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Family Firm IPO Performance and Market Signals

Evidence from the Swedish Market

Stefan Saner
40408@student.hhs.se

Tutor: Prof. Clas Bergström

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Abstract:

This thesis examines how family ownership affects IPO performance measured by first day underpricing. Using IPO data from the Swedish stock-exchange between 1994 and the beginning of 2014, different hypothesis are tested to find organisational and structural differences between family firms and non-family firms to shed light on the potential difference in first day underpricing.

Contrary to the evidence found in other studies and the theoretical outline, Swedish family firms have a higher level of underpricing. The reason is the desire of the family CEO to stay in control of their firms connected with the choice of a dual-class share structured IPO. This separation of control and ownership after the IPO in connection with a family CEO evolves as a major drawback for initial investors, who value the firm at a lower price than investors on the public market. This causes underpricing of 14.23% for family firms as compared to 7.4% for non-family firms.

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Contents

1. Introduction 6
1.1 Background 6
1.2 Purpose 6
1.3 Outline 7
2. Theoretical Background 8
2.1. Underpricing 8
2.1.1. Asymmetric Information 8
2.1.2. Agency Conflict 9
2.1.3. Behavioural Explanations 10
2.2. Distinction of family firms 11
2.2.1. Special motives for going public 11
2.2.2. Signaling and special characteristics of family firms 12
2.2.3. Benefits and drawbacks of family firms 13
3. Literature review 15
3.1. Ownership structures around the world and in Sweden 15
3.1.1. World 15
3.1.2. Sweden 16
3.2. Family firms and underpricing 17
3.2.1. Evidence on underpricing effect in the US 17
3.2.2. Evidence on the effect in Taiwan 17
3.2.3. Result of the effect in Norway 18
3.3. Results from related studies in Sweden 18
4. Hypotheses 19
4.1. Hypothesis H1 19
4.2. Hypothesis H2 20
4.3. Hypothesis H3 20
4.4. Hypothesis H4 21
4.5. Hypothesis H5 21
5. Method and Data Description 22
5.1. Construction of the data set 22
5.1.1. Sample overview 22
5.1.2. Criteria, Collection and Quality of Data 23
5.2. Methodology 24
5.2.1. Family firm classification 24
5.2.2. Variables 25

5.3. Descriptive statistics 28
5.3.1. Overview 28
5.3.2. Industry 30
5.3.3 Family and non-family firms variables 31
5.3.4 Dual-Class Share structures and family firms 32
5.3.6. Outliers 33
6. Regression & Empirical Analysis 34
6.1. OLS Regression 34
6.1.1. Empirical Design 34
6.1.2. OLS Assumptions 34
6.2. Results 35
6.3. Robustness 38
7. Conclusion 38
8. Discussion 40
9. Limitations 41
10. Bibliography 42
Appendix 45

List of Tables

Table 1: Overview of related Studies in the Swedish Market 18
Table 2: Sample Size 22
Table 3: Number of Observations and Underpricing for Family and Non-Family Firms 29
Table 4: Results of t-test and Mann-Whitney U Test of Family Firm Variables compared to Non-Family Firms Variables 31
Table 5: Dual-Class Share structure and Family Firms 33
Table 6: Results of the OLS Regression 36
Table 7: Results of the OLS Regression, family dummy replaced with family ownership % ... 52
Table 8: Dual-Class Shares and Family CEO 53
Table 9: Result of the OLS regression including dual-class dummy instead of family dummy 53
Table 10: Results of the OLS Regression, family CEO replaced with CEO ownership 54
Table 11: Results of the OLS Regression, family dummy replaced with shares retained 54

List of Figures

Figure 1: Number of IPOs and Underpricing Over Time 29
Figure 2: IPOs for Industry Sectors and Underpricing 30

1. Introduction

1.1 Background

An initial public offering (IPO) represents for any firm a milestone in its history. An IPO means new capital, a broader shareholder base and public exposure to the issuing firm. Therefore, the execution must be carefully considered. An initial public offering usually draws much more attention to the firm than other types of financing. For example, IPOs are to a larger extent covered and discussed in the "normal" press than a new credit from a bank. This exposure to a new audience can be critical for the future valuation of the company. IPO performance, measured as the relationship between offering and first day closing price, and the underlying phenomenon of underpricing has therefore received a lot of academic attention.

Prior research has mainly focused on signaling. Information asymmetry and agency conflict between key parties (the issuing firm, the investors and the underwriting bank) play a pivotal role. As plenty of research has shown, family firms distinguish themselves considerably from other owning principals. Daugherty & Jithendranathan (2012) are among the first ones to combine these "hot" topics and compare the IPO performace of family firms to its couterpart for the U.S. market. They found unique characteristics in family firms while going public and tried to explain why family firms are significantly less underpriced .

Sweden has one of the highest frequencies of family ownership in the world (La Porta, Lopez-De-Silanes, & Shleifer, 1999)and some contraditionary evidence for the performance and valuation of family firms has been found (e.g. Averstad & Rova, 2007). To shed further light on this opposing evidence help family firms to understand "their" IPO better, this thesis investigate the connection between family firms and IPO underpricing for the Swedish market and try to discuss its implications.

1.2 Purpose

In this study we will investigate the particularities of family firms compared to non-family firms in the specific event of an initial public offering. The outcome can help to understand the phenomenon of underpricing better for both the issuing firm and investors and help them to find their optimal strategy around an IPO. Furthermore, this thesis tries to explain

differences between the two underlying groups, especially control and operational differences affecting information asymmetry, agency conflict and adverse selection and its implications for an IPO event. Studies in the U.S., Taiwan and Norway indicate less underpricing for family firms, but evidence from the Swedish market is missing and is hence a new approach to the topic. This is especially true considering the evaluation bias family firms suffer from in Sweden. Although family firms tend to have a better long-term performance, they are valued at a discount compared to non-family firms (Averstad & Rova, 2007).

The purpose of this study is to analyse the differences between family firms and non-family firms and the effect of family ownership on underpricing when conducting an IPO. In order to do so, this paper will compare underpricing data for family and non-family firms in the Swedish market from 1994 to early 2014.

1.3 Outline

The remainder of this paper is structured as follows. The next section discusses the theoretical background of underpricing, as well as suggested explanations for the phenomenon. It also outlines the characteristics that distinguishes family firms from other firms and gives a detailed review of the evidence on performance and valuation differences. Section four presents the hypothesis for this thesis. Thereafter section 5 describes the construction of the dataset and the methodology and shows the results of the descriptive statistics. Section 5 explains the findings of the OLS analysis and concludes the results before the final section discusses its meanings and implications.

2. Theoretical Background

To lay the foundation for the analysis of this thesis, we first cover the theoretical background of underpricing, its reasons, the special characteristics of a family firm and the connection between these two factors.

2.1. Underpricing

The phenomena of first-day underpricing in an IPO, also referred to as initial return, is extensively documented and researched for decades. More recently, Jenkinson & Ljungqvist (2001) found IPO underpricing of more than 15% in almost all industrial countries and more than 60% in emerging markets. The cause is still under discussion, especially outside the US, as extension to the comprehensive research already conducted in the U.S., but there are a few convincing assumptions as to why underpricing occurs (see e.g. Ljungqvist, 2006 for a complete overview). Asymmetric information, agency conflicts and behavioural reasons are according to Ritter and Welch the most plausible (2002). Signaling plays a crucial role and is a widely adopted practice for communication between the different parties involved in an IPO (Spence, 1974).

IPO stocks are priced and distributed to the public market through an investment bank, the underwriter. The underwriter determines an offer price in presenting the issuing firm – the issuer – to various potential investors ("road show"). This process ensures that the issuer will raise enough capital at the time of the initial public offering, as the offering prices is assumed to be accepted by the market (Sherman, 2005). Underpricing occurs if the first day closing price is higher than the offering price. The money not skimmed by the issuer is considered to be "left on the table" and consist basically of a transfer of wealth from the issuer to the investor.

2.1.1. Asymmetric Information

Information asymmetry can occur between the issuing firm, the underwriter (investment bank) and the investors (Michaely & Shaw, 1994). Similar to the popular illustration of the information asymmetry in the car market with adverse selection (first discussed by Akerlof,

1970)[1], Grossman (1976) explained the problematical relationship between issuer and investor. The investor has a high degree of uncertainty about the "true" price of a firm, while it is assumed that the issuer is more informed. Hence it is necessary for the issuer to signal its value and quality to the investors. A very strong signal can be sent through the offer price. A high offering price means high involvement and therefore represents a high risk for the investor. Contrary, a low offering price represents a low risk and signals quality, because the issuer is confident to regain the money "left on the table" in the future, while weak firms find underpricing too risky (Allen & Faulhaber, 1989) . Jenkinson & Ljungqvist suggest that underpricing is the return for taking the risk of investing (2001). The potential return is the higher the lower the offering price is.

Rock (1986) described a market with an informed and an uninformed investor. The informed investor has better knowledge of the true value of firms and bids only in attractive public offerings, while the uninformed investor bids randomly. Unattractive IPOs therefore have a smaller subscription and mostly get allocated exclusively to the uninformed investor . As the uninformed investor is aware of his disadvantageous situation, he needs a positive expected return in form of a low offering price in order to be willing to stay in the market. Additionally, Rock (1986) argued that the market is too large for the informed investors and it is therefore necessary to attract uninformed investors to have sufficient liquidity in the market. Underpricing is thus an efficient way to compensate investors for their informal disadvantage regarding the "true" value of the firm (Rock, 1986).

2.1.2. Agency Conflict

The underwriter is supposed to act in the best interest of its client – the issuing firm – and to raise as much money as possible in a public offering. However, Baron (1982) argued that the maximization of proceeds confronts the threat of under-subscription that in turn can cause severe problems for any underwriter. He stated that the underwriter possesses superior information about the investors' demand in the market, and that the firm itself is uncertain about its true value. The firm is therefore dependent on the underwriter. Since the bank mostly covers the shares offered, they can first of all lose their own money (Ross,

[1] Owners of good cars will not place their cars on the used car market because owners of bad cars will drive down the price for all cars since buyers cannot differentiate between good and bad cars before they actually bought the car.

Westerfield, Jaffe, & Jordan, 2008). Secondly, bearing an IPO that is not fully subscribed may damage the reputation of the bank and opens up the risk of litigation (Tiniç, 1988). According to Loughran & Ritter (2002), investment banks underprice in order to attract investors, who in turn will compensate the banks later with business.

Another agency conflict can occur between the management and the shareholders of a firm (Rock, 1986). If there is a separation of ownership and control, the management might have no incentive to maximise the proceeds. The management of such firms may therefore accept a low offering price because they are not directly affected by it. Low offering prices and potential oversubscription also facilitates the management to stay in control. Brennan & Franks (1997) reasoned that underpricing is used to generate excess demand for the shares. This oversubscribing is then used as an instrument to ration share allocation and hence prevent block-building. The lack of a big block-holder, hence greater dispersion of shares, in turn reduces the monitoring of the management, as described by Brennan & Franks (1997) as the "reduced monitoring" hypothesis.

