Corporate Investment in Swedish Family Firms: Do Investment Horizon and Diversification Level of Family Owners Matter?

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Abstract

In the literature, large family owners are widely assumed to have *undiversified* portfolios and *long-term horizon* in the firms in which they invest. Consequently, these families are expected to take less risk in corporate financial decisions. Using a novel Swedish ownership dataset, we question these two assumptions and investigate whether family owners' investment horizon and family-portfolio diversification level are significantly related to corporate investment. Our data suggest that there is heterogeneity in both families' investment horizon and family-portfolio diversification level. We first show that family firms invest less than nonfamily firms. This is consistent with the literature's conclusion that family firms are risk averse. Yet, having exploited the variations in our data, our main finding is that *long-investment-horizon* family owners invest more, and also families with *diversified* portfolios do more investment. Moreover, we find that corporate investment in family firms with long-horizon owners are valued positively by the market whereas family ownership is negatively associated with firm value. The results are robust to a number of additional tests we run, including alternative measurements of investment, family ownership, horizon, and diversification. Endogeneity concerns are also discussed and addressed.

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Key words: family firm, family ownership, investment horizon, portfolio diversification, family portfolio, corporate investment

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1. Introduction

Family firms are common organizational structures. La Porta, Lopez-de-Silanes, and Shleifer (1999) and Faccio and Lang (2002) report that family firms are in fact more common than widely-held firms in Western Europe. They are observed more in continental Europe than in the U.S., UK and Japan (Sraer and Thesmar, 2007). Empirical work on family firms is still a growing literature, and knowledge on the topic in general, such as how these firms behave and perform, is limited.[1] [2]

Investigating corporate investment in family firms is particularly important since families, large "undiversified" and accordingly "risk-averse" owners, might expropriate wealth from diversified minority shareholders by reducing firm risk (Anderson and Reeb, 2003b). More specifically, poorly diversified risk-averse family owners are more likely to prefer lower firm risk than well-diversified shareholders who can diversify away firm risk.[3] [4] In addition, family owners who are argued to have "long-term" investment horizon also tend to reduce firm risk due to concerns related to continuity of their family business. Therefore, a comprehensive analysis of corporate investment in family firms to see if they indeed reduce firm risk via a lower level of corporate investment is essential in order to assess the consequences, in terms of minority-wealth expropriation, of family ownership. This matter becomes even more important in a setting like

[1] Important studies on family firms include, from the U.S., Anderson and Reeb (2003a), Anderson, Duru, and Reeb (2012), Anderson and Reeb (2003b), Anderson, Duru, and Reeb (2009), Anderson, Mansi, and Reeb (2003), Pérez-Gonzalez (2006), Villalonga and Amit (2006), Palia, Ravid, and Wang (2008); from Sweden, Cronqvist, and Nilsson (2003), Bjuggren, Dzansi, and Palmberg (2007), Naldi, Nordqvist, Sjöberg, and Wiklund (2007), and Heaney and Holmén (2008); from France, Sraer and Thesmar (2007), and Bach (2010); from Denmark, Bennedsen, Nielsen, Pérez-Gonzalez, and Wolfenzon (2007); from Switzerland, Isakov and Weisskopf (2012); from Germany, Andres (2008); from Japan, Nguyen (2011); and from Italy, Amore, Minichilli, and Corbetta (2011). Finally, Maury (2006) is a cross-country example.

[2] In the literature, apart from family-*performance* papers, family firms are mainly analyzed in relation to the following dimensions: corporate financial policies with a focus on capital structure (Amore et al., 2011; Anderson and Reeb, 2003b; Gonzalez, Guzman, Pombo, and Trujillo, 2013), corporate diversification (Anderson and Reeb, 2003b), corporate opacity (Anderson et al., 2009; Bianco, Bontempi, Golinelli, and Parigi, 2012), management compensation (Palia et al., 2008) and investment (Bianco et al., 2012; Anderson et al., 2012).

[3] The underlying idea here is that "the expected utility of any risk-averse investor decreases with increased variance of her wealth. If a controlling shareholder is risk-averse and poorly diversified, an increase in firm-specific risk will decrease her expected utility" (pg. 3602, Faccio, Marchica, and Mura, 2011). Similarly, undiversified large shareholders are expected to support conservative investments *assuming* that the utility of these shareholders is lower than that of diversified shareholders (Paligorova, 2010).

[4] According to Shleifer and Vishny (1986), large undiversified shareholders' risk-reduction strategy is the major cost to minority shareholders among other costs related to, for example, special dividends and excessive compensation packages.

Sweden, where there are gaps between vote and cash flow rights, and dual-class share mechanisms are quite prevalent.[5]

However, previous studies investigating the effects of family ownership on different channels through which risk taking is reflected miss two important dimensions, mainly due to data limitations: the family's *investment horizon* and the family portfolio's *diversification* level. Instead, those studies take the following for granted: 1) families have long-term investment horizon in the firms in which they invest and 2) families have undiversified risk due to concentrated ownership in the firm. Below, we discuss the centrality of two these themes to this paper.

First, the family's investment horizon is essential in exploring corporate investment in family firms. According to the literature (Anderson et al., 2012; Naldi et al., 2007; Hiebl, 2013; Anderson and Reeb, 2003b), family owners having a long-term horizon preference are more likely to avoid corporate risk[6] for the sake of the continuity of the family business. The importance of horizon preference is also highlighted in Bach (2010), who refers to firms with family successions as *dynastic* firms since these firms have strong motives for *continuity* of family business or control, which is expected to result in less corporate risk taking. To them, increasing firm risk means (a risk of) losing control.[7] Overall, the literature mainly assumes that families have *long-term* investment horizon and continuing commitments to their businesses, which accordingly make them avoid risk, for example, by choosing less risky projects. We explore if the investment horizon is indeed long-term or if there is any heterogeneity in the horizon choices across family firms – we adopt the identification assumption that investment

[5] The wedge between vote and cash flow rights is on average 10%, and on average 55.3% of listed firms in Sweden employ dual-class shares (Panel A in Table 2). Panel B in Table 2 further shows that the wedge, as well as the use of dual-class shares is higher in family firms.

[6] Anderson et al. (2012) also counter-argues that a family's long-term investment horizon might, on the other hand, provide strong incentives to commit considerable financial resources to corporate projects. This is their *extended-investment-horizon* hypothesis, in contrast to their *risk-aversion* hypothesis. However, their empirical finding supports the risk-aversion hypothesis since they find that family firms do less corporate investment.

[7] Very broadly speaking, since dynastic firms tend to invest in the firm through multiple generations, they should not go to bankruptcy.

horizon of an investor is constant over time[8]. We then exploit this variety to test its implications on corporate investment.

Second, the diversification dimension is also important in investigating corporate investment in family firms. Studies have up to now assumed that family owners hold *undiversified* portfolios and therefore have a desire to reduce firm risk (Anderson et al., 2012; Anderson and Reeb, 2003b). However, firms with diversified large shareholders have incentives to favor more risky projects than those with undiversified large shareholders (Jensen and Meckling, 1976; Shleifer and Vishny, 1997). Faccio et al. (2011), studying only *large* shareholders, for the first time interrogates the validity of the common assumption that large shareholders are undiversified and, hence, take less risk. Their data show that typical large shareholders hold poorly diversified portfolios while some are highly diversified by investing in many firms. Analyzing implications of this heterogeneity on corporate risk taking, Faccio et al. (2011) find that firms controlled by diversified large shareholders engage in riskier projects compared to those controlled by undiversified large shareholders. In this paper, we aim to explore whether there is heterogeneity in diversification level of *family* portfolios, and if so, whether it matters for corporate investment.

