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School of Business, Economics and Law at the University of Gothenburg

Graduate School

Master Degree Project in Finance

Swedish family ownership and its influence on stock performance

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June 22, 2021

Abstract

This study researches the association between Swedish family ownership and stock performance. Using the sample of non-financial firms listed in SSE (Stockholm stock exchange) in the time-period of 2010-2020, we find that Swedish family firms delivered an annual abnormal return of 1.82% to 3.23% when adjusting for firm characteristics. We also find that family firms delivered an abnormal return of 8.73% to 9.90% when adjusting for risk factors. We document that family firms experience a lowered valuation caused by perceived agency cost from the market while being more efficient than non-family firms. The result of this study suggests that an investor would earn a premium by investing in Swedish family firms.

Keywords: Abnormal returns, Fama-French, Swedish stock exchange, Family firms, Ownership structure, Firm characteristics, Agency cost, Performance, Valuation.

Acknowledgements

As our research comes to its end, we feel proud of our effort, the results and the outcome of this thesis. This would not be the case without the support and excellent guidance of our supervisor. Thus, we would like to extend our sincerest gratitude and appreciation for the time, expertise and guidance from our supervisor Van Diem Nguyen. We also hope that our study sparks an interest for new research in the literature of ownership and abnormal returns.

Table of contents

1. Introduction

In this study we will try to answer our research question: Do Swedish family firms produce any abnormal returns and do they operate more efficiently? We start this section by motivating our research question followed by the second section which argues the relevance and gain of this study.

1.1 Motivation for the research question

The academic literature on the impact of family ownership and control has received great attention during the 90's & 00's when it comes to valuation and efficiencies of public companies. In the literature, valuation metrics such as Tobin's Q and profitability metrics such as return on asset (ROA) has generally been the standard approach to derive the results in the old method (Cronqvist & Nilsson 2003; Villalonga & Amit 2006). Unlike the old method, the new method also includes the relationship between the stock market performance and the shareholder structure (Gompers, Ishii & Metrick 2003; Lilienfeld-Toal & Ruenzi 2014; Eugster & Isakov 2019; Edmans 2011). The reason for the lack of interest in studying the relationship between the stock market performance and shareholder structure in the old method may be due to the belief in the efficient market hypothesis. However, studies applying the new methodology have found that some strategies outperform the market. For example, Gompers et al. (2003) found that a strategy of longing a portfolio of democratic firms while shorting a portfolio of dictatorship firms outperforms the market. Gompers et al. (2003) also found that a portfolio of democratic firms outperforms the market, while a portfolio of dictatorship firms underperforms the market. More recent studies such as Lilienfeld-Toal & Ruenzi (2014) found that a portfolio consisting of firms where the CEO has a high personal ownership leads to an outperformance compared to the market. Eugster & Isakov (2019) found that a strategy of longing a portfolio consisting of family firms while shorting a portfolio of non-family firms in Switzerland delivered positive abnormal returns. Furthermore, Edmans (2011) found that a portfolio consisting of the companies in "Forbes 100 best companies to work for " delivered positive abnormal returns.

These studies point to some market inefficiencies as these strategies are producing abnormal returns compared to the market. This market inefficiency should not be occurring according to the efficient market hypothesis, as the ownership structure is public information, it should by theory already be incorporated in the stock price.

One reason for the abnormal stock returns delivered by family ownership could be that the market values the agency problem associated with family ownership inaccurately. This inaccuracy is caused by the duality characteristics of the agency cost. On one hand, family owners want to maximize their own wealth and are therefore incentivized to maximize the firm's value. This can be achieved by reducing the principal-agent problem, through the execution of long-term strategies by increasing the monitoring and by board challenges. On the other hand, family owners increase the agency cost by increasing the principal-principal problem i.e. the difference between the family owners interest and the minority shareholder's interest. This duality characteristic is backed by theoretical studies made by Shleifer & Vishny (1989) and Stulz (1998), they find a non-linear relationship between ownership and agency cost. Where too low ownership gives the owners little incentive to reduce the agency cost, while too much ownership yields negative benefit to the shareholders, as the owners can entrench themselves.

This paper focuses on the stock performance of Swedish family firms between the time period of January 2010 to December 2020 for the companies that were listed on the Nasdaq (2020a) SSE (Stockholm stock exchange). In this study, we want to see if abnormal returns are associated with family owners, we also want to see how valuation and efficiency is influenced by family owners. We concentrate on family owners and not institutional, due to the influence family owners can exert over firm management. Institutional investors are either active or passive owners, managing very diversified portfolios. Focusing intensely on every firm in the portfolio might not be a good strategy, thus it usually leads to a "check the box" approach when it comes to governance (Appel, Gormley & Keim 2016).

Previous studies have different thresholds for the definition of family firms. For instance, Chu (2009) and Villalonga & Amit (2006) defined family firms as firms that had more than 5% family ownership while Martin, Gomez-Mejia, Berrone & Makri (2017) opted to use the 10% threshold, whereas Eugster & Isakov (2019) define family threshold as 20% family ownership. According to De Massis, Frattini & Lichtenthaler (2013) the threshold for family firms is not universally defined where family ownership definitions vary in a range of 5% - 20%. We have opted to define family owners as having greater than or equal to 10% cash flow rights of a firm in this study, thereby placing the threshold in the middle of the commonly used range.

1.2 Relevancy and gain to the research community

This study contributes to the literature as we try to bridge the gap that exists in the Swedish research community by focusing on the stock markets as Gompers et al. (2003) and Eugster & Isakov (2019), examining if abnormal returns are associated with family ownership. We also include a similar approach as Cronqvist & Nilsson (2003) by looking at how company valuations and performance are affected by family owners. Effectively taking the 90's-00's valuation and performance method with the more recent method of stock performance. The goal of this study is to combine the old method with the new for the Swedish market. To investigate whether family owners are associated with lower valuation and performance as found by Cronqvist & Nilsson (2003), or if the results are more like Eugster & Isakov (2019) which found that performance was higher for family firms. Further we expand on the study of Cronqvist & Nilsson (2003) by including the stock market approach of Gompers et al. (2003); Eugster & Isakov (2019); Lilienfeld-Toal & Ruenzi (2014); Edmans (2011), to see whether family firms deliver positive abnormal returns.

The U.S. based studies of Gompers et al. (2003) Lilienfeld-Toal & Ruenzi (2014) and Edmans (2011) all found positive abnormal returns. These results make it relevant to study whether there exist any abnormal returns in our selected country, since according to La Porta, Lopez-de-Silanes & Shleifer (1999) ownership structures in Anglo-Saxon countries are more dispersed whereas European countries are more concentrated, mainly by family-owned businesses. Therefore, the main difference between Swedish and the U.S. shareholder structure is the extensive use of dual class shares and higher concentration of ownership in Sweden. Unlike the U.S, the Swedish stock market environment is similar to Switzerland's (La Porta et al. 1999), where Eugster & Isakov 2019 found positive abnormal returns for Swiss family firms. As Eugster & Isakov (2019) uses voting rights to define their ownership level, we differentiate our study by looking at the cash flow rights when defining the ownership level. The reason for the usage of cash flow rights is due to Cronqvist & Nilsson (2003) findings of ownership with a high spread between the voting and cash flow rights, impacting firms negatively.

Thus it is relevant to see whether the results from the studies on US and Swiss companies are similar in Sweden.

Furthermore, the economic environment for our selected time period may have changed compared to the previous studies in three aspects. First, the risk-free rates are historically low, potentially impacting valuations differently. Second, central bank policies might influence the financial markets more than before. Third, the inclusion of the pandemic year in our time period might affect industries differently. Therefore, it might be relevant for the research community to do further empirical research to see how the environmental changes affect the previous studies.

2. Literature & Hypothesis

This chapter starts with the theoretical background that is central for this study. We then present previous empirical results that are based on similar methodology as ours. We also present our hypothesis that is based on theoretical and empirical findings at the end of this chapter.

2.1 Theoretical background

2.1.1 Monitoring

Graham, Harvey & Rajgopal (2005) find that the large majority of firm management are sacrificing long-term value creation for meeting short-term estimates. Further, Jensen (1989) explains that the free cash flow in a value maximizing firm should be distributed to the shareholder. However, most management will be more incentivized to expand businesses and extract private benefits for themself. This conflict of interest between the firm's managers and the shareholders causes the typical principal-agency problem. Due to inefficiencies and waste in organizations, Jensen (1989) argues that the large shareholders can increase their value by reducing the principal-agent problem through monitoring, making long-term strategic plans, sitting on boards of directors and dismissing underperforming management.

Monitoring is defined by Tirole (2006) as a means to reduce firm agency cost by monitoring through an individual or agency. Tirole (2006) argues that there may be gains from having a monitoree monitoring the firm. The gain would be a reduction of the agency cost, this could however be offset from the cost of having a monitoree. The cost stems from the incentives given to the monitoree from the shareholders. Thus, there is an argument that having a monitoree is more beneficial if the investors are "long-term players", as the monitoring gains are long-run value for the firm. The theoretical model produced by Holmstrom & Tirole (1997) of monitoring being profitable for the shareholders is the basis of the above argument. One potential issue with monitoring is caused by the free-rider problem, which according to Grossman & Hart (1980) is when one party pays for something and the other party does not, but the benefits are enjoyed by both parties. Tirole (2006) argues that the free-rider problem can lead to some large shareholders not employing a monitoree as the benefit gained is shared and not fully attributed to the one who bears the cost of the monitoring. This might lead to insufficient monitoring for firms with low family ownership.

2.1.2 Agency cost

Jensen & Meckling (1976) show that a full ownership of the company by the manager leads to private benefits that are non-pecuniary which lowers the firm's value, and as ownership levels dilutes more, the incentive to monitor increases for the other shareholders.
Shleifer & Vishny (1989) show that firm performance is improving with managerial ownership, but as the managers ownership increases, incentives to entrench themselves with private benefits also increases. The managers can entrench themselves by different methods according to Shleifer & Vishny (1989), for instance the manager could invest in a project that boosts their value and make them too costly to replace. Furthermore, they could structure the firm's contracts as if the manager leaves or gets fired, the contract goes with the manager. The manager could engage in diversification that may be unfavourable for the shareholders and lastly block hostile bust-up takeovers.
Shleifer & Vishny (1989) show that managers have incentives to invest the firm's assets to increase the dependency of the managers for the firm. Once the firm is dependent on the managers, the shareholders suffer as managers compensation increases. Mechanism to counter entrenchments can be capital rationing that slows the rate of investment of the company so that managers performance can be observed, select the right managers that are self-explanatory and lastly granting the CEO some insulation from competition for his job.
Stulz (1988) shows similar results when it comes to managerial ownership and firm value. Their model predicts that as managers own more of the firm, the negative effect of entrenchment takes over the incentive benefits gained from the managers ownership.
Byun & Kim (2013) finds evidence of another agency problem called principal-principal problem, this problem arises between a majority shareholder and the minority shareholders. The result of this agency problem is that the majority shareholders are able to extract private benefits, thus reducing shareholder wealth.

2.2 Previous research

Gompers et al. (2003) find that corporate governance and abnormal stock return are strongly correlated. Based on 24 variables linked with corporate control, a construction of a governance variable (G) was made to see whether the sampled firm's control is tilted towards the shareholders or towards the managers of the firm. Between 1990-1999 the difference between firms with $G < 5$ i.e. firms with large shareholder control and firms with $G > 14$ i.e. firms with large manager control returns, resulted in an abnormal return of 8.5% annual for the firms with large shareholder control. Gompers et al. (2003) further argue that there is some complication with their statistics as there could exist an unobservable variable that is correlated with the governance variable, one example could be corporate culture. Thus, corporate culture could be the true driver of the abnormal return found in the study. Gompers et al. (2003) further studied the firm characteristics of return and found that as the governance variable increases, the return of the stock decreases. Thus, Gompers et al. (2003) concludes that there exists positive monthly abnormal return for low G companies i.e. that a high shareholder power in a firm contributes towards excess returns compared to firms with low shareholder power. Gompers et al. (2003) also find that the valuation (Tobin's Q) decreases with an increase in G, for the performance (ROE) they find no significant result.

Eugster & Isakov (2019) found that family firms in Switzerland delivered abnormal stock returns between 2.8% and 7.1% in the years 2003-2013. To generate such results, they used panel data with firm characteristics as main variables to find what drove the stock returns, where a family dummy showed positive and significant abnormal return. The results were further strengthened by Fama & French (1993) and Carhart's (1997) portfolio approach to see whether a portfolio consisting of family firms outperforms the market. Eugster & Isakov (2019) also found that the valuation (Tobin's Q) was lower while the performance (ROA) was higher in family-owned firms.

The incentives to maximize firm value by owning a large share of the firm is empirically backed by Lilienfeld-Toal & Ruenzi (2014). Which finds that CEOs with ownership exceeding 10% deliver annual abnormal returns of 4% - 10% in the time period of 1988-2010. They argue that the negative impact of weak governance can be mitigated by CEO ownership, this can be seen in the empirical results as the effect on abnormal return is larger in firms with weak external governance. Lilienfeld-Toal & Ruenzi (2014) also find that there exist firm performance differences between CEOs with higher ownership than those with lower ownership, where higher CEO ownership leads to a higher ROA.

Edmans (2011) finds that an equally weighted and value weighted portfolio constructed from the "100 best companies to work for in America" criteria between 1984-2009 deliver positive abnormal returns. Carhart's (1997) model is used for the regressions, where the results are significant and positive both for the value weighted and equal weighted portfolios. The value weighted portfolio produced an annual abnormal return of 3.5% from 1984-2009.

Edmans (2011) presents their characteristics regressions, where firms that are listed in the latest "100 best companies to work for in America" deliver an additional monthly abnormal return of 0.39%.

Strickland, Wiles & Zenner (1996) and Gantchev (2013) show that minority shareholders receive abnormal returns from monitoring activities. Strickland et al. (1996) studied a shareholder "union" called USA (United shareholders association) that operated between 1986-1993 and whether this union of small shareholders returned any gains to the members. The study concludes that the union was successful in enhancing shareholder wealth via corporate governance, the annual abnormal returns gained from the negotiation was ($1.3B) 0.9%. Gantchev (2013) studied the behaviour of shareholder activism in hedge funds during 2000-2007 and found that the annual mean abnormal return from activities after cost is roughly 0.23%.

Strickland et al. (1996) and Gantchev (2013) discuss the free-rider problem that occurs with changes in corporate governance. Strickland et al. (1996) could not explain how the $1.3B wealth was distributed between the members of the union and the free-riders. Gantchev (2013) discussed the trade-off between the private cost of monitoring and the public benefit of monitoring, where the first is a cost on the activist and the latter is a gain for all shareholders. Thus shareholders incentive to monitor is determined by this trade-off where the more shares the activist holds the more incentive it has to monitor.

