.2.2 Hypothesis 1: FII effect on the rate of default

To further the analysis of FIIs effect on performance the first hypothesis, it states that FII will lead to less default. The dependent variable is here default $DE_D$, coded 1 and no default coded 0. The model will be using both the $FII_C$, continuous variable which to some extent indicate monitoring, as well as dummy variable $FII_D$ which tend towards stock picking due to greater analysis ability.

Hypothesis 1: $g: \quad \hat{DE}_D = FII_C$

$h: \quad \hat{DE}_D = FII_D$

<table>
<thead>
<tr>
<th>Table 10. Hypothesis 1: Model Summary</th>
</tr>
</thead>
<tbody>
<tr>
<td>N = 246</td>
</tr>
<tr>
<td>$\hat{DE}_D = FII_C$</td>
</tr>
<tr>
<td>$\hat{DE}_D = FII_D$</td>
</tr>
<tr>
<td>Iteration</td>
</tr>
<tr>
<td>Variables</td>
</tr>
<tr>
<td>$FII_C$</td>
</tr>
<tr>
<td>$MC_C$</td>
</tr>
<tr>
<td>$FII_D$</td>
</tr>
<tr>
<td>$MC_D$</td>
</tr>
<tr>
<td>Beta</td>
</tr>
<tr>
<td>Sig.</td>
</tr>
<tr>
<td>Wald</td>
</tr>
<tr>
<td>Naive model predictions</td>
</tr>
<tr>
<td>Actual model predictions</td>
</tr>
<tr>
<td>Chi$^2$ Sig.</td>
</tr>
<tr>
<td>Nagelkerke / R Square</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>N = 246</td>
</tr>
<tr>
<td>$\hat{DE}_D = FII_C$</td>
</tr>
<tr>
<td>$\hat{DE}_D = FII_D$</td>
</tr>
<tr>
<td>Iteration</td>
</tr>
<tr>
<td>Variables</td>
</tr>
<tr>
<td>$FII_C$</td>
</tr>
<tr>
<td>$MC_C$</td>
</tr>
<tr>
<td>$FII_D$</td>
</tr>
<tr>
<td>$MC_D$</td>
</tr>
<tr>
<td>Beta</td>
</tr>
<tr>
<td>Sig.</td>
</tr>
<tr>
<td>Wald</td>
</tr>
<tr>
<td>Naive model predictions</td>
</tr>
<tr>
<td>Actual model predictions</td>
</tr>
<tr>
<td>Chi$^2$ Sig.</td>
</tr>
<tr>
<td>Nagelkerke / R Square</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>The hypothesis states that FII correlates with fewer defaults, however the Nagelkerke R square of 0.002 and the chi square of 0.829 leads to the model being rejected. This suggests FII is not significantly better at avoiding defaults. Whether the dummy or continuous variable is used the same conclusion is derived.</td>
</tr>
</tbody>
</table>
4.2.3 Hypothesis 2: Price per share effect on private investors investing

In the second hypothesis we will test if the PI are attracted by lower listing prices.

Hypothesis 2:

\[
\begin{align*}
\text{a} & \quad \hat{LP}_C = \hat{PI}_C \\
\text{b} & \quad \hat{LP}_C = \hat{PI}_{\text{clog}}
\end{align*}
\]

Table 11. Hypothesis 1: Model Summary

<table>
<thead>
<tr>
<th>Iteration</th>
<th>Variables</th>
<th>(LP_C = PI_C)</th>
<th>(LP_{\text{clog}} = PI_C)</th>
<th>(LP_{\text{clog}} = MC_C)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(PI_C)</td>
<td>(MC_C)</td>
<td>(PI_C)</td>
<td>(MC_C)</td>
</tr>
<tr>
<td>Beta</td>
<td>0.263</td>
<td>0.000</td>
<td>-0.502</td>
<td>0.00003</td>
</tr>
<tr>
<td>Sig.</td>
<td>0.521</td>
<td>0.686</td>
<td>0.007</td>
<td>0.002</td>
</tr>
<tr>
<td>STD. Error</td>
<td>0.412</td>
<td>0.164</td>
<td>0.184</td>
<td>0.000</td>
</tr>
<tr>
<td>Anova Sig</td>
<td>0.679</td>
<td>0.000</td>
<td>0.000</td>
<td>0.005</td>
</tr>
<tr>
<td>R Square</td>
<td>0.007</td>
<td>0.063</td>
<td>0.033</td>
<td></td>
</tr>
</tbody>
</table>