Before testing our hypotheses, we first explore the corporate investment policies of family firms in comparison to those of nonfamily firms – this is our base investigation. The paper has two main hypotheses: 1) We investigate if the investment horizon of family owners matters for a firm's investment policies, and 2) we analyze if family-portfolio diversification is significantly related to the firm's investment policies. Additionally, we also investigate how the stock market values corporate investment decisions in family firms – particularly in those with owners who have long-term horizon and diversified portfolios.

We use an unbalanced panel dataset composed of 208 firms listed on the NASDAQ-OMX stock exchange in Stockholm and domiciled in Sweden. The dataset covers the period from 1999

[8] In the literature, investment horizon is seen as a characteristic of an investor (Gaspar, et al. 2005) and is generally considered to be exogenous and constant over time (Cella, 2014; Derrien, et al. 2014). Derrien, et al. (2014) show that investor turnover persists over time, leading them to make the assumption that investors who have long-term investment horizon in the past maintain to be also a long-term investor in the future. Accordingly, in our paper we assume that horizon is not changing over time. For example, Investor A started investing in the firm on March 31, 2004 and sold out all her/his shares in the firm on April 2, 2010. Accordingly, her/his horizon is 6.008 years. In other words, for the years that Investor A is the largest shareholder in the company, the horizon variable will take value of 6.008.

through 2012. Our novel Swedish ownership data come from the database provided by SIS Ägarservice AB (SIS Ownership Service AB). Sweden offers uniquely detailed and accurate ownership data (more elaboration on this below). Exploiting this detailed ownership data, we find heterogeneity in families' investment horizon and in their portfolios' diversification level. These findings challenge the two assumptions used in the family-firm literature: families have long-term investment horizon in the firms in which they invest, and families hold undiversified portfolios.

Our empirical results, overall, demonstrate that these heterogeneities affect corporate investment. We first show that family firms invest less than nonfamily firms. Then, our main findings related to the *horizon* analysis are as follows. First, families with longer investment horizon have more corporate investment than families with shorter investment horizon. Second, decomposing total investment into capital expenditures (capex) and R&D, we find that capex is higher in family firms, indicating that families devote more funds to less risky capex than relatively more risky R&D expenses.[9] However, families with long-term investment horizon are found to invest less in capex (relative to R&D).

Our main findings regarding the *diversification* analysis are as follows. First, we show a positive relation between diversification level of (any type of) the large shareholder and total investment. We further find that family firms with diversified owners invest more by exploiting the benefit of portfolio diversification. Second, however, diversified family owners invest more in less risky capex (rather than relatively more risky R&D).

To sum up, family firms seem to devote fewer funds to corporate investment. This is consistent with the literature concluding that family firms are risk averse. However, the main findings from the two themes indicate that *long-investment-horizon* family owners invest more (and less in capex compared to R&D), and also families with *diversified* portfolios do more corporate investment. However, diversified family owners choose less risky capex relative to more risky R&D.

[9] While there is literature (Wahal and McConnell, 2000) arguing that both capex and R&D are considered to be long-term corporate expenditures, Anderson et al. (2012) suggest that R&D expenses are associated with higher idiosyncratic risk compared to capex.

Moreover, we investigate how corporate investment in family firms is valued by outside shareholders in relation to the horizon and diversification issues. We first give evidence to the argument that family firms are associated with agency costs because they are found to have lower firm valuation than non-family firms. However, we further present that family firms which invest more have a valuation premium suggesting negative agency costs. Moreover, we show that agency costs are even more negative for those family firms which invest more *and* have long-horizon owners.

Overall, our results are robust to a number of additional and robustness tests we conduct, including alternative measurements of investment, family ownership, horizon, and diversification. Endogeneity concerns are also discussed and addressed extensively.

The paper has two important contributions. To the best of our knowledge, this paper is the first to address two important questions: 1) Does a family's investment horizon matter for a firm's investment activities? 2) Does family-portfolio diversification level have any implications for corporate investment policies?

Sweden offers a unique environment for us to investigate family firms for several reasons. First, family firms are quite prevalent in Sweden; 42.7% of our sample consists of family firms. Similarly, in Cronqvist and Nilsson's (2003) study, 58.8% of listed Swedish firms (of 1,317 firm-year observations) are family firms (covering 1991–1997). Family firms also constitute 60% of 646 firm-year observations in the Bjuggren et al. (2007) study using Swedish data (covering 1999-2005).

Second, Sweden has uniquely *accurate* and *detailed* ownership data. The Swedish Securities Register Center, Värdepapperscentralen, keeps a register of all shareholders of the firms listed on the Stockholm Stock Exchange since the 1970s (Cronqvist and Nilsson, 2003), and Swedish law allows "public" access to this shareholders' register. The ownership database provided by SIS Ägarservice AB uses this register, and covers the years from 1999 to today. The data is also very detailed. We can neatly pinpoint family ownership. Thanks to the database (more details on the database are provided below in the Data part), we can detect if the largest shareholder (family or not) has a long-term investment horizon in the firm that she/he invests in. Moreover, we can measure the diversification level of this largest shareholder's portfolio. In addition to these two

features, another important advantage of the data is that SIS Ägarservice AB aggregates closely related owners, like family members, into a single group (sfär), basically an ownership coalition, which enables us to construct our family firm variable in a sound way, unlike the rest of the studies in the literature. The database also takes the ultimate shareholdings into account.

Third, we observe variation in ownership structures across listed Swedish firms (Giannetti and Simonov, 2006). On the one hand, ownership is often concentrated in either a single or a few major shareholders (the Swedish Corporate Governance Code). On the other hand, investor protection is strong in Sweden (La Porta, Lopez-de-Silanes, Shleifer, and Vishny, 1998), which encourages dispersed ownership. Therefore, it is interesting to investigate this variation in ownership structures and to explore if it might have any implications on firms' investment policies.

Lastly, Burkart, Panunzi, and Schleifer (2003) conclude that separation of ownership and management is an indicator of good corporate governance. Accordingly, the presence of concentrated ownership and family firms would reflect financial underdevelopment. The fact that in Sweden, a country with a relatively well functioning capital market, family firms are common is an additional reason to investigate family firms in Sweden.

The paper proceeds as follows. Section 2 presents the data and variable measurements. Section 3 exhibits descriptive and univariate analyses. In Section 4, we discuss the methodology and empirical results. Finally, in Section 5, we present concluding remarks.

2. Data and Variable Construction

2.1 Data

The sample includes 208 firms[10] listed on the NASDAQ-OMX stock exchange in Stockholm and domiciled in Sweden.[11] Our unbalanced panel dataset covers the period from 1999 through 2012. Due to strong regulation in their industry, 24 financial firms are removed from the sample as is common in the field (e.g., Anderson and Reeb, 2003a; Sraer and Thesmar, 2007; Bach, 2010; Isakov and Weisskopf, 2012).

[10] Accounting data of four firms were not available on Datastream, so they were removed from the sample.

[11] 14 foreign firms were removed from the sample.

All the data used are collected as fiscal year-end values. Three data sources are used for the study: Datastream, company annual reports and SIS Ägarservice AB ownership data. Accounting data, as well as firm characteristics, are collected from Datastream and annual reports. Data regarding family *ownership*, *diversification* and *horizon* are collected manually from the ownership database provided by SIS Ägarservice AB, a Swedish company specializing in ownership data for listed firms in Sweden. This database provides detailed ownership data by taking the ultimate ownership into account.[12] First, for each listed firm, we are able to obtain information on the identity of the largest shareholder, that is, family owner or not. Second, the detailed holdings of the largest shareholders are also provided. Holdings are presented as percentages of both total *capital* and *votes* – when different. The database accordingly gives information on whether a firm uses a dual-class share structure, and, if so, how much wedge there is between vote and capital holdings.

The database also provides data regarding family *diversification* and *horizon*. First, the level of diversification of the largest owner's portfolio can be detected. Second, the database lists the first date when the largest shareholder owns shares in the company, and when the shareholder sells his/her shares (or still holds shares at the end of our sample period, December 2012[13]). Electronic SIS Ägarservice AB data only go back to 1999. Therefore, for owners who have a stake in the firm in 1999, we assume that the starting date of their investment is 1999.

