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Governance structure and firm performance in private family firms

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Abstract

Although a large proportion of firms are family owned and most family firms are private, our understanding of private family firms is limited. Using confidential information on family relationship between board members, CEOs, and shareholders, this is the first study that provides large-scale evidence on the association between governance structure and firm performance in family controlled private firms. Our sample is unique as it covers almost all private limited liability firms in Norway, spans 11 years, traces firm ownership to ultimate owners, and identifies family relationship using data on kinship, marriage, and adoption. The results show a U-shaped relationship between family ownership and firm performance. Higher ownership of the second largest owner, higher percentage of family members on the board, stronger family power, and smaller boards are associated with higher firm performance. In addition, the positive association between the ownership of the second largest owner and firm performance also occurs when the second largest owner is a member of the controlling family, but the association is stronger when the second largest owner is a non-family member. We further test the relative importance of these test variables and find that ownership structure is more associated with firm performance than board structure.

Keywords: Governance structure, ownership structure, board structure, firm performance, private family firms

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1 INTRODUCTION

A large proportion of businesses are family owned worldwide.¹ Family firms play an essential role for society, both in terms of economic contribution and social responsibility. As the majority of family firms are private, how private family firms are organized, and how they perform are of great importance. There have been increasing calls for research that enhances our understanding of private family firms (Chrisman et al., 2007). Miller et al. (2011, p.22) note that any study of public family corporations is biased since it does not reflect the behavior of private companies and many family businesses are private. Most prior studies have focused on public family firms probably due to easier data accessibility. The few studies that do focus on private family firms usually employ small samples (Sciascia & Mazzola, 2008; Westhead & Howorth, 2006), which could be subject to sample selection bias.² Although many issues have been frequently studied for public (family) firms, we can not take for granted that the evidence for public firms is valid for private small and medium-sized firms. The role of boards is

¹ “Research suggests that 80% of all businesses in the United States are family owned (Daily & Dollinger, 1992) and family businesses contribute between 50% and 60% of U.S. gross domestic product (Francis, 1993; Upton, 1991). Similar findings have been reported in the UK (Stoy Hayward and The London Business School 1989, 1990), Western Europe (Lank, 1995), and Australia (Smyrnios and Romano, 1994; Smyrnios et al., 1997). Providing further evidence of the contribution of family business to the economy, La Porta et al. (1999) and Shleifer & Vishny (1986) find that the ownership structure of even large public companies is characterized by controlling stockholders who are more often families, usually the founder or their descendants.” (Carey et al., 2000, p.37).

² While little work is done on the relationship between ownership and board structure and firm performance within private family firms, there are relatively more studies comparing firm performance between (private) family firms and (private) non-family firms. For example, Arosa et al. (2010) study how ownership concentration can influence firm performance between private family and private non-family firms. They show that it matters whether the firms are in the first generation or subsequent generations. Miller et al. (2007) distinguish family firms where at least two family members are involved in the business from lone founder firms and find that only lone founder businesses outperform.

different in small or medium- sized private firms with concentrated ownership and more involvement of the owners in running the business compared to large public firms (Chin et al., 2004; Eisenberg et al., 1998; Huse, 2000). Hence, studies employing high quality data to explore governance issues in private family firms are warranted.

This paper focuses on private limited liability firms that are controlled by families and employs a unique and confidential dataset.³ It examines how firm performance is associated with ownership and board structure in these firms. Although it is likely that governance variables are related to firm performance, not all are equally important. It is useful and interesting to understand which governance variable is most associated with firm performance. Hence, this paper also investigates the relative importance of factors related to ownership and board structure for firm performance. Our dataset is unique as it covers almost all private limited liability firms in Norway, spans 11 years from 2001 to 2011, traces firm ownership to ultimate owners, and identifies family relationship between owners, board members, and CEOs using data on kinship, marriage, and adoption spanning four generations and extending out to third cousins.

The board of directors and ownership structure are among the main governance mechanisms that could affect firm performance (Blair, 1995; Jensen & Meckling, 1976). While some studies find a positive relationship between family ownership and firm performance in public family firms (Anderson & Reeb, 2003; Lee, 2006; Maury, 2006), studies on private family firms are sparse in comparison and find no association between

³ There are two types of limited liability firms in Norway: private limited liability firms (AS) and public limited liability firms (ASA). All listed firms must be registered as ASA, but an ASA does not need to be listed on a stock exchange. As of 2010, there were 280 ASA and 204,000 AS.

family ownership and firm performance in general (Sciascia & Mazzola, 2008; Westhead & Howorth, 2006).⁴ As ownership distribution could determine the power of different stakeholders (Salancik & Pfeffer, 1980) and ownership structure could potentially affect firm performance (Jensen & Meckling, 1976), it is surprising that family ownership is not associated with firm performance in private family firms. Firms with different levels of family ownership, say 51%, 80%, and 100%, are likely to have different firm performance, *ceteris paribus*, because the distribution of ownership between the controlling family and outside owners could affect, e.g., to what extent the controlling family expropriate minority owners, and to what extent outside owners are motivated and powered to curb the expropriation of the controlling family.

As for the relationship between board characteristics and firm performance, there is no consensus on how firm performance is associated with board characteristics although it is frequently studied (Anderson & Reeb, 2004; Eisenberg et al., 1998). Furthermore, most of the studies focus on medium or large public firms (Chin et al., 2004). Hence, the relationship between ownership and board structure and firm performance in private family firms merits further exploration.

Our hypotheses development is guided by insights from both agency theory and stewardship theory.⁵ Using these two theoretical perspectives provides a broader

⁴ There is mixed evidence on the relationship between family ownership and firm performance in public firms. While some studies find positive evidence (Anderson & Reeb, 2003; Lee, 2006; Maury, 2006), others show no or negative relationship between family ownership and firm performance in public family firms (Stewart & Hitt, 2012).