The \(a\) iteration of the hypothesis fails due to the significance being more than 0.05, also the R square suggests that the impact of the correlation cannot explain much of the variance. The \(b\) iteration is significant and has a R square of 0.063, indicating through the beta of -0.502 that PI has a negative correlation with listing price. The standardized residual seem to be normally distributed. While some of the variance is explained by the control variable in as indicated in the last column, there is an improvement in both significance and R square contributed to the addition of listing price. Thus the hypothesis is confirmed, there is a bias towards lower price.
The result discussion will discuss the findings of the models in the previous chapter.

By first focusing on the results of the descriptive statistics they tend to support the notion of Aktietorget being a lemon market with a lottery stock skew. The median yearly return on Aktietorget is \(-12.4\%\) and more than 70\% of stocks have negative returns, this is what suggests a lemon market, which in accordance with EMH and classical utility theory should fail. The same negative expected return coupled with the possibilities of extreme gains of \(1500+\%\) gives the Lottery stock skew. However as stated in the background, 15 years of lemons have not deterred investors. In fact if you go by information on the Aktietorget homepage the invested capital has only gone up (Aktietorget, 2014). Going by the general capital composition the majority of this capital should be coming from the founders but a large portion should be provided by the PI and FII. Whoever the investors are, new capital is flowing towards Aktietorget.

The study tries to find if there are ways of segmenting PI and FII as well as pointing toward specific rationality issues on a market with substandard returns. Definite differences can be shown even though the R squares are low. The regressions from the previous chapter shows FII being significantly better at acquiring stocks with positive returns, while PI seem to be distributed randomly across stock performance. The multiple iterations of measuring FII impact on returns yields the difference between the use of a dummy variable and the use of a variable which also considers share size. The difference in R square between these gives a reason for claiming that not only information analysis before the investments is the FII superiority, but also the monitoring after investment gives them an advantage. Thus, we suggest that FII have superiority compared to PI in return, which is through stock picking by information analysis, but we also found some indications that it could be due to their monitoring ability.

The most interesting finding is that price per share is relevant to the PI. The linear regression of the second hypothesis suggests that price drives investment incentives for PI. If you consider behavioural finance the implications of lottery stocks and the utility of hope, the perceived utility might be rather than expected, be hoped for returns. This does not even have to be at odds with Fama and Frenchs notion that the only way to rationalize investments
which are not yielding the appropriate returns, are by getting utility by something other than returns. In this case, this could be the utility of hoping for extremely positive returns. This seems to be indicative of the PI spectrum, else due to EMH there is better investments and investments in Aktietorget should not be made.
6. Conclusion

The conclusion concludes the main body of the thesis by reporting the conclusions made by the authors due to the findings and theory utilized.

6.1 Conclusion

The measurable conclusion is as follows: FII tend towards positive returns due to both stock picks and monitoring ability, PI does to a small degree base their choice of stock by low price. These are the statistical facts, now follows conclusion conjecture on why.

Concluding FII are more able to conform to classical linear utility theory and could view investments as classically rational from their prospective. The results are in line with our expectations of the restrictions due to the second order agent principal (i.e. FII employee) being forced into rationality due to regulations and accountability, as well as expectations by for example Field and Lowry (2009) confirming FII experience. The forcing of the FII agent is something which the true principal, the PI, does not have to deal with, and as such can make decisions which are in line with the financial literature derogatory label dumb money. However this second order agent principal issue makes a market like Aktietorget well suited to investigate extreme PI behaviour, due to FII or smart money not participating at large. Their absence should lead to a larger group of principals not being accountable to their principals and thus more likely to act on behavioural biases.

One of our main contributions is thus the suggestion that the lemon markets can exist since they to a large extent consists of principals, and not, like most other markets, of agents fulfilling other principals wishes. Aktietorget relies on PI to invest when no other investors can be found; their utility of hope is a utility which cannot be defended by an agent PII investor to their principal.