2.2 Variable Construction

Below, we provide information on how we construct our variables. All variable definitions are compiled in Table 1.

2.2.1 Corporate Investment and Tobin's *Q*

We proxy for corporate investment with three measures applied by Anderson et al. (2012): 1) *Total Inv./Assets*, calculated as the sum of R&D and capital expenditures, all divided by total assets; 2) *Capex/Total Inv.*, constructed as the capital expenditures divided by the sum of R&D

[12] The 200 largest shareholders are provided for each listed firm.

[13] Since our sample ends in 2012, we need to assume that the end of the investment is in December 2012 for those large shareholders who still hold a stake in December 2012.

and capital expenditures; and 3) *R&D/Total Inv.*, measured as R&D expenditures divided by the sum of R&D and capital expenditures.

In addition, to be used in the firm valuation analysis, we construct the *Tobin's Q* variable, proxy for firm valuation, and it is measured as the sum of the market value of equity plus book value of total liabilities, all divided by the book value of assets.

< Insert Table 1 around here >

2.2.2 Family Firms

As also highlighted in Cronqvist and Nilsson (2003), an important benefit of the SIS Ägarservice AB data is that they aggregate closely related owners, like family members, into ownership coalitions. According to the database, this ownership group is constituted by family members and other owners closely associated to the family; such as cofounders, managers who took part in an MBO and so on. We define family firms as those whose largest owner is a family (or a family group). This is our primary variable called *family firms* (*FF*), a dummy variable equal to 1 when the largest fraction of the total votes is held by a family (group) and zero otherwise[14] (Anderson and Reeb, 2003a, 2003b; Anderson et al. 2003; Anderson et al. 2009; Gonzalez et al., 2013).

As robustness checks, we employ several alternative measures of family ownership. First, we use a continuous version of the family firm dummy variable, *FF-cont.*, that shows the fraction of the total votes held by the family. Second, to check whether our findings are consistent when the family is also a controlling shareholder, we include two thresholds for the family's minimum vote, *FF_5%* and *FF_20%*, each of which equals 1 when the largest fraction of the total votes held by the family surpasses the respective threshold and zero otherwise. These are basically proxies for family-owners that are blockholders at 5% (Villalonga and Amit, 2006; Anderson et al., 2012; Nguyen, 2011) and 20% (Cronqvist and Nilsson, 2003; Isakov and Weisskopf, 2012; Sraer and Thesmar, 2007).

[14] For sake of giving more insights about our data, we also present descriptive statistics on founder family firms. We decompose our *FF* variable into two other dummy variables: *Founder FF* and *Nonfounder FF*. *Founder FF* equals 1 when the largest fraction of the total votes is held by the founder (or descendants of the founder) and families and individuals closely affiliated with the founder and zero otherwise. *Nonfounder FF* equals 1 when the largest fraction of the total votes is held by families and individuals unaffiliated with the founder and zero otherwise.

2.2.3 Investment Horizon and Portfolio Diversification

We proxy for investment horizon with two alternative measures. First, *No. of Years* is the total number of years between the first date when the largest shareholder[15] owns shares in the company (no earlier than the beginning of our period, 1999) and the date when the shareholder sells all shares (or still holds shares at the end of our sample period, 2012).[16] The second horizon measure (*No. of Years Dummy*) is based on the first, equal to 1 when the value of *No. of Years* is more than 9.902 (sample mean value) and zero otherwise. This dummy represents long-investment-horizon owners.

Following Faccio et al. (2011), diversification is measured in two ways. *No. of Firms* is the total number of firms[17] in which the largest shareholder[18] invests. The amount of the vote holdings in these firms does not matter; we include all levels of the largest owner's investment. However, this measure is limited because diversification is not totally captured when the largest shareholder invests in *many* firms, but concentrates his/her wealth in *one* single firm. To overcome this limitation, we use another proxy (*1−Herfindahl Index*) calculated as one minus the sum of the squared weights that each investment has in the largest shareholder's portfolio. The Herfindahl index itself can take values between 0 and 1, where 1 reflects the largest owner investing in just one firm (fully concentrated wealth) while 0 shows the opposite state. To ease interpreting the results, we subtract the index from 1 so that a higher value indicates a more diversified portfolio.

[15] In the case of family *groups*, the horizon of the group member who has the biggest share is taken into account, and used as a proxy for the *family* horizon.

[16] We run the entire sample as well as a "cleaner" sub-sample which only includes investors who bought after 1999 and sold before the end of 2012.

[17] Note that SIS Ägarservice AB only compiles Swedish firms when forming the portfolio of the largest shareholder. Therefore, while composing the portfolio, we are not able to include any non-Swedish firms in which the largest shareholder may invest.

[18] In the case of family *groups*, the portfolio of the group member who has the biggest share is taken into account, and used as a proxy for the *family* portfolio.

The limitation of the data obtained from SIS Ägarservice AB is that SIS provides detailed portfolio data on family groups, but does not provide data on the personal portfolios of "individual"[19] family owners. So, this decreases our sample size for the diversification analyses.

2.2.4 Ownership and Control

We define control in two ways: 1) *Excess Vote (%)*, calculated as the difference between the percentage of votes and the percentage of capital held by the largest shareholder (Villalonga and Amit, 2006; Cronqvist and Nilsson, 2003), and 2) *Dual-class Share*, a dummy variable equal to 1 when the firm has a dual-class share structure and zero otherwise (Villalonga and Amit, 2006; Anderson et al., 2012).

2.2.5 Control Variables

We control for factors that potentially affect corporate investment (Anderson et al., 2012). Most of the control variables are obtained from Datastream, but the date of incorporation to calculate firm age is collected manually from annual reports since these data are limited on Datastream. We control for basic firm characteristics. *Leverage* is measured as total debt divided by total assets. *Total assets* is the natural logarithm of total assets. *Dividend/TA* is the ratio of total cash dividends paid to total assets. *Net sales* is the natural logarithm of net sales. *Largest Sh. Vote* is the percentage of the total votes held by the largest shareholder. In addition to firm and ownership characteristics, we control for firm age since firms might involve in less risky activities as they get older. *Firm age* is calculated by subtracting the year of firm's inception from 2012, and then taking the natural logarithm of the result. Finally, we also control for industry and year fixed effects.

[19] Holmén et al. (2007) and Heaney and Holmén (2008) use the source, Affärsvärlden to collect the wealth data for those individuals. They also use the ownership data provided by S. Sundqvist, which is basically the SIS Ownership Data that is used in this paper. They state that in some cases SIS equity ownership data may underestimate the portfolio diversification level of large owners since SIS only reports the equity investments done in listed firms on Stockholm Stock Exchange (SSE) (also see Footnote #17 in this paper). However, they argue that SIS data is still superior to the ones previously used in the literature since it is reasonable to think that the majority of equity investments of large owners in Sweden take place at SSE.

3. Descriptive and Univariate Statistics

Table 2 shows the descriptive and univariate statistics for our sample of firms. Panel A presents the descriptive statistics, and Panel B shows mean difference tests for variables between family and nonfamily firms. Panel C is the correlation matrix of the selected variables.

< Insert Table 2 around here >

As seen in Panel A, total investment to assets has a mean value of 11.90% (9.39% in Anderson et al., 2012). When we break total investment into two components, we find that capex account for 44.20%, and R&D expenses account for 55.80% (67.80% and 32.20% in Anderson et al., 2012) of total investment, respectively. Value (Tobin's *Q*) of firms is, on average, 1.877.