Jenkinson & Ljungqvist (2001) suggested that underpricing leads to a strong interest from media. Investors perceive the share as "hot" and will have a positive approach towards the share as well as to the underwriter.

2.1.3. Behavioural Explanations

Ljungqvist also included behavioural theories to explain underpricing (2007). They are based on the irrational behaviour of investors bidding up the price of a share beyond its "true" value and the opportunity-taking of a "smart" investor in case of a biased market. The four described theories according to Ljungqvist (2007) are cascades, investor sentiments, prospect theory and mental accounting.

Cascades

Investors irrationally disregard their own information and instead base their decisions on other investors and their previous decisions. Early investors therefore enjoy a certain market power and are able to demand a lower IPO price (Ljungqvist, 2007). This is similar to Welch's model (1989), where potential investors rely on the preferences of other investors.

Investor's sentiments

Since IPO firms can be hard to value, "some sentiment investors hold optimistic beliefs about the future prospects for the IPO company" (Ljungqvist, 2007). Hence, the optimal strategy for the issuer is to prevent the stock price from falling and to provide the investor with a positive experience "to maximize the excess valuation over the fundamental value" of the share (Ljungqvist, 2007).

Prospect theory and mental accounting

Prospect theory combined with mental accounting happens when the issuer fails to "get upset" about leaving "money on the table" (Loughran & Ritter, 2002) because they are confident they can regain today's wealth loss in the after-market. Contrary to the previous explanations for IPO underpricing, this theory stresses the bias on the side of the issuing firm instead of the investors side (Ljungqvist, 2007).

2.2. Distinction of family firms

Family controlled firms inherently have some distinctive differences regarding their structure, strategy, management and ownership compared to other large blockholders such as states, individual investors, industrial companies or financial institutions (banks, insurance firms or investment funds). Furthermore, due to these differences, family firms underlie a different perception in the market; some are considered beneficial for the family firms and some drawbacks. Unsurprisingly, family firms also have their own approach with public offerings.

2.2.1. Special motives for going public

Family firms have shown some distinctive motivations for conducting an IPO (Chambers, 2012). The main reason for conducting an IPO is to raise capital and subsequently to invest the gained money into positive projects. According to Ritter & Welch (2002), members of family firms sell their shares for personal reasons and not to get a more diversified portfolio, which is the case in non-family firms. Zingales (Zingales, 1995) emphasised that founders could use a public offering to "collect the price" of their work. A public offering will lead to a higher price than other selling options since the buyer must deal with outside investors and not just with the principal owner which proves to be difficult for bargaining (Ritter & Welch,

2002). Furthermore, going public facilitates the collection of money compared to private placements. Although one might achieve a higher price while negotiating privately, the costs of doing so with many new shareholders might diminish any potential gains (Chemmanur & Fulghieri, 1999). Bancel & Mittoo (2009)also point out that a family might conduct an IPO to rebalance the power between the bank and creditors without losing control over the firm.
Family firms are generally more resistant to venture capital due to the corresponding decrease in control (Daugherty & Jithendranathan, 2012). Holmen & Hogfeldt (2004) found that the founding family often stays in control for decades after the public offering, which condemns the assumption that going public is solely used as "payday" for the owning family. Family IPOs are therefore often designed to secure the control of the family after the IPO, regularly with dual-share classes.

2.2.2. Signaling and special characteristics of family firms

A firm can send signals to the investors about the true value of its firm to overcome the ex-ante uncertainties and the conflicts discussed earlier (Shapiro, 1983).These signals will be convoyed by the investor to the underwriter and subsequently influence the offering price (Sanders & Boivie, 2003). A valid signal must be intended, known and observable prior the IPO event and should be difficult to imitate (Deeds, DeCarolis, & Coombs, 1998). Especially the signals that are sent via the prospectus have proved to affect first day underpricing (Certo, Covin, Daily, & Dalton, 2001).

The most striking difference between family controlled firms and other ownership models lies in the separation of management and ownership. This separation does generally not exist in family firms; the controlling family is present both in the management and as the owner (Chambers, 2012). This is in line with Anderson and Reeb (2003), who distinguished family firms to non-family firms by the amount of shares the founding family represents in combination with the representation on the board (for the exact definition of the term "family firm", see chapter 5.2.1.). They further explain that the CEO and management ownership is greater in family firms, which means they carry part of the risk of an IPO. Investors can take this as a signal that the management acts in the best interest as their private wealth is affected. Ljungqvist (2007) raised concerns that when the ownership is too

large, the agency costs that family firms have to bear may outweigh the private benefits they enjoy.

Family members usually understand the business they are operating in, which Anderson & Reeb used as explanation as to why family firms with a family CEO have a higher profitability compared to non-family firms (2003). Furthermore, they concluded that the agency conflict is reduced and the performance increased (or at least is equal) when ownership and management is combined in family firms, compared to non-family firms. Villalonga & Amit (2006) confirmed this with their findings of higher profitability of family firms. This, however, only holds if the founder of the company is in control. They further attribute lower agency cost to the relationship between a family and minority shareholders compared to the conflict in non-family firms between management and shareholders. A family CEO, especially if it is the founder, sends a strong signal of quality to investors.

Pyle & Leland (1977) argued that the portion of shares retained by the selling family affects the level of underpricing. If the owner is confident, he will retain a high portion of shares and thereby sends a positive signal to the market. In case an offer structured with dual class shares, underpricing is supposed to be reduced since the issuer lacks incentive to use underpricing for shareholder dispersion (Brennan & Franks, 1997). This hypothesis of reduced monitoring was confirmed by (Smart & Zutter, 2003), who found that in a comparison of single dual-class IPO in the USA from 1990 to 1998, the dual-class structures had 3% lower underpricing.

Clarkson & Merkley (1994) added a disclosing of the earnings forecast in the prospectuses and uncertainty about the true issue price as a strong signal to the investor. This implies that an issuer that is more certain about its future and its own value can be regarded of better quality. Reducing ex-ante uncertainties about the “true” value of the firm reduces the gap between offer price and the price on the market.

2.2.3. Benefits and drawbacks of family firms

Furthermore, a family as principal owner inherits some unique benefits and drawbacks compared to other ownership structures.

Benefits

Barontini & Caprio (2006) described family firms as long-term oriented to ensure a handover of the firm to later generations. This enables a more stable valuation of the firm and therefore less information asymmetry (Litz, 2004). Habib & Ljungqvist (2001) argued that the family tries to maximize its performance in the long run since the family wealth is tied closely to the company. This combined with the outlined importance of implicit contracts by Andres (2008) form the main benefit of family firms. Andres described the necessity of long-term contracts between shareholders and stakeholders to encourage firm-specific investments by stakeholders (2008). Family firms appear to have a high credibility for this type of implicit contracts, as the long-term commitment of the family implies interest in a long-term existence. Implicit contracts do not require any legal commitment and are formless and therefore more desirable than explicit, written contracts.

Anderson & Reeb (2003) argued that the deviation of interests between shareholders and bondholders in firms owned by the founding-family is less severe than between diversified small shareholders and bondholders in widely held firms. Founding families are normally not diversified in different companies, which minimises the costs of debt (Anderson & Reeb, 2003). Furthermore, founding family ownership is considered to protect the interest of bondholders since it decreases the conflicts between provider of equity and provider of debt capital.

Bhattacharya and Ravikumar (2001) outlined that families play an important role especially in economies with poorly developed financial markets and insufficient investor protection. This is confirmed by several other studies (e.g. Burkart, Panunzi and Shleifer, 2003; Almeida and Wolfenzon, 2005).

Drawbacks

However, despite the previously outlined benefits, the prominent position of the family also poses the main problem for this kind of ownership. The firm is dependent on the family and particularly on its founder (McConnaugh, Walker, Henderson & Mishra, 1998; Pérez-González, 2006; Villalonga and Amit, 2006). This might be especially concerning in cases where the founder is retiring, or when a savvy family successor is stepping down without an

equally skilled replacement available. Morck, Shleifer & Vishny (1988) confirmed this with their finding of a negative effect of descendant management on firm performance. Family firms tend to employ family members in key positions, disclaiming skilled non-family persons (Morck, Shleifer, & Vishny, 1988). The exclusion of outsiders, also for the board, causes a lower market valuation of family firms and reduces its attractiveness as an investment object. The discounted value can be considered as control premium (Barclay & Holderness, 1989; Cronqvist & Nilsson, 2003). The close identification of a family with the firm often leads to private consumption of company funds instead of maximising the firm value (Fama & Jensen, 1983). Furthermore, Sraer & Thesmar (2007) suggested that the close firm-family relationship combined with dependence on the firm wealth can lead to an overcautious management style. This, in turn, can cause missed opportunities (this argument can also be seen as a benefit, since the management style can be considered as very risk adverse). Bjuggren, Eklund, & Wiberg (2007) confirmed this negative effect for the Swedish market and attributed it to the presence of dual-class shares. They found that a separation in cash-flow rights and control rights affects investment decision negatively.

3. Literature review

Following the theoretical background for underpricing and family firms in the previous section, this section will proceed with a review of existing literature in order to fortify the worthwhileness of the paper. First the relevance of a family as ownership model will be examined, followed by an overview of comparable and related studies.

3.1. Ownership structures around the world and in Sweden

Firstly, it is useful to analyse the frequency of family firms as type of ownership structure. The spread of different types of ownership around the world and in Sweden will therefore be illustrated.

3.1.1. World

La Porta, Lopez-De-Silanes, & Shleifer (1999) conducted a frequently quoted study of 30 firms in 27 countries regarding ownership structure around the world. They found that widely held companies are only common in richer countries that have a strong shareholder

protection. The US have the highest percentage of firms that qualify as widely held (80%), Japan is second with only 50%.

Anderson & Reeb (2003) found that out that one third of S&P 500 have a family as owner with an average of18% of the shares. These firms firms are on average in family ownership for more than 78 years. La Porta, Lopez-De-Silanes, & Shleifer (1999) found only a limited occurance of pyramid- and cross-holdings for the U.S. and in Europe (excluding Sweden). Moreover, only 6% of the public traded companies in the U.S. have dual-class shares.

In contrast, poor shareholder protection leads to a higher distribution of large blockholders such as the government or a family. This is especially visible in for the Asian market and in emerging econonmies (La Porta, Lopez-De-Silanes, & Shleifer, 1999).

The shareholder structure in Europe can be considered relatively concentrated. Barotini & Caprio (2006) found that families represent 52% of large shareholders, followed by companies, financial institutions and the state.This is confirmed by Faccio, Lang, & Young (2001) who concluded that family ownership (combined with management positions) is the most frequent ownership structure for European firms. This is especially the case for Continental Europe, whereas in the United Kingdom and Ireland it is more common with widely held companies[2]. Family ownerhip is more frequent for smaller and indistrual firms (Faccio, Lang, & Young, 2001).