Contrary to the studies with positive results associated with different ownership structures, other empirical studies conducted have shown opposite results.

Cronqvist & Nilsson (2003) for example concluded that controlling minority shareholder (CMS) actions leads to increased agency cost. They analyzed the agency cost of CMS's structure for Swedish firms during 1991-1997, where the controlling shareholders voting rights are larger than the cash flow rights. This is mainly achieved through dual-class shares where cash flow rights for both share-types are equal but voting rights differ, often by a factor of 10. Cronqvist & Nilsson (2003) argued that the use of such corporate control instruments by the CMS's could lead to expropriation of non-controlling shareholders. Moreover, the controlling shareholders can protect their influence and private benefits from external pressure of corporate governance mechanisms. This leads to agency cost, as CMSs actions to maximize his utility may not maximize the utility of non-controlling shareholders. Cronqvist & Nilsson (2003) find evidence that firms with CMS have relatively lower market valuation than firms without such shareholder structure. For CMS, family-controlled firms

result in a lower valuation (Tobin's Q) than corporate or financial institutional controlled firms. The return on assets (ROA) was significantly lower for the CMS firms, which they argue could partly explain the lower market valuation (Tobin's Q). Other reasons for the lower valuation, especially for family-controlled firms, could be that they exhibit a higher probability of ending up in financial distress and are less likely to be taken over.
Claessens, Djankov, Fan & Lang (2002) find that differences between cash flow rights and control rights are associated with a lower market value, especially when it comes to family-controlled firms. However, the association between the different ways of separating cash flow and control rights such as dual-class shares and lower valuation is not individually statistically significant.
Furthermore Claessens et al. (2002) find that concentrated ownership is associated with a lower book-to-market ratio, independent of the type of owner. In addition, the firm's performance improves with higher managerial ownership, but the effect decays as the managers of the firm become more and more entrenched. The conclusion of Claessens et al. (2002) study is strongly in line with Shleifer & Vishny (1989) and Stulz (1988) theoretical findings of management entrenchment.

2.3 Hypothesis

Previous studies by Gompers et al. (2003), Strickland et al. (1996), Gantchev (2013) and Lilienfeld-Toal & Ruenzi (2014) show that shareholder structure can affect stock returns of firms. More specifically, Eugster & Isakov (2019) shows that family ownership leads to abnormal positive stock returns. Studies such as Claessens et al. (2002), Shleifer & Vishny (1989) and Stulz (1988) indicates that a high ownership leads to lower valuations caused from managerial entrenchment, in addition the principal-principal problem proposed by Byun & Kim (2013) increases with ownership leading to lower valuations. Jensen (1989) however argues that higher ownership incentivizes monitoring and other corporate governance mechanisms that reduces the principal-agent problem, thus increasing the valuations. This leads to our two first hypothesis:
(1) Family firms deliver positive yearly abnormal returns.
(2) Increase in family ownership leads to higher yearly abnormal returns.

In contrast to Jensen (1968) and Fama & French (1993) which found no abnormal returns in their portfolios, Gompers et al. (2003), Eugster & Isakov (2019), Lilienfeld-Toal & Ruenzi

(2014) and Edmans (2011) all find positive abnormal returns with different portfolio constructions and strategies. The positive abnormal returns generated by these portfolios are by prior literatures deemed improbable, as the efficient market hypothesis states that no abnormal return should occur. The results that deviate from the efficient market hypothesis leads us to an interest to test our third and fourth hypothesis:

(3) A portfolio consisting of family firms delivers positive abnormal returns compared to the market.

(4) A strategy of longing a portfolio consisting of family firms and shorting a portfolio consisting of non-family firms, delivers positive abnormal returns compared to the market.

Eugster & Isakov (2019) finds that Swiss family-owned firms operate more efficiently than non-family firms, when controlling for ROA. This result is opposite to the finding of Cronqvist & Nilsson (2003) study of Swedish firms in the 90's where family CMS firms exhibit a lower ROA than other firms. The differences in the two empirical studies leads us to our fifth hypothesis:

(5) Family firms are more efficient than non-family firms.

Eugster & Isakov (2019) and Cronqvist & Nilsson (2003) find that the valuation (Tobin's Q) of family firms and family CMS firms is lower compared to other firms. It could be argued that the discount could be explained by either a too large ownership and/or by a large wedge between cashflow and voting rights, which leads to higher agency cost as explained by Jensen & Meckling (1976), Stulz (1988), Shleifer & Vishny (1989) and Byun & Kim (2013). This agency cost is then further argued to be "priced in" in the valuation of the firm, thus leading to a lower Tobin's Q. This argument leads us to our sixth hypothesis:

(6) Valuations of family firms are lower than non-family firms.

3. Method

This chapter will present the methodology of this study. The first section presents the method of our primary test that uses panel regression with ownership and firm-characteristics variables, to test whether family firms deliver positive yearly abnormal returns and whether a higher family ownership delivers higher abnormal returns. To verify the result in the primary test, a secondary approach is presented in the second section that uses Jensen's (1968), Fama & French (1993) and Carhart's (1997) factor models to see whether a portfolio of family firms creates any positive abnormal returns. The reason for having the risk factors as a complementary method is that the risk factors can be included as a firm characteristic in the firm-characteristics approach, thus helping to explain the returns better (Eugster & Isakov 2019). The third section presents the method of how family-owned firms' valuation and efficiency is affected by using Tobin's Q and ROA with firm characteristics as variables. The fourth section presents how the data is handled and its distribution. The last section presents limitations and criticization of the presented methodology.

3.1 Panel regressions

The panel regressions in this section are based on Gompers et al. (2003) method of using Fama-MacBeth regressions, we also add Lilienfeld-Toal & Ruenzi (2014) method of using pooled panel regressions with one dimensional clustering along the firm. The reason for the clustering is due to Fama-MacBeth regressions may have some bias on its standard errors in the presence of firm effects (Thompson 2011). Thus it is recommended to use both the Fama-MacBeth and the pooled panel regressions (Skoulakis 2006). The clustering of the standard errors also accounts for heteroskedasticity and autocorrelation (Wooldridge 2015). For the Fama-MacBeth regressions we use Newey-West standard errors with one lag. The use of one lag on the Newey-West standard errors is based on the rule of thumb presented by Stock & Watson (2015). We opted not to use fixed effects regressions as the ownership variable was deemed to be constant over time.

The following panel regression will thus be made:

$$r_{it} = \alpha_i + \beta_i X_{it} + \eta_i Z_{it} + e_{it} \tag{1}$$

Where the dependent variable r_{it} is total stock return for firm i in year t, X_{it} is the dummy that indicates family owners and Z_{it} is a vector of firm characteristics.

For the Fama-MacBeth approach, the regressions are run separately for each year, and the final values are determined by taking the mean of all these yearly regressions (Gompers et al. 2003; Eugster & Isakov 2019).

For the vector with firm characteristics, Gompers et al. (2003), Lilienfeld-Toal & Ruenzi (2014) and Eugster & Isakov (2019) follow mostly the firm characteristics defined by Brennan, Chordia & Subrahmanyam (1998). In our study, we follow the standard practice that includes Brennan et al. (1998) firm characteristics of firm size, book-to-market ratio, volume in SEK, stock price and the historic logarithmic annual cumulative returns with the time intervals of 2-3 months, 4-6 months and 7-12 months. We will also include the following firm characteristics from Gompers et al. (2003), dividend yield and sales growth. From Eugster & Isakov (2019) we will include the wedge of the largest shareholders voting right and cash flow right, industry dummies (ICB standard practice), firm age, asset turnover and leverage as firm characteristics. We will also include an additional family owner dummy in the firm characteristics vector once a regression is made without it. This is done to see whether additional family owners boost the family firm's return. The additional family dummy is inspired from the other blockholder dummy from Eugster & Isakov (2019). The selected firm characteristics allows us to capture the effect that the variables will have on the stock return, this will in turn make our family variable more accurate in predicting the effect of family ownership.

In order to test our first hypothesis, we will conduct a T-test as our statistical measure to see whether the family dummy is significant or not. If the family dummy is positive and significant, we conclude that our first hypothesis is true, i.e. that family firms deliver positive yearly abnormal returns.

In order to test our second hypothesis, we will conduct a similar T-test. However instead of having the family dummy on X_{it}, we will use a continuous variable as X_{it} for family ownership. This is then controlled to only include family firms to see whether the hypothesis holds. If the continuous ownership variable is positive and significant, we conclude that our second hypothesis is true, i.e. that an increase in family ownership leads to higher yearly abnormal returns.

3.2 Portfolio method

The portfolio method is mainly based on Gompers et al. (2003) and Eugster & Isakov (2019) approach. The section is divided into four subsections where the first three subsections present a regression model, followed by the last subsection that handles the regression method.

3.2.1 Jensen's model

Jensen (1968) derived a risk-adjusted tool to measure portfolio performance, which estimates a manager's forecasting ability and whether the fund manager can produce excess return. Jensen's model is based on the CAPM model and is defined as follow:

$$R_{pt} - R_f = \alpha_p + \beta_{1p}(R_m - R_f) + e_{pt} \qquad (2)$$

Where R_{pt} is the monthly return of the portfolio. R_f is the risk-free return generated from a risk-free asset, R_m is the monthly market's return (from an index). Jensen's alpha is based on the alpha (intercept) in the model above, the alpha explains the monthly abnormal return enjoyed by the pre-specified portfolio. Jensen (1968) found that on average, 115 mutual funds (100% of the sample) had an alpha that was not significantly different from zero.

3.2.2 Fama French three factor model

Fama and French's (1993) work further expands on Jensen's (1968) model, they find two additional common risk factors that influence the shared variation in stock returns. The first factor is the market factor, similar to Jensen's model, and the two new risk factors are firm size (SMB) and book-to-market equity (HML). The intercept (α_p) generated is Jensen's alpha. The Fama-French three factor model is defined as:

$$R_{pt} - R_f = \alpha_p + \beta_{1p}(R_m - R_f) + \beta_{2p}SMB_t + \beta_{3p}HML_t + e_{pt} \qquad (3)$$

Where R_{pt} is the monthly return of the portfolio. R_f is the risk-free return generated from a risk-free asset, R_m is the market's return (from an index). For the two new factors, Fama & French (1993) constructed six portfolios based on size and book-to-market equity ratio (B/E). The portfolios are divided into two sizes (small/big) and three B/E ratios (Low/medium/high).

SMB is calculated from six portfolios (S/L, S/M, S/H) and (B/L, B/M, B/H) where it is calculated by taking the average return of the small firm portfolios minus the average return of the large firm portfolios. The SMB factor is defined as:

$$SMB = \frac{S/L + S/M + S/H}{3} - \frac{B/L + B/M + B/H}{3}$$

HML is calculated from 4 portfolios (S/H, B/H) and (S/L, B/L) where it is calculated by taking the average return from the two high-B/E portfolios minus the average return from the small-B/E portfolios. The HML factor is define as:

$$HML = \frac{S/H + B/H}{2} - \frac{S/L + B/L}{2}$$

This portfolio construction makes SMB largely free of B/E influence whereas HML is largely free of size influence.

The intercept (Jensen's alpha) was close to zero in all stock portfolios that Fama & French (1993) examined. Therefore, they concluded that the average stock returns can be well explained by accounting for the three risk factors.

3.2.3 Fama French four factor model

Carhart (1997) extends the previous Fama & French (1993) three factor model by including a fourth factor. The fourth factor added to the regression is momentum, adding momentum will help explain cross sectional variation in portfolio's returns, as the market may have inefficiencies in the way it reacts to new information (Carhart 1997).

The Fama-French four factor model is defined as:

$$R_{pt} - R_f = \alpha_p + \beta_{1p}(R_m - R_f) + \beta_{2p}SMB_t + \beta_{3p}HML_t + \beta_{4p}WML_t + e_{pt} \quad (4)$$

Where all variables are the same as before with the extension of WML which is the momentum factor. Winners minus losers (WML) is calculated from an equal weighted sample by taking the stock return of the best performing stocks (winners) minus the stock return of the worst performing stocks (losers), lagged for one month and is monthly rebalanced. Winners are considered as winners if their 12-month return is on average positive, while losers are considered as losers if the opposite is true (Carhart 1997).

3.2.4 Portfolio Regressions

For the regression we will conduct three regression models with monthly portfolio returns, the regression models are based on Jensen's model (1968), Fama-French three factor model (Fama & French 1993) and Fama-French four factor model (Carhart 1997). The choice of factor models is based on the standard practice in previous research (Gompers et al. 2003; Hegde, Seth & Vishwanatha 2020; Lilienfeld-Toal & Ruenzi 2014; Eugster & Isakov 2019).

The objective of the regressions is to see if any abnormal return exists without the inclusion of any factors, then adding factors to see how the alpha evolves. The changes in alpha will explain whether the inclusion of additional factors explain some of the previous abnormal returns or not and whether abnormal returns still exist.

The regressions will be made with a portfolio consisting of family owners and with a non-family portfolio. We will also include a portfolio strategy that is long on the family portfolio and short on the non-family portfolio to see whether this strategy creates abnormal returns. The portfolios will thus be defined as:

Portfolio characteristic	Portfolio name
$<$10% Family ownership	Non-Family portfolio
$\geq$10% Family ownership	Family portfolio

We conclude the regressions with two weights, a value-weighted portfolio that is based on market capitalization and an equal weighted portfolio. By doing so, one of the portfolios will no longer be overrepresented by larger firms, thus giving smaller firms an equal playing field. This is done to see whether there exists a difference between smaller companies and larger companies when it comes to producing abnormal returns.

In order to test our third hypothesis, we will conduct a significance test for each regression using a standard T-test, the results from the test show whether the coefficients are significantly different from zero or not. If the T-test on the coefficient of the alpha is positive and statistically significant, we can conclude that our third hypothesis is true, i.e. that there exists a positive abnormal return in a portfolio consisting of family firms compared to the market.

In order to test our fourth hypothesis, we will conduct a similar T-test as our third, here we will look at the alpha delivered by longing the family portfolio while shorting the non-family portfolio. If the T-test on the coefficient of the alpha is positive and statistically significant, we can conclude that our fourth hypothesis is true, i.e. that longing the family portfolio and shorting the non-family portfolio delivers positive abnormal returns compared to the market.