Panel A also shows that family firms constitute 42.7% of our firm-year observations, based on our *FF* definition.[20] When we use a threshold to define family firms, 42.5% of the total observations are identified as family firms who have family blockholders with a minimum 5% of the firm's total votes. A more parsimonious cut-off point is defining family blockholders with a minimum of 20% of total votes: 37.1% of our firm-year observations are classified as family firms at that threshold.[21]

Panel A further shows that the investment horizon of the largest shareholders is, on average, 10 years. The maximum investment horizon for our sample firms is 13 while the minimum length is zero. When we particularly look at family firms, we see that families, on average, invest in a firm for about 11 years, which is slightly above the sample mean.[22] However, unlike the assumption used in the literature that family firms have long-term investment horizon, we find heterogeneity in investment horizon of families: similar to other types of large shareholders, the minimum

[20] Our study compares to Cronqvist and Nilsson (2003) whose focus is on controlling shareholders with at least 25% of the firm's total votes. Their sample is composed of 309 firms listed on the Stockholm Stock Exchange, and covers 1991–1997. Their total firm-year observations are 1,317, and family firms constitute 58.8% of them.

[21] Our unreported statistics show that *Founder FF* make up 23.6% of the total firm-year observations, while *Nonfounder FF* family firms are observed less frequently, 19.1% of the total observations.

[22] This is consistent with Anderson et al. (2012), who used the length of the depreciation periods of capital investments as proxy for families' investment horizon to get some insights into families' investment horizon. Their unreported results suggest that assets family firms buy depreciate later than those nonfamily firms buy. This implies that family firms have longer horizon relative to nonfamily firms.

period that families invest in a firm can very well be just a few months while the maximum length of their investment can be up to 13 years. This suggests that families do not always have long-term investment horizon.

Moreover, it is shown in Panel A that the largest shareholders in Sweden are rather diversified: mean value of (*1−Herfindahl Index*) is 0.504, and the largest shareholders, on average, invest in 32 firms (where unreported ln(*No. of Firms*) is 2.035). These univariate results can be compared to Faccio et al. (2011), who focus on large shareholders' diversification (and its relation to corporate risk taking) in a sample of private and publicly traded European firms. Their mean value for (*1−Herfindahl Index*) is 0.351 while it is 1.420 for ln(*No. of Firms*). This comparison suggests that the largest shareholders in Sweden are more diversified than those in Europe. In addition, similar to Faccio et al. (2011), some shareholders are found to be well diversified (the maximum value of (*1−Herfindahl Index*) is 1, and for *No. of Firms* it is 476), while some are totally undiversified (the minimum value of (*1−Herfindahl Index*) is zero, and for *No. of Firms* it is 1).

When we only look at family firms, we find that families also seem to diversify their wealth well (Panel A). We show that families, on average, invest in 12 firms, which is lower than the sample mean. However, the diversification level of family portfolios is even slightly better than that of any other largest shareholders in the sample ((*1−Herfindahl Index*) has a mean value of 0.598 in family firms). Similar to the horizon variable, what is our concern here is to check if there is any heterogeneity in the degree of portfolio diversification of family owners. Families are found to invest maximum in 113 firms, again which is lower than the sample maximum value, whereas (*1−Herfindahl index*) result shows that families can almost fully diversify their wealth (0.932). On the other hand, families can have totally undiversified portfolios since the minimum *No. of Firms* is 1, and the minimum (*1−Herfindahl Index*) is zero. Overall, contrary to the literature's assumption that family owners are undiversified, our univariate findings suggest heterogeneity in family-portfolio diversification levels.

Panel B presents mean difference tests for key variables between family and nonfamily firms. Family firms show (statistically significant) differences from nonfamily firms for all variables except leverage and firm age. The tests show that family firms' total corporate investment, as

well as R&D expenses, is less than that of nonfamily firms. However, family firms have more capex than nonfamily firms. Family owners' investment horizon is longer than those of nonfamily owners. We note that portfolios of family owners are, on average, formed by fewer firms than those of nonfamily owners. However, according to (*1−Herfindahl index*) values, families seem to diversify their wealth in their portfolios better than nonfamily owners.

Panel C provides the correlation matrix of the selected variables. Family firms are positively correlated with both horizon and diversification variables. Moreover, they are negatively correlated with total investment and positively correlated with capex. We also observe that total investment is negatively correlated with the horizon variable and positively correlated with the diversification variable.

Some unreported descriptive statistics show that family firms are observed most commonly in the following three industries: industrial goods and services (27.85% of the observations), technology (13.92%), construction and materials (11.96%). They are not observed at all in the following three other industries: utilities, chemicals, and food and beverage.

4. Empirical Findings

4.1 Family Horizon and Corporate Investment

In order to analyze if investment horizon of family owners[23] matters for corporate investment, we have two main sets of regressions. We look at the relation between investment horizon and total investment and capex, respectively, in the following two regressions:

$$\begin{aligned} \textit{Total Investment}_{it} = {} & \beta_0 + \beta_1(FF_{it}) + \beta_2(FF_{it} \times Horizon_{it}) \\ & + \beta_3(Horizon_{it}) + \beta_4 X_{Control\ Variables,it} + e_{it} \end{aligned} \quad (1)$$

$$\begin{aligned} \textit{Capital Expenditures}_{it} = {} & \alpha_0 + \alpha_1(FF_{it}) + \alpha_2(FF_{it} \times Horizon_{it}) \\ & + \alpha_3(Horizon_{it}) + \alpha_4 X_{Control\ Variables,it} + u_{it} \end{aligned} \quad (2)$$

[23] Our final sample we use for the horizon analyses contains 784 observations due to having many missing values in the R&D variable in calculating the total investment.

The regressions also include industry and year fixed effects because family firms are concentrated in certain industries in our sample and because of the possibility that some year-specific shocks might influence all the firms similarly. White's heteroskedasticity-robust standard errors are used. Table 1 presents all the variable definitions. Nonfamily firms are the reference case in the regressions without interaction terms. With interaction terms, the reference case is family firms with a *shorter* investment horizon.

< Insert Table 3 around here >

Table 3 presents the main results for equation 1. Column 1 tests equation 1 without an interaction term. After adding the interaction term (between family ownership and horizon) to the model (Column 2), we have a new interpretation of our coefficients. The interaction term implies that the relation between horizon and corporate investment is different depending on the value of the family-firm dummy. In equation 1, β_1 is the coefficient of a categorical variable (*FF*), while β_3 is the coefficient for a continuous variable (*No. of Years*). In such a case, the interaction term is interpreted as follows: the relation between horizon and corporate investment is $\beta_2 \times FF + \beta_3 = \beta_2 + \beta_3$ for a family firm ($FF = 1$) and β_3 otherwise ($FF = 0$). In interpreting the results, our concern is the former relation, so both constitutive terms should be included in the regression (Brambor, Clark, and Golder, 2005). In light of these explanations, we find a positive association between horizon and corporate investment for family firms ($\beta_2 \times FF + \beta_3 > 0$). In other words, for two family firms, a family firm with a *longer* horizon is expected to have a higher level of corporate investment than a family firm with a *shorter* horizon. This finding suggests that family firms with long-term investment horizon do not attempt to mitigate firm risk via reduced corporate investment.

In our analyses, we further decompose total investment into capex and R&D. Anderson et al. (2012) suggest that R&D expenses are associated with higher idiosyncratic risk compared to capex. Therefore, we test if family firms in fact seek to reduce firm risk, and accordingly invest more in capex and less in R&D. The estimation outputs of these analyses are provided in Columns 3 and 4 in Table 3. We only present the results from the capital expenditure analyses

(equation 2[24]), however the way that the dependent variable is constructed (capex is measured as capital expenditures divided by total investment, and total investment is the sum of capital expenditures and R&D expenses) allows us to also calculate the relation for R&D expenses.

Column 3 shows that family firms have more capex than nonfamily firms. The coefficient on the family firm dummy shows that family owners invest more in capex, and less in R&D compared to nonfamily owners, suggesting that family firms seem to reduce firm risk by investing more in capex and less in R&D.