3.1.2. Sweden

Empirical evidence on the ownership structure in Sweden is scarce. According to Holmén & Knopf, Sweden has a high degree of separation between ownership and control rights, not only through dual class shares, but also via pyramids and cross-holdings (2004). Notably, Sweden has the highest frequency of dual-class shares in the world, the second highest frequency of pyramidal structures[3] and the third highest frequency of crossholdings (La Porta, Lopez-De-Silanes, & Shleifer, 1999).

Only 25% of all large publicly traded firms in Sweden are widely held, 15% are held by financial institutions, 10% are state-owned and 45% are held by families. The family ownership increases up to 60% for medium sized publicly traded firms La Porta, Lopez-De-

[2] One might speculated the reason for this are tax benefits and the mobility of large international companies

[3] The Wallenberg family is the most prominent owner in Sweden for these ownership structure (Högfeldt, 2004)

Silanes, & Shleifer (1999). Therefore, it is most relevant to examine the impact of family ownership on IPO performance.

3.2. Family firms and underpricing

Rydqvist found an average underpricing of 39% for the entire Swedish market (1993) from 1970 to 1991. Although published evidence is missing, various master theses have indicated that underpricing has decreased significantly over time. For example, Henricson (2012) found an average underpricing of 11.49% between 1994 and 2011 for companies listed on the Nordic OMX Stockholm (and its predecessor). However, evidence for the case of family firms is missing in Sweden and researchers around the world have just discovered this ownership principal as a topic in connection with underpricing.

3.2.1. Evidence on underpricing effect in the US

A study of the U.S. market found that family firms are less underpriced than non-family firms. Daugherty & Jithendranathan included market data from 1996 to 2004 and contributed the lower underpricing difference mainly to the effectiveness of managers in family controlled firms (2012). They found an average underpricing of 20.03% for family firms, compared to 29.61% for non-family firms. They considered this consistent with the agency theory and as a demonstration of the effectiveness of managers in a family firm to raise maximum proceeds in the sale of stock. They found that family firms tend to have a lower presence of venture capital before the issuing, as well as being older and hiring less prestigious underwriters for the IPO. The lack of venture capital causes family firms to pay higher underwriter fees, as the valuation becomes more difficult and evaluative process.

3.2.2. Evidence on the effect in Taiwan

Ding & Pukthuanthong-Le (2009) examined in a simliar study the Taiwanes market and also concluded less underpricing for family run firms. They emphasise that low manegerial opportunism in family firms improves their performace, especially in case of a non-family CEO at the moment of the IPO. They also argue that “outsider” management reduces uncertainty and therefore reduces underpricing. Similar to the study performed for the U.S. market metioned above, family firms are older and have less venture capital backing.

However, some limitations compared to the US-study should be mentioned. Firstly, the Taiwanese market is relatively young. Secondly, due to market restrictions of price

movements in the initial days of trading, the event window was prolonged to fiftheen days instead of one day.

3.2.3. Result of the effect in Norway

In line with the theory and the studies from the U.S. and Taiwan, Skattum & Strand discovered a negative effect of family ownership for underpricing, i.e. that family firms are less underpriced than non-family firms. They argue that family firms suffer less information asymmetry due to higher firm age and represent a lower risk due to the smaller size of the offer. However, they cannot reject that a lower agency conflict will influence underpricing. Contrary to theory, they found no evidence of the "quality" signal of CEO ownership. Moreover, they found ambivalent results for the influence of the underwriter depending on whether the firm is controlled by a family or not. The study was conducted for the Norwegian stock market between 2001 and 2010.

3.3. Results from related studies in Sweden

Published evidence for the Swedish IPO market related to underpricing barely exists. Nevertheless, there is some evidence from related – unpublished – master theses (and one bachelor thesis) from the Stockholm School of Economics. These should serve as a small overview on the topic of underpricing in Sweden and might help to fortify or confute potential explanations for the results of this thesis. Especially as underpricing may be affected by various variables (as described above), it is worthwhile to check different approaches to the subject.

Table 1: Overview of related Studies in the Swedish Market

Thesis	Period	# IPOs[4]	Main outcome
"IPO Underpricing and Share Class Strucutres" (Davidsson & Lennehag, 2004)	1993-2003	140	**8.25% higher IPO underpricing for dual-class firms.** Result contrasts empirical evidence from the US market.
"The usage and effects of overallotment arrangements in Swedish IPOs: An empirical study of IPOs on the Stockholm Stock Exchange 1999-2008" (Strömberg & Oskarsson, 2009)	1999-2008	77	No evidence of the overallotment arrangement to mitigate underpricing.
"Can First Day Returns of Initial Public Offerings be Explained by Individual Financial Ratios?" (Andersson & Westling, 2009)	2000-2008	49	No statistically significant relationship between financial ratios and underpricing.

[4] The number of IPOs might vary for the same period since some theses also included other stock exchanges and lists such as First North, SBI or Aktietorget.

"Founder CEOs and IPO Underpricing" (Gehrig & Strömberg, 2009)	1999-2008	82	Founder as CEO has no significant impact on underpricing.
"Pre-IPO equity private placements in Sweden : a Market overview and the effect on IPO underpricing" (Ankarberg & Nilsson, 2001)	1998-2000	78	**PE-backed firms have higher underpricing.** Controlling for the strong effects of IT firms and timing, the certification and monitoring hypotheses is partly support. Shortly PE-backed firms have less underpricing than longer PE-backed firms.
"A test of hypotheses on underpricing of initial public offerings: results from a qualitative study of Swedish investment banks" (Fredriksson & Lind, 1996)	1990-1994	*Qualitative Interviews with underwriters*	Investors demand underpricing as risk compensation. Cost of overpricing is higher than underpricing for underwriter.

The two most striking results for the Swedish market are the unexpected impact of dual-class shares and ambivalent results for private equity. Davidsson & Lennehag (2004) failed to find support for the reduced monitoring hypothesis (outlined earlier), as opposed to in the U.S. market. They attribute this "bias" to the small size of the Swedish market and the dependence on institutional investors. Furthermore, they assume that the "money left on table" is less for dual-class firms and could explain the differences. Moreover, the threat of inefficient management of controlling minority shareholders might add uncertainty and therefore a valuation discount. Ankarberg & Nilsson's results are highly influenced by the IT sector. Including IT, they found an opposed effect of venture capital and underpricing, contrasting to the certification and monitoring theory as well as to evidence from other markets. Controlling for this effect, they found a weak indication that VC-backed firms have less underpricing.

4. Hypotheses

Based on previous studies of underpricing, the importance of signaling and in particular the distinction of a family firm to non-family firm, the following section will outline the hypotheses regarding IPO underpricing.

4.1. Hypothesis H1

As previously outlined, family firms have other reasons to conduct an IPO and inherit specific characteristics distinguishing them from non-family firms. A family has often a large stake of its wealth tied to its firm and therefore tries to maximize its performance in the long run which reduces information asymmetry and thereby underpricing. Considering the outlined theory and the comparable studies, underpricing is expected to be lower for family

controlled firms than for firms with other owner structures. However, due to the fact that dual-class shares are more common in Sweden, we expect a less distinctive result.

Thus, H1: Family controlled firms have less underpricing.

An explanation for the result will be investigated in the following hypotheses.

4.2. Hypothesis H2

Information asymmetry is smaller for older firms than for younger firms since past data are used for evaluating the "true" value of the firm. Consequently a lack of data makes an assessment of a young firm more difficult and thus more expensive (Ritter, 1984). Pouthiouris, Chittenden & Michaelas (1998) found that family firms in the United Kingdom have a pecking order in financing. Families try to sustain their business primarily with their own funds and only turn to external funds (e.g. public shareholders) as least preferred source of capital. A longer past can also reduce risk since the firm is established (Rock, 1986), which itself can reduce underpricing.

Thus, H2: Older firms have less underpricing.

If the hypothesis H1 is confirmed and information asymmetry can be assumed to decrease with firm age, firm age could be used as a proxy for information asymmetry and hence lower underpricing.

4.3. Hypothesis H3

Family firms tend to omit outside financing to a greater extent. This was confirmed by Poutziouris (2001) who found evidence that family firms use less venture capital for their financing needs. However, the effect of venture capital on IPO underpricing is ambiguous in the literature (e.g. Daugherty & Jithendranathan, 2012).

Thus, H3: Family firms have less venture capital at the time of the IPO

If this hypothesis is true, we follow the results of Ankarberg & Nilsson (2001) that indicated higher underpricing for venture capital backed firms in Sweden and expect underpricing to be lower for family firms.

4.4. Hypothesis H4

Family firms want to stay in control after an IPO and offer therefore fewer shares (Chambers, 2012). Fewer shares mitigate the need to lower the price in an attempt to attract a sufficient number of investors (informed and uninformed) and pose a smaller risk for the market (Rock, 1986) and should therefore result in lower underpricing.

Moreover, a higher portion of cash-flow shares retained by the controlling family implies a long-term strategy and therefore a signal of good quality to the investors (Litz, 2004).

Thus, 4a: Higher offer size will lead to higher underpricing.

4b: Lower proportion of shares retained by the controlling family will lead to higher underpricing.

4.5. Hypothesis H5

Managers are interested in maximizing their personal wealth in the long run. Therefore, if they hold stock, they will try to systematically to underprice an IPO and later sell their shares in the post-IPO market at a maximum price. This is based on the attention theory that highly underpriced IPO will generate attention by the substantial price appreciation after the first public offering and consequently increase abnormally (Aggarwal, Krigman, & Womack, 2002). Families generally have a strong presence in the management, especially in the position of the CEO. Therefore, this conflict between owner and management (and underwriter) is reduced. According to Ritter & Welch (2002), this effect causes lower underpricing at an IPO event for family firms since family managers plan to continue to hold shares and maintain their control. Furthermore, studies on agency theory suggest that family firms are less likely to suffer from managerial opportunism due to its long-term orientation (Le Breton-Miller & Miller, 2006).

Thus, H5: Family firms have higher management ownership at the time of the IPO and therefore reduced underpricing

We expect therefore higher management ownership for family firms and a reduced underpricing.

5. Method and Data Description

This section gives an overview of the dataset, the method used and the different variables tested for and especially the definition of "family firm" underlying this thesis. The section ends with a closer description of the data and its characteristics.

5.1. Construction of the data set

5.1.1. Sample overview

The sample for this research is predicated on IPOs listed on the NASDAQ OMX Stockholm stock exchange (and its predecessor, the Stockholmsbörsen) in the years between 1994 and beginning of 2014, including listing on the A-, O- and OTC-list and subsequently on the Nordiska-list (the Nordiska-list is still divided into large-, mid- and small-cap equivalent to the previous lists). IPOs from other stock-exchanges (e.g. SBI or Aktietorget) are not included due to the lack of data and to avoid potential anomalies between the different markets. We also avoid different conditions to be listed and concentrate therefore on an as standardised market as possible.