⁵ Agency theory assumes that the agent (the manager) acts opportunistically and will maximize his/her own utility at the expense of the interests of the principal (the owner) unless the principal takes measures that incentivize or discipline the agent to act in the interest of the principal (Jensen and Meckling, 1976). Stewardship theory assumes that the goal of the principal and agent is aligned and that the agent acts as a good steward in the interest of the principal (Donaldson, 1990).

framework to investigate the governance issues in family firms (Klein et al., 2005). Lee & O'Neill (2003) stress the complementarity of agency and stewardship theory. We develop hypotheses on two factors related to ownership structure (family ownership and the ownership of the second largest owner), and three factors related to board characteristics (the percentage of board members belonging to the controlling family, board size, and family power). We regress firm performance, measured by return on assets, on these test variables together with control variables, adjusting for serial correlation and heteroskedasticity.

The results show that the fraction of shares owned by the controlling family has a U-shaped relationship with firm performance. Firms with relatively low (e.g., 51%) and very high (e.g., 100%) family ownership have higher firm performance compared to firms with family ownership in-between (e.g., 80%). Firm performance is positively related to the ownership of the second largest owner, consistent with the argument that a strong second owner has the motivation and power to curb the potential expropriation of the majority owner and thus increases firm value (Bennedsen & Nielsen, 2010). It is interesting to note that this applies no matter the second largest owner is a member of the controlling family or not. The positive association between the ownership of the second largest owner and firm performance is weaker when the second largest owner is a member of the controlling family than when the second largest owner is non-family member.

Firm performance is positively associated with a high percentage of board members coming from the controlling family and strong family power.⁶ While agency theory suggests that independent boards are suitable for large public firms, our results support Huse (2000) that the role played by the boards in private family firms seems to be different from the board's functions in public firms. The board size, measured by the number of board members, is negatively associated with firm performance, consistent with the literature (Guest, 2009; Jensen, 1993). In short, our results show that ownership and board structure matters for firm performance in private family firms. Put differently, private family firms are not a homogeneous group of firms and it may be important to account for the heterogeneity among these firms to understand why they exhibit varying performance.

While various governance variables are related to firm performance, not all are equally important. By standardizing all the variables in the regression, we are able to tell the relative importance of the governance factors by comparing their coefficients directly. The analysis shows that ownership structure is more associated with firm performance than board characteristics. Furthermore, we conduct a series of robustness tests using, e.g., alternative definitions of family firms, different measures of firm performance, subsamples based on firm size (total assets), additional variables that could matter for firm performance (e.g., dual class shares, generational and lone-owner effects), and tests of endogeneity. All our robustness tests lend supports to the main findings.

This paper adds several contributions to the literature. First, it enhances our

⁶ Family power is an indicator variable that equals 1 if the Chair of the Board and the CEO are members of the controlling family and the CEO is a board member, and 0 otherwise (see section 3.2).

understanding of private family firms. There have been increasing calls for research on private family firms (Chrisman et al., 2007). This paper follows the call. To the best of our knowledge, this is the first study that provides large-scale empirical evidence on the association between ownership and board structure and firm performance within private family firms. In addition to using confidential data on kinship from the National Registry, we also employ data from a period where all firms published audited financial statements. Thus, we have chosen a research setting where the sample selection problem is not a concern and the data are detailed and of high quality.⁷

Second, our study provides new evidence on the relationship between family ownership and firm performance in private family firms. While prior studies on private family firms find no relationship between family ownership and firm performance in general (Sciascia & Mazzola, 2008; Westhead & Howorth, 2006), we find a U-shaped relationship. When the fraction of shares owned by the controlling family is relatively low, e.g., between 50% and 67%, there is a positive relationship between firm performance and family ownership (after controlling for the ownership of the second largest owner).⁸ When family ownership increases, its relationship with firm performance becomes negative. However, the relationship between family ownership and firm

⁷ The use of data from the National Registry to map family relationship between CEOs, board members, and owners removes uncertainty as to whether persons are related by blood, marriage, or adoption. An additional advantage with our dataset stems from the fact that all limited liability firms, independent of size, are required to disclose names and shareholdings of their direct owners in notes to the financial statements (see section 3.1 for further details). This enables the calculation of ultimate ownership for all firms taking into account both direct and indirect ownership. Suppose that firm B owns 90% in firm A and that person P owns 10% in firm A and 60% in firm B. P's direct ownership in A is 10%, P's indirect ownership in A is $(0.9 * 0.6 =) 54%$, and P's ultimate ownership (sum of direct and indirect ownership) is 64%. Using a cutoff of owning more than 50% to define a family firm, both A and B will be classified as family firms owned by P.

⁸ The break points we employ are based on the Norwegian corporate law that contains several provisions for regulating the decision-making power of the majority owner. Please see section 3.2 for further details.

performance turns positive again when family firms are 100% owned by the controlling family. This U-shaped relationship between family ownership and firm performance might indicate that outside owners with higher ownership are able to strengthen performance in private family firms. When outside ownership is low, firm performance suffers and becomes lower compared to firms that are wholly owned by the controlling family. This sheds new light on the importance of the ownership structure for the private family firm segment.

Third, corporate governance mechanisms are highly country specific, and no single corporate governance arrangement can fit the multifaceted needs of companies embedded in widely different cultural, historical, and institutional settings (Corbetta & Salvato, 2004a). Our study enriches the literature by providing additional empirical evidence using data from a Nordic country with civil law and high protection of minority stockholders.