Having interacted the family-ownership variable with the horizon variable, however, we find that family owners with longer investment horizon devote less money to capex than family owners with shorter investment horizon (Column 4). The coefficients show that long-investment-horizon firms invest around 4.7% (as a fraction of firm's total investment) less in capex.[25] We find that longer-investment-horizon family firms invest in R&D 3.8% more than shorter-investment-horizon family firms.[26] These results indicate that family owners with long-term view on the firm in which they invest seem not to reduce firm risk via investment policies.

Lastly, unreported estimation results with the "*No. of Years Dummy*" horizon variable are qualitatively similar to those estimated with our main horizon proxy, "*No. of Years*".[27]

4.2 Family Diversification and Corporate Investment

To analyze the relation between diversification[28] level of family portfolios and corporate investment, we have two main sets of regressions: total investment and capex, respectively.

[24] In constructing capex (that is capex/total investment) we lose observations due to missing values in the R&D variable. Therefore, we also run the regressions with an alternative measure of capex, which is the natural logarithm of capex and get qualitatively similar results.

[25] We find this number by dividing the relation between horizon and capex ($\alpha_2 \times FF + \alpha_3 = -0.022 + 0.001 = -0.021$) by the mean value of our capex ratio, which is capex over total investment ($-0.021/0.442 = -4.7\%$).

[26] Similarly, we can calculate the relation between horizon and R&D by simply dividing 0.021 by the mean value of R&D ratio (0.557).

[27] We also get qualitatively similar results when we run regressions in Columns 1-4 in Table 3, with our "cleaner" horizon variable. This robustness measure is run on a sub-sample which only includes investors who bought their first share after 1999 and sold all of their shares before the end of 2012.

[28] We use a subset of our sample ($N = 420$) due to the data limitation mentioned earlier regarding the diversification variables.

$$Total\ Investment_{it} = \gamma_0 + \gamma_1(FF_{it}) + \gamma_2(FF_{it} \times Diversification_{it}) + \gamma_3(Diversification_{it}) + \gamma_4 X_{Control\ Variables,it} + \nu_{it} \quad (3)$$

$$Capital\ Expenditures_{it} = \rho_0 + \rho_1(FF_{it}) + \rho_2(FF_{it} \times Diversification_{it}) + \rho_3(Diversification_{it}) + \rho_4 X_{Control\ Variables,it} + \varepsilon_{it} \quad (4)$$

The regressions also include industry and year fixed effects. White's heteroskedasticity-robust standard errors are used. Table 1 provides the variable definitions. Nonfamily firms are the reference case in the regressions without interaction terms. With interaction terms, the reference case becomes family firms with *less diversified* portfolios.

< Insert Table 4 around here >

Column 1 and 2 in Table 4 present the estimation results for equation 3. In Column 1, we confirm our prior findings that family firms devote less capital to corporate investment than nonfamily firms do. We also find a positive relation between diversification level of (any type of) large shareholder and total investment, which is in line with Faccio et al. (2011). When looking specifically at family firms, having interacted the family firm dummy variable with the diversification variable, we find that family firms with diversified owners invest more than those with less diversified owners ($\gamma_2 \times FF + \gamma_3 > 0$; Column 2). This result suggests that higher levels of family-portfolio diversification do seem to promote corporate investments.

Columns 3 and 4 in Table 4 present the estimates of equation 4.[29] Family firms have more capex than nonfamily firms, and there is a negative relation between portfolio-diversification level and capex (Column 3). The estimation with the interaction term in Column 4 shows that family owners with well-diversified portfolios invest more in less risky capex (relative to R&D) than those with less diversified portfolios. These results indicate that family portfolio-diversification levels promote capex over R&D projects.

[29] In constructing capex, we lose observations due to missing values for R&D. Therefore, we also run the regressions with an alternative measure of capex, ln(*capex*), and we get qualitatively similar results.

Lastly, unreported estimation results using the *No. of Firms* diversification variable are qualitatively similar to those estimated with the (*1−Herfindahl index*) proxy.[30]

4.3 Sensitivity Analyses

In this section, we test the sensitivity of our findings to the definition of the family-firm variable.[31] We set two thresholds to denote a family firm: family owners holding a minimum of 5% and 20% of the firm's total votes. Accordingly, we use the variables, *FF_5%* and *FF_20%*. Both of the specifications show[32] similar results to our main estimation: Family firms with long-term investment horizon devote more capital to total investment than family firms with shorter investment horizon.

4.4 Addressing Endogeneity

The relation between family ownership and corporate investment is possibly subject to endogeneity concerns. Reverse causality (or simultaneity) is one of the potential sources[33] of endogeneity in this relationship. In other words, family owners planning to devote more funds to total investment might, as a consequence, adjust the structure of their holdings so they decrease their holdings. Or there can be a selection bias issue. More specifically, based on some unobservable factors, families might self-select to invest in firms with lower levels of investment, that is, violation of the random assignment (i.e., the treatment, which is being a family firm or not, is not independent of the potential outcome, which is the level of corporate investment). Another source of endogeneity can be due to possible variables omitted from the regression that are correlated both with the family ownership variable and the corporate investment variable. Unobserved firm heterogeneity can also be considered under this category.

[30] Some further unreported robustness results exhibit qualitatively similar findings when we assign zero to (*1−Herfindahl Index*) for those "not available" data points. For such cases, we assign the lowest (*1−Herfindahl index*) score by making the fair assumption that these individual family members have only one firm in their portfolios.

[31] In order not to lose many observations from our sample, we run these tests on the sample with which the horizon analyses are conducted (N = 784).

[32] Results are available upon request.

[33] Simultaneity, selection bias, omitted variables bias and measurement error are the main sources of endogeneity (Wooldridge, 2010; Roberts and Whited, 2012)

Unobservable time-invariant firm-specific factors, represented by μ_i,[34] might also be correlated with the family ownership variable causing endogeneity (i.e., endogeneity is present if corr(μ_i, FF_{it}) $\neq 0$).

The practice in the family-firm literature has been not to use a firm fixed effect model with which potential unobserved firm heterogeneity or omitted variables issues can be addressed. The reason is that family ownership variable does not vary much over time. In such a setting if the researcher uses a firm fixed effect model, the cross-sectional variation that the researcher is interested in is dismissed, and the coefficient on the family ownership variable is identified only by the within-firm variation (Roberts and Whited, 2012). Therefore, the family firm literature does not use firm fixed effect. In addition, to address the simultaneity or self-selection bias related concerns, the literature mainly uses techniques, such as instrumental variable regression.

This paper is not interested in the relationship between family ownership and corporate investment solely. Rather, we focus on this particular relation, yet, *conditional on* family owners' being long-term-horizon owners or diversified owners. Therefore, endogeneity concerns raised above are not much of an issue in this paper. First of all, the identification assumption that we have for the horizon variable, which is that horizon is constant over time, helps not to raise endogeneity concerns for the horizon analyses (Equation (1) and (2)). Second, regarding the diversification analyses, it is not very plausible to think that family owners planning to devote more funds to total investment would, as a consequence, adjust the structure of their holdings, *as well as* change the level of their portfolio diversification. This is probably because there are other determinants of the portfolio diversification of family owners than the level of corporate investment in firm X in their portfolios. Moreover, it is hard to think of any omitted variable, which could be a firm-specific characteristic as well, that would potentially affect both the existence of *family firms with diversified owners* (the interaction in Equation (3) and (4)) and corporate investment.[35] Similarly, the selection bias issue is not a concern in our diversification interaction model since there is no real treatment any more. The "treatment" in the interaction

[34] Since μ_i is unobservable, it is a component of the error term.