The dataset is first reduced to companies with a "pure" IPO. This criterion to exclude firms consists of list transfers, mergers/demergers or listed abroad (see next chapter for the exact criteria for inclusion). Secondly, 19 firms are dropped because of missing or contradictory information. The final sample consists of 156 firms. Due to the time frame of 20 years involving many bankruptcies (of firms and underwriters alike), restructuring and lastly long time some data – mainly the prospectus – could not be found. An overview of the sample can be found in Appendix A.

Table 2: Sample Size

IPOs on the NASDAQ OMX Stockholm between 1994 and the beginning of 2014

Criteria	Firms
Listed on OMX 1994-2014	411
Pure IPOs	175
Prospectus missing	17
Stock data missing	2
Final sample	**156**

5.1.2. Criteria, Collection and Quality of Data

The criteria for a sample to be included in the dataset were more specifically:

- IPO between 1994 and 2014 at the NASDAQ OMX Stockholm (or its predecessors)
- Prospectus available
- Prior and post IPO ownership data available
- Offering price available
- Closing price available
- Name of the underwriter
- No merger or demerger (including carve-outs & spin-offs)
- Shares must be sold to the public
- No list transfer
- No previous listing anywhere else in the world

IPO events are firstly obtained from the Zephyr database. Where this source did not provide sufficient information, Skatteverket (the Swedish tax authority) as well as OMX's archive is used to complete the data. Simultaneously to the completion of the set, the data was counterchecked and confirmed by the various sources. First day closing prices were obtained from DataStream and OMX directly either from the stock history if the sample is still listed or from historic data. All ownership characteristics and offer size were taken directly from the prospectuses. If further insight in the ownership was needed (e.g. for cross-holdings or pyramid structures), SIS Ägarna och Makten or the homepage of the company in question served as information source. The prospectuses were partly obtained from Finansinpektionen (the Swedish Financial Service Authority) and partly from the Kungliga Bibliotheket.

To prevent biased data, some IPO samples had to be excluded from the database. This thesis only includes "pure" IPOs, i.e. IPOs from firms that were previously listed or were fully owned by another listed firms prior to the IPO were excluded. This includes spin-offs, carve-out, merger/restructuring, dirty/hybrid issues, secondary listing and unofficial trading prior IPO. In most cases, these "impure" IPOs reduce uncertainty since they were already exposed to the public market directly (or were part of a firm that was). Biased results for e.g. carve-outs are confirmed by Pagano, Panetta, & Zingalas (1998).

The quality of the data can be assumed to be very accurate since it was obtained from official institutions or OMX directly. Especially the prospectus can be considered very reliable sources, as they must be approved by several instances. IPO data obtained from OMX directly was partly flawed, e.g. OMX listed a few offerings as "IPO" even though the event is not considered to be a "pure" IPO according to the standards outlined above – OMX stated in most cases when this was the case otherwise[5]. The thorough proofing of the data thus explains why this dataset contains fewer observations than comparable works. Critical data such as the offering and closing price and especially extreme values were double checked and can be considered accurate.

5.2. Methodology

The event investigated is the initial public offering of a firm and consists from the announcing of the offering price to the first day closing price. For reasons of comparison and prevent new market information, a (arbitrary) longer time window is not considered in this thesis.

5.2.1. Family firm classification

To exactly define what qualifies as family firm is difficult and several different definitions exist in the literature. Andres (2008) specifies a family firm as following: The founder and/or family members hold more than 25% of the voting shares, or if the founding-family owns less than 25% of the voting rights they have to be represented on either the executive or the supervisory board. Andres defines "founder" "as the person who has founded the sample company or the predecessor company (in case of a change in the legal form and/or the company's name). In case a person has acquired a majority stake and is the CEO, "he/she is treated as a founder if he/she changes the company's operational business significantly." Andres continues to mention that in case a firm has more than one founder "they are together treated as one family." This approach makes sense since the founders are assumed to act coordinated and almost always pool their votes (Andres, 2008), despite that they do not necessarily have any (personal) affinity to each other.

Following Anderson & Reeb (2003), Andres divides family firms into three subcategories:

- Founder-CEO: The founder acts as the company's CEO

[5] This also explains the smaller dataset compared to Henricson (2011).

- Descendant-controlled: One of the founder's descendants acts as CEO.
- Professionally managed: The family is not represented on the executive board but the firm still classifies as family firm

Companies with individuals that hold enough shares to be classified as family firms but have not shaped the firm significantly in any way are not considered as family firms since the owner acts purely as an investor.

Andres' definition is rather restrictive in comparison to other literature (e.g. Anderson & Reeb, 2003; Villalonga & Amit, 2006; Sraer & Thesmar, 2007). Also La Porta, Lopez-de-Silanes & Shleifer (1999) for example defined a family controlled firm as a family owning a minimum of 20% of the shares. On the other hand, in Norway, Bøhren (2011) required a family to own 50% of the shares to be defined as a family firm.

Despite the rather narrow definition by Andres, his definition is used in this thesis. There are sometimes difficulties involved in identifying the ultimate owner as families are sometimes hidden behind pyramids or cross-holdings. In case an institution holds more than 25% of a company and is itself family controlled according to Andres' definition above, the company will be also defined as family company.

The variables for the definition of a family firm were taken directly from the prospectus; hence they represent the ownership just prior to the IPO. This omits the effect of firms shortly held by venture capitalists, e.g. a firm might be regarded as family controlled one year prior to the IPO but was acquired by a venture capitalist just prior to the IPO.

5.2.2. Variables

The hypotheses will be studied next to the descriptive statistics quantitatively with an OLS regression to control for effects of underpricing related to family firms. Therefore, the definitions of the different variables used are given below.

5.2.2.1 Dependent Variable

Underpricing (UP) is the key variable in this thesis and will therefore serve as the only dependent variable in all regressions. Underpricing refers to the relation between the price per share for firm *i* prior to the listing on the public market, called the opening price (OP_i), and the difference to the price after the first day of trading on a stock-market, called closing

price (CP_i). This formula was first used by Ibbotson (1975) and is now widely established in financial research.

$$UP_i = \frac{(CP_i - OP_i)}{OP_i}$$

The higher the underpricing, the more money is "left on the table" for the issuer, meaning the offering firm could have skimmed more money from the investors since they perceive the value of the firm higher than its offering price.

If UP turns negative, it is overpricing, i.e. the first day closing price is below the offering price, e.g. meaning the issuer was able to skim more money from the market than the perceived "real" value of the firm (assumed all the shares were sold).

5.2.2.2. Independent Variables

Age

The age of the firm determines of much data of the past is available, i.e. the older a firm the more information can be embraced, leading to more accurate and less risky pricing since the information asymmetry is reduced (Ritter, 1984). It is based on the assumption that age is a proxy for risk and that more information leads to more accuracy in estimating the risk.

Age is defined as the natural logarithm of date of IPO minus founding year. The founding year is hereby defined as the starting point of any firm including name changes. If the essence of the company changed, then the date of the change is considered as the founding date.

Offer size

Habib & Ljungqvist (2001) use offer size (or gross proceeds), defined as the number of shares offered multiplied by the offering price, as a measure of risk, i.e. the larger the size of the offer the larger the underlying risk for investors. This was earlier confirmed by Michaley & Shaw (1994) who found a negative correlation between gross proceeds and underpricing. To control for any size effects, the natural logarithm of the offer size is used.

Family dummy

Family dummy is a dummy variable used to indicate family ownership prior to the IPO as stated in the IPO prospect and according to the definition earlier.

Ultimate ownership of owning family

The percentage of voting shares owned by the family after the IPO is included in order to test the effect of ultimate ownership.

Family CEO dummy

A family dummy is included based on theory of diminishing agency cost in case of a family CEO as proposed e.g. Anderson & Reeb (2003).

Founder dummy

The Founder dummy investigates if the founder holds as a quality signal as suggested by the theory. A person is hereby considered as founder, if he or she was active in the firm at its beginning, regardless if he or she is the owner.

Ownership CEO

This variable helps us to determine whether the agency conflict is mitigated by CEO ownership in addition to the effect of a family CEO and is defined as the percentage of cash-flow shares hold by the CEO.

Proportion of cash-flow (CF) shares by the owning family

This variable tests the effect of cash-flow risk that is carried after the IPO.

Underwriter rank (UW)

The reputation of the underwriter might decrease underpricing according to Carter & Manaster (1990). They argue that “low risk” firms want to signal their quality to the investors by choosing an underwriter with a high reputation, which reduces ex-ante uncertainties. To rank the underwriters, this paper follows Megginson & Weiss (1991) and measures the quality of each underwriter as the percentage of the total amount brought to the market. In case of more than one underwriter, the average reputation is used.

IT dummy

As observed this study and several others, the IT sectors tend to react significantly different than other sectors in an IPO. To account for this, a dummy for IT companies is included.

Venture capital dummy (VC)

Ritter (2003) illustrated that venture capital involvement has a decreasing effect on underpricing and was confirmed by Daugherty & Jithendranathan (2012) for family firms. This is, however, contrary to the finding for the Swedish market (Ankarberg & Nilsson, 2001). To check for the effect of venture capital involvement at the time of the IPO, a venture capital dummy is included.

Time dummy

As seen in the descriptive statistic, underpricing is volatile over time. To prevent biased results and take "hot" IPO periods into account (especially considering the long-time window throughout two crises), a time dummy is included. This approach was confirmed by Ritter (1998) who attributes higher underpricing to "hot" IPO periods.

List dummy

Since the requirement for a listing for the small, mid and large cap (respectively OTC, O and A) vary, it is possible that the uncertainty level and market behaviour also differs.

5.3. Descriptive statistics

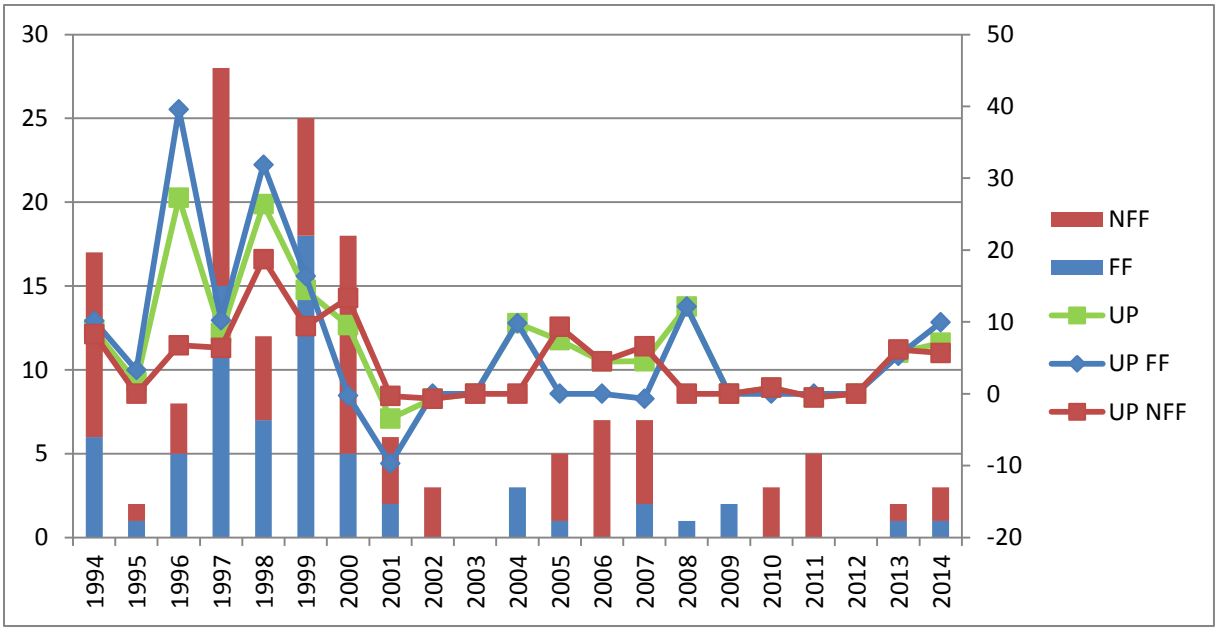
As a first indicator to answer the hypothesis, the descriptive statics of the obtained observations is given below.