3.3 Performance & Valuations method

Following our analysis of firm characteristics and portfolio methods, we adopt the valuation measures to answer whether family owners are value increasing or decreasing shareholders. The method used to evaluate this is presented in several previous empirical researches (Gompers et al. 2003; Hegde et al. 2020; Cronqvist & Nilsson 2003; Eugster & Isakov 2019). For the valuation metric, Tobin's Q is the variable of choice, we opt to follow Gompers et al. (2003) definition of how Tobin's Q is calculated and then we follow Hegde et al. (2020) approach by taking the natural logarithm of Tobin's Q. We also follow the standard methodology for the performance metrics which is the return of assets (ROA) (Hegde et al. 2020; Cronqvist & Nilsson 2003; Eugster & Isakov 2019). The panel regression and Fama-MacBeth regression is handled similarly as in section 3.1 in regard to clustering at firm level and using lagged standard errors respectively.

To estimate how the valuation and performance metrics are associated with family firms, we do the following panel regression:

$$Y_{it} = \alpha_i + \beta_i X_{it} + \eta_i Z_{it} + e_{it} \qquad (5)$$

Where Y_{it} is the log Tobin's Q ratio or the ROA. X_{it} is the dummy variable of family ownership and Z_{it} is a vector of control variables. The panel data regression above is regressed similarly to the pooled panel regressions in section 4.1, i.e. Fama-MacBeth and Pooled panel regression.

The control variables used in the regression above will be similar to Cronqvist & Nilsson's (2003) Eugster & Isakov's (2019) and Gompers et al. (2003) control variables. The chosen variables for the valuation (Tobin's Q) regression are the log of firm size, log firm age, wedge, sales growth, leverage, ROA, family dummy, asset turnover, book to market, industry and year dummies. Where one regression is made without ROA and one with ROA included. The chosen variables for the performance (ROA) regression are similar to the valuation regression, these are the log of firm size, log firm age, wedge, sales growth, leverage, family dummy, asset turnover, book to market ratio, industry and year dummies.

In order to test our fifth hypothesis, we will conduct a T-test as our statistical measure to see whether the family dummy is significant in the Tobin's Q regression. If there exists a negative and significant coefficient on the family dummy, we can conclude that our fifth hypothesis is true, i.e. that the valuation of family firms is lower than non-family firms.

We also test our sixth hypothesis on the ROA regression by using the same T-test method for our sixth hypothesis. If there exists a positive and significant coefficient on the family dummy, we can conclude that our sixth hypothesis is true, implying that family firms are more efficient than non-family firms.

3.4 Data

This section presents what data we use, how we use it and where the data is obtained. The section is divided into four subsections, selected sample, ownership, variables and rebalancing.

3.4.1 Selected sample

The sample of the companies selected is based on the Nasdaq's (2020a) Stockholm list, this list includes large-, mid- and small-cap companies listed on the SSE (Stockholm stock exchange). Public companies whose industry specification is bank, financial or insurance are omitted due to regulations causing differences in accounting standards compared to other industries. We will also omit companies with a different ISIN than the regular Swedish ISIN (SE) which is obtained from SHoFDB (2021), since the majority of companies with non-SE ISIN are foreign companies. By omitting these companies we reduce the possibility of firms' nature being different, for example variations in taxation, accounting and regulatory laws. Identification of all the firms in the SSE during the selected time period is collected by extracting historical market data from SHoFDB (2021), which includes all stocks that have been or are currently listed in the SSE. More detailed information about delisted stocks is available via Nasdaq (2020b) where its main usage is on the portfolio rebalancing, see section 3.4.4.

3.4.2 Ownership

For the definition of family ownership, we opted to use the 10% threshold as it lies in the middle of the commonly used range as described in the introduction. In addition, based on agency cost theory a too low ownership would increase the principal-agent cost whereas a too high threshold would increase the principal-principal problem. We thus believe that the 10% threshold is high enough to incentivize a reduction in principal-agent cost while at the same time having a low principal-principal cost.

For firm ownership, the database of Holdings (2021) is mainly used to get the annual cash flow and voting rights of every owner. We requested a query from a Holdings representative that delivered the raw data of every owner above 5% in capital rights on the SSE list.

For delisted companies where Holdings (2021) has no available data, Capital IQ's (2021) historical data for public ownership is used as a complement. However, as Capital IQ lacks data of voting rights, an assumption is made that the spread between the cash flow and voting rights are zero for these companies.

Holdings (2021) categorizes private owners that are disguised under an AB or as another type of firm, by either marking them as a private owner or by displaying these holdings under their surname. However, manual screening is done to ensure that the ownership structure is correct. We manually screen firm's where the ownership is higher than 5%, filtering out institutional owners, companies and other non-family holders from the raw data.

Once the ownership data is collected and filtered, it gives an annual outlook for each firm's ownership holdings of the last trading day of each year. The ownership data is then used as a key variable in this study.

We also construct a dummy variable that signals whether additional family owners are present, this dummy takes the value of one if there are two or more family owners.

Table 1 presents the number of firms included in this study, the table also presents the distribution of family and non-family firms for each year.

Year	All Firms	Non-Family	Family
2010	212	93	119
2011	213	90	123
2012	212	88	124
2013	211	78	133
2014	220	77	143
2015	234	77	157
2016	242	87	155
2017	266	94	172
2018	277	93	184
2019	279	94	185
2020	275	93	182

Table 1 - Number of firms each year.

The table indicates a clear and positive trend over the years in the number of family firms whereas non-family is stable over time. The reason for this can be partly explained by the sheer number of new IPOs with high concentration in ownership and by the relisting to SSE from smaller exchanges, which is apparent after 2013.

3.4.3 Variables

The database of SHoFDB (2021) is used to extract all the SSE firm's historical monthly and yearly share price (adjusted to dividends and buybacks), market capitalization, dividend yield and SEK volume within our selected time period.

The database of Compustat (2021) is used to collect total assets, common equity, long term debt, EBIT, net income before and after extraordinary items, revenue and deferred tax.

Some firms were not picked up by Compustat's database from our ISIN list while other firms had missing entries in some of the variables, thus Capital IQ is used as a complement by manually handwriting the missing data.

For firm age, we mainly use Capital IQ to collect data for when firms are established. However some firms had missing entries, we therefore relied on the company's own homepages to obtain the year of establishment.

The main variables in the panel regressions are obtained from Compustat (2021) and SHoFDB (2021). From these two databases, we are able to collect and calculate our firm characteristics which are: yearly stock price (adjusted), volume, yearly stock returns, book-to-market ratio, log Q-Ratio, ROA, dividend yield, leverage, sales growth, asset growth, asset turnover, industry dummies, firm age and market cap.

We also include the natural logarithm of the annual cumulative returns of 2-3, 4-6 and 7-12 months delay as firm characteristics, which is calculated from the monthly stock data obtained from SHoFDB (2021). From Holdings (2021) we are able to calculate the wedge which is the spread between the largest shareholder's voting right and cash flow rights, the wedge variable is then used as a firm characteristic variable. The calculations for all the variables are presented in appendix 6.1.

Lastly, we winsorize variables that were deemed to have too large of an outlier, the winsorization follows the standard approach to remove the 1% tail. The winsorized variables are Q-ratio, dividend yield, B/M ratio, ROA, stock return, sales growth, asset growth and asset turnover.

Table 2 presents the mean, median, standard deviation, min, max and the number of observations of the stock returns for the entire sample, for the non-family and for the family firms.

Stock return	Mean	Median	SD	Min	Max	Observations
All firms	0.1576	0.1019	0.4693	-0.7936	2.084514	2303
Non-Family	0.1467	0.0746	0.5032	-0.7936	2.084514	821
Family	0.1637	0.1102	0.4495	-0.7936	2.084514	1482

Table 2 - Characteristics of stock returns.

The table indicates that family firms tend to have a higher average stock returns than non-family firms. The median also shows that family firms deliver higher stock returns than non-family firms. We also see that the standard deviation is lower in the family firms than in the non-family firms. This result is similar to Eugster & Isakov's (2019) data, as they found that the average and median were higher in family firms and that family firms had a lower standard deviation. This gives an indication that family firms both outperforms non-family firms and possibly is a safer investment. We reserve that the minimum and the maximum value is the same in all the categories due to winsorizing potential outliers of the 1% tail.

Table 3 presents the mean, median, standard deviation, min, max and the number of observations of our entire sample for our main variables.

Stats	Mean	Median	SD	Min	Max	Observations
Stock returns	0.1576	0.1019	0.4693	-0.7936	2.0845	2303
Tobin's Q	2.3769	1.5211	2.4394	0.5867	14.505	2641
ROA	0.0197	0.0494	0.1617	-0.7895	0.3449	2641
Firm age	52.5854	31	53.1333	0	411	2641
Book-Market ratio	0.6233	0.4479	0.5866	0.0007	3.3764	2641
Dividend yield	0.0216	0.0151	0.0278	0	0.1747	2641
Leverage	0.1601	0.1194	0.1641	0	1.1605	2641
Volume	1.37e+10	6.97e+08	4.51e+10	1618.377	9.18e+11	2636
Sales growth	0.0956	0.0607	0.3581	-0.8502	2.2460	2303
Asset growth	0.1227	0.0659	0.3421	-0.5079	2.1002	2303
Market cap	1.73e+10	2.75e+09	4.70e+10	9279779	5.39e+11	2641
Total asset	15818.82	2087.138	41784.36	24.269	524837	2641
Revenue	12448.52	1863.75	34422.63	0.014	431980	2612
Wedge	0.0582	0	0.1094	-0.1047	0.4985	2641

Table 3 - Characteristics of firm variables.

Comparing the results in table 3 with other studies we find that our mean and median for Tobin's Q is higher than Cronqvist & Nilsson (2003) and Eugster & Isakov's (2019), indicating that the stock valuation under our time period is higher. This is further backed by Ychart (2021) that looks at Tobin's Q in the US market, in 2013 the US Tobin's Q was in line with Eugster & Isakov's (2019) Tobin's Q, whereas in 2020 it is slightly higher than our mean.

Looking at the ROA, our mean is lower than Eugster & Isakov's (2019) while our median is slightly higher than their mean. The mean and median ROA from Cronqvist & Nilsson (2003) is lower than the result in table 3. This may indicate that the selected Swedish firms are more efficient than the selected Swedish firms in Cronqvist & Nilsson (2003) time period.

Comparing the firm age in Sweden with other studies indicates that the Swedish firms are older than U.S. firms but younger than Swiss firms (Eugster & Isakov 2019; Lilienfeld-Toal & Ruenzi 2014).

The mean of the Book-Market ratio is lower than Eugster & Isakov's (2019) and higher than Lilienfeld-Toal & Ruenzi (2014). Indicating that U.S firms are valued higher than Swedish firms, while Swiss firms are valued more conservatively.

The mean dividend yield of Swedish firms is higher than for Swiss firms. We also see that the leverage in Swedish firms is higher than Swiss firms (Eugster & Isakov 2019).

Sales growth for Swedish firms are on average higher than U.S companies while asset growth is higher in the U.S companies than in the Swedish companies (Lilienfeld-Toal & Ruenzi 2014).

Swiss firms have a higher market capitalization, total asset and revenue than Swedish firms (Eugster & Isakov 2019). The wedge is larger in the Swedish firms than in the Swiss firms (Eugster & Isakov 2019), this could be partly explained by the fact that the dual class share system is more common in Sweden (Adams & Ferreira 2008).

The factors in the Fama-French regressions are acquired from AQR's (2021) database. The variables collected are SMB, HML, R_{mt}-R_{ft}, R_{ft} and WML for the Swedish market, ranging from 2010-2020 in monthly observations. We use the monthly share price from SHoFDB (2021) to get the monthly simple returns for each stock. Additionally, from the market capitalization we are able to construct a value-weighted portfolio, while we use the number of firms to construct the equal weighted portfolio. The weights of the portfolios will be dependent on the distribution between family and non-family firms, as the value-weighted portfolio will be based on the sum of the family or the non-family firms market cap divided by the family or non-family firms individual market cap at the first month of that year. For the equal weighted portfolio it will be one divided by the number of firms that are family or non-family to get the weights of the family and the non-family portfolio.

3.4.4 Rebalancing

In order to reduce the survivorship bias in the portfolio method in section 3.2, the portfolios will be rebalanced after the last trading day of each year. Firms that are delisted will be handled differently based on the cause of delisting. If the delisting is due to a tender offer, the last stock price will be assigned for the rest of that year and then be rebalanced out. If the delisting is due to a bankruptcy an assumption is made that the stock price drops to zero at the month of the bankruptcy, at the end of that year the firm is rebalanced out of the portfolio. If the reason for the delisting from the SSE market is due to being listed in any other market, the last stock price is used until the firm is rebalanced by that year's end. Firms that are newly listed in time period (year) t, will be included in the portfolio at time period t if and only if the firm was listed before July in time period t, otherwise it will be included at t+1. If the firm's inclusion is made at time period t, the first observable stock price is applied on the previous months as the monthly price until the month after the firm's listing. The rules of the portfolio rebalancing applies to both the value-weighted portfolios and the equally-weighted portfolios.

3.5 Criticization /limitation

If the regression finds abnormal returns, we will have problems pinpointing whether it is abnormal returns or whether the abnormal returns are caused by omitted variable bias. For instance one could not for certain say that all the firm characteristics are included, and thus some unobserved variable could explain the abnormal returns.

One limitation that occurs due to monthly data of ownership not being available is in the assignment of dummy variables. We expect this limitation to be negligible as La Porta et al. (1999) states that ownership structures are rather stable over time. The consequence if the ownership structure changes a lot in short time periods is that regression results may be influenced by the lag of the dummies being updated and being properly placed.

The time frequency was also an issue for the data extracted from Compustat, where only yearly or quarterly data was available, rendering a monthly time frequency on the firm-characteristics regressions to be inaccurate.

We also see a potential issue that could occur with our yearly firm characteristics data due to the databases, for example a firm that is delisted prior to the last trading day of the year will not be included in that year. This problem could potentially cause some under/over estimations in our regressions, however as we have a large sample size, we believe that this effect will be minimal.

We also believe that there might exist some upward bias in our portfolios. The reason is that we use the last stock price in SSE for a relisted company. When a firm gets listed in another Swedish market, it likely receives some discount on the stock price, which is the cause for the bias. The magnitude of this bias is deemed to be small, as there is a high sample of firms that are weighted into a portfolio, the effect of this bias is higher in the equal weighted portfolio.

We also identify a bias that occurs when we make use of the complementary ownership data from Capital IQ, where the assumption of no wedge is made. However as we believe that it is better to have a larger sample for the other variables, we opted not to omit firms that had no information on ownership data on Holdings. The ownership data that was not available was towards the time period of 2010-2012 for delisted companies.

4. Analysis

In this chapter we present the analysis of our findings. We begin the first section with presenting the univariate statistics of our data sample. The second section presents results from the panel regressions with firm characteristics. The third section handles the regression results of the Fama-French regressions. The fourth and fifth section presents the results from the performance and valuation regressions. The last section presents the robustness check.