Furthermore, this paper enriches the literature by showing that in private family firms, ownership structure is more associated with firm performance than board structure. In addition, this study deepens regulators' understanding of the private firm segment of the economy, which is important for designing and implementing rules and regulations. It is also intriguing for private family firms, entrepreneurs, and venture capitalists, as we provide evidence on how firm performance is related to ownership and board structure. Finally, the paper provides academics with a better comprehension of the relationship between firm performance and governance structure in private family firms, and advances our understanding of governance issues in private family firms.

The rest of this paper is organized as follows. Section 2 describes related literature, theories, and hypotheses development. Data, methodology, and descriptive statistics are outlined in section 3. Section 4 presents the main results and various robustness tests. Closing remarks are provided in section 5.

2 RELATED LITERATURE, THEORIES, AND HYPOTHESES

Agency theory has been dominating in corporate governance. Agency theory is applied in situations when a firm's ownership and management are separate and there are diverging goals between the owners and managers of a firm (Fama & Jensen, 1983). For private family firms that have more goal congruence due to closely held ownership and close relationships between family owners and managers, it is often considered that the principal-agent conflict is not a main concern (Westhead & Howorth, 2006). Howorth et al. (2004) state that agency theory may provide only a partial explanation of private family firm dynamics. In private family firms in which there is more goal congruence between the owners and the managers, stewardship theory is more appropriate (Davis et al., 1997; Schulze et al., 2003). Sharma (2004) shows that stewardship theory provides a useful framework to examine governance issues in family firms. Lee & O'Neill (2003) stress the complementarity of agency and stewardship theory. As both agency theory and stewardship theory can provide guidance for private family firms, we apply both to investigate the governance structure in private family firms. We focus on two factors related to ownership structure and three factors related to board characteristics.

2.1 Ownership Structure and Firm Performance

2.1.1 Family ownership

Agency theorists have argued that differences in ownership structure are crucial to understanding governance issues in modern corporations (Jensen & Meckling, 1976). How ownership is distributed and used can determine the power of different stakeholders (Salancik & Pfeffer, 1980). Many studies find a positive relationship between family ownership and firm performance in listed family firms (Anderson & Reeb, 2003; Lee, 2006; Maury, 2006). However, studies in private family firms find no relation between family ownership and firm performance in general. Westhead & Howorth (2006) hypothesize a negative relationship between firm performance and family ownership, but fail to find any relationship, based on a sample of 526 private U.S. firms. Castillo & Wakefield (2006) also find no correlation between family involvement in ownership and firm performance, using 240 private U.K. firms. Sciascia & Mazzola (2008) hypothesize a non-linear relationship between firm performance and family involvement in ownership. By studying 620 privately held family firms in Italy, they find that family involvement in ownership has no impact on firm performance.

One of the reasons of failing to find any association between family ownership and firm performance in private family firms might be that the relationship is non-linear and many different, or even contradicting, forces are at work at the same time. Stewardship theory suggests that closely held family firms with little outside influence might focus on nonfinancial objectives to protect “family agendas” (Zahra et al., 2004). This behavior may retard financial performance in private family firms. There might be more focus on financial performance if more “outsiders” gain ownership stakes in the

family firm (Westhead & Howorth, 2006). This indicates that relatively low family ownership is positively associated with firm performance in private family firms.

Agency theory provides a similar prediction. The conflict between majority owners and minority owners is a concern for private family firms. Having higher fraction of shares enables outside owners both power and motivation to monitor the controlling family, which indicates that private family firms with lower family ownership might have higher firm performance, *ceteris paribus*. However, there are downsides with outside owners. As pointed out by Mueller (1988), while outsiders can add values to the family firms by importing objectivity into the business, outsiders are strangers, working in an emotionally charged atmosphere that in general is not easily accessible to outsiders. When private family firms are 100% owned by the controlling family, there is likely more goal congruence and fewer conflicts, *ceteris paribus*. Therefore, it is likely that private family firms with low family ownership or very high family ownership will have higher firm performance compared to those with family ownership in-between. Private family firms with family ownership in-between are likely to have the downsides of having outsiders compared to those with 100% family ownership, and less of the benefits of having outsiders with strong power and motivation compared to private family firms with low family ownership. Hence, we hypothesize the following (all hypotheses are stated as the alternative to the null-hypothesis).

Hypothesis 1.1: There is a U-shaped relationship between family ownership and firm performance in private family firms. Private family firms with low or high family

ownership have higher firm performance than private family firms with family ownership in-between.

2.1.2 Ownership of the second largest owner

According to agency theory, the majority owners may expropriate small shareholders by entrenching themselves and appropriating firm assets (Jensen & Meckling, 1976).

Villalonga & Amit (2006) argue that a greater concentration of voting rights can lead to greater incentives for controlling shareholders to obtain private benefits. Maury & Pajuste (2005) show that families are more prone to private benefit extraction if they are not monitored by another strong blockholder. It is documented that a strong second owner increases performance because she has both the motivation and the power to curb the potential expropriation by the controlling owner (Bennedsen & Nielsen, 2010; Lehmann & Weigand, 2000; Pagano & Roell, 1998). This indicates that the ownership of the second largest owner is positively related to firm performance. In additional tests, we check whether it matters when the second largest owner is a member of the controlling family or not. We test the following hypothesis.

Hypothesis 1.2: There is a positive relationship between the ownership of the second largest owner and firm performance in private family firms.

2.2 Board Characteristics and Firm Performance

A board of directors is supposed to provide direction for the organization, establish governance system, and mitigate agency conflicts in the organization (Dwivedi & Jain,

2005). Board composition and board size can consequently affect the overall efficiency of a board of directors (Jaskiewicz & Klein, 2007). The relationship between board characteristics and firm performance has been central to both research and corporate practice (Corbetta & Tomaselli, 1996; Huse, 2000). Much work has been done on the effect of board size (Eisenberg et al., 1998; Huther, 1997; Yermack, 1996) and board composition (Baysinger & Butler, 1985; Hermalin & Weisbach, 2001) on corporate performance. However, the relationship between board characteristics and corporate performance remains unclear (Anderson & Reeb, 2004; Rosenstein & Wyatt, 1997).