5.3.1. Overview

During the observed time frame from 1994 to the beginning of 2014, 156 independent IPOs on the NASDAQ OMX Stockholm and its predecessors could be observed. Like other stock-markets and the general state of the economy, the IPO market in Stockholm is highly cyclical. Graph 1 shows the number of IPOs carried out each year in combination with the average underpricing.

Figure 1: Number of IPOs and Underpricing Over Time

The abbreviations are as following: Non-Family Firms (NFF), Family Firms (FF), and Underpricing (UP).



One can observe high fluctuation of IPOs for both groups alike over time peaking in the years 1996 to 1999 when the Dot-com bubble happened. This is in line with Ljungqvist & Wilhelm's (2003) reasoning that investors were overoptimistic during this period. After the millennium the market for IPO stagnated and just seemed to recover until the next stagnation during the Financial Crisis 2007 to 2008. In the last three years, IPO are again rather low as after the Dot-com bubble. The "hot-issue"-market theory, i.e. firms go public after other firms receive a high stock market valuation, is just partly observable. The two most extreme values of 243% and -23% are both particularities of their timing, they occurred 1999 and 2001 respectively.

As seen in table 3 below (see section 5.3.6. why one observation is excluded), family firms account for 44% of all observations and experience in average underpricing of 14.33% as compared to 7.4% of non-family firms. Family firms also show a higher volatility.

Table 3: Number of Observations and Underpricing for Family and Non-Family Firms

	Total	Family firms	Non-family firms
Observations	155	68	87
Underpricing			

Mean	**10.40**	**14.33**	**7.41**
Max	105.88	105.88	95.71
Min	-22.90	-22.90	16.13
Std.	19.51	22.47	16.43

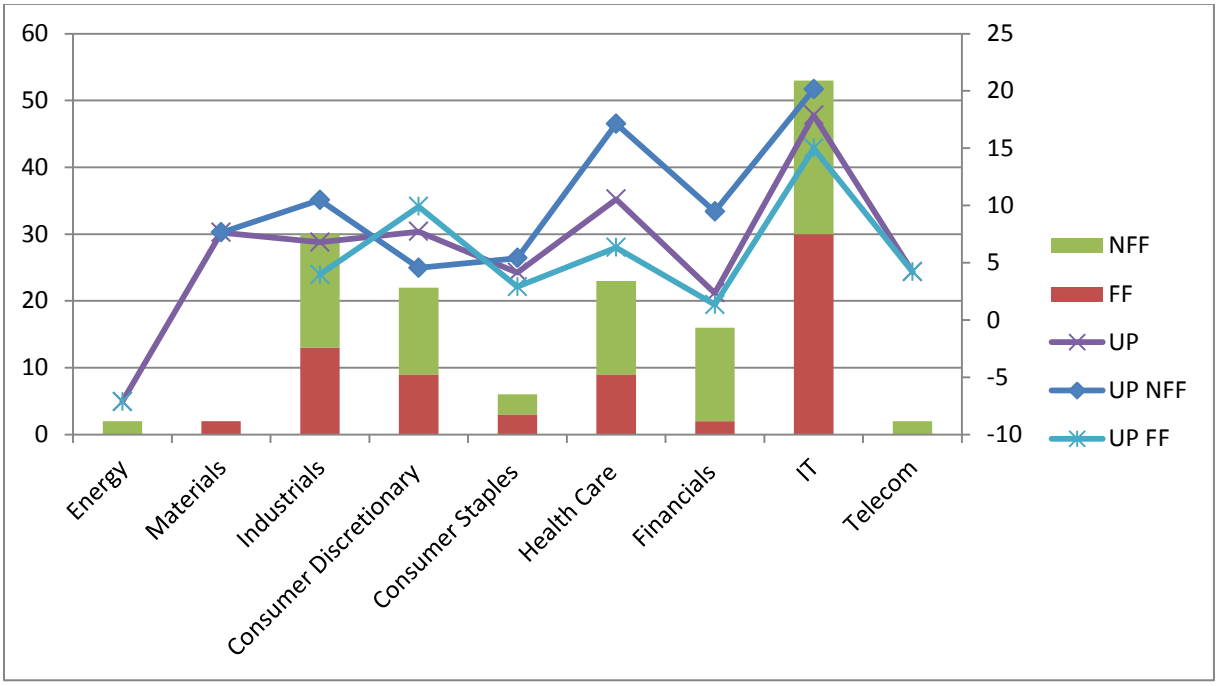
5.3.2. Industry

Figure 2 below illustrates the number of IPO distributed into the ten different industries defined by the Global Industry Classification Standard (GICS)[6].

It is striking that the IT sector accounts for more than a third (34%) of all IPOs conducted. Combined with the much higher observable underpricing, the IT sector can be considered an exception that needs close attention. It is also worth to mention that the majority (60%) of the IT firms went public during the bullish market from 1996 to 1999. Ljungqvist, Jenkinson & Wilhelm (2003) hereby stated a high information asymmetry in the IT sector.

Figure 2: IPOs for Industry Sectors and Underpricing

The abbreviations are as following: Non-Family Firms (NFF), Family Firms (FF), and Underpricing (UP).



[6] There is no IPO observation for the "Utilities" sector.

5.3.3. Family and non-family firms variables

As one can see in the table below, there are some significant differences between the two outlined groups when performing an IPO. First of all, family firms are much more underpriced than non-family firms (14% vs. 7%). This supports hypothesis H1, however, in the contrary direction than anticipated. Both groups have an average age of 28 years before conducting an IPO. This is contrary to the results from the U.S., Taiwan and Norway, although one cannot yet say if age has nevertheless an effect on underpricing, age is not causing the differences between the two groups. The IT sector inherits 17% underpricing on average, but a significant difference between the two underlying groups is not statistically confirmed.

Non-family firms seem to be more generous with their offering, both for voting and capital shares. It is also apparent that the voting offer of family firms is smaller than the cash flow offer; the significantly higher portion of dual-class share in family firms is therefore not surprising. However, the higher frequency of dual-class shares in family firms had to be assumed considering the mentioned "sticking to the ownership" of families.

Along with other studies, this thesis can confirm a much higher management ownership for family firms. Considering that 40 family firms have a family member installed as CEO, this seems reasonable.

There is also evidence for the proposed hypothesis H3, i.e. that family firms prefer to stay more independent of venture capital. Also, family firms IPOs have less than half the size of their counterparts.

Table 4: Results of t-test and Mann-Whitney U Test of Family Firm Variables compared to Non-Family Firms Variables

Since the data is skewed to the right (see section 6.1.2. for further discussion), a Mann–Whitney U test is additionally used to compare the two groups and find similar results to the t-test.

	Family Firms	Non-Family Firms	t-stat (p-value	Mann–Whitney U (p-value)
Observations	67	88		
UP in %	**14.33**	**7.41**	**2.128**	**2408.50**
			(0.035)**	**(0.051)***
Age at IPO	28	28.1	0.498	2808.50
			(0.619)	(0.512)

Offer-size in MSEK	**309.7**	**853.0**	**3.795 (0.000)*** **	**1668.50 (0.000)*** **
%-offered voting	21.53	40.05	6.116 (0.000)***	1367.50 (0.000)***
%-offered cash flow	31.65	41.43	3.421 (0.001)***	2211.50 (0.008)***
%-Dual-class firms	**65**	**13**	**7.992 (0.000)*** **	**1380.50 (0.000)*** **
%-Family CEO	59	-	-	-
%-CEO ownership	**30.59**	**3.18**	**7.631 (0.000)*** **	**1401.00 (0.000)*** **
%-CF-shares retained	35.30	-	-	-
%-Founder CEO	55	33	2.809 (0.006)***	2291.50 (0.006)***
UW rank (out of 31)	8.20	7.40	0.836 (0.405)	2770.00 (0.518)
%-VC-backed	**31**	**58**	**3.418 (0.001)*** **	**2163.00 (0.001)*** **
%-IT firms	43	26	2.223 (0.028)**	2490.0 (0.026)**
IT firms UP	20.15	14.98	0.737 (0.464)	328.50 (0.927)

*, **, *** Significance at 10%, 5%, 1%

5.3.4. Dual-Class Share structures and family firms

Since there is a high frequency of dual-class shares structure present for family firms and they have shown to cause higher underpricing (see Davidsson & Lennehag, 2004), a more thorough investigation of the particularities of dual-class shares for family firms may be required and helpful for the subsequence analysis later in this thesis. It is apparent from the table below, that a close family control of the firm before the IPO in form of a family member is maintained via the using dual-class shares. A family CEOs occurs significantly

more frequent with a dual-class share structure, the CEO ownership and cash-flow shares retained by the family are also significantly higher.

Table 5: Dual-Class Share structure and Family Firms

Since the data is skewed to the right (see section 6.1.2. for further discussion), a Mann–Whitney U test is additionally used to compare the two groups and find similar results to the t-test.

	Family Firms	Dual-class	Single-class	t-stat (p-value)	Mann–Whitney U (p-value)
Observations	67	44	23		
Underpricing	14.33	18.68	6.02	2.527	340.00
				(0.014)**	(0.016)**
Founder CEO	37	29	8	2.670	356.00
				(0.010)**	(0.011)**
Family CEO	40	33	7	3.968	286.00
				(0.000)***	(0.000)***
% CEO ownership	30.59	36.04	20.18	2.198	354.00
				(0.033)**	(0.025)**
%-CF-shares retained	36.31	40.05	29.16	2.771	288.50
				(0.008)***	(0.002)***

*, **, *** Significance at 10%, 5%, 1%

5.3.5. Outliers

Three extreme values of underpricing are observed. With an underpricing of 243% (Cybercom Group AB), 106% (Connecta AB) and 96% (Micronic Mydata AB) respectively are more than three standard deviations away from the mean value and can be considered outliers. Due to the rather small sample size and Brook's (2011) argument for not intervening, we only exclude the most extreme value of 243%, which is more than seven standard deviations away from the average and has a very high impact on the value of underpricing for family firms.