4.1 Univariate statistics

In order to compare family and non-family characteristics, we conduct a standard univariate statistic by taking a T-test between the family and non-family variable means.
Table 4 presents the yearly result of the univariate test.

Variable	Family mean	Non-Family mean	Family - Non-Family T-statistics
Stock Return	0.1637	0.1467	0.0170
Tobin's Q	2.1804	2.7186	-0.5383***
ROA	0.0284	0.0045	0.0239***
Firm Age	54.2576	49.6764	4.5813**
Book-Market ratio	0.6560	0.5665	0.0895***
Dividend Yield	0.0222	0.0206	0.0016
Leverage	0.1731	0.1375	0.0356***
Volume (LN)	20.4005	20.9646	-0.5642***
Sales Growth	0.0883	0.1089	-0.0207
Asset Growth	0.1228	0.1226	0.0002
Market Cap (LN)	21.7303	21.8968	-0.1665**
Total Asset (LN)	7.9352	7.7979	0.1373*
Revenue (LN)	7.6062	7.4520	0.1542*
Wedge	0.0785	0.0229	0.0556***

The significance level is indicated at the 10%, 5% and 1% level by *, ** and ***.

Table 4 - Univariate test of variables.

Table 4 indicates that non-family firms have higher Tobin's Q than family firms at 1% significance level, this gives an indication that the market values family firms with some risk-premia with the agency cost in mind, since Tobin's Q is a forward-looking valuation metric. This result is in line with Eugster & Isakov (2019) and Hegde et al. (2020) findings where family firms had a lower Tobin's Q however their T-statistics were not significant. Looking at the ROA, family firms seem to be more efficient than non-family firms, this result is significant at the 1% level. Hegde et al. (2020) summary statistics points to an opposite result while the result of Eugster & Isakov's (2019) is significant and in line with our result. This would imply that family firms are more efficient in Sweden and Switzerland while non-family firms are more efficient in India. Family firms age is higher than non-family firms at the 5% significance level, this result is opposite to Eugster & Isakov's (2019) findings. The book-market ratio is higher in family firms than non-family firms at the 1% significance level. Eugster & Isakov (2019) find similar results while Hegde et al. (2020) finds that non-family firms have a higher book-market ratio than family firms, lastly Lilienfeld-Toal & Ruenzi (2014) finds that there is no difference between the book-market ratios. This implies that Swedish and Swiss family firms are more conservatively valued. Dividend yield is higher in family firms than non-family firms, however the result is not significant. Eugster & Isakov (2019) also finds that family firms have higher dividend yield than non-family firms and that it is significant. This implies that the dividend policy in Swedish firms is not influenced by ownership structure. The leverage is larger in family firms than non-family firms and significant at the 1% level, the opposite is true for the Swiss study (Eugster & Isakov 2019). This indicates that Swedish family firms are more in debt than the non-family firms. The sales growth is higher but not significant in non-family firms, this result is similar to Lilienfeld-Toal & Ruenzi (2014) and indicates that the firm's sales growth is not determined by the ownership structure. The asset growth in family firms is similar to non-family but not significant, indicating that the firm's asset growth is not determined by the ownership structure. For the firm size, we see that non-family are larger than family firms, this is statistically significant at the 5% level. We see similar results in Eugster & Isakov (2019) and Lilienfeld-Toal & Ruenzi (2014), indicating that non-family firms are either larger or valued higher by the market. The revenue of family firms is higher than non-family firms and significant at the 10% level. The result of Eugster & Isakov (2019) finds that the revenue is similar in family and non-family. The total assets of family firms are higher than the non-family firms and statistically significant at the 10% level. Eugster & Isakov (2019) finds the opposite results, that non-family firms have higher assets than family firms. This indicates that Swedish family firms are larger than non-family firms when looking at the total assets, which is a book-value metric. Lastly, we see that the wedge is higher in family-controlled firms than non-family-controlled firms and is significant at the 1% level. This implies that family-controlled firms on average have more control via corporate governance mechanics. This is in line with previous research conducted by Cronqvist & Nilsson (2003) and Eugster & Isakov (2019).

Looking at these results, we see that non-family firms have higher market cap and Tobin's Q ratio while having a lower revenue, ROA and total asset. This would imply that the non-family firms are valued higher while being less efficient, having lower sales and less assets. Thus it further strengthens the reasoning that the market values family firms with some type of risk-premia.

In appendix section 7.5, table X.16 we present a pairwise correlation test between the family dummy and the main variables used in this study. We can see that the family dummy has a positive and significant (1%) correlation with ROA, leverage, book-market, asset growth and wedge. This positive result is in line with the result in table 4 where ROA, leverage, book-market and wedge are all clearly higher in family firms, this however is not the case for asset growth. The variable that has a negative and significant correlation with the family dummy is Tobin's Q which is in line with the result in table 4.

4.2 Panel regressions

In the first subsection we present the regression result from the family dummy which will answer our first hypothesis. The second subsection presents the regression result from the continuous ownership variable which will answer our second hypothesis.

4.2.1 Family dummy

Table 5 presents the regression results, conducted as instructed in section 3.1. In the first column we see the regression results produced by the pooled panel regression method, the second column shows the regression results from the Fama-MacBeth regression method. The third and fourth column follows the first and second column methods respectively, with the inclusion of the additional owner dummy variable.

In table 5, variables such as wedge, dividend yield, leverage, asset turnover and sales growth are significant in all the regressions, where the influence on the stock returns is clear. This indicates that the usage of firm characteristics is relevant when analyzing Swedish stock performances as the standard asset pricing theory models lack the above-mentioned firm characteristics. The regression results in table 5 shows that family firm stocks produce higher returns than non-family firms and that it is significant. The regression result is similar to Eugster & Isakov (2019) where they also find that family ownership yields additional return in both methods. Further, the additional owner dummy is not significant in the regressions, this implies that the excess return caused from the family ownership is not influenced by other family blockholder. The negative and significant impact of wedge on the stock return is consistent with the theory of agency cost, the results implies that a higher wedge leads to higher entrenchment effects, this may indicate that the incentives to maximize firm value stems from a higher capital ownership rather than a high voting ownership.

Since the family dummy is positive and significant in both regression methods, we conclude that our first hypothesis cannot be rejected and that firm characteristics can explain the additional yearly abnormal return that is caused by family owners. The yearly abnormal return ranges between 1.82% to 3.23%.

	(1)	(2)	(3)	(4)
Family dummy	0.0323**	0.0217**	0.0270*	0.0182**
	(0.0143)	(0.0092)	(0.0149)	(0.0079)
Additional owner			0.0198	0.0133
			(0.0150)	(0.0113)
Wedge	-0.1738***	-0.1457***	-0.1735***	-0.1466***
	(0.0445)	(0.0457)	(0.0444)	(0.0456)
BM ratio	-0.0711***	-0.0609***	-0.0706***	-0.0613***
	(0.0144)	(0.0123)	(0.0143)	(0.0124)
Log size	-0.0018	-0.0028	-0.0014	-0.0029
	(0.0093)	(0.0097)	(0.0093)	(0.0097)
Price	0.0004***	-0.0006	0.0004***	-0.0006
	(0.0001)	(0.0008)	(0.0001)	(0.0008)
Log volume	0.0013	0.0033	0.0017	0.0039
	(0.0056)	(0.0078)	(0.0056)	(0.0075)
Dividend yield	-0.5859**	-0.8446***	-0.5885**	-0.8357***
	(0.2435)	(0.2614)	(0.2442)	(0.2600)
Leverage	-0.1623***	-0.1536***	-0.1689***	-0.1573***
	(0.0412)	(0.0381)	(0.0418)	(0.0404)
Asset turnover	-0.0371***	-0.0342***	-0.0379***	-0.0348***
	(0.0100)	(0.0077)	(0.0100)	(0.0077)
Asset growth	0.0723*	0.0379	0.0718*	0.0377
	(0.0370)	(0.0341)	(0.0370)	(0.0346)
Sales growth	0.0638*	0.0538**	0.0639*	0.0548**
	(0.0371)	(0.0214)	(0.0370)	(0.0219)
Return 2-3	0.1417***	0.1298***	0.1418***	0.1297***
	(0.0116)	(0.0186)	(0.0116)	(0.0186)
Return 4-6	0.2440***	0.2239***	0.2439***	0.2242***
	(0.0205)	(0.0337)	(0.0204)	(0.0340)
Return 7-12	0.4752***	0.4494***	0.4749***	0.4478***
	(0.0263)	(0.0683)	(0.0263)	(0.0680)
Intercept	-0.0279	0.0274	-0.0420	0.0283
	(0.1329)	(0.0259)	(0.1329)	(0.0267)
Industry dummy	Yes	Yes	Yes	Yes
Year dummy	Yes	No	Yes	No
Method	Pooled	FMB	Pooled	FMB
N	2285	2285	2285	2285
R^2	0.6582	0.6628	0.6584	0.6622

The significance level is indicated at the 10%, 5% and 1% level by *, ** and ***.

Table 5 - Panel regression with family dummy as main variable.

4.2.2 Continuous ownership variable

The regression results of the continuous ownership variable can be seen in table 6. The regression setup is similar to section 4.2.1 where we use pooled panel regressions and Fama-MacBeth. We also include the additional ownership variable. The regression is controlled to only include family firms.

	(1)	(2)	(3)	(4)
Continuous ownership	0.0213	0.0108	0.0257	0.0153
	(0.0565)	(0.0564)	(0.0566)	(0.0559)
Additional owner			0.0169	0.0006
			(0.0152)	(0.0129)
Wedge	-0.1789***	-0.1364**	-0.1806***	-0.1399**
	(0.0437)	(0.0475)	(0.0433)	(0.0489)
BM ratio	-0.0832***	-0.0743***	-0.0823***	-0.0752***
	(0.0180)	(0.0145)	(0.0178)	(0.0150)
Log size	-0.0147	-0.0095	-0.0144	-0.0096
	(0.0135)	(0.0107)	(0.0135)	(0.0107)
Price	0.0004*	-0.0007	0.0004*	-0.0007
	(0.0002)	(0.0008)	(0.0002)	(0.0008)
Log volume	0.0044	0.0030	0.0053	0.0034
	(0.0075)	(0.0083)	(0.0076)	(0.0078)
Dividend yield	-0.5861**	-0.8429***	-0.5926**	-0.8248***
	(0.2535)	(0.2178)	(0.2549)	(0.2161)
Leverage	-0.0956**	-0.1253***	-0.1023**	-0.1249***
	(0.0479)	(0.0368)	(0.0487)	(0.0364)
Asset turnover	-0.0390***	-0.0397***	-0.0398***	-0.0394***
	(0.0103)	(0.0114)	(0.0103)	(0.0115)
Asset growth	0.0428	0.0420	0.0422	0.0413
	(0.0345)	(0.0274)	(0.0345)	(0.0278)
Sales growth	0.0882**	0.0812***	0.0883**	0.0827***
	(0.0364)	(0.0207)	(0.0363)	(0.0210)
Return 2-3	0.1502***	0.1254***	0.1503***	0.1249***
	(0.0143)	(0.0217)	(0.0143)	(0.0217)
Return 4-6	0.2757***	0.2524***	0.2753***	0.2533***
	(0.0185)	(0.0400)	(0.0185)	(0.0403)
Return 7-12	0.5093***	0.4764***	0.5088***	0.4752***
	(0.0245)	(0.0628)	(0.0246)	(0.0625)
Intercept	0.2405	0.1346	0.2080	0.0920
	(0.1885)	(0.1026)	(0.1904)	(0.0868)
Industry dummy	Yes	Yes	Yes	Yes
Year dummy	Yes	No	Yes	No
Method	Pooled	FMB	Pooled	FMB
N	1476	1476	1476	1476
R^2	0.6933	0.7042	0.6935	0.7031

The significance level is indicated at the 10%, 5% and 1% level by *, ** and ***.

Table 6 - Panel regression with continuous ownership as main variable.

Table 6 has similar results to table 5, where dividend yield, leverage, asset turnover, sales growth and wedge are all significant and thus are relevant as variables when analyzing stock returns. The regression finds a positive return with continuous ownership for both methods, the results however are not significant. Including the additional owner variable yields a similar result, where both the continuous and the additional owner variable is positive but not significant. Therefore we conclude that our second hypothesis can be rejected i.e. that an increase in family ownership yields no additional abnormal return.

The regression result could to some degree be linked with Shleifer & Vishny (1989) and Stulz (1988) theoretical models, where they find that a too high or too low ownership leads to agency costs. It can be plausible that the continuous variable in this regression is influenced by the positive effects on the agency cost due to additional monitoring and a reduction on the principal-agent problem. While at the same time being negatively affected by heightened agency cost stemming from entrenchment effects and principal-principal problem, which leads us to an insignificant result in this regression.

4.3 Fama-French regressions

Following our methodology, we conduct three regressions, Jensen's (one factor), Fama-French three factors and Carhart's four factors model to see whether the portfolio constructed with family firms delivers any abnormal returns and whether the strategy of longing family and shorting non-family portfolios delivers any abnormal returns.

4.3.1 Jensen's regression

Table 7 presents the results of the single factor regression. The results indicate that both the family and non-family portfolios outperform the market positively, however only the family portfolios are significant. The abnormal return of the equally weighted family portfolio is 0.69% monthly or 8.60% annually and significant at the 1% level. The strategy of longing the equally weighted family portfolio and shorting the non-family portfolio generates a positive and significant abnormal return of 4.28% annually.

For the value weighted portfolio we see that the family portfolio delivers positive and significant (1%) abnormal returns of 7.44% annually, whereas the non-family is positive but insignificant. Longing the value weighted family portfolio and shorting the non-family portfolio yield positive abnormal returns, however the result is not significant.

Jensen's model (single factor) AQR						
Equal-Weighted				Value-weighted		
	Family	Non-family	Family - Non-family	Family	Non-family	Family - Non-family
Alpha	0.0069***	0.0034	0.0035**	0.0060***	0.0033	0.0027
	(0.0026)	(0.0028)	(0.0017)	(0.0023)	(0.0023)	(0.0017)
RMRF	0.6642***	0.6294***	0.0348	0.6451***	0.5676***	0.0775***
	(0.0573)	(0.0589)	(0.0312)	(0.0411)	(0.0379)	(0.0293)
N	131	131	131	131	131	131
R^2	0.6552	0.5596	0.0105	0.6886	0.6228	0.0538
The significance level is indicated at the 10%, 5% and 1% level by *, ** and ***.						

Table 7 - Jensen's model (Fama-French single factors).

4.3.2 Fama-French 3 factor regression

Adding the factors SMB and HML yields the results in table 8. The results are in line with those of table 7 for the equally weighted portfolios. The inclusion of additional risk factors (size and book-market) increases the abnormal return for the family and non-family value-weighted portfolios while it decreases for the non-family equally weighted portfolio.