Agency theory assumes that the primary role of the board is to monitor management, and an effective board is relatively large and active with mainly non-executive board members that are independent of the firm and the family (Gubitta & Gianecchini, 2002; Corbetta & Salvato, 2004b). In contrast, stewardship theory (Davis et al., 1997) assumes that the main role of the board is advisory and effective boards should be relatively small with a high number of executive directors (Gubitta & Gianecchini, 2002).

2.2.1 Percentage of board members being family members

In listed firms, where the major conflict usually is between owners and managers, it is important to have independent board members to monitor the CEOs. However, in private family firms in which goal congruence is high and the owner - manager conflict most likely is not the major concern, the importance of having independent board members is lower compared to listed firms. Ford (1988) argues that outside members could obstruct the effectiveness of the board of directors in family firms due to a lack of knowledge of

the firm and accessibility to the firm. Stewardship theory proposes that fewer outsiders should be present on a board owing to the reduced need for a monitoring purpose (Gubitta & Gianecchini, 2002). Jaskiewicz & Klein (2007) suggest that communication in families might be more efficient as family members communicate in both the business and the family system. These arguments indicate that a higher percentage of board members coming from the controlling family is likely to be associated with higher firm performance in private family firms. We hypothesize the following.

Hypothesis 2.1: There is a positive relationship between the percentage of board members belonging to the controlling family and firm performance in private family firms.

2.2.2 Board size

Stewardship theory predicts smaller boards in family firms with high levels of goal alignment between owners and managers compared to agency theory (Gubitta & Gianecchini, 2002). From a theoretical point of view, boards with a small number of members might perform better (Neubauer & Lank, 1998). When there are many board members, it might be difficult to reach agreements, and therefore the board might be less efficient as board size increases (Jensen, 1993). Yermack (1996), using U.S. firms, shows that a smaller board may face fewer bureaucratic problems and is more functional, and therefore is associated with better firm performance. Eisenberg et al. (1998) find a significant negative correlation between board size and profitability in a sample of small and medium-sized Finnish firms. Mak & Kusnadi (2005) also find an inverse relationship

between board size and firm value. Chiang & Lin (2007) show that smaller board size can help improve productivity of firms, using data from Taiwan. Guest (2009) reviews 23 studies and shows that 17 studies found a negative correlation between firm performance and board size. We expect a negative relationship between board size and firm performance in private Norwegian family firms.

Hypothesis 2.2: There is a negative relationship between board size and firm performance in private family firms.

2.2.3 Family power

According to the theoretical model of Corbetta & Salvato (2004b), strong family power will determine a higher presence of inside/affiliated directors and CEO duality. The function of strong family power in a family firm is in spirit similar to the role of CEO duality.⁹ According to organization theory, the unity of command of a CEO leads to an unambiguous leadership over subordinates and, hence, induces effective decision-making (Donaldson & Davis, 1991). Pfeffer & Salancik (1978) suggest that CEO duality empowers a strong single leader who could respond quickly to a changing market environment. CEO duality may result in higher total factor productivity due to a unitary command that leads to effective and unambiguous leadership (Chiang & Lin, 2007). We hypothesize that strong family power is positively related to firm performance.

⁹ Family power and CEO duality are two different concepts that describe concentration of power within a firm. CEO duality refers to the situation where the same person serves as both CEO and Chair of the board (Desai et al., 2003). Family power measures the extent of family influence through ownership, board membership, and involvement in management (Corbetta & Salvato, 2004b). In a family firm with CEO duality, family power is higher if the CEO/Chair of the board is a member of the controlling family compared to a situation where the CEO/Chair of the board is a non-family member.

Hypothesis 2.3: There is a positive relationship between family power and firm performance in private family firms.

3 DATA, METHODOLOGY, AND SUMMARY STATISTICS

3.1 Data Types and Data Sources

Our dataset covers almost the whole population of Norwegian private family firms and spans a period of 11 years from 2001 to 2011. The data are obtained from the Centre for Corporate Governance Research (CCGR) at BI Norwegian Business School. CCGR has obtained governmental permission to collect, merge, and store data from Experian AS and the National Registry (NR) in accordance with confidentiality and secrecy rules set forth by the Norwegian Data Inspectorate, an independent administrative body that is set up to ensure that private and public storage of data is in accordance with the Norwegian Personal Data Act.

Experian AS provides firm-specific information such as firms' financial statements, industry affiliation, and, most importantly for this study, the names of all CEOs, board members, and major owners. Experian AS collects information from the Brønnøysund Register Center (BRC), which is an administrative agency responsible for a number of national control and registration schemes for business and industry. These data are publicly available. The Norwegian accounting regulation requires that limited liability

firms disclosed audited financial statements in our sample period.¹⁰ In notes to the accounts, a firm that does not qualify as a small enterprise must disclose its 20 largest shareholders by name and shareholding as long as the ownership exceeds 1%. Small enterprises must disclose their 10 largest shareholders for ownership exceeding 5%.

In contrast to BRC data, the data by NR are not publicly available. Specifically, neither social security numbers nor family relationships among individuals are publicly available. Through a special agreement, CCGR is allowed to use information from NR to identify family relationship between every pair of persons that occur as CEOs, board members, and owners. The family data (based on marriage and blood lines) trace back four generations and extend out to third cousins. An additional noteworthy feature with the CCGR dataset is that it contains both direct and ultimate ownership of all firms.