Regarding the size, TeliaSonera AB had to be excluded from the computation of the underwriter rank and the offer size. TeliaSonera's IPO was more than ten times bigger than the second biggest IPO and would distort these variables extremely.

6. Regression & Empirical Analysis

The descriptive statistics in the previous section indicated some significant differences between family firms and non-family firms, especially regarding their ownership and control structure. In this next section, a more thorough OLS regression is conducted to test the influence of the different variables on underpricing. The section is followed with a conclusion about the definite reasons as to why family firms are much higher underpriced and a general discussion about the findings.

6.1. OLS Regression

6.1.1. Empirical Design

Comparable research conducted by Daugherty & Jithendranathan (2012) and Ding & Pukthuanthong-Le (2009) respectively used the ordinary least square (OLS) method and considered it as an acceptable method to investigate underpricing in the context of underpricing and ownership structure of the firm. Furthermore, OLS is widely used in finance and considered to be a very robust estimator. Given the outlined variables from above, the OLS regression is as follows:

$$
\begin{aligned}
&Underpricing\ (UP) \\
&\quad = family\ firm\ dummy + family\ CEO\ dummy + \ offer\ CF \\
&\quad + firm\ age\ (\ln) + VC\ dummy\ + size(\ln) + IT\ dummy \\
&\quad + underwriter\ rank\ + \ industry\ dummy\ + time\ dummy
\end{aligned}
$$

Due to collinearity concerns, family firm ownership variables (family firm dummy, ownership % and shares retained) are not included in the same regression but used for testing the robustness of the results. The same applies to family CEO dummy and management ownership. Since all these variables are extensively congruent as illustrated, they will be exchanged when needed.

6.1.2. OLS Assumptions

To assure the quality of the OLS, several tests are conducted to check if the estimation is sufficient for an OLS.

Normality

The sample shows kurtosis and skewedness to the right. Although this was to be expected from comparable studies regarding underpricing, it violates the assumption of the OLS method. Brooks (2011) states that there is no obvious procedure if there is evidence of a non-normal distribution. To find a better model fit can be very demanding and OLS might be the best model nevertheless, if the model has been researched sufficiently. Especially in financial research, there are often some extreme residuals that cause major impact affecting the model (Brooks, 2011). The sample suffers from a few extreme observations causing the skewed distribution. Disclaiming these values may improve the model fit, but with consideration to the rather small sample they are included nevertheless, except for the most extreme value as mentioned earlier.

Brooks (2001) further suggests transferring certain variables to a natural logarithm to improve normality. This improves the fit of the variables for a linear regression and is therefore applied where reasonable for improved normality.

Heteroscedasticity

Homoscedasticity is an underlying assumption for OLS. The conducted White's test showed no evidence for homoscedasticity, heteroscedastidicity can therefore be assumed.

Autocorrelation & Multicollinearity

The Durbin-Watson test (DW) gives an indication of the presence of autocorrelation. The result shows a DW value close to 2, indicating a low level of autocorrelation. The threat of an increasing probability of a type 1 error leading to a wrong rejection of a null hypothesis does therefore not exist. Furthermore, the Variance Inflation Factor (VIF) showed no concerning presence of multicollinearity.

6.2. Results

Table 6 below shows the result of the described OLS regression. The regression has an explanatory power of 25.2%, which means that more than a quarter of the underpricing phenomenon is explained with the outlined variables.

Table 6: Results of the OLS Regression

Time and year dummy were included in the regression, but due to lucidity not individually illustrated.

	Coefficient	t-stat	p-value
Constant	-45.86	1.33	0.184
Family dummy	**-6.84**	**1.57**	**0.119**
Family CEO	**15.58**	**3.19**	**0.002*****
Offered CF %	-0.35	3.70	0.000***
Underwriter rank	-0.32	1.44	0.154
Firm age (ln)	2.68	1.96	0.052*
VC dummy	5.40	1.72	0.087*
Size (ln)	3.07	1.727	0.087*
IT dummy	8.62	2.43	0.017**
Time dummy	*Included*		
List dummies	*Included*		
N	155		
R^2	38.30		
Adj. R^2	25.20		
DW	2.08		

*, **, *** Significance at 10%, 5%, 1%

The regression output reveals some significant relation between family ownership and IPO underpricing, but it also seems to be ambivalent. Although the family dummy variable shows the initially expected negative sign, it does not reach statistical significance (this is also confirmed if the dummy is replaced with the %-ownership of the family, see App. B). Considering the increasing effect on underpricing of 15.58% from a family CEO, it would be wrong to dismiss any relationship between family ownership and underpricing. Appendix C also reveal the strong impact of a family CEO on dual-class firms, implying that it is not the share-class structure per se that impacts underpricing negatively (a regression with a dual-share class dummy shows no significance), but the family CEO choosing this structure. A family CEO is not considered as beneficial to the business and the outlined theory of reduced management opportunism does not hold. Apparently, he also cannot be considered a signal for quality.

Percentage of cash flow shares offered indicates a 0.35% lower underpricing for every percentage offered. Considering the smaller offer percentage of family IPOs, the percentage of cash flow shares offered helps to explain the higher underpricing for family firms partly.

The suggested impact of the age variable cannot be observed. Older firm seem to have more underpricing. Hypothesis H2 is therefore rejected: age does not seem to lower ex-ante uncertainties as expected. Together with the observation from the descriptive statistic, the assumption of the difference in underpricing due to firm age between family and non-family firms can be nullified.

The dummy for venture capital is significant on a 10% level and suggest 5.4% higher underpricing for VC-backed firms, which is in line with Ankarberg & Nilsson (2001). Together with the evidence that family firms have less venture capital involvement, the purpose of hypothesis H3 can be forasmuch answered that venture capital has a mitigating effect on the underpricing for family firms, but cannot explain the higher underpricing for family firms.

The positive value of the coefficient for the offer size implies higher underpricing for bigger offers (H4a can be confirmed), but since the offer size of family firms is smaller, offer size cannot be responsible for the difference in underpricing between family and non-family firms as assumed. Also, a replacement of the family dummy with shares retained by the family generates no significant effect (see App. E). The theory of signaling good quality through a high portion of shares retained (H4b) can therefore not be confirmed, although the coefficient (-0.146) inherits the expected sign.

The observed connection between family CEO and management ownership implies already a denial of H5. Replacing the family CEO dummy with CEO ownership confirms that high management ownership results in higher underpricing (see App. D) – at least in connection with family firms. Hypothesis H5, suggesting lower underpricing for high management ownership prior to the IPO, has therefore to be denied. The strong effect of a family CEO seems to dominate; one percentage higher management ownership indicates higher underpricing by 0.14% (p-value of 0.111) and the unification of ownership and control seems not to be beneficial. The absence of outsiders seems to be negative and stronger than the lower agency conflict.

The presence of the bullish market just prior the IT-bubble and the high number of IT IPOs during this time result in an 8.62% higher underpricing for IT firms. Considering the illustrated higher frequency of family firms in the IT sector, IT might suggest an influence on the higher underpricing for family firms, although no significant difference between underpricing in the IT sector for family and non-family firms could be observed.

The list dummies (excluding the O-list dummy) seem to have no explanatory power. This implies that underpricing does not differ between the OTC-, O- and A-list despite the different requirements to be listed.

The time dummies, excluding 2014, show no significant results except 1996. On a significance level of 5%, the coefficient deflects with 24.5%. However, this result has to be carefully ingested since the year dummies from 1996 to 2000 show collinearity (which poses no problem for our main results since the time dummies are not our main interest).

6.3. Robustness

The regression is very robust regarding the family CEO variable regardless of any change, e.g. including a family dummy instead of the ultimate family ownership; the family CEO stays significant and highly influential. Other family variables are more prone to changes of certain variables and lose significance. Therefore, the focus is clearly on family CEO as a reliable variable (see App. B & D).

7. Conclusion

The purpose of this thesis is to analyse potential differences between family firms and non-family firms and its effect on underpricing for the Swedish market between 1994 and early 2014. The approach is an extension of existing literature and aims to explain more thoroughly the differences in performance and valuation for family firms in the event of an IPO.

Signaling plays a crucial role when going public and can mitigate the ex-ante uncertainties any investor might have (Rock, 1986). Especially uncertainties arising from information asymmetry and agency conflict have proven to influence the IPO performance (Ljungqvist A. , 2007). Existing studies from the U.S., Taiwan and Norway suggest significantly lower underpricing for family firms and find some distinguishing characteristics. They all find that family firms are older and have less venture capital at the time of the IPO. Furthermore, management ownership is significantly higher and the combination of ownership and control reduces managerial opportunism and the agency conflict. Also, the long-term orientation of family firms due to the dependency of the family on the firm's wealth seems to send a strong signal to investors.

This thesis, however, provides evidence for a significant difference in underpricing the opposite direction as could have been assumed after the outlined theoretical background and the comparable studies. The underpricing of family firms is significantly higher compared to that of non-family firms – a striking 14.33% compared to 7.41%. Testing and controlling for a variety of variables that can impact signaling for family firms in an OLS regression, a family member as CEO is by far the most influential. A family CEO increases underpricing by 15.58%. However, other family-related signals, such as cash-flow shares retained, control stake prior the IPO or family ownership show no significant results.

The strong correlation observed between a family CEO and the occurrence of dual-class shares implies that if a family is actively controlling a firm, it has a desire to maintain its control after the IPO. Dual-class shares offer to maintain the control while carrying less of the cash-flow risk. Initial investors seem to value this double-tracked ownership structure in connection with a family CEO very negatively, leading to a lower valuation of family firms and higher underpricing since the strongest signal for family ownership, the dependence on the firm's wealth of the family is violated and the family accepts that it "leaves money on the table" at the IPO. Although the agency conflict might be mitigated, the absence of outsiders as a bad signal seems to dominate.

8. Discussion

The findings of this thesis once more highlight the problematic existence of dual-class shares in the Swedish market and raise the question if such a double-tracked ownership structure is efficient for the market. Initial investors seem to answer this question with a low evaluation of its users, in this case the family companies, resulting in higher underpricing and unstable first day of trading. Although families deliberately choose this structure and sacrifice firm value for the private benefits of control, the long-term implications of this effect are ambiguous and worth further research. A lower firm value might for example be disadvantageous for further financing. Also, the high frequency of separation of control and cash flow poses questions the market attractiveness as a whole. Especially in a small market such as Sweden, foreign money could reduce dependency on the few big players in the Swedish market.