The abnormal return in the equally weighted portfolio is 8.73% annually in the family portfolio and significant (1%). Longing the equally weighted family portfolio and shorting the non-family portfolio produces a positive and significant abnormal return of 4.53% annually.

For the value weighted portfolios the family portfolio delivers a positive and significant (1%) abnormal returns of 7.83% annually, whereas the non-family portfolio yields an abnormal return of 4.78% annually with a lower significance level (10%). Longing the family portfolio and shorting the non-family portfolio produces a positive abnormal return, however this is not significant.

Fama-French 3 factors AQR						
Equal-Weighted				Value-weighted		
	Family	Non-family	Family - Non-family	Family	Non-family	Family - Non-family
Alpha	0.0070***	0.0032	0.0037**	0.0063***	0.0039*	0.0024
	(0.0022)	(0.0025)	(0.0017)	(0.0022)	(0.0022)	(0.0017)
RMRF	0.6535***	0.6227***	0.0308	0.6435***	0.5573***	0.0862***
	(0.0435)	(0.0475)	(0.0326)	(0.0410)	(0.0373)	(0.0273)
SMB	0.4387***	0.4970***	-0.0582	-0.1817**	-0.1478**	-0.0339
	(0.0750)	(0.1036)	(0.0640)	(0.0800)	(0.0740)	(0.0569)
HML	0.1463	0.0696	0.0767	0.0477	0.1999**	-0.1522**
	(0.1094)	(0.1195)	(0.0690)	(0.1061)	(0.0931)	(0.0739)
N	131	131	131	131	131	131
R^2	0.7308	0.6464	0.0261	0.7026	0.6457	0.0908
The significance level is indicated at the 10%, 5% and 1% level by *, ** and ***.						

Table 8 - Fama-French three factor model.

4.3.3 Fama-French 4 factor regression

Adding the last factor WML yields us the results in table 9. The inclusion of WML helps to capture cross-sectional variation in the portfolio's returns. When adding WML as a factor, the abnormal return in all portfolios is higher than both Jensen's (1968) one factor model and Fama & French (1993) three factor model. As the factors are added, they should help capture the abnormal returns that might have been produced with the single factor model. Since we see an increase in the abnormal returns, it implies that there exists some abnormal return as the factors cannot capture the alpha.

The result in table 9 further indicates some differences in both equally weighted and the value weighted portfolios compared to the previous results.

For the equally weighted portfolios, we see that the family portfolio and the non-family portfolio both have positive and significant abnormal returns. The family portfolio however has a higher abnormal return of 8.73% annually at the significance level of 1%, while the non-family portfolio has an abnormal return of 7.06% annually at the significance level of 5%. Longing the family portfolio and shorting the non-family portfolio produces an almost near zero abnormal return which is different from the previous tables.

For the value weighted portfolios we see that both portfolios deliver positive and significant abnormal returns, where the abnormal return is 9.90% annually for the family portfolio with a significance level of 1%, while the non-family portfolio had an abnormal return of 5.79% annually at the significance level of 10%. This result is different from table 7 & 8 in the aspect that the non-family abnormal return is significant. Longing the family portfolio and shorting the non-family portfolio delivers a significant (10%) and positive abnormal return of 3.91% annually. Indicating that it can be a viable strategy to long the family portfolio and short the non-family portfolios to get a positive abnormal return when compared to the market.

Since we see from the regression result that the family portfolios are statistically positive and significant, we conclude that our third hypothesis cannot be rejected. This implies that the family portfolios are outperforming the market and that it generates a yearly abnormal return of 9.90% on the value weighted and 8.73% on the equally weighted portfolio. This result further strengthens the panel regression results produced with the usage of firm characteristics.

We also see that the strategy of longing the value-weighted family portfolio and shorting the non-family portfolio produces a positive and significant abnormal return, thus we conclude that our fourth hypothesis cannot be rejected. This means that the strategy would produce a yearly abnormal return of 3.91%, however one can note that longing either the value-weighted family portfolio (9.90%) or non-family portfolio (5.79%) would produce a higher abnormal return than this strategy.

Fama-French 4 factors AQR						
	Equal-Weighted			Value-weighted		
	Family	Non-family	Family - Non-family	Family	Non-family	Family - Non-family
Alpha	0.0070***	0.0057**	0.0013	0.0079***	0.0047*	0.0032*
	(0.0025)	(0.0028)	(0.0020)	(0.0024)	(0.0025)	(0.0019)
RMRF	0.6533***	0.6120***	0.0413	0.6363***	0.5539***	0.0825***
	(0.0434)	(0.0451)	(0.0297)	(0.0398)	(0.0368)	(0.0285)
SMB	0.4385***	0.4847***	-0.0462	-0.1898**	-0.1517**	-0.0381
	(0.0750)	(0.1011)	(0.0631)	(0.0775)	(0.0741)	(0.0561)
HML	0.1461	0.0506	0.0955	0.0350	0.1939**	-0.1589**
	(0.1133)	(0.1194)	(0.0673)	(0.1070)	(0.0938)	(0.0738)
WML	-0.0023	-0.1691*	0.1667**	-0.1131	-0.0540	-0.0591
	(0.0843)	(0.0917)	(0.0684)	(0.0079)	(0.0711)	(0.0560)
N	131	131	131	131	131	131
R^2	0.7308	0.6551	0.0779	0.7071	0.6469	0.0975

The significance level is indicated at the 10%, 5% and 1% level by *, ** and ***.

Table 9 - Fama-French four factor model.

The development of the regressions from Jensen's model to the four-factor model, indicates that the equal weighted and the value weighted portfolios beats the market regardless of ownership structure. This can potentially be explained by the fact that we as the standard practice are omitting finance industries such as banks, insurance and investment firms. This sector has underperformed the OMX Stockholm All-share Cap index, which can be seen in the appendix section 6.5 in figure 1 & 2. In figure 1 we compare the OMX bank index with the OMX Stockholm All-share Cap index and in figure 2 we compare the OMX finance industry index with the All-share index. In both figures we see a divergence around 2017, where the All-share index starts to outperform the bank and finance indexes. We believe that this is the reason why both the family and non-family portfolios outperform the market, as the market includes the finance sector whereas we omit it.

4.4 Performance & Valuation regressions

In this section we present the regression results produced by the performance and valuation method described in section 3.3. The first subsection presents the results from the performance regressions, while the second subsection presents the results from the valuation regressions.

4.4.1 Performance regressions

For the performance regression we have ROA as the dependent variable and family dummy as the main independent variable. Table 10 presented below shows the regression result. For our analysis, we opt to focus on the Fama-MacBeth regression, however we reserve that we cannot rule out that firm effects may bias our results.

Table 10 indicates that family firms are more efficient than non-family firms, this is in line with the univariate results that found a significant difference between the family and non-family firms. We observe that the relation between ROA and family firms is positive and significant at the 5% level in the Fama-MacBeth regression, while being positive but not significant in the pooled panel regression.

Since we focus on the Fama-MacBeth results, the fifth hypothesis cannot be rejected. Thus, we conclude that family firms are more efficient than non-family firms.

The result of Eugster & Isakov (2019) and Lilienfeld-Toal & Ruenzi (2014) is similar and significant. Cronqvist & Nilsson (2003) found the opposite result i.e. that non-family firms are more efficient than family firms. Comparing the result from Cronqvist & Nilsson (2003) and the result in table 10 shows that Swedish family firms are behaving differently in regard to efficiency in our time-period. It could be argued that either Swedish family firms have become more efficient, or non-family firms have become less efficient. This argument could be further backed by studies with a more present time-period, indicating a pattern that family firms are overall more efficient than non-family firms (Eugster & Isakov 2019 and Lilienfeld-Toal & Ruenzi 2014).

	(1)	(2)
Family dummy	0.0144	0.0127**
	(0.0134)	(0.0045)
Wedge	0.0778	0.0800***
	(0.0492)	(0.0176)
Log size	0.0282***	0.0266***
	(0.0042)	(0.0020)
Log age	0.0137**	0.0108***
	(0.0066)	(0.0023)
Leverage	-0.0159	-0.0259
	(0.0430)	(0.0374)
Sales growth	0.0658***	0.0637***
	(0.0142)	(0.0096)
Asset turnover	0.0743***	0.0650***
	(0.0120)	(0.0102)
BM ratio	0.0176	0.0167***
	(0.0118)	(0.0052)
Intercept	-0.5288***	-0.2265**
	(0.1110)	(0.0905)
Industry dummy	Yes	Yes
Year dummy	Yes	No
Method	Pooled	FMB
N	2304	2304
R^2	0.2790	0.2540

The significance level is indicated at the 10%, 5% and 1% level by *, ** and ***.

Table 10 - ROA regression.

4.4.2 Valuation regressions

For the valuation regression we have Tobin's Q as the dependent variable and family dummy as the main independent variable. Table 11 presented below shows the regression result.

For our analysis, we opt to focus on the Fama-MacBeth regression, however we reserve that we cannot rule out that firm effects may bias our results.

Table 11 indicates that the valuation of family firms is lower than non-family firms, this is in line with the univariate results that found a significant difference between the family and non-family firms. We observe that the relation between Tobin's Q and family firms is negative and significant at the 1% level in the Fama-MacBeth regression, while being negative but not significant in the pooled panel regression.

Since we focus on the Fama-MacBeth regression result, we conclude that the sixth hypothesis cannot be rejected. This result implies that family firms are valued more conservatively than non-family firms. Our results are in line with Eugster & Isakov (2019) and Cronqvist & Nilsson (2003) whereas Hegde et al. (2020) found no difference between the family and non-family firms. This implies that the valuation of Swedish firms by this measure has not changed from Cronqvist & Nilsson (2003) time-period.

	(1)	(2)	(3)	(4)
Family dummy	-0.0471	-0.0446***	-0.0496	-0.0499***
	(0.0494)	(0.0098)	(0.0496)	(0.0122)
ROA			0.1748	0.1933
			(0.1722)	(0.1355)
Wedge	-0.2350	-0.1979**	-0.2485	-0.2063**
	(0.1784)	(0.0787)	(0.1729)	(0.0847)
Log size	0.0666***	0.0571***	0.0617***	0.0517***
	(0.1558)	(0.0080)	(0.0170)	(0.0082)
Log age	-0.1015***	-0.0935***	-0.1039***	-0.0970***
	(0.0263)	(0.0135)	(0.0266)	(0.0147)
Leverage	-0.5469***	-0.5018***	-0.5441***	-0.5047***
	(0.1716)	(0.0819)	(0.1701)	(0.0826)
Sales growth	0.0225	0.0181	0.0110	0.0076
	(0.0389)	(0.0216)	(0.0386)	(0.0228)
Asset turnover	-0.0458	-0.0452***	-0.0588	-0.0606***
	(0.0366)	(0.0120)	(0.0393)	(0.0175)
BM ratio	-0.6378***	-0.5957***	-0.6409***	-0.5981***
	(0.0661)	(0.0684)	(0.0663)	(0.0693)
Intercept	0.1739	0.1893*	0.2664	0.2594**
	(0.3833)	(0.0991)	(0.4108)	(0.1045)
Industry dummy	Yes	Yes	Yes	Yes
Year dummy	Yes	No	Yes	No
Method	Pooled	FMB	Pooled	FMB
N	2304	2304	2304	2304
R^2	0.5836	0.5641	0.5849	0.5686

The significance level is indicated at the 10%, 5% and 1% level by *, ** and ***.

Table 11 - Tobin's Q regression.

What is interesting is that in section 4.4.1 we found that family firms perform better than non-family firms, however we see that in table 11 that the market is valuing the family firms less than the non-family firms, despite the proven performance difference. We see two possible reasons for this, one might be that the market is predicting a worse outlook for the family firm since Tobin's Q is a forward measure while ROA is a historical measure. The more likely explanation could be that the market is assigning a risk-premia on family firms caused by the perceived agency cost. The reason we believe that the second explanation is more likely stems from our discussion in section 4.1, where we point out that non-family firms have higher market cap, while having a lower revenue and total asset. In addition the regression results in 4.4.1 shows that non-family firms have lower ROA, indicating that the market systematically values family firms lower.

4.5 Robustness

In this section we conduct three robustness checks. The first subsection presents the result of a 20% threshold for the family ownership. The second subsection presents the results when excluding the pandemic year of 2020. Whereas the last subsection presents the results with the usage of voting rights instead of cash flow rights.

4.5.1 Ownership 20%

As our first robustness check we use a 20% threshold for the ownership to see whether there are any differences in the results. There could be potential differences caused by the 10% threshold being too low to incentivize monitoring and long-term strategies. Furthermore an increase in the threshold could have a negative impact, as the entrenchment effect increases as well as the principal-principal problem. We use the same methodology as in the main study for the 20% ownership threshold. The tables of the regression results will be presented in appendix section 6.2.

Table X.2 presents the regression results, produced by similar methodology as table 5. The family dummy is still positive but no longer significant regardless of the regression method. This result indicates that firms with private ownership between 10-20% are the main reason for the abnormal return produced in table 5. Since these firms now become defined as non-family firms in this regression, we see that the difference between family and non-family stock returns is closer to zero.

The result from table X.3 uses the continuous variable which starts from 20% private capital ownership. The regression result is in line with the result of table 6, that is positive returns but no significance. Further indicating that an increase in capital ownership from 20% does not improve the abnormal return of that stock.

Table X.4 presents the regression results caused from having a family portfolio with 20% ownership threshold and a non-family portfolio. The results are very similar to that of table 9, we see that family firms still outperform non-family firms. What can be observed from the regression results in table X.4 is that the return gap between both the equal and value-weighted portfolios becomes tighter, indicating that the reasoning of table X.2 can be further strengthened by the result in table X.4.

The results in table X.5 are in line with the results in table 10, further backing the conclusion that family firms are more efficient than non-family firms.

The result in table X.6 is unlike table 11, insignificant. The coefficient in column two is positive which is opposite to table 11. This result might indicate that the firms within the 10%-20% ownership levels are more undervalued. Since they are now included in the non-family category, the inclusion seems to close the difference in the valuation between the family and non-family firms.

The conclusion made from this section is that firms with a private ownership between 10-20% seem to be the main drivers of the regression result produced in our main study.

4.5.2 Exclusion of the pandemic year

The second robustness check excludes the pandemic year of 2020 from the time period. The reason for this is that the pandemic might influence industries differently which result in over/under performances, where some industries benefit while others suffer. Thus, the omission of the pandemic year may result in the time period reflecting a more "normal" market. The tables of the regression results are presented in the appendix 6.3.

Table X.7 presents the regression results, produced by similar methodology as table 5.