3.2 Variable Definitions and Methodology

In the main analysis, we define a firm as a family firm if the largest family owns more than 50% of the shares using ultimate ownership (we refer to this family as the controlling family). According to Miller et al. (2007), the mixed evidence on firm performance in family firms may be attributed to different classifications of family firms and control samples. Hence, our alternative definition of family firms is to require both the controlling family owns more than 50% of the shares using ultimate ownership *and* the CEO is a member of the controlling family.

¹⁰ Effective May 1, 2011, the smallest limited liability firms were allowed to vote down their auditors. From May to end of 2011, about 21% of the small firms that could deselect their auditors have done so.

We employ panel data and test all the hypotheses simultaneously using the following regression:

$$ROA_{i,t} = \alpha + \beta_1 FO50to67_{i,t} + \beta_2 FO67to90_{i,t} + \beta_3 FO90to99_{i,t} + \beta_4 FO100_{i,t} + \beta_5 2^{nd_largest_ownership}_{i,t} + \beta_6 Per_fam_board_{i,t} + \beta_7 Board_size_{i,t} + \beta_8 Family_power_{i,t} + \gamma_1 ROA_{i,t-1} + \gamma_2 \ln(Firm_age)_{i,t-1} + \gamma_3 Debt_ratio_{i,t-1} + \gamma_4 \ln(Total_assets)_{i,t-1} + \gamma_5 \ln(Sales)_{i,t-1} + \gamma_6 Sales_growth_{i,t-1} + \sum \gamma_{7,y} YR_y + \varepsilon_{i,t}$$

As a measure of firm performance, we use the accounting measure return on assets (*ROA*). Following Anderson & Reeb (2003), we compute return on assets in two ways. The first measure is to divide net income in year t by the average book value of total assets in year t and t-1. The second measure is to divide earnings before interest and taxes (*EBIT*) in year t by the average book value of total assets in year t and t-1. The latter measure indicates how effectively a firm generates returns from its assets before contractual debt obligations and tax obligations are deducted. As our focus is on how assets are utilized, we prefer a performance measure that is not affected by the cost of debt financing (e.g., interest expenses) and tax positions (e.g., the extent of tax loss carry forwards that influence the tax expense). We therefore use return on assets based on *EBIT* as our main measure of firm performance and label it *ROA1* ($ROA1 = EBIT / \text{average total assets}$). We also conduct analyses using return on assets based on net income (*ROA2* = net income / average total assets) and return on equity (*ROE* = net income / average shareholders' equity) as additional measures for firm performance.¹¹ All the variables are defined in Table 1.

¹¹ One could consider operating metrics such as sales growth, asset growth, and *CAPEX*/sales as measures of firm performance. While these operating measures capture how fast a firm grows, *ROA* and *ROE* are

-- Insert Table 1 about here --

Our test variables are defined as follows. Hypothesis 1.1 predicts a U-shaped relationship between family ownership and firm performance. To capture the non-linear relationship, we use the piecewise linear specification for family ownership, following Morck et al. (1988), which allows changes in the slope coefficient on family ownership. We construct four variables, based on the variable *Family_ownership* that measures the fraction of shares held by all owners that belong to the family with the highest shareholding using ultimate ownership. The first variable, *FO50to67*, equals *Family_ownership* if *Family_ownership* is more than 50% and less than two-thirds ($\frac{2}{3}$), and $\frac{2}{3}$ if *Family_ownership* is equal to or more than two-thirds. The rationale for the break points used for the piecewise linear specifications is based on the Norwegian Companies Act. Normally, decisions at the stockholders' meeting require approval of 50% of the shares, cf. Companies Act paragraph 5-17. However, paragraph 5-18 requires at least two-thirds of the shares in order to approve certain issues.¹² The next break point is 0.9, which is the threshold specified in paragraph 5-19 for the majority owner to squeeze out the remaining shareholders. We classify the family firms that keep 100% of their shares within the controlling family as a separate group because a large proportion of the sample is in this category and family firms without outside owners are probably different from those with outside owners in some aspects. The four variables based on the family ownership are constructed as follows:

better at gauging the profitability of a firm. There is evidence that family firms may focus on family objectives (Birley et al., 1999) and are reluctant to grow (Upton et al., 2001).

¹² These issues include, e.g., resolutions to waive preferential rights related to share issues, to approve a merger or demerger, to amend the Articles of Association, to authorize changes in the share capital, and decisions that could substantially alter the rights and preferences of any shares.

FO50to67 = *Family_ownership* if $0.5 < \textit{Family_ownership} < \frac{2}{3}$
 = $\frac{2}{3}$ if $\textit{Family_ownership} \geq \frac{2}{3}$

FO67to90 = 0 if $\textit{Family_ownership} < \frac{2}{3}$
 = *Family_ownership* if $\frac{2}{3} \leq \textit{Family_ownership} \leq 0.90$
 = 0.9 if $\textit{Family_ownership} > 0.9$

FO90to99 = 0 if $\textit{Family_ownership} \leq 0.9$
 = *Family_ownership* if $0.9 < \textit{Family_ownership} \leq 0.99$
 = 0.99 if $\textit{Family_ownership} > 0.99$

FO100 = 0 if $\textit{Family_ownership} < 1$
 = *Family_ownership* if $\textit{Family_ownership} = 1$

2nd_largest_ownership measures the shareholding of the second largest owner (hypothesis 1.2). *Per_fam_board* measures the percentage of board members belonging to the controlling family (hypothesis 2.1). *Board_size* is the natural logarithm of the number of board members (hypothesis 2.2). *Family_power* indicates whether the controlling family has strong power in the family business. Corbetta & Salvato (2004b) measure family power based on the extent of family ownership, the extent of governance control of the family on the board, and the extent of managerial control of the family. As we investigate several specific aspects related to ownership and board structure, which include measures for family ownership and the percentage of family members on the board, we exclude them when defining family power. Our measure of family power is an indicator variable that is 1 if both the Chair of the Board and the CEO belong to the controlling family and the CEO is a board member, and 0 otherwise (hypothesis 2.3).