Högfeldt (2004) portrayed dual-class shares as a highly political topic in Sweden. He illustrated the vast control over 41 of the 50 biggest firms in Sweden by certain key families[7]. The families only bear a diminishingly small cash-flow risk in relation to their voting power. But apart from the personal advantages for the families and the political "romance" of keeping Swedish firms in Swedish possession, the rambling retention of dual-class shares affects the firms' value. Gompers, Ishii, & Metrick (2010) found a negative relationship between firm value and voting rights for U.S. firms with a dual-class share structure. Several papers have shown the same effect in the Swedish market (e.g. Bjuggren, Eklund, & Wiberg, 2007)

Naturally, dual-class structures also provide benefits for the "small" owner, e.g. prevention of hostile take-overs, the possibility of entrepreneurs to find financing while realising their ideas (although with an average age of 28 years before the IPO, this arguments seems invalid for the Swedish market) or prevent short-sighted investors from exploiting the firm (Mayer & Moores, 2013).

Therefore, further research should be conducted towards long-term performance of family firms that choose a dual-class share structure and the effects for the whole market, including

[7] Some of the more prominent families among others: Wallenberg, Bonnier, Johnsson and Söderberg

if family firms are able to compensate for the "money left on the table" at the IPO. Additionally, foreign investment on the Swedish market might be worthwhile to examine to see if the high frequency of dual-class shares has a repellent effect or not.

9. Limitations

As one can conclude from the theoretical introduction, IPO underpricing may be influenced by a vast variety of factors. Since this paper is focused on family firms and signaling, many otherwise influencing variables were not included. Thus, market trends and earnings figures are the two most prominent variables that were omitted. Including them might have increased the explanatory power of the regression, but considering the strong effect of family ownership, family CEO or dual-class shares, a different outcome is highly questionable. Due to practical reasons and Beatty & Ritter (1986), who stated that with an average initial gain of 14.1% and an average market return of 0.1%, it would not be meaningful to make adjustments, first day market movements, especially the overallotment option are not adjusted for. Ad-hoc signals, such as profit warnings, were not included and are difficult to obtain, especially for a long time window.

Moreover, the rather small dataset caused by the small size of the Swedish market can be seen as a limitation. Although as many observations as possible were included, a larger data set could have delivered more meaningful results and mitigate the exposure to values with a high deviations from the average.

The focus on the NASDAQ OMX Stockholm facilitated the data collection and homogeneity of observations, but it can be questioned if the results can be generalised on other Swedish stock-markets.

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Appendix A: Sample Overview

Name	UP	Age at IPO	Size MSEK	%-Offered CF	%-Offered Voting	Dual Shares	VC	Family Firm	Shares retained	Family CEO	Founder CEO	CEO ownership
A-Com AB	7.89	6	494	48	48	0	0	1	28.7	0	1	23.3
Adera	0.63	16	80	21.7	5.5	1	0	1	21.1	1	1	7.8
Aerocrine	12.00	10	225	20	20	0	1	0	-	0	0	1.5
Affärsstrategerna AB	14.39	10	99	58.3	21.2	1	1	1	51.9	1	1	66.2
Alfa Laval AB	7.69	119	5589	59.7	59.7	0	1	0	-	0	0	0.7
Alfaskop AB	21.43	7	45	17	17	0	0	0	-	0	1	3.6
Allenex AB	-7.14	8	210	34	34	0	0	0	-	0	1	8.0
Althin Medical AB	3.31	10	200	26.6	10.5	1	0	1	55.8	1	1	76.0
Arise AB	-2.27	4	590	30.6	30.6	0	0	0	-	0	1	7.1
Arkivator AB	8.46	57	80	38.1	38.1	0	1	1	39.4	0	0	10.0
Artimplant AB	26.67	7	68	23.1	9.7	1	1	0	-	0	1	5.8
Audiodev AB	4.76	13	170	32.9	24.7	1	0	1	62	1	0	74.4
AU-System	15.79	26	1164	34.8	34.8	0	1	0	-	0	0	0.0
Availo AB	17.24	12	168	28	28	0	1	0	-	0	1	13.1
Axis AB	1.32	16	475	18.1	18.1	0	1	1	32.2	0	0	0.0
Ballingslöv International AB	-0.78	73	446	50	50	0	1	0	-	0	0	3.0
BE Group AB	4.84	121	1550	50	50	0	1	0	-	0	0	0.0
Biacore International AB	9.39	12	533	55	55	0	0	0	-	0	0	0.0
BioGaia AB	64.58	8	64	20	14	1	0	1	23.43	1	0	14.1
BioInvent International AB	-16.13	18	372	21.3	21.3	0	0	0	-	0	0	5.0
Biora AB	17.39	11	374	31	31	0	1	0	-	0	0	4.0
Biotage AB	2.00	3	1000	28.8	28.8	0	1	0	-	0	0	0.0
Boss Media AB	23.08	3	70	18	18	0	1	1	21.7	0	0	0.0
Boule Diagnostics AB	-4.29	19	66	28	28	0	1	0	-	0	0	5.1
Broström Van Ommeren Shipping AB	-8.57	108	215	20	13	1	1	1	46.5	0	0	0.0

Brukens Nordic	10.83	48	138	57.6	34.2	1	0	0	-	0	0	0.7
BTS Group AB	3.51	15	111	33.5	23.2	1	0	1	27.1	1	1	40.7
Bufab Holding AB	6.52	37	1099	63.1	63.1	0	1	0	-	0	0	1.0
Byggmax Group AB	5.43	17	1180	42.7	42.7	0	1	0	-	0	0	1.1
Cardo AB	0.00	27	1544	60.6	60.6	0	1	0	-	0	0	0.0
Castellum AB	9.80	5	1530	60	60	0	0	0	-	0	1	0.0
Clas Ohlson AB	20.75	81	335	38.5	21.5	1	0	1	58.4	0	0	0.0
Cloetta	4.55	96	88	16.3	2.4	1	0	1	37.7	0	0	0.0
Connecta AB	105.88	6	299	27	8	1	1	1	28.1	1	1	32.5
Cybercom Group AB	243.55	4	169	35	35	0	0	1	47.2	1	0	35.0
D.Carnegie & Co AB	15.65	198	1349	17.6	17.6	0	0	0	-	0	0	0.5
DGC One AB	12.12	21	50	18.5	18.5	0	0	1	65.29	0	1	3.2
Dimension AB	9.02	25	641	36.4	36.4	0	1	0	-	0	0	0.7
Din Bostad Sverige AB	10.00	3	203	16	16	0	1	0	-	0	1	6.1
Diös Fastigheter AB	-7.74	1	258	29.4	29.4	0	0	0	-	0	1	1.2
Duni AB	0.00	58	1620	69	69	0	1	0	-	0	0	0.0
East Capital Explorer AB	1.50	0	2433	84	84	0	0	0	-	0	1	0.0
Elekta AB	38.98	22	201	23	10.7	1	0	1	25.7	1	0	71.5
Eniro AB	0.00	0	6313	50.1	50.1	0	0	0	-	0	0	0.0
Enlight Interactive AB	-0.95	5	140	21	4	1	1	1	36.2	1	1	24.6
Entra Data	15.38	15	122	39	39	0	1	1	23	1	1	25.6
FB Industri	7.14	5	72	44.6	16.2	1	1	1	37	1	1	33.3
FinnvedenBulten AB	0.00	138	629	61.84	61.84	0	1	0	-	0	0	1.0
Frango AB	8.06	12	80	28.4	17.2	1	0	1	34.6	1	1	49.0
Gandalf Data AB	7.14	13	20	22.71	12.2	1	0	1	13.87	1	1	18.0
Gant Company AB	37.23	57	1229	54.4	54.4	0	1	0	-	0	0	0.0
Guide Konsult	46.29	10	109	27.1	11.4	1	1	0	-	0	1	3.8
Heba Fastighets AB	-7.84	42	149	42	22	1	0	0	-	0	0	16.9
Hemfosa Fastigheter AB	4.84	5	3209	59.1	59.1	0	0	0	-	0	1	6.0
Hemköpskedjan AB	1.92	34	1030	53	32	1	0	1	47	0	0	0.0

Hemstaden Bostads	-15.00	5	55	21.2	21.2	0	0	0	-	0	0	6.2
Hemtex AB	18.75	32	527	33.6	33.6	0	1	0	-	0	0	1.0
HiQ International AB	-6.13	3	212	50	50	0	0	1	20.6	0	0	0.0
HMS Networks AB	-1.35	19	480	61.4	61.4	0	0	1	15	0	1	19.5
Höganäs AB	7.78	197	1836	80	65	1	0	0	-	0	0	0.0
I.A.R Systems Group AB	-2.33	14	40	21.8	6.7	1	0	1	32.8	1	1	55.9
ICA Gruppen AB	5.84	5	901	7.3	7.3	0	0	0	-	0	0	0.2
Image Systems AB	8.82	11	122	33.7	33.7	0	1	0	-	0	1	23.7
Indutrade AB	12.69	27	1430	55	55	0	0	0	-	0	0	0.0
Information Highway System	8.13	3	70	27.3	27.3	0	1	0	-	0	0	3.6
Intentia International AB	81.82	12	385	35	18.5	1	1	1	8.1	1	1	33.0
JC AB	-11.67	31	279	50	50	0	0	0	-	0	0	0.5
Jeeves Information Systems AB	0.00	7	40	35.8	35.8	0	0	1	22.6	0	0	0.9
Jobline International AB	-10.00	1	700	23.8	23.8	0	1	1	20	0	0	0.0
KappAhl AB	4.91	53	1400	33.3	33.3	0	1	0	-	0	0	19.1
Karlshamns AB	2.15	76	759	38.9	38.9	0	1	0	-	0	0	1.1
Karo Bio AB	45.65	11	202	24.5	24.5	0	1	0	-	0	0	1.6
Karolinska Development AB	0.00	8	456	34.2	24.3	1	0	0	-	0	0	0.0
Kjessler & Mannerstrale	10.53	60	92	59.2	59.2	0	0	0	-	0	0	4.0
Klippan AB	7.50	421	200	80.7	80.7	0	0	1	11.3	1	0	58.0
Kungsleden AB	0.00	6	380	31	31	0	0	0	-	0	1	1.7
Labs2 Group AB	6.67	13	60	32.5	32.5	0	0	1	47.4	1	0	70.2
LBI International AB	24.80	4	375	24.9	24.9	0	0	0	-	0	1	9.9
M2S Sverige AB	16.42	8	132	31	31.2	1	0	1	29.3	1	1	48.9
Malmbergs Elektriska	4.88	18	70	42.8	22.5	1	0	1	42.2	1	1	75.0
Mandator AB	63.64	15	75	15.63	15.63	0	0	1	57.1	1	1	87.3
Matteus AB	11.67	4	58	30.8	30.8	0	1	0	-	0	1	6.0
Medivir AB	6.00	8	171	20.2	10.2	1	0	1	7.9	0	0	0.0
Mekonomen AB	2.73	27	321	40.2	20.2	1	0	1	27.8	1	1	50.0
Micronic Mydata AB	95.71	16	633	29.1	29.1	0	1	0	-	0	0	0.0