[35] However, in our interaction models, in order to deal with potential remaining endogeneity problem arising from omitted-variable bias, we first control for time-varying observable variables that might affect both family ownership and corporate investment in our regressions. Second, we add year and industry fixed effects to capture potential effects of any unobservable unit- and industry-invariant factors.

model would be being a family firm with a *more* diversified owner versus being a family firm with a *less* diversified owner. This choice for this "treatment" is most likely given independently. In other words, it is not very realistic to think that this choice is given in relation to the outcome, that is, the level of corporate investment in firm X in the family owner's portfolio.

Having discussed the advantage of using interaction models in terms of avoiding the endogeneity concerns to a great extent, for sake of robustness of our *base* results, we control for endogeneity in the base analysis in two different ways. First, we use one year lagged values to address the simultaneity concerns. As seen in Table 5, our base findings are robust to such concerns since we still find that family owners devote fewer funds to total investment and more funds to capital expenditures compared to R&D.

< Insert Table 5 around here >

Second, we employ the instrumental variable (IV) estimation technique to mitigate endogeneity stemming mainly from simultaneity and possible omitted variables that affect both the family firm variable and corporate investment variable. The literature uses IVs, such as lagged family ownership (Gonzalez et al., 2013), and the natural logarithm of total assets (Anderson and Reeb, 2003b) that possibly do not meet the IV's exogeneity condition. Therefore, we use a new sound IV which is the percentage of votes held by founder family firms (*Founder-FF-cont.*) that fulfills the criteria of being a valid IV. The instrument's relevance and instrument's exogeneity are two conditions that need to be satisfied to be a valid instrument. Instrument relevance condition can be tested while there is no official test for the instrument exogeneity condition, as we discuss below. First, we check if our IV, *Founder-FF-cont*. fulfills the instrument relevance requirement. To check this, a wald test is conducted on the IV coefficient in the reduced form of the family firm equation (see Column 1 in Table 6). The IV coefficient needs to be statistically different from zero. This is the key identification assumption after assuming that the IV is exogenous to corporate investment (Wooldridge, 2010). The corporate investment equation is basically not identified if the IV coefficient is equal to zero. As we can see in Column 1, the coefficient on the

IV is statistically significant as well as large in magnitude. Also, in the unreported results, the t-statistic of the wald test shows that the IV has a coefficient different from zero.

< Insert Table 6 around here >

Second, when it comes to the instrument exogeneity condition, together with the instrument relevance, cov (IV, *u*) = 0 implies that *Founder-FF-cont*. affects corporate investment only through its effect on *FF*. In order to support this implication, we can ask if the IV has any impact on the dependent variable: either on its observed part (corporate investment) or on its unobserved part (u) (Roberts and Whited, 2012). Cov (IV, *u*) = 0 is not testable since the error term is unobservable. However, we can argue that *Founder-FF-cont*. is a suitable IV based on the insignificant correlation between *Founder-FF-cont*. and corporate investment. *Founder-FF-cont*. shows insignificant correlations both with *Capex/Total Inv.* and *R&D/Total Inv.*.[36] The last two columns in Table 6 present the findings of the 2nd stage from the IV estimation showing that our base findings are robust. Overall, after controlling for endogeneity concerns, we still find that family firms devote more funds to capex and fewer funds to R&D expenses, which are considered to be relatively more risky.

4.5 Firm Valuation of Corporate Investment in Family Firms in Relation to the Horizon and Diversification Issues

In this last section, we evaluate how shareholders value corporate investment in family firms with owners who have long-term investment horizon and who have diversified portfolios. Table 7 presents the findings from this valuation analysis. Firm value, proxied by *Tobin's Q*, is the dependent variable while the variable of interests throughout Columns 1-4 in Table 7 vary.

First, we investigate how family firms in general are valued by outside shareholders. Column 1 presents a negative relationship between family firms and firm value, which is in contrast to Anderson and Reeb (2003a) while supporting the finding by Villalonga and Amit (2006) who

[36] Since the correlation between *Founder-FF-cont*. and *Total Inv./Assets* is relatively less insignificant, compared to those with the two components, we run the IV estimation with the components of total investment instead of *Total Inv./Assets*. These correlations discussed while checking for the IV's exogeneity criterion are available upon request.

show that descendants, not founders, deteriorate firm value. Next, we look at the valuation of family firms *with* a higher level of corporate investment. And the significant *total* effect (*FF*×Ln(*Total Inv./Assets*) + Ln(*Total Inv./Assets*), which is 0.54%) in Column 2 shows that family firms with higher levels of corporate investment are valued positively.

In Column 3 and 4 we employ triple interaction models. The research questions are as follows: how are the *long-horizon-owner* family firms *with* a higher level of corporate investment (Column 3), and how are *diversified-owner* family firms *with* a higher level of corporate investment (Column 4) valued in the market?[37] We basically interact *FF*×Ln(*Total Inv./Assets*) further with either the horizon variable or the diversification variable. Column 3 shows that the relation between firm value and corporate investment is positive and statistically significant for family firms with owners who have long-term investment horizon. Because, the total effect (*FF*×Ln(*Total Inv./Assets*)×*Horizon* + Ln(*Total Inv./Assets*)) is positive and significant (0.58%). Column 4 presents that the relation between firm value and corporate investment is positive and statistically significant for family firms with owners who have diversified portfolios since the total effect (*FF*×Ln(*Total Inv./Assets*)×*Diversification* + Ln(*Total Inv./Assets*)) is also positive and statistically significant (0.42%).

< Insert Table 7 around here >

To sum up the findings from Table 7, family firms are valued negatively by the market. However, when they increase the level of their total investment, there is a valuation premium associated with this. Moreover, if such family firms, which are devoting more funds to total investment, have long-term horizon owners, the firm valuation seems to be even higher. Nevertheless, that is not the case for the diversification analysis since the total effect in Column 4 is smaller than the one in Column 2. In sum, we support the argument that family firms are associated with agency costs due to having lower firm valuation than non-family firms. However, family firms which invest more have a valuation premium suggesting negative agency

[37] For sake of easing the interpretation of the triple interaction term, the horizon and diversification variables are converted into dummy variables (by taking their sample mean values as the cut-off point in creating the dummies).

costs. In addition, we also show that agency costs are even more negative for those family firms which invest more *and* have long-horizon owners.

5. Conclusion

Using an unbalanced panel dataset composed of 208 listed Swedish firms and covering the period from 1999 through 2012, we explore whether characteristics of family owners matters for corporate investment policies. Sweden offers uniquely detailed and accurate ownership data. Exploiting this detailed data, we find heterogeneity in both families' investment horizon and family-portfolio diversification levels. These findings challenge the two assumptions used in the family-firm literature: 1) Families have long-term investment horizon in the firms in which they invest and 2) families hold undiversified portfolios. Interrogating these assumptions, specifically, this paper investigates if these heterogeneities have any implications on corporate investment.

We show that family firms are associated with a lower level of corporate investment, which is our base investigation to be consistent with the literature. However, family owners who have long-term investment horizon in the firm appear to have more (less) total investment (capex), and also families with diversified portfolios seem to devote more capital to corporate projects. Though, the type of the project is still less risky: diversified family owners prefer capex which is less risky relative to R&D expenses.

Our results could be related to Anderson and Reeb (2003b), who find that family firms do not seem to reduce firm risk via *debt* and *corporate diversification.*[38] Therefore, instead of creating agency conflict (via reduced firm risk), family ownership, in their paper, is found to even mitigate agency conflict, thus reflecting an effective organizational structure. First, we, in contrast, suggest that family firms with diversified owners are to some extent associated with reduced firm risk via the choice on the type of investment strategies (increased agency cost) because they choose to invest more in less risky *capex* even though the level of *total investment* in firms with diversified family owners increases with a higher level of diversification. Second, when the family has a long-term investment horizon in the firm, then we find that family

[38] Anderson and Reeb (2003b) find that family firms have less corporate diversification, and a similar debt level compared to nonfamily firms.

ownership is not associated with increased agency cost. This is because long-investment-horizon family owners are found to devote more funds to corporate investment.