We include a set of control variables commonly used in the literature. Since Return on Assets (*ROAI*) is auto-correlated, we include one period lagged *ROAI* as a control variable. It is well documented that firm size can influence the relationship between ownership and firm performance (Anderson & Reeb, 2003). We use the natural logarithm of the book value of total assets ($\ln(\textit{Total_assets})$) and sales ($\ln(\textit{Sales})$) to control for size. We control for debt in the capital structure by using long-term debt divided by total assets (*Debt_ratio*) as prior studies show that more leveraged firms have higher profitability (Anderson & Reed, 2004). We also control for firm age ($\ln(\textit{Firm_age})$) and growth opportunities (*Sales_growth*) (Scherr & Hulburt, 2001), as well as year fixed effects. All the control variables are one-year lagged. To adjust for serial correlation and heteroskedasticity, we employ the Huber-White Sandwich Estimator (clustered at firm level) to obtain robust variances adjusted for within-cluster correlation.

3.3 Sample Selection and Descriptive Statistics

There are in total 2.2 million firm-year observations in our period spanning 2001 through 2011.¹³ Accounting data before 2001 are also employed since we use lagged control variables. We only include firms that are not publicly listed on a stock exchange and firms where the largest family owns more than 50% of the shares using ultimate ownership (reducing the sample size with about 850,000 observations). To ensure that our results are not driven by a number of very small firms of little economic importance,

¹³ There are about 150,000 limited liability firms in 2001, and the number of observations is gradually increased to about 250,000 in 2011.

we require firms' minimum annual sales to be 1 million NOK in the sample period (reducing the sample size with about 843,000 observations).¹⁴ We winsorize return on assets, return on equity, debt ratio, and sales growth at the 1st and 99th percentiles. After matching with lagged control variables and deleting observations with missing values, our final sample consists of 511,203 firm-year observations.

-- Insert Table 2 about here --

Summary statistics of all the variables described previously are reported in Panel A of Table 2. For each variable, we present the mean, standard deviation, the 5-, 25-, 50-, 75-, and 95-percentile. The number of observations is 511,203 for all the variables, except for ROE, which is only calculated for firms with positive book value of equity. As we restrict the sample to family firms in which the controlling family has more than 50% of shares, ownership of the largest family (*Family_ownership*) is high, at 92% on average. The next four variables, *FO50to67*, *FO67to90*, *FO90to99*, and *FO100*, are defined using the piecewise linear specifications in the previous subsection. These variables are continuous and equal to *Family_ownership* between the break points and are constant beyond the break points. In Panel B of Table 2, we present descriptive statistics for the intervals between the break points of these four variables to provide more detailed information on the distribution of *Family_ownership*.

The average fraction of shares held by the second largest owner (*2nd_largest_ownership*) is 13%.¹⁵ The percentage of board members belonging to the

¹⁴ The average US Dollar to Norwegian Krone (NOK) exchange rate is 1 US\$=6.64 NOK in our sample period.

¹⁵ The second largest owner can be either a family owner or a non-family owner. If the former, the shareholding of the second largest owner is included in the family ownership. This makes the sum of the average of *Family_ownership* and the average of *2nd_largest_ownership* larger than 1 (1.05=0.92+0.13).

controlling family is high. 85% of the board members are related to the largest families (*Per_fam_board*). There are, on average, 1.87 board members (*#Board_members*), and the variable is positively skewed. The mean of *Family_power* is 0.68, which indicates that 68% of the firms in the sample have strong family power in that the Chair of the Board is a family member, the CEO is a family member, and the CEO is a board member. The average *ROA1* is 0.07 with a large standard deviation of 0.29, implying that firm performance in private family firms varies significantly. *ROA2* is similar to, but slightly lower than *ROA1*, which is reasonable as *ROA1* is computed using EBIT while *ROA2* uses net income. Return on equity (*ROE*) has a mean of 0.38 and a standard deviation of 0.78. Higher average for *ROE* than for *ROA1* and *ROA2* is as expected because the denominator usually is much lower in *ROE*. The *Debt_ratio* is 0.79 on average.¹⁶ The mean total assets (sales) are 11 million NOK (11 million NOK) while the medians are substantially smaller, indicating strong positive skewness. The mean (median) firm age is 13.9 (11) years.¹⁷

To collaborate how family ownership is distributed, we report descriptive statistics for family ownership between 50% and 67% (*FO50to67*), between 67% and 90% (*FO67to90*), between 90% and 99% (*FO90to99*), and of 100% (*FO100*) in Panel

We also use the second largest owner that is non-family owner in the tests, and the results are stronger (see section 4.1).

¹⁶ Some debt ratios are higher than 1 because these firms have negative equity (i.e., the book value of total assets is less than the book value of total debt).

¹⁷ During the sample period, there are 206,109 firm-year observations of private non-family firms that meet the sample selection criteria. For this sample of non-family firms, the mean of *Family_ownership* is 31% and the mean of *2nd_largest_ownership* is 24%. The average *ROA1* and *Debt_ratio* are 3.6% and 0.79, respectively, while the average total assets is 36 million NOK.

B.¹⁸ There are 72 000, 60 238, 32 638, and 346 327 firm-year observations for the four intervals, respectively (and a total of 511,203 firm-year observations). About two-thirds of the observations have 100% family ownership.