Mind	-1.84	1	405	28	28	0	0	0	-	0	1	12.8
Moberg Derma AB	-1.03	5	74	28	28	0	0	0	-	0	1	9.2
MQ Holding AB	-0.62	4	529	46.7	46.7	0	1	0	-	0	0	2.7
MSC Konsult AB	52.88	11	10	6.7	2	1	0	1	34.4	1	1	36.4
MTV Produktion	1.59	16	80	23.1	10.4	1	1	1	26.76	0	1	10.2
Munters AB	0.00	42	1816	90.8	90.8	0	1	0	-	0	0	0.0
Munters AB	9.77	63	708	69.5	69.5	0	1	0	-	0	0	4.6
Naturkompaniet AB	0.00	68	50	62.1	62.1	0	1	0	-	0	0	0.0
Nederman Holding AB	9.77	8	642	63	63	0	1	0	-	0	0	0.0
Nefab AB	26.83	47	45	15.9	6.2	1	1	1	58.4	0	0	2.0
NeoNet AB	-15.00	4	160	19.7	19.7	0	0	0	-	0	1	0.1
Netwise AB	0.00	8	701	28.9	15.6	1	1	1	48.9	0	0	0.0
New Wave Group AB	2.73	7	126	40.9	6.9	1	0	1	50.5	1	1	89.0
NIBE Industrier AB	2.14	48	108	26.2	8.3	1	1	0	-	0	0	6.7
Nilörngruppen AB	8.70	26	92	35.3	11.8	1	1	1	46	1	1	75.1
Nobia AB	-8.97	6	1555	34.6	34.6	1	1	0	-	0	0	0.7
NordicTel Holding AB	4.29	4	140	5	5	0	0	0	-	0	1	1.0
Norrporten AB	-1.33	1	225	60	60	0	0	0	-	0	1	0.0
North Atlantic Natural Resources AB (NAN)	-12.00	0	225	42.9	42.9	0	0	0	-	0	0	0.0
Note AB	-8.00	5	722	21.3	21.3	0	0	1	21.7	0	1	2.4
Novotek AB	26.19	13	63	28	12	1	0	1	68.7	1	1	96.3
Opcon AB	3.57	12	112	64	64	0	1	0	-	0	0	0.0
OptiMail AB	5.15	7	175	37.7	39	1	1	0	-	0	1	9.4
ORC Group AB	20.83	13	300	20.9	20.9	0	0	0	-	0	1	11.6
ORESA Ventures S.A.	7.64	1	432	28	28	0	0	1	20	1	0	53.0
Orexo AB	0.00	10	1195	27.9	27.9	0	1	0	-	0	0	0.0
Oriflame Cosmetics S.A, SDB	9.74	7	3946	35	35	0	1	1	13.9	0	0	2.0
Owell Svenska AB	10.00	4	50	22.4	22.4	0	1	0	-	0	1	10.9
Pandox	1.92	2	416	80	80	0	0	0	-	0	1	0.0

Partnertech AB	1.89	73	262	70	70	0	1	0	-	0	0	0.1
Peak Performance	28.15	10	161	45	17.8	1	0	1	55	1	1	50.0
Platzer Fastigheter Holding AB	5.28	12	670	26.4	9.2	1	0	1	10.8	0	0	0.4
Poolia AB	13.33	10	141	28	15.6	1	0	1	66.1	1	1	92.5
Prevas AB	55.32	13	94	28	11	1	0	1	41.8	1	1	46.3
Proffice AB	31.55	39	378	29	18	1	1	1	41.3	0	0	0.0
Profilgruppen AB	10.00	16	100	36	16	1	0	1	56.6	1	1	33.7
Prosolvia	5.22	9	362	26	18	1	0	1	67.4	1	1	45.3
Q-Med AB	1.72	12	290	21.9	21.9	0	0	1	56.3	0	0	0.0
Readsoft AB	24.00	8	25	13	7.7	1	1	1	59.4	1	1	29.7
Recipharm AB	9.94	19	1309	47	11	1	0	1	53	1	1	50.0
Resco AB	55.13	14	31	30.8	11.6	1	0	1	47.1	1	1	23.8
RKS AB	6.25	10	45	20.3	9.7	1	0	0	-	0	0	5.6
RNB – Retail and Brands AB	-22.89	92	109	34.4	34.4	0	1	1	21.1	0	0	2.0
Sanitec Oyj	6.15	179	3183	52.8	52.8	0	1	0	-	0	0	0.4
Sardus AB	0.68	15	515	70	70	0	1	0	-	0	0	0.0
Scandic Hotels	8.95	10	1069	75	75	0	1	0	-	0	0	0.0
Scandinavia Online	7.39	6	874	17.4	17.4	0	0	0	-	0	0	0.1
Scania	1.94	2	1350	50	50	0	1	0	-	0	0	0.0
Sectra AB	20.00	21	18	11.5	6.5	1	0	1	36.5	1	1	20.2
Semcon AB	3.13	17	414	75	75	0	1	0	-	0	0	2.9
Senea AB	0.00	3	29	40.7	40.7	0	0	1	25.4	1	1	42.7
Softronic AB	35.94	14	26	7.5	3.1	1	0	1	27.3	1	1	29.5
Stadshypotek	7.50	129	3360	100	100	0	0	0	-	0	0	0.0
Svedbergs i Dalstorp AB	20.77	77	172	50	32.5	1	0	1	35	1	0	50.0
Svenska Orient Linien AB	-6.06	4	308	75	75	0	0	1	25	0	0	0.0
Swedish Orphan Biovitrum AB	11.50	5	670	15	15	0	1	0	-	0	1	1.0
Synectics Medical	2.00	18	40	18.8	11.5	1	0	1	34	0	0	1.9
Systemair AB	0.00	33	1607	39.6	39.6	0	0	1	38.1	1	1	63.4
Tele1 Europe Holding AB	28.57	3	5367	25	25	0	0	0	-	0	1	1.5

Telelogic AB	26.00	16	100	20	20	0	1	0	-	0	0	0.1
TeliaSonera AB	4.12	147	6654 8	25	25	0	0	0	-	0	0	0.0
Teligent AB	0.00	9	122	27	27	0	1	0	-	0	1	4.4
Tilgin AB	-12.00	9	50	8.5	8.5	0	1	0	-	0	0	0.5
TradeDoubler AB	0.00	6	1203	40	40	0	1	1	12.2	0	0	0.1
Transmode AB	2.83	11	471	33	33	0	1	0	-	0	0	2.2
Tryckinvest i Norden	-6.94	1	1246	83.1	83.1	0	1	0	-	0	0	2.8
TV4 AB	67.00	10	400	20	23.6	1	1	0	-	0	0	3.5
Unibet Group Plc.	27.78	7	119	14.1	14.1	0	0	1	32.4	0	0	0.6
Verimation	-6.25	10	52	50	50	0	0	0	-	0	1	0.0
Vitrolife AB	-9.75	20	170	23.1	23.1	0	0	0	-	0	1	11.0
Wedins Norden AB	0.89	3	100	35.7	12.8	1	1	1	42.6	1	0	32.6

Appendix B: OLS Regression replacing family dummy

Table 7: Results of the OLS Regression, family dummy replaced with family ownership %

Time and year dummy were included in the regression, but due to lucidity not individually illustrated.

	Coefficient	t-stat	p-value
Constant	-45.86	1.334	0.184
Family ownership %	**-0.23**	**0.352**	**0.725**
Family CEO	**12.25**	**2.375**	**0.019****
Offered CF %	-0.34	3.518	0.001***
Underwriter rank	-0.33	1.485	0.140
Firm age (ln)	2.43	1.764	0.080*
VC dummy	5.69	1.790	0.076*
Size (ln)	3.17	1.768	0.079*
IT dummy	8.69	2.394	0.018**
Time dummy	*Included*		
List dummies	*Included*		
N	155		
R^2	37.20		
Adj. R^2	23.90		
DW	2.08		

*, **, *** Significance at 10%, 5%, 1%

Appendix C: Impact of Dual-Class Shares

Table 8: Dual-Class Shares and Family CEO

	Dual-Class	Family CEO	Non-Family CEO	t-stat	Mann–Whitney U
Observations	55	33	22		
				1.807	253.00
Underpricing	17.77	22.13	18.61	(0.076)*	(0.059)*

*, **, *** Significance at 10%, 5%, 1%

Table 9: Result of the OLS regression including dual-class dummy instead of family dummy

Time and year dummy were included in the regression, but due to lucidity not individually illustrated. Due to the high collinearity, family variables were excluded.

	Coefficient	t-stat	p-value
Constant	-54.38	1.41	0.160
Dual-class dummy	**1.94**	**0.47**	**0.637**
Family CEO	10.18	2.29	0.024**
Offered CF %	-0.32	3.25	0.001***
Underwriter rank	-0.33	1.47	0.145
Firm age (ln)	2.24	1.62	0.109
VC dummy	5.92	1.87	0.063*
Size (ln)	3.22	1.79	0.075*
IT dummy	9.20	2.53	0.013**
Time dummy	*Included*		
List dummies	*Included*		
N	155		
R^2	37.30		
Adj. R^2	23.90		
DW	2.24		

*, **, *** Significance at 10%, 5%, 1%

Appendix D: OLS Regression replacing Family CEO dummy

Table 10: Results of the OLS Regression, family CEO replaced with CEO ownership

Time and year dummy were included in the regression, but due to lucidity not individually illustrated.

	Coefficient	t-stat	p-value
Constant	-39.93	1.01	0.314
Family dummy	-1.82	0.44	0.656
% CEO ownership	**0.14**	**1.60**	**0.111**
Offered CF %	-0.35	3.55	0.001***
Underwriter rank	-0.33	1.38	0.169
Firm age (ln)	2.70	1.92	0.057*
VC dummy	4.46	1.37	0.172
Size (ln)	2.67	1.45	0.149
IT dummy	10.30	2.76	0.006***
Time dummy	*Included*		
List dummies	*Included*		
N	155		
R^2	34.70		
Adj. R^2	20.80		
DW	2.25		

*, **, *** Significance at 10%, 5%, 1%

Appendix E: OLS Regression using Shares Retained

Table 11: Results of the OLS Regression, family dummy replaced with shares retained

Time and year dummy were included in the regression, but due to lucidity not individually illustrated.

	Coefficient	t-stat	p-value
Constant	-49.33	1.29	0.199
% Shares retained	**-0.15**	**1.41**	**0.162**
Family CEO	14.83	3.11	0.002***
Offered CF %	-0.36	3.72	0.000***
Underwriter rank	-0.34	1.52	0.131
Firm age (ln)	2.77	2.01	0.047**

VC dummy	5.34	1.69	0.093*
Size (ln)	3.09	1.74	0.085*
IT dummy	8.20	2.29	0.024**
Time dummy	*Included*		
List dummies	*Included*		
N	155		
R^2	38.10		
Adj. R^2	25.00		
DW	2.24		

*, **, *** Significance at 10%, 5%, 1%