The implication of PI searching for low price should be due to something other than lottery stocks behaviour. Are PI acting like swedes at a fire sale, is it a case of buy now while stocks last (pun intended). Investing more at lower price should indicate a flawed rationality stock picking pattern, the rationality being: if you are not playing the rational lottery while at Aktietorget, you really should not invest. The pattern should also indicate the possibility of
scamming investors by prizing the IPO shares low and releasing more of them. This would be the reason for regulating the market, but as such a small part of the market can be explained by this faulty rationality it seems the majority accepts the terms of probable loss to gain the hope of extreme gains. Therefore while Aktietorget then can be considered a more rational lottery with the FII having a better strategy in picking somehow reoccurring numbers, the implications of botched rationality on the part of the PI investment strategy can easily still be brushed to the side of irrelevancy by the likes of Fama (2004). There is no reason to believe that even if the bias of low price exists, that it has any effect on the market as a whole. Aktietorget itself can be considered anomalous due to the growing while having a lemon market character; as such the miniscule part of the anomaly being anomalous, while being interesting, is not relevant in a larger sense. If there will be a regulation trying to take away the low price actions, it could very well imply that those investors leave the market and find some other lotteries. Thus, the extreme risk capital will flee, and not only scam companies will not get financed, but also highly risky serious investments.

The argument could be made however that the investment in Aktietorget substandard companies implies a reduction of capital available to companies with better returns. If the existence of a Aktietorget lemon market imply a reduction of capital which could have been invested in non-lemon stocks, then there would be a need of stricter market regulations (Carpentier & Suret, 2012) to make the market conform to a less lemony market character. If the capital is not lost by the existence of a lemony character, the capital would not go to other productive investments but to real lottery and other non-productive markets in order to be able to gain lottery like returns. Then the substandard market is not societal issue, but the avant-garde of financing high risk corporations. Thus, the Aktietorget may contribute by attracting capital from gambling and lottery activities. Capital which otherwise would not have been invested in capital markets but would have been used far more ineffective in regards to efficient markets.

How about instead changing the derogatory label of dumb money to adventurous capital; a contrast to venture capital. Following in the footsteps as such great adventurers as Columbus, for he too had utility of hope, hope of finding India. We are sure the adventurous capital will have similar results.
6.2 Short comings of the study
The major shortcoming is the lack of snapshots of ownership composition, this is due to the variance of delisting rate at the market in conjunction with our lack of access to data making the data gathering of comparable doable. Several points of reference in ownership composition coupled with price information could yield more data to test the hypothesis of biases due to price per share.

Another issue which have been covered briefly earlier is the problem with using a control variable market capitalization which is chosen due to the probability of significant correlation with returns, to control a variable which is expected to take such probabilities into account to yield the same correlation. The shortcoming being that the control variable did correlate with FII and thus being a variable taken into account in analysing the viability of an investment. However luckily the viability of an investment was not correlated with the control variable, which can be regarded as a sort of successful failure, as the control in theory would control for something which perhaps did not need controlling, in practise does not control for anything

Both investor types acts as hypothesised but to a small degree, perhaps Fama is right in confining the behavioural aspects to the status of anomalies. The choice of Aktietorget was due to the anomalous character and still the anomalies though significant, for the most part, are limiting towards rather irrelevant.

6.3 Specifically Ethical/Societal considerations
Depending on which world view you take, it is either right to let people gamble their money away or it’s not. Even if stricter rules where applied the effect might only be the move to actual lotteries or frequent trading; both are losing strategies for an inexperienced investor. The main question is if they knowingly gamble their money away or if they can be considered duped. One consideration might be that with the study we can shine a light on the extreme skew towards losing your investment. A light which might let the eventual investor who does not agree to the lottery that is Aktietorget, divest and move to a non-lottery market.
6.4 Suggestions for further studies

For us it would be interesting to do a survey study through one of the internet based banks, asking private investors to take part in a web based questionnaire to gauge if investors at Aktietorget actually know the risk they are exposed to and perhaps discern behaviour biases. In this study we would also try to find out if the Pi consider other investments, and if they are as adventurous as Aktietorget. This study would test our speculation in the conclusion that the investment opportunities at Akteotorget do not compete, when it concerns PI, with other share investments, but with other extreme high risk investments, such as lotteries.

Another interesting subject might be testing agents acting as principal effect on professional investors within FII and how their agent influenced investments differ from their individual investments. The problem being if they are naturally classically rational or forced classically rational.
7. References


Knight, F. (1921). Risk, Uncertainty, and Profit.


1. Appendix 1: Distribution of standardized residuals