Figure 1A illustrates how family ownership relates to firm performance. The x-axis shows four categories of firms based on the shareholdings of the controlling family. The ownership categories are (from left to right): family ownership between 50% and 67%, family ownership of at least 67% and less than 90%, family ownership of at least 90% and less than 100%, and family ownership of 100%. The left y-axis presents the fraction of firm-year observations for each category. The right y-axis reports the average return on assets (*ROAI*) for the four categories: 0.082, 0.054, 0.040, and 0.068, respectively. This graph demonstrates a U-shaped relationship between firm performance and family ownership. Figure 1B shows the relationship between three categories of the ownership of the second largest owner and firm performance, while Figure 1C shows the relationship between three categories of board size and firm performance (in each figure, the bars show the fraction of firms in each category). In Figure 1B, the categories are (from left to right) ownership greater than 0% and less than 20%, at least 20% and less than 33%, and at least 33% and less than 50%. For each category, we show mean *ROAI* on the right y-axis. As predicted by hypothesis 1.2, figure 1B shows that firm performance increases with the ownership of the second largest owner. Figure 1C shows the relationship between *ROAI* and three categories of board size. The categories are

¹⁸ The definitions of these four variables are not exactly the same as the ones using piecewise linear specifications defined in the previous subsection as we only include the observations that are between the break points.

(from left to right): One board member, two or three board members, and four or more board members. The relationship is negative as predicted by hypothesis 2.2.

Correlation coefficients among the test and control variables are shown in Panel C of Table 2. The correlations among the variables based on family ownerships are high due to how the variables are constructed. Correlation between $\ln(Total_assets)$ and $\ln(Sales)$ is 59% and correlation between $Board_size$ and Per_fam_board is -0.54. The rest correlation coefficients are reasonably low.¹⁹

4 RESULTS

4.1 Main Results

Our main analysis is to regress firm performance, measured by return on assets ($ROAI$) on the test and control variables for private family firms, as illustrated in section 3.2. The results for the main analysis are presented in column [1] of Table 3. The coefficients on both $FO50to67$ and $FO100$ are positive and significant at the 1% level, with t-statistics of 5.54 and 6.53, respectively, while the coefficients on $FO67to90$ and $FO90to99$ are negative and significant. This means that private family firms with relatively lower family ownership (between 50% and 67%) and very high family ownership (100%) have higher firm performance than private family firms with family ownership in-between. This indicates a U-shaped relationship between family ownership and firm performance, consistent with hypothesis 1.1. The positive and significant coefficients on $FO50to67$

¹⁹ For every regression, the variance inflation factors (VIF) for the variables constructed using family ownership are between 4 and 5, and are below 2 for other variables. The mean VIF is slightly higher than 2. This indicates no serious multicollinearity problems in our regressions (Lardaro, 1993).

indicates that although there are potential conflicts between the controlling family and outside owners, private family firms with relatively higher outside ownership (*FO50to67*) are superior in performance than those with relatively lower outside ownership (*FO67to90* and *FO90to99*). The positive and significant coefficient on *FO100* indicates that the benefits of having outside owners outweigh the negative effects only when outside ownership is high enough. These results provide new evidence on the relationship between family ownership and firm performance among private family firms.²⁰

-- Insert Table 3 about here --

The fraction of shares held by the second largest owner (*2nd_largest_ownership*) has a positive and significant coefficient as predicted by hypothesis 2.1. It indicates that the presence of a strong second owner is beneficial for performance of a private family firm. One unasked question is whether a strong second owner being a family member will have similar function as a strong second owner being a non-family member. In additional analysis, we investigate this question by differentiating between second large owners that are members of the controlling family and those that are not. When we require that there is only one owner in the controlling family, which means that the second largest owner is a non-family member, the coefficient on *2nd_largest_ownership* becomes larger in magnitude and more significant. Further analysis shows that the disciplining effect of having a strong second largest shareholder also occurs when the

²⁰ We have also used indicator variables for low and high family ownership. The results, untabulated for brevity, show a U-shaped relationship between firm performance and family ownership, consistent with those using the piecewise linear regressions.

second largest shareholder is a member of the controlling family, but the effect is weaker.²¹

The coefficient on *Per_fam_board*, the percentage of board members belonging to the controlling family, is positive and significant as predicted by hypothesis 2.1. This is in line with the stewardship theory and suggests that a board of directors with a high percentage of family members is positive for firm performance. It also shows that the board's monitoring role, which requires an independent board, seems to be less important for private family firms. Furthermore, it is likely that the communication is more efficient when more family members instead of outsiders are on the board (Jaskiewicz & Klein, 2007). The coefficient on the number of board members (*Board_size*) is negative, but insignificant. The coefficient on *Family_power* is positive and significant with a t-value of 7, suggesting that private family firms with strong family power have higher firm performance, *ceteris paribus*.

The coefficients on the control variables show that return on assets (*ROAI*) is highly auto-correlated. Firm age, debt ratio, and sales are positively related to firm performance, while total assets and sales growth are negatively related to firm performance.

We have not included controls for industry affiliation in this test. The reason is that several of the test variables within a firm could be constant throughout the sample period (see subsection 4.6 below) and that firms usually belong to the same industry over

²¹ We test for the effect of the second largest shareholder being a member of the controlling family by running the tests on a subset of firms that are 100 percent owned by one family with two or more family members.

time. Thus, there might be high correlation between indicator variables for industry affiliation and the test variables for many firms. As a robustness test, we include control variables for industry affiliation (using two digits industry codes). The coefficients on all the test variables (results not tabulated for brevity) are qualitatively similar to those reported above.

4.2 Tests Using Alternative Definitions and Measures

Miller et al. (2007) show that empirical results are sensitive to the definition of family firms. We examine whether our results can be affected by a different definition of family firms. Many studies on family firms require the CEO to belong to the controlling family when defining family firms. We therefore redefine a family firm requiring that the controlling family owns more than 50% of shares *and* the CEO belongs to the controlling family. We redo the regression using this alternative definition of family firms and report the results in column [2] of Table 3. The number of observations has dropped from 511,203 by the previous definition of family firms to 401,994 by this definition. The results are consistent with those in the main regression in column [1] of Table 3, except that the coefficient on *Board_size* has become significantly negative at the 1% level, which is in accordance with hypothesis 2.2.