The results in table X.7 are positive and significant in column 1 and 2. This indicates that the abnormal returns in Table 5 are not due to potential positive effects of the pandemic on family firms as these results hold for both regressions. There is however one difference between table X.7 and table 5. In column 3 and 4, the inclusion of additional owners removes the significance from table X.7, this result must be taken with caution as the significance level for the family dummy in column 3 (4) is 10.8% (11.8%).

The result from table X.8 is in line with the result of table 6, that is positive returns but no significance. Further strengthening the result in our main study as the results do not change with the exclusion of the pandemic year.

The results in table X.9 are in line with the main results in table 9. We can also observe that the exclusion of the pandemic year yields a higher abnormal return for the family-portfolios, while being relatively unchanged for non-family portfolios. This could indicate that the family portfolio is underperforming the market in the year 2020 and this further strengthens our reasoning in table X.7. Thus the pandemic year has been impacting family firms more negatively than non-family firms.

The results in table X.10 are in line with the results in table 10, further backing the conclusion that family firms are more efficient than non-family firms. Thus, the exclusion of 2020 does not impact the family firm's performance.

The results in table X.11 are in line with the results in table 11, further backing the conclusion that family firms are more undervalued than non-family firms. Thus, the exclusion of 2020 does not impact the family firm's valuation.

The conclusion made from this section is that the regressions results do not change with the omission of the pandemic year. This further strengthens the robustness of the main study.

4.5.3 Voting rights

The third robustness check uses voting rights instead of cash flow rights as ownership dummy. Using voting rights will be more in line with Eugster & Isakov's (2019) methodology. One reservation is made; when constructing the ownership dummy with voting rights one problem occurs, as the manual query was made on every owner holding more than 5% of the capital rights from Holdings. This problem occurs when the largest owner holds 10% or more voting rights but less than 5% of the cash flow rights, in such cases there will be data missing in our sample. Therefore, the results will be biased, and this bias is likely to be upwards as the missing firm's owners have low cash flow rights and high voting rights, therefore increasing the incentives of entrenchment. The degree of the bias is unknown. The tables of the regression results are presented in the appendix 6.4.

The results in table X.12 are in line with that of table 5. Column 1 and 3 in table X.12 is more significant than in table 5, in addition the coefficients of the family dummy are higher in all columns in table X.12. This would indicate that looking at voting rights rather than cash flow rights yields a higher abnormal return. However, due to the incomplete data such a statement cannot be made. What can be seen is that high voting rights ownership in firms are associated with abnormal returns.

The result from table X.13 uses the continuous variable which starts from 10% ownership. The regression result is in line with the result of table 6, that is positive returns but no significance. Further indicating that an increase in ownership from 10% does not improve the abnormal return of that stock.

The results in table X.14 are in line with the results in table 10, further backing the conclusion that family firms are more efficient than non-family firms. This result also implies that it does not matter what form of family ownership type i.e. cash flow or voting rights as both ownership structures produce positive results.

The results in table X.15 are in line with the results in table 11, further backing the conclusion that family firms are undervalued compared to non-family firms. This result also implies that it does not matter what form of family ownership type i.e. cash flow or voting rights as both ownership structures produce similar results.

From these results we can conclude that the voting rights ownership shows similar results as our main study, however we still reserve the fact that we may have sampling errors that can cause bias.

5. Conclusion

In contrast to the efficient market hypothesis, we find that Swedish ownership structures are associated with abnormal returns. This should not be the case according to efficient market theory as the ownership structure is public information and therefore should be fully reflected in the stock price, rendering abnormal returns not plausible.

Our panel data ranges from Januari 2010 to December 2020 for stocks on the SSE excluding financials. We find that for the selected time period family firms delivered a yearly abnormal return of 1.82% to 3.23%. We further find that the risk-adjusted family portfolios produced a yearly abnormal return between 8.73% to 9.90%. We thus find evidence that there exist positive abnormal returns for family firms when compared to non-family firms and the market.

We further find that family firms are more efficient than non-family firms but at the same time family firms are valued lower. We believe the reason for the more conservatively valuation of family firms even as they outperform non-family firms, stems from the perceived agency cost associated with family ownership. This agency cost most likely stems from the principal-principal problem, where the controlling family owners are able to extract private benefits which reduces shareholder wealth. The principal-agency problem should be reduced by monitoring from the family owner. However, the incentives to maximize firm value gained by owning a large share of the firm seems to outweigh the potential agency costs. The market however, seems to be asking for additional risk premia on family firms. We believe it is this additional risk premia that drives the abnormal returns of family firms in Sweden. This risk-premia is further amplified by the usage of dual share-class which is in line with the theory of agency cost. We find that the wedge between voting- and cash flow-rights negatively impacts the stock return. We believe that the main reason is that when voting-rights are larger than cash flow-rights the principal-principal problems increase and indirectly the incentives to maximize firm value decreases.

We thus conclude that there could be two potential reasons for why the abnormal return occurs. It could be caused by the market overestimating the agency costs associated with the family firms, thus leading to a greater discount while the family firms are performing better, leading to the abnormal return. This explanation would imply that for an outside investor it is generally more profitable to invest in family firms.

The second explanation could be that the market values the agency cost associated with family firms correctly and that there exists unobservable firm characteristics that are the true driver of the returns which cannot quantitatively be explained, such as firm culture. This explanation would imply that the return is not abnormal if such unobservable firm characteristics exists.

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6. Appendix

The first section presents how the variables are collected and calculated. The second section presents the first robustness check. The third section presents the second robustness check. The fourth section presents the third robustness check. The last section presents additional figures and tables.

6.1 Variables

In table X.1 the variables used in this paper are defined. The sources used to collect and calculate the variables are described in detail in section 3.4.3.

Ownership	
Family dummy (10%)	Dummy variable that takes the value of 1 if one or more private shareholders holds 10% or more of the cash flow rights, and 0 otherwise. Obtained from Holdings (2021).
Family dummy (20%)	Dummy variable that takes the value of 1 if one or more private shareholders holds 20% or more of the cash flow rights, and 0 otherwise. Obtained from Holdings (2021).
Continuous ownership (10%)	Continuous variable starting from 10% private capital ownership. Obtained from Holdings (2021).
Continuous ownership (20%)	Continuous variable starting from 20% private capital ownership. Obtained from Holdings (2021).
Family dummy (voting rights)	Dummy variable that takes the value of 1 if one or more private shareholders holds 10% or more of the voting rights, and 0 otherwise. Obtained from Holdings (2021).
Firm characteristics	
ROA	The net income divided by total assets. The data of net income is Obtained from Compustat (2021).
Tobin's Q	Market value of assets divided by total assets.
Market value of assets	The sum of total assets and total market value less common equity and deferred taxes. Obtained from Compustat (2021).
Total assets	The sum of current assets, net property, plant, and equipment and other noncurrent assets. Obtained from Compustat (2021).
logTobinQ	The natural logarithm of Tobin's Q.
Additional owner	Dummy that takes the value of 1 if there exist multiple private owners holding 10% or more of the cash flow rights, and 0 otherwise.

Wedge	The spread between the largest shareholder's voting right and cash flow rights.
BM ratio (Book-to-market)	The ratio of book value to total market value.
Book value	The sum of common equity and deferred taxes. Obtained from Compustat (2021).
Total market value (size)	The market value of common equity. The data of market capitalization is obtained from SHoFDB (2021).
Log size	The natural logarithm of the total market value.
Age	The current year minus the year founded. Obtained from CapitalIQ (2021).
Log age	The natural logarithm of age.
Volume	Yearly average SEK volume adjusted for corporate actions. Obtained from SHoFDB (2021).
Log volume	The natural logarithm of volume.
Price	The firm's historical yearly share price (adjusted to dividends and buybacks). Obtained from SHoFDB (2021).
Dividend yield	The ratio of the unadjusted dividend per share to unadjusted share price. Both are obtained from SHoFDB (2021).
Leverage	The ratio of long-term debt to total assets. The data of long-term debt is obtained from Compustat (2021).
Asset turnover	The ratio of revenue to total assets.
Asset growth	Total asset in current time period divided by the total asset in the previous year, minus 1.
Sales growth	Revenue in the current time period divided by the revenue in the previous year, minus 1.
Return 2-3	The natural logarithm of the annual cumulative returns over month t - 2 and t - 3.
Return 4-6	The natural logarithm of the annual cumulative returns over month t - 4 and t - 6.
Return 7-12	The natural logarithm of the annual cumulative returns over month t - 7 and t - 12.
Industry dummy	Nine different industry dummies that are categorized as the industry classification benchmark (ICB) 11 industry classification. The ICB dummies are organized via Nasdaq (2021) ICB definition, where utilities

	are categorized into industrial due to low sample (2) and financials are omitted.

Table X.1 Definitions and sources of variables.

6.2 Robustness check #1

This appendix section presents similar regressions as in the main study, but with the modification of family ownership being defined as family owners if their capital stake is higher than 20%.

	(1)	(2)	(3)	(4)
Family dummy	0.0144 (0.0124)	0.0090 (0.0139)	0.0085 (0.0126)	0.0055 (0.0136)
Additional owner			0.0268* (0.0146)	0.0174 (0.0116)
Wedge	-0.1548*** (0.0432)	-0.1354*** (0.0423)	-0.1558*** (0.0431)	-0.1378*** (0.0420)
BM ratio	-0.0702*** (0.0140)	-0.0609*** (0.0125)	-0.0696*** (0.0141)	-0.0609*** (0.0125)
Log size	-0.0009 (0.0093)	-0.0020 (0.0098)	-0.0005 (0.0093)	-0.0021 (0.0097)
Price	0.0003** (0.0001)	-0.0006 (0.0008)	0.0003*** (0.0001)	-0.0006 (0.0008)
Log volume	0.0002 (0.0057)	0.0021 (0.0081)	0.0009 (0.0057)	0.0030 (0.0077)
Dividend yield	-0.5931** (0.2427)	-0.8211** (0.2616)	-0.5938** (0.2433)	-0.8147*** (0.2588)
Leverage	-0.1545*** (0.0416)	-0.1489*** (0.0363)	-0.1639*** (0.0423)	-0.1549*** (0.0390)
Asset turnover	-0.0352*** (0.0101)	-0.0336*** (0.0079)	-0.0366*** (0.0101)	-0.0348*** (0.0077)
Asset growth	0.0737** (0.0371)	0.0408 (0.0340)	0.0729** (0.0371)	0.0407 (0.0345)
Sales growth	0.0626* (0.0372)	0.0536** (0.0224)	0.0630* (0.0372)	0.0540** (0.0229)
Return 2-3	0.1426*** (0.0115)	0.1302*** (0.0186)	0.1425*** (0.0116)	0.1300*** (0.0186)
Return 4-6	0.2441*** (0.0205)	0.2247*** (0.0338)	0.2439*** (0.0205)	0.2250*** (0.0342)
Return 7-12	0.4760*** (0.0263)	0.4491*** (0.0684)	0.4755*** (0.0263)	0.4474*** (0.0682)
Intercept	-0.0172 (0.1332)	-0.0226 (0.0606)	-0.0351 (0.1331)	0.0347 (0.0268)
Industry dummy	Yes	Yes	Yes	Yes
Year dummy	Yes	No	Yes	No
Method	Pooled	FMB	Pooled	FMB
N	2285	2285	2285	2285
R^2	0.6575	0.6628	0.6579	0.6625

The significance level is indicated at the 10%, 5% and 1% level by *, ** and ***.

Table X.2 - Panel regression with family dummy as main variable.

	(1)	(2)	(3)	(4)
Continuous ownership	0.1091 (0.0779)	0.0707 (0.0681)	0.1331 (0.0835)	0.0817 (0.0728)
Additional owner			0.0208 (0.0153)	0.0075 (0.0096)
Wedge	-0.1132** (0.0518)	-0.0936* (0.0443)	-0.1127** (0.0508)	-0.0893* (0.0452)
BM ratio	-0.0721*** (0.0191)	-0.0762*** (0.0233)	-0.0711*** (0.0187)	-0.0769*** (0.0238)
Log size	-0.0133 (0.0161)	-0.0099 (0.0117)	-0.0132 (0.0160)	-0.0093 (0.0111)
Price	0.0001 (0.0001)	-0.0008 (0.0008)	0.0001 (0.0001)	-0.0008 (0.0008)
Log volume	0.0116 (0.0107)	0.0078 (0.0077)	0.0129 (0.0108)	0.0076 (0.0079)
Dividend yield	-0.6767* (0.3923)	-0.8339 (0.4806)	-0.6787* (0.3940)	-0.8259 (0.4785)
Leverage	-0.0449 (0.0556)	-0.0250 (0.0552)	-0.0509 (0.0563)	-0.0219 (0.0554)
Asset turnover	-0.0309** (0.0126)	-0.0213 (0.0144)	-0.0318** (0.0124)	-0.0220 (0.0147)
Asset growth	0.0410 (0.0541)	0.0142 (0.0363)	0.0413 (0.0540)	0.0118 (0.0408)
Sales growth	0.0659 (0.0501)	0.0673** (0.0297)	0.0652 (0.0500)	0.0638* (0.0290)
Return 2-3	0.1381** (0.0192)	0.1099*** (0.0199)	0.1379*** (0.0193)	0.1104*** (0.0194)
Return 4-6	0.2631*** (0.0237)	0.2441*** (0.0460)	0.2624*** (0.0237)	0.2410*** (0.0458)
Return 7-12	0.5164*** (0.0275)	0.4973*** (0.0744)	0.5162*** (0.0276)	0.4970*** (0.0745)
Intercept	-0.7252*** (0.2341)	0.0872 (0.1113)	-0.7754*** (0.2292)	0.1684 (0.0955)
Industry dummy	Yes	Yes	Yes	Yes
Year dummy	Yes	No	Yes	No
Method	Pooled	FMB	Pooled	FMB
N	875	875	875	875
R^2	0.7231	0.7255	0.7235	0.7228

The significance level is indicated at the 10%, 5% and 1% level by *, ** and ***.

Table X.3 - Panel regression with continuous ownership as main variable.

Fama-French 4 factors AQR						
Equal-Weighted				Value-weighted		
	Family	Non-family	Family - Non-family	Family	Non-family	Family - Non-family
Alpha	0.0078***	0.0073***	0.0004	0.0085***	0.0071***	0.0015
	(0.0029)	(0.0025)	(0.0021)	(0.0030)	(0.0025)	(0.0029)
RMRF	0.5887***	0.5967***	-0.0069	0.5232***	0.5552***	-0.0320
	(0.0548)	(0.0441)	(0.0386)	(0.0611)	(0.0385)	(0.0500)
SMB	0.4971***	0.4258***	0.0712	-0.1616**	-0.1648**	0.0326
	(0.0856)	(0.0881)	(0.0636)	(0.0797)	(0.0833)	(0.0900)
HML	0.1337	0.0744	0.0593	0.0147	0.1500	-0.1353
	(0.1280)	(0.1198)	(0.0679)	(0.1432)	(0.1028)	(0.1182)
WML	-0.0211	-0.1528*	0.1316*	-0.1916**	-0.1072	-0.0854
	(0.0982)	(0.0814)	(0.0748)	(0.0946)	(0.0792)	(0.1153)
N	131	131	131	131	131	131
R^2	0.6345	0.6938	0.0378	0.5505	0.6486	0.0241
The significance level is indicated at the 10%, 5% and 1% level by *, ** and ***.						