Agency costs related discussions on family firms could be extended by looking at the firm valuation of corporate investment in family firms in relation to the horizon and diversification issues. We first show that family firms are associated with a discount on firm value. However, family firms which devote *more* funds to total investment than family firms which devote *fewer* funds are valued positively by the outside shareholders. And corporate investment in family firms *with long-horizon* owners are valued even more positively by the market.

Our findings are robust to a number of additional tests we run, including alternative measurements of investment, family ownership, horizon, and diversification. The extensive section on the endogeneity issues also strengths the robustness of our findings.

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Table 1 Definition of Variables

Dependent Variables	
Total Inv./Assets	The sum of R&D and capital expenditures, all divided by total assets
Capex/Total Inv.	Capital expenditures divided by the sum of R&D and capital expenditures
R&D/Total Inv.	R&D expenditures divided by the sum of R&D and capital expenditures
Tobin's Q	The sum of market value of equity plus book value of total liabilities, all divided by book value of assets
Test Variables	
Family firms (FF)	
FF	Dummy variable that equals 1 when the largest fraction of the total votes is held by a family (group) and zero otherwise
FF-cont.	% of votes held by the family (group)
FF_5%	Dummy variable that equals 1 when the largest fraction of the total votes held by the family (group) is at least 5% and zero otherwise
FF_20%	Dummy variable that equals 1 when the largest fraction of the total votes held by the family (group) is at least 20% and zero otherwise
Horizon	
No. of Years	The total number of years between the first date when the largest shareholder owns shares in the company (no earlier than the beginning of our period, 1999) and the date when the shareholder sells all shares (or still holds shares at the end of our sample period, 2012)
No. of Years Dummy	Dummy variable that equals 1 when the value of *No. of Years* is more than 9.902 (sample mean value) and zero otherwise
Diversification	
1−Herfindahl Index	1 − the sum of the squared weights that each investment has in the largest shareholder's portfolio
No. of Firms	The total number of firms that constitutes the largest shareholder's portfolio
Ownership & Control	
Excess Vote (%)	(% of votes held by the largest shareholder) – (% of capital held by the largest shareholder)
Dual-class Share	Dummy variable that equals 1 when the firm has dual-class shares and zero otherwise
Control Variables	
Leverage	Total debt/total assets
Total Assets	The natural logarithm of total assets
Firm Age	The natural logarithm of firm age
Dividend/TA	Total cash dividends paid divided by total assets
Net Sales	The natural logarithm of net sales
Largest Sh. Vote (%)	% of votes held by the largest shareholder

This table presents brief definitions of the variables used in this paper. The data is obtained from Datastream, company annual reports, SIS Ägarservice AB ownership data and Retriever.

Table 2 Descriptive and Univariate Statistics

Panel A: Descriptive Statistics of Variables (firm-year)							
	Mean	Median	Stdev	Max	Min	Q1	Q3
Dependent Variables							
Total Inv./Assets	0.119	0.072	0.148	1.779	0.002	0.044	0.139
Capex/Total Inv.	0.442	0.455	0.330	1.000	0.000	0.108	0.718
R&D/Total Inv.	0.558	0.545	0.330	1.000	0.000	0.282	0.892
Tobin's Q	1.877	1.353	1.606	16.733	0.278	1.049	2.029
Test Variables							
Family firms (FF)							
FF	0.427	0.000	0.494	1.000	0.000	0.000	1.000
FF-cont.	0.185	0.000	0.256	0.884	0.000	0.000	0.331
FF_5%	0.425	0.000	0.494	1.000	0.000	0.000	1.000
FF_20%	0.371	0.000	0.483	1.000	0.000	0.000	1.000
Horizon							
No. of Years	9.902	11.753	3.940	13.013	0.000	6.499	13.005
No. of Years (for *FF* only)	11.427	13.005	3.163	13.013	0.304	11.178	13.005
No. of Years (for non-*FF* only)	8.762	9.750	4.076	13.013	0.000	4.838	12.967
No. of Years Dummy	0.612	1.000	0.487	1.000	0.000	0.000	1.000
No. of Years Dummy (for *FF* only)	0.773	1.000	0.418	1.000	0.000	1.000	1.000
Diversification							
1−Herfindahl Index	0.504	0.593	0.360	0.999	0.000	0.065	0.830
1−Herfindahl Index (for *FF* only)	0.598	0.721	0.264	0.932	0.000	0.433	0.808
No. of Firms	32.387	7.500	78.564	476.000	1.000	2.000	19.000
No. of Firms (for *FF* only)	11.984	11.000	9.257	113.000	1.000	5.750	16.000
Ownership & Control							
Excess Vote (%)	10.000	1.200	12.800	53.600	−14.900	0.000	20.200
Dual-class Share	0.553	1.000	0.497	1.000	0.000	0.000	1.000
Control Variables							
Leverage	0.205	0.167	0.191	1.010	0.000	0.024	0.338
Total Assets (in million)	11,468	1,065	33,555	361,239	7.290	346	5,901
Firm Age	56.513	30.000	69.998	599.000	4.000	18.000	74.000
Dividend/TA	0.025	0.013	0.046	0.959	0.000	0.000	0.033
Net Sales (in million)	10,131	1,154	28,750	310,367	0.000	326	4,255
Largest Sh. Vote (%)	32.817	27.300	21.118	88.400	0.200	15.700	45.950

Panel B: Family Firms versus Nonfamily Firms

	FF	Non-FF	Mean Equality Test
Dependent Variables			
Total Inv./Assets	0.096	0.136	3.758***
Capex/Total Inv.	0.547	0.364	−8.048***
R&D/Total Inv.	0.452	0.635	8.048***
Test Variables			
Horizon			
No. of Years	11.427	8.762	−16.455***
No. of Years Dummy	0.773	0.489	−13.976***
Diversification			
1−Herfindahl Index	0.598	0.446	−5.987***
No. of Firms	11.984	44.836	5.950***
Ownership & Control			
Excess Vote (%)	23.337	17.290	−9.963***
Dual-class Share	0.745	0.410	−16.398***
Control Variables			
Leverage	0.203	0.204	0.197
Total Assets (in million)	15,855	8,120	−5.210***
Firm Age	57,937	55.560	−0.772
Dividend/TA	0,034	0.019	−7.111***
Net Sales (in million)	15,449	6,154	−7.351***
Largest Sh. Vote	43.381	24.917	-22.233***

Panel C: Correlation Matrix of Selected Variables

	FF	*Total Inv./Ass.*	*Capex/Tot. Inv.*	*No. of Years*	*1−Herfin. Ind.*
FF	1.000				
Total Inv./Ass.	−0.085**	1.000			
Capex/Tot Inv.	0.243***	−0.485***	1.000		
No. of Years	0.289***	−0.084**	0.213***	1.000	
1−Herfin. Ind.	0.399***	0.120*	0.052	0.214***	1.000

In this table, Panel A provides descriptive statistics of the main variables. *Q1* and *Q3* refer to the first and third quartiles, respectively. Panel B shows mean difference tests for variables between family and nonfamily firms. Panel C is the correlation matrix of the selected variables. ***, **, * denote statistical significance at the 1, 5 and 10% levels, respectively. All variables are described in Table 1.

Table 3 Family Horizon and Corporate Investment

	Dependent Variable: Ln(*Total Inv./Assets*)		Dependent Variable: *Capex*/*Total Inv.*	
	(1)	(2)	(3)	(4)
FF	−0.057	−0.372**	0.077***	0.310***
	(0.042)	(0.186)	(0.016)	(0.032)
Horizon				
No. of Years	0.001	−0.006	−0.004**	0.001
	(0.008)	(0.009)	(0.002)	(0.002)
FF×*No. of Years*		0.030**		−0.022***
		(0.015)		(0.003)
Controls				
Leverage	−0.879***	−0.795***	0.346***	0.284***
	(0.097)	(0.081)	(0.071)	(0.072)
Ln(*age*)	−0.019	−0.030	0.046***	0.054***
	(0.020)	(0.023)	(0.013)	(0.012)
Ln(*total assets*)	−0.108***	−0.110***	0.051***	0.053***
	(0.013)	(0.013)	(0.002)	(0.002)
Dividend/TA	0.001	0.049	0.670***	0.634***
	(0.529)	(0.568)	(0.240)	(0.207)
Intercept	−0.080	0.054	−0.230***	−0.329***
	(0.247)	(0.237)	(0.068)	(0.070)
Industry Fixed Effect	Yes	Yes	Yes	Yes
Year Fixed Effect	Yes	Yes	Yes	Yes
Adj. R^2	0.202	0.204	0.381	0.394
Observations	784	784	784	784

This table reports OLS regression results with robust standard errors. The dependent variables are *Ln(Total Inv./Assets)* and *Capex/Total Inv.*. All variables are described in Table 1, and measured at time *t*. ***, **, * denote statistical significance at the 1, 5 and 10% levels, respectively. Robust standard errors are in parenthesis.

Table 4 Family Diversification and Corporate Investment

	Dependent Variable: Ln(*Total Inv./Assets*)		Dependent Variable: *Capex/Total Inv.*	
	(1)	(2)	(3)	(4)
FF	−0.204**	−0.079	0.090***	−0.009
	(0.095)	(0.046)	(0.019)	(0.042)
Diversification				
1−Herfindahl Index	0.308***	0.361***	−0.035*	−0.078***
	(0.033)	(0.046)	(0.022)	(0.020)
FF×(*1−Herfindahl Index*)		−0.226*		0.180***
		(0.129)		(0.054)
Controls				
Leverage	−1.464***	−1.497***	0.454***	0.480***
	(0.186)	(0.199)	(0.075)	(0.072)
Ln(*age*)	0.099***	0.101***	0.013	0.011
	(0.025)	(0.026)	(0.010)	(0.010)
Ln(*total assets*)	−0.083***	−0.078***	0.037***	0.033***
	(0.021)	(0.023)	(0.003)	(0.004)
Dividend/TA	0.206	0.107	1.026	1.104
	(1.924)	(1.884)	(0.735)	(0.704)
Intercept	−0.913**	−1.025**	0.035	0.124**
	(0.455)	(0.501)	(0.052)	(0.054)
Industry Fixed Effect	Yes	Yes	Yes	Yes
Year Fixed Effect	Yes	Yes	Yes	Yes
Adj. R^2	0.170	0.168	0.304	0.307
Observations	420	420	420	420

This table reports OLS regression results with robust standard errors. The dependent variables are *Ln(Total Inv./Assets)* and *Capex/Total Inv.*. All variables are described in Table 1, and measured at time *t*. ***, **, * denote statistical significance at the 1, 5 and 10% levels, respectively. Robust standard errors are in parenthesis.

Table 5 Endogeneity between Corporate Investment and Family Ownership – 1

	Dependent Variable: Ln(*Total Inv./Assets*)	Dependent Variable: *Capex*/*Total Inv.*
	(1)	(2)
FF	-0.457***	0.239***
	(0.159)	(0.050)
Controls		
Leverage	-0.919***	0.354***
	(0.252)	(0.079)
Ln(*age*)	-0.053	0.022*
	(0.042)	(0.013)
Ln(*total assets*)	-0.072***	0.055***
	(0.017)	(0.005)
Dividend/TA	-0.141	0.992***
	(0.828)	(0.262)
Intercept	-1.110	-0.557***
	(0.211)	(0.066)
Industry Fixed Effect	No	No
Year Fixed Effect	Yes	Yes
Adj. R^2	0.177	0.378
Observations	722	722

This table reports OLS regression results with robust standard errors. The dependent variables are *Ln(Total Inv./Assets)* and *Capex/Total Inv.*. All variables are described in Table 1. All right-hand side variables are at time (*t-1*) while the dependent variables are at time *t*. ***, **, * denote statistical significance at the 1, 5 and 10% levels, respectively. Robust standard errors are in parenthesis.

Table 6 Endogeneity between Corporate Investment and Family Ownership – 2

	Dependent Variable: *FF-cont.*	Dependent Variable: *Capex/Total Inv.*	Dependent Variable: *R&D/Total Inv.*
	Reduced form equation	IV Estimation (2nd stage)	IV Estimation (2nd stage)
		IV: *Founder-FF-stake*	IV: *Founder-FF-stake*
	(1)	(2)	(3)
FF-cont.		0.118*	-0.118*
		(0.067)	(0.067)
Founder-FF-cont.	0.858***		
	(0.015)		
Controls			
Leverage	-0.195***	0.332***	-0.332***
	(0.026)	(0.077)	(0.077)
Ln(*age*)	0.008**	0.039***	-0.039***
	(0.004)	(0.013)	(0.013)
Ln(*total assets*)	0.026***	0.054***	-0.054***
	(0.002)	(0.005)	(0.005)
Dividend/TA	0.202***	0.688***	-0.688***
	(0.077)	(0.252)	(0.252)
Intercept	-0.391***	-1.310***	1.310***
	(0.040)	(0.110)	(0.110)
Industry Fixed Effect	Yes	Yes	Yes
Year Fixed Effect	Yes	Yes	Yes
Adj. R^2	0.638	0.388	0.388
Observations	1981	784	784

This table reports OLS (Column 1) and two-stage least squares (Column 2 and 3) results with robust standard errors. The dependent variables are *FF-cont.*, *Capex/Total Inv.* and *R&D/Total Inv*. All variables are described in Table 1, and measured at time *t*. ***, **, * denote statistical significance at the 1, 5 and 10% levels, respectively. Robust standard errors are in parenthesis.

Table 7 Firm Valuation of Corporate Investment in Family Firms with Long-horizon and Diversified Owners

	Dependent Variable: *Tobin's Q*			
	(1)	(2)	(3)	(4)
FF	-0.166***	-0.029	0.002	-0.204
	(0.068)	(0.365)	(0.174)	(0.164)
Ln(*Total Inv./Assets*)		0.530***	0.500***	0.475***
		(0.080)	(0.070)	(0.064)
FF×Ln(*Total Inv./Assets*)		0.011		
		(0.127)		
FF×Ln(*Total Inv./Assets*)×*Horizon*			0.078	
			(0.074)	
FF×Ln(*Total Inv./Assets*)×*Diversification*				-0.055
				(0.068)
Horizon				
No. of Years Dummy			0.372***	
			(0.138)	
Diversification				
1−Herfindahl Index Dummy				-0.229*
				(0.129)
Controls				
Leverage	-0.725***	0.808*	0.701*	0.327
	(0.243)	(0.430)	(0.433)	(0.378)
Ln(*age*)	-0.130***	-0.249***	-0.264***	-0.152***
	(0.041)	(0.076)	(0.077)	(0.061)
Ln(*net sales*)	-0.187***	-0.206***	-0.214***	-0.161***
	(0.018)	(0.029)	(0.029)	(0.028)
Dividend/TA	7.642***	10.924***	10.683***	14.897***
	(0.730)	(1.429)	(1.416)	(1.684)
Intercept	4.739***	5.827***	5.683***	4.730***
	(0.340)	(0.557)	(0.562)	(0.468)
Industry Fixed Effect	Yes	Yes	Yes	Yes
Year Fixed Effect	Yes	Yes	Yes	Yes
Adj. R^2	0.200	0.329	0.334	0.412
Observations	1938	771	771	413

This table reports OLS regression results with robust standard errors. The dependent variable is *Tobin's Q*. All variables are described in Table 1, and measured at time *t*. ***, **, * denote statistical significance at the 1, 5 and 10% levels, respectively. Robust standard errors are in parenthesis.