Table X.4 - Fama-French four factor model.

	(1)	(2)
Family dummy	0.0163	0.0120**
	(0.0117)	(0.0040)
Wedge	0.0756	0.0807***
	(0.0475)	(0.0152)
Log size	0.0284***	0.0267***
	(0.0042)	(0.0020)
Log age	0.0142**	0.0111***
	(0.0066)	(0.0023)
Leverage	-0.0129	-0.0232
	(0.0428)	(0.0382)
Sales growth	0.0658***	0.0644***
	(0.0142)	(0.0096)
Asset turnover	0.0745***	0.0657***
	(0.0121)	(0.0103)
BM ratio	0.0178	0.0170***
	(0.0117)	(0.0052)
Intercept	-0.5431***	-0.1426
	(0.1134)	(0.0833)
Industry dummy	Yes	Yes
Year dummy	Yes	No
Method	Pooled	FMB
N	2304	2304
R^2	0.2796	0.2539
The significance level is indicated at the 10%, 5% and 1% level by *, ** and ***.		

Table X.5 - ROA regression.

	(1)	(2)	(3)	(4)
Family dummy	-0.0033	0.0022	-0.0060	-0.0015
	(0.0510)	(0.0099)	(0.0518)	(0.0095)
ROA			0.1684	0.1842
			(0.1737)	(0.1314)
Wedge	-0.2837	-0.2499**	-0.2964*	-0.2594**
	(0.1817)	(0.0874)	(0.1766)	(0.0947)
Log size	0.0685***	0.0596***	0.0637***	0.0545***
	(0.0159)	(0.0079)	(0.0173)	(0.0076)
Log age	-0.1018***	-0.0937***	-0.1042***	-0.0971***
	(0.0263)	(0.0133)	(0.0266)	(0.0144)
Leverage	-0.5622***	-0.5169***	-0.5600***	-0.5205***
	(0.1734)	(0.0827)	(0.1720)	(0.0838)
Sales growth	0.0230	0.0180	0.0119	0.0080
	(0.0390)	(0.0219)	(0.0173)	(0.0234)
Asset turnover	-0.0494	-0.0488***	-0.0619	-0.0638***
	(0.0368)	(0.0126)	(0.0396)	(0.0182)
BM ratio	-0.6383***	-0.5957***	-0.6413***	-0.5982***
	(0.0666)	(0.0683)	(0.0668)	(0.0693)
Intercept	0.1018	0.1029	0.1933***	0.1511
	(0.4102)	(0.0923)	(0.4417)	(0.0912)
Industry dummy	Yes	Yes	Yes	Yes
Year dummy	Yes	No	Yes	No
Method	Pooled	FMB	Pooled	FMB
N	2304	2304	2304	2304
R^2	0.5827	0.5629	0.5839	0.5670

The significance level is indicated at the 10%, 5% and 1% level by *, ** and ***.

Table X.6 - Tobin's Q regression.

6.3 Robustness check #2

This appendix section presents similar regressions as in the main study, but with the modification of excluding the year 2020 from the time-period, we also define family owners as in the main study (10%). The reason for this exclusion is to see whether the pandemic year has influenced a diversion from the “normal” stock-market behaviour.

	(1)	(2)	(3)	(4)
Family dummy	0.0300**	0.0196*	0.0232	0.0158
	(0.0139)	(0.0103)	(0.0144)	(0.0092)
Additional owner			0.0254	0.0145
			(0.0161)	(0.0129)
Wedge	-0.1527***	-0.1273**	-0.1511***	-0.1282**
	(0.0458)	(0.0491)	(0.0456)	(0.0485)
BM ratio	-0.0703***	-0.0629***	-0.0697***	-0.0634***
	(0.0149)	(0.0134)	(0.0148)	(0.0135)
Log size	0.0022	-0.0029	0.0027	-0.0030
	(0.0087)	(0.0107)	(0.0087)	(0.0107)
Price	0.0002**	-0.0007	0.0002**	-0.0007
	(0.0001)	(0.0009)	(0.0001)	(0.0009)
Log volume	-0.0009	0.0029	-0.0003	0.0036
	(0.0056)	(0.0087)	(0.0057)	(0.0084)
Dividend yield	-0.4917**	-0.7474**	-0.4947**	-0.7375**
	(0.2277)	(0.2336)	(0.2281)	(0.2313)
Leverage	-0.1497***	-0.1454***	-0.1566***	-0.1494***
	(0.0403)	(0.0414)	(0.0409)	(0.0437)
Asset turnover	-0.0334***	-0.0290***	-0.0344***	-0.0297***
	(0.0102)	(0.0086)	(0.0102)	(0.0084)
Asset growth	0.0254	0.0240	0.0249	0.0237
	(0.0414)	(0.0336)	(0.0413)	(0.0341)
Sales growth	0.0970**	0.0616**	0.0971**	0.0627**
	(0.0410)	(0.0231)	(0.0409)	(0.0238)
Return 2-3	0.1433***	0.1292***	0.1433***	0.1291***
	(0.0114)	(0.0204)	(0.0114)	(0.0204)
Return 4-6	0.2348***	0.2137***	0.2345***	0.2141***
	(0.0221)	(0.0356)	(0.0221)	(0.0360)
Return 7-12	0.4713***	0.4410***	0.4705***	0.4393***
	(0.0283)	(0.0744)	(0.0283)	(0.0740)
Intercept	-0.0636	0.0302	-0.0812	0.0312
	(0.1259)	(0.0283)	(0.1251)	(0.0292)
Industry dummy	Yes	Yes	Yes	Yes
Year dummy	Yes	No	Yes	No
Method	Pooled	FMB	Pooled	FMB
N	2014	2014	2014	2014
R^2	0.6633	0.6651	0.6637	0.6645

The significance level is indicated at the 10%, 5% and 1% level by *, ** and ***.

Table X.7 - Panel regression with family dummy as main variable.

	(1)	(2)	(3)	(4)
Continuous ownership	0.0298	0.0127	0.0337	0.0172
	(0.0510)	(0.0620)	(0.0507)	(0.0615)
Additional owner			0.0199	0.0001
			(0.0158)	(0.0140)
Wedge	-0.1505***	-0.1037**	-0.1512***	-0.1072**
	(0.0441)	(0.0385)	(0.0433)	(0.0393)
BM ratio	-0.0840***	-0.0768***	-0.0830***	-0.0778***
	(0.0185)	(0.0158)	(0.0183)	(0.0163)
Log size	0.0030	-0.0100	-0.0026	-0.0101
	(0.0111)	(0.0117)	(0.0110)	(0.0118)
Price	0.0001	-0.0008	0.0001	-0.0008
	(0.0001)	(0.0009)	(0.0001)	(0.0009)
Log volume	-0.0003	0.0034	0.0006	0.0038
	(0.0068)	(0.0091)	(0.0069)	(0.0086)
Dividend yield	-0.5713**	-0.7568***	-0.5778**	-0.7358***
	(0.2446)	(0.1913)	(0.2455)	(0.1862)
Leverage	-0.1061**	-0.1207**	-0.1137**	-0.1200**
	(0.0455)	(0.0413)	(0.0462)	(0.0407)
Asset turnover	-0.0311***	-0.0300***	-0.0320***	-0.0296***
	(0.0111)	(0.0091)	(0.0110)	(0.0090)
Asset growth	0.0178	0.0448	0.0170	0.0441
	(0.0370)	(0.0300)	(0.0370)	(0.0305)
Sales growth	0.1028***	0.0787***	0.1028***	0.0803***
	(0.0388)	(0.0224)	(0.0386)	(0.0228)
Return 2-3	0.1555***	0.1260***	0.1556***	0.1255***
	(0.0150)	(0.0242)	(0.0150)	(0.0241)
Return 4-6	0.2669***	0.2432***	0.2663***	0.2441***
	(0.0201)	(0.0434)	(0.0201)	(0.0438)
Return 7-12	0.5251***	0.4809***	0.5442***	0.4796***
	(0.0272)	(0.0695)	(0.0275)	(0.0692)
Intercept	0.1038	0.1481	0.0679	0.1012
	(0.1644)	(0.1113)	(0.1632)	(0.0948)
Industry dummy	Yes	Yes	Yes	Yes
Year dummy	Yes	No	Yes	No
Method	Pooled	FMB	Pooled	FMB
N	1297	1297	1297	1297
R^2	0.7138	0.7166	0.7142	0.7157

The significance level is indicated at the 10%, 5% and 1% level by *, ** and ***.

Table X.8 - Panel regression with continuous ownership as main variable.

Fama-French 4 factors AQR						
Equal-Weighted				Value-weighted		
	Family	Non-family	Family - Non-family	Family	Non-family	Family - Non-family
Alpha	0.0081***	0.0056**	0.0025	0.0084***	0.0046*	0.0038*
	(0.0026)	(0.0028)	(0.0020)	(0.0023)	(0.0027)	(0.0019)
RMRF	0.6081***	0.5414***	0.0667**	0.6019***	0.5256***	0.0763***
	(0.0420)	(0.0428)	(0.0310)	(0.0369)	(0.0413)	(0.0283)
SMB	0.3589***	0.3927***	-0.0338	-0.2517***	-0.1974**	-0.0543
	(0.0718)	(0.1024)	(0.0651)	(0.0777)	(0.0797)	(0.0582)
HML	0.0671	0.0364	0.0307	-0.0682	0.1740	-0.2422***
	(0.1014)	(0.1139)	(0.0735)	(0.0952)	(0.1073)	(0.0718)
WML	-0.0103	-0.1427	0.1324**	-0.0969	-0.0278	-0.0691
	(0.0893)	(0.0948)	(0.0622)	(0.0746)	(0.0764)	(0.0573)
N	119	119	119	119	119	119
R^2	0.6708	0.5609	0.0725	0.6951	0.5984	0.1236
The significance level is indicated at the 10%, 5% and 1% level by *, ** and ***.						

Table X.9 - Fama-French four factor model.

	(1)	(2)
Family dummy	0.0151	0.0130**
	(0.0141)	(0.0050)
Wedge	0.0787	0.0830***
	(0.0519)	(0.0188)
Log size	0.0285***	0.0265***
	(0.0045)	(0.0022)
Log age	0.0152**	0.0118***
	(0.0069)	(0.0025)
Leverage	-0.0220	-0.0297
	(0.0466)	(0.0405)
Sales growth	0.0680***	0.0650***
	(0.0164)	(0.0106)
Asset turnover	0.0727***	0.0626***
	(0.0124)	(0.0105)
BM ratio	0.0160	0.0148**
	(0.0127)	(0.0052)
Intercept	-0.6991***	-0.2492**
	(0.1141)	(0.0930)
Industry dummy	Yes	Yes
Year dummy	Yes	No
Method	Pooled	FMB
N	2029	2029
R^2	0.2703	0.2441
The significance level is indicated at the 10%, 5% and 1% level by *, ** and ***.		

Table X.10 - ROA regression.

	(1)	(2)	(3)	(4)
Family dummy	-0.0547	-0.0494***	-0.0577	-0.0552***
	(0.0513)	(0.0089)	(0.0514)	(0.0115)
ROA			0.1986	0.2168
			(0.1702)	(0.1483)
Wedge	-0.1839	-0.1602*	-0.1995	-0.1697*
	(0.1855)	(0.0718)	(0.1784)	(0.0802)
Log size	0.0612***	0.0526***	0.0555***	0.0465***
	(0.1021)	(0.0071)	(0.0178)	(0.0070)
Log age	-0.1030***	-0.0929***	-0.1060***	-0.0967***
	(0.0266)	(0.0149)	(0.0269)	(0.0162)
Leverage	-0.5626***	-0.5080***	-0.5582***	-0.5113***
	(0.1740)	(0.0912)	(0.1725)	(0.0920)
Sales growth	0.0415	0.0293	0.0281	0.0175
	(0.0410)	(0.0216)	(0.0407	(0.0233)
Asset turnover	-0.0530	-0.0517***	-0.0674*	-0.0690***
	(0.0370)	(0.0103)	(0.0398)	(0.0168)
BM ratio	-0.6309***	-0.5866***	-0.6340***	-0.5894***
	(0.0645)	(0.0746)	(0.0644)	(0.0757)
Intercept	0.3852	0.2082*	0.5240	0.2853**
	(0.4315)	(0.151)	(0.4539)	(0.1075)
Industry dummy	Yes	Yes	Yes	Yes
Year dummy	Yes	No	Yes	No
Method	Pooled	FMB	Pooled	FMB
N	2029	2029	2029	2029
R^2	0.5833	0.5626	0.5851	0.5678

The significance level is indicated at the 10%, 5% and 1% level by *, ** and ***.

Table X.11 - Tobin's Q regression.

6.4 Robustness check #3

This appendix section presents similar regressions as in the main study, but with the modification of family ownership now being defined as a family owner when holding 10% or more of the voting rights.

	(1)	(2)	(3)	(4)
Family dummy	0.0444***	0.0290**	0.0398**	0.0261**
	(0.0150)	(0.0106)	(0.0157)	(0.0085)
Additional owners			0.0178	0.0123
			(0.0151)	(0.0107)
Wedge	-0.2059***	-0.1666***	-0.2039***	-0.1660***
	(0.0439)	(0.0484)	(0.0439)	(0.0475)
BM ratio	-0.0713***	-0.0612***	-0.0708***	-0.0617***
	(0.0144)	(0.0122)	(0.0144)	(0.0122)
Log size	-0.0032	-0.0035	-0.0027	-0.0036
	(0.0094)	(0.0094)	(0.0094)	(0.0094)
Price	0.0004***	-0.0006	0.0004***	-0.0006
	(0.0001)	(0.0008)	(0.0001)	(0.0008)
Log volume	0.0020	0.0038	0.0024	0.0044
	(0.0056)	(0.0075)	(0.0056)	(0.0072)
Dividend yield	-0.5994**	-0.8381***	-0.6003**	-0.8304***
	(0.2418)	(0.2518)	(0.2425)	(0.2510)
Leverage	-0.1627***	-0.1520***	-0.1683***	-0.1558***
	(0.0407)	(0.0371)	(0.0413)	(0.0399)
Asset turnover	-0.0383***	-0.0350***	-0.0390***	-0.0358***
	(0.0100)	(0.0076)	(0.0100)	(0.0076)
Asset growth	0.0720*	0.0368	0.0715*	0.0369
	(0.0371)	(0.0333)	(0.0371)	(0.0339)
Sales growth	0.0646*	0.0541**	0.0648*	0.0546**
	(0.0370)	(0.0212)	(0.0370)	(0.0219)
Return 2-3	0.1414***	0.1293***	0.1414***	0.1293***
	(0.0116)	(0.0185)	(0.0116)	(0.0186)
Return 4-6	0.2440***	0.2248***	0.2438***	0.2251***
	(0.0204)	(0.0338)	(0.0204)	(0.0342)
Return 7-12	0.4742***	0.4486***	0.4739***	0.4470***
	(0.0263)	(0.0683)	(0.0263)	(0.0680)
Intercept	-0.0196	0.0048	-0.0344	0.0536
	(0.1323)	(0.0670)	(0.1328)	(0.0316)
Industry dummy	Yes	Yes	Yes	Yes
Year dummy	Yes	No	Yes	No
Method	Pooled	FMB	Pooled	FMB
N	2285	2285	2285	2285
R^2	0.6587	0.6626	0.6589	0.6620

The significance level is indicated at the 10%, 5% and 1% level by *, ** and ***.

Table X.12 - Firm characteristics with family dummy.

	(1)	(2)	(3)	(4)
Continuous dummy	0.0083	0.0002	0.0089	0.0029
	(0.0530)	(0.0485)	(0.0530)	(0.0483)
Additional owners			0.0105	-0.0057
			(0.0149)	(0.0101)
Wedge	-0.1832***	-0.1433***	-0.1828***	-0.1456***
	(0.0437)	(0.0449)	(0.0438)	(0.0447)
BM ratio	-0.0802***	-0.0708***	-0.0797***	-0.0714***
	(0.0179)	(0.0162)	(0.0178)	(0.0167)
Log size	-0.0119	-0.0063	-0.0117	-0.0067
	(0.0126)	(0.0099)	(0.0126)	(0.0100)
Price	0.0004*	-0.0008	0.0004*	-0.0008
	(0.0002)	(0.0008)	(0.0002)	(0.0008)
Log volume	0.0029	0.0016	0.0034	0.0018
	(0.0072)	(0.0072)	(0.0073)	(0.0068)
Dividend yield	-0.3867	-0.6773**	-0.3877	-0.6718**
	(0.2522)	(0.2547)	(0.2531)	(0.2530)
Leverage	-0.1080**	-0.1385***	-0.1123**	-0.1355***
	(0.0474)	(0.0383)	(0.0479)	(0.0394)
Asset turnover	-0.0388***	-0.0406***	-0.0393***	-0.0403***
	(0.0102)	(0.0096)	(0.0101)	(0.0096)
Asset growth	0.0474	0.0608**	0.0472	0.0623**
	(0.0330)	(0.0220)	(0.0329)	(0.0226)
Sales growth	0.0857**	0.8086***	0.0858**	0.8001***
	(0.0358)	(0.0191)	(0.0357)	(0.0200)
Return 2-3	0.1497***	0.1240***	0.1498***	0.1240***
	(0.0134)	(0.0199)	(0.0134)	(0.0201)
Return 4-6	0.2863***	0.2667***	0.2861***	0.2683***
	(0.0179)	(0.0415)	(0.0179)	(0.0418)
Return 7-12	0.5080***	0.4764***	0.5077***	0.4750***
	(0.0239)	(0.0611)	(0.0240)	(0.0609)
Intercept	0.2014	0.1531*	0.1872	0.1524*
	(0.1706)	(0.0820)	(0.1719)	(0.0825)
Industry dummy	Yes	Yes	Yes	Yes
Year dummy	Yes	No	Yes	No
Method	Pooled	FMB	Pooled	FMB
N	1611	1611	1611	1611
R^2	0.6929	0.6954	0.6930	0.6945

The significance level is indicated at the 10%, 5% and 1% level by *, ** and ***.

Table X.13 - Panel regression with continuous ownership as main variable.

	(1)	(2)
Family dummy	0.0184	0.0166***
	(0.0144)	(0.0046)
Wedge	0.0652	0.0677***
	(0.0488)	(0.0167)
Log size	0.0281***	0.0265***
	(0.0042)	(0.0020)
Log age	0.0134**	0.0105***
	(0.0066)	(0.0023)
Leverage	-0.0156	-0.0256
	(0.0432)	(0.0383)
Sales growth	0.0660***	0.0642***
	(0.0141)	(0.0096)
Asset turnover	0.0739***	0.0646***
	(0.0120)	(0.0103)
BM ratio	0.0178	0.0168***
	(0.0118)	(0.0052)
Intercept	-0.5293***	-0.1430
	(0.1110)	(0.0835)
Industry dummy	Yes	Yes
Year dummy	Yes	No
Method	Pooled	FMB
N	2304	2304
R^2	0.2797	0.2549

The significance level is indicated at the 10%, 5% and 1% level by *, ** and ***.

Table X.14 - ROA regression.

	(1)	(2)	(3)	(4)
Family dummy	-0.0507	-0.0505***	-0.0539	-0.0564***
	(0.0507)	(0.0120)	(0.0507)	(0.0147)
ROA			0.1763	0.1964
			(0.1723)	(0.1356)
Wedge	-0.2085	-0.1684*	-0.2200	-0.1736*
	(0.1799)	(0.0801)	(0.1758)	(0.0841)
Log size	0.0672***	0.0577***	0.0622***	0.0523***
	(0.0155)	(0.0081)	(0.0166)	(0.0082)
Log age	-0.1008***	-0.0925***	-0.1032***	-0.0960***
	(0.0265)	(0.0136)	(0.0268)	(0.0147)
Leverage	-0.5502***	-0.5052***	-0.5475***	-0.5087***
	(0.1736)	(0.0834)	(0.1719)	(0.0843)
Sales growth	0.0219	0.0176	0.0102	0.0068
	(0.0388)	(0.0213)	(0.0385)	(0.0225)
Asset turnover	-0.0452	-0.0443***	-0.0582	-0.0598***
	(0.0368)	(0.0120)	(0.0397)	(0.0175)
BM ratio	-0.6382***	-0.5958***	-0.6414***	-0.5984***
	(0.0662)	(0.0685)	(0.0663)	(0.0694)
Intercept	0.1628	0.1143	0.2561	0.2537**
	(0.3730)	(0.0932)	(0.3968)	(0.1025)
Industry dummy	Yes	Yes	Yes	Yes
Year dummy	Yes	No	Yes	No
Method	Pooled	FMB	Pooled	FMB
N	2304	2304	2304	2304
R^2	0.5836	0.5644	0.5849	0.5690

The significance level is indicated at the 10%, 5% and 1% level by *, ** and ***.

Table X.15 - Tobin's Q regression.

6.5 Figures & Tables

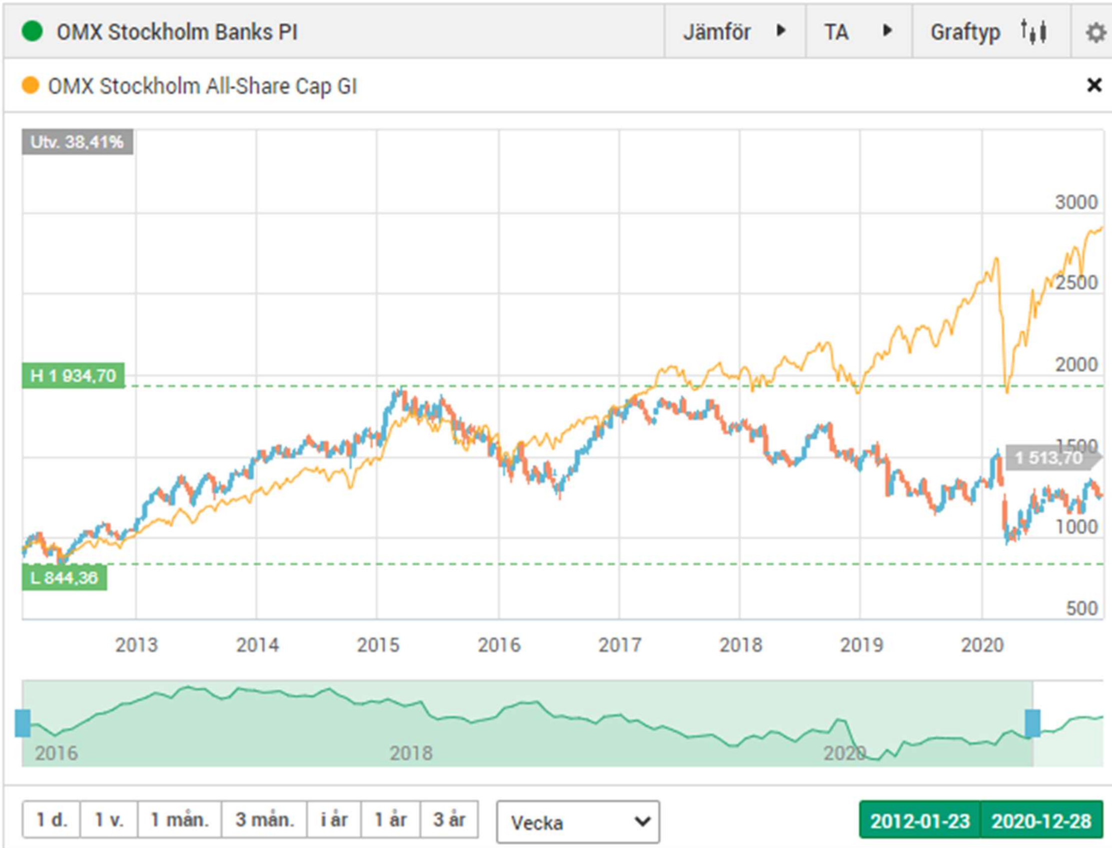

Figure 1 - OMX Stockholm banks PI compared to OMX Stockholm All-Share Cap GI. Source: Avanza (2021a)

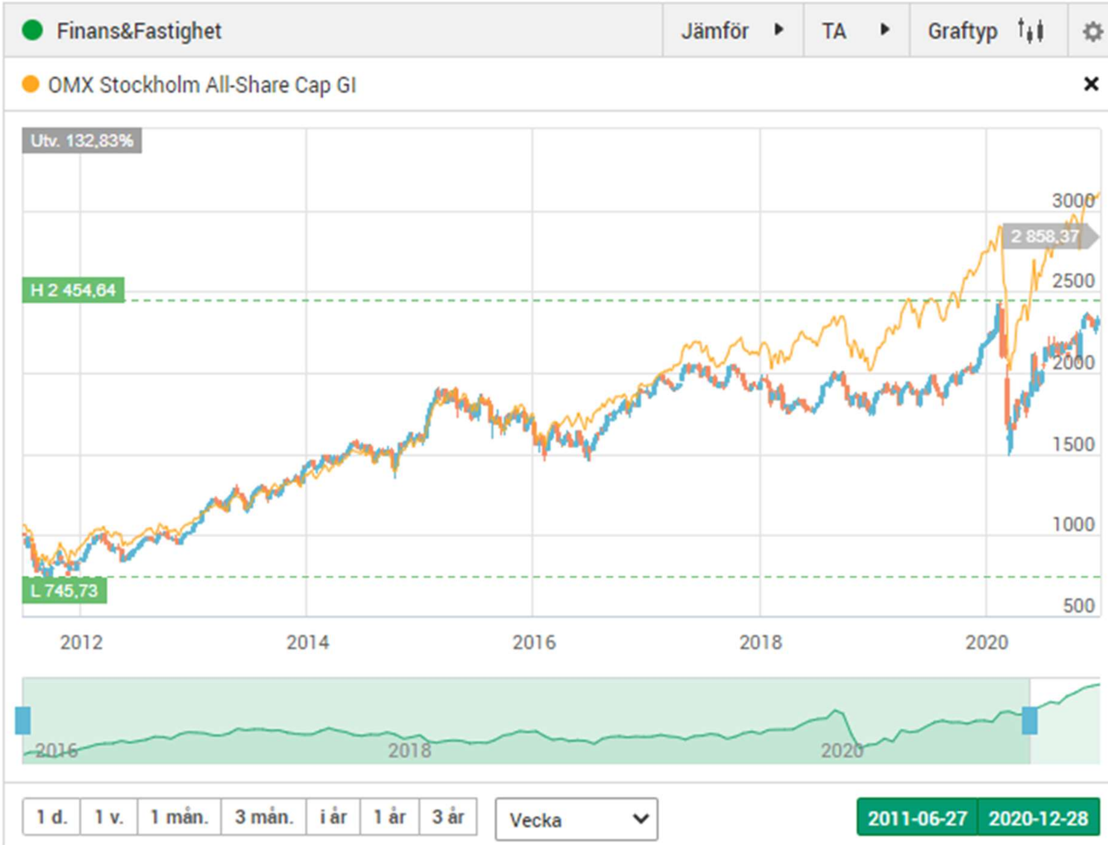

Figure 2 - SX30PI compared to OMX Stockholm All-Share Cap GI.
Source: Avanza (2021b)

Table X.16 - Pairwise correlation

	Family dummy	ROA	Tobin's Q	Leverage	BM ratio	Log size	Age	Dividend yield	Asset turnover	Asset growth	Sales growth	Wedge
Family dummy	1											
ROA	0.0713*	1										
Tobin's Q	-0.1063*	-0.0021	1									
Leverage	0.1046*	0.0508*	-0.1621*	1								
BM ratio	0.0735*	-0.0724*	-0.4674*	0.1327*	1							
Log size	-0.0413	0.3136*	0.1947*	0.2754*	-0.3215*	1						
Age	0.0415	0.1383*	-0.1710*	0.0732*	0.0986*	0.3141*	1					
Dividend yield	0.0275	0.2243*	-0.1444*	-0.0541*	0.0447	0.0486	0.0960*	1				
Asset turnover	0.0003	0.1458*	0.0894*	0.0644*	-0.1290*	0.0857*	-0.0764*	-0.1136*	1			
Asset growth	0.0808*	0.2462*	-0.0291	-0.3359*	-0.1555*	-0.1938*	0.0172	0.2073*	-0.1032*	1		
Sales growth	-0.0277	0.1279*	0.0830*	-0.0005	-0.1100*	0.0226	-0.0724*	-0.0816*	0.4887*	0.0013	1	
Wedge	0.2449*	0.1559*	-0.0296	-0.0338	-0.0422	0.1713*	0.1471*	0.1415*	-0.0372	0.0819*	-0.0319	1

The significance level is indicated at the 1% level by *.