We also use alternative measures of firm performance, the return on assets (*ROA2*), computed as dividing net income by the average book values of total assets, and return on equity (*ROE*), which is the ratio of net income to the average shareholders' equity. We redo the regression analysis replacing *ROA1* with *ROA2* and *ROE*, respectively, and report the results in the last two columns of Table 3. The coefficients on

all the test variables have the predicted sign and are significant. This subsection shows that our findings hold for different measures of firm performance and alternative definition of private family firms.

4.3 The Relative Importance of Different Governance Variables

We have shown that several aspects of ownership structure and board characteristics are related to firm performance. Yet, not all factors are equally important for firm performance. It is interesting and useful to understand which factors are most associated with firm performance in private family firms. To investigate the relative importance of the factors related to ownership and board structure for firm performance, we standardize all the variables in the main regression to make the coefficients comparable, following Bennett et al. (2003). We subtract each variable by its average and divide the difference by its standard deviation, so that each variable will have a mean of zero and a standard deviation of one. The coefficients can be interpreted as the expected standard deviation change in the dependent variable when there is one standard deviation change in the independent variables. The results are presented in Table 4.

-- Insert Table 4 about here --

The two columns in Table 4 present results using the main and alternative definition of family firms, corresponding to the first two models in Table 3. The t-values are the same as the ones in Table 3, while the coefficients have changed and can be compared directly. Among all the coefficients on the test variables, the coefficients on *FO67to90* and *2nd_largest_ownership* are the highest in magnitude in both columns. Their absolute values are 0.009 and 0.008 in column [1], and are 0.01 for both in column

[2]. This implies that the controlling family has the potential to expropriate minority owners and it is important to have a strong second owner to balance the power of the majority owner and/or makes the family firm focus more on financial performance. The coefficients on *FO50to67*, *FO100*, *Per_fam_board*, and *Family_power* are 0.004 or 0.005, while the coefficient on *Board_size*, with the absolute value of 0.001, is the least important factor for firm performance in column [1]. In column [2], the coefficient on *Per_fam_board* becomes a bit lower and on *Board_size* is a bit stronger compared to those in column [1]. The results in this table indicate that ownership structure is more associated with firm performance than board characteristics.

4.4 Tests for Subsamples

In this subsection, we test whether our results hold for firms in different size categories. We split the sample into three subsamples based on firms' total assets (*TA*) and redo the main regression for the three subsamples. The regression results for the three subsamples are reported in Table 5. Columns [1], [2], and [3] present the results for the smallest, medium-sized and largest firms, respectively.

-- Insert Table 5 about here --

The results for the private family firms in the lowest and 2nd highest total assets categories are generally in line with those reported for the main analysis in column [1] of Table 3. For the highest total assets subsample in column [3] of Table 5, some of the coefficients become insignificant or weaker. The weaker results for the large firm subsample might be due to lower profit margins and greater competition for large firms.

To examine whether this is the case, we follow the reviewer's suggestion and match large firms with small and medium-sized firms along *Board_size* and *Family_power*. These two dimensions are chosen because the coefficients on these two variables have become insignificant for large firms. After we have matched the large firms with the small and medium-sized firms, we conduct the regression analysis for the matched sample and report the results in the last column of Table 5.²² The coefficients on the test variables have the predicted sign and are significant except for *FO90t099*. This matching method strengthens our findings and shows that the weaker results for large firms in column [3] are attributed to firm size.

4.5 Controlling for Dual-class Shares, Generational and Sole Owner Effects

The literature has shown that the use of dual-class shares affects firm performance (Gompers et al., 2010; Masulis et al., 2007). The studies on dual-class shares usually focus on listed firms. For private family firms, the use of dual-class shares is likely less common compared to listed firms because private family firms may have more control over their businesses and thus have less need to maintain control via dual-class shares. Nevertheless, it is interesting to examine whether the use of dual-class shares is systematically related to firm performance in private family firms.²³ We use one indicator

²² The sample of large firms is 170,412. When we match the large firms with the small and medium-sized firms, 126 large firm-year observations do not get any match and 65 firm-year observations get multiple matches. We drop these observations and reduce the sample to 170,221. Some of the large firms are matched with the same small or medium-sized firms. We drop the duplicates and have a number of observations of 154,941 for the matched sample.

²³ We appreciate this suggestion from the reviewer. Information on share classes and voting rights is obtained from the Norwegian Tax Administration through a special agreement.

variable, *Dual_class*, which equals 1 if a firm uses dual-class shares and 0 otherwise, and one continuous variable, *Wedge_vote_CF*, which is an approximation of the difference between voting rights and cash-flow rights.²⁴ In our sample, 3.8% of the firm-year observations have dual-class shares, which is much lower than the fraction of 13% among Norwegian listed firms (Faccio and Lang, 2002). The average wedge (*Wedge_vote_CF*) is 26% for the observations with positive difference between the voting rights and cash-flow rights.

-- Insert Table 6 about here --

We add these two variables both separately and simultaneously in the regressions and present the results in Panel A of Table 6.²⁵ Column [1] adds *Dual_class* only. The coefficients on all the test variables remain similar to those in the main analysis. The coefficient on *Dual_class* is positive and significant at the 1% level, which is in contrast to the negative impact of dual-class shares on firm performance in listed firms (Gompers et al., 2010). Column [2] adds the variable, *Wedge_vote_CF*, in the main regression. The coefficient on this variable is positive and significant at the 5% level. Column [3] presents results of regression including both *Dual_class* and *Wedge_vote_CF* as additional variables. The coefficient on *Dual_class* remains positive and significant at the

²⁴ The measure of the wedge between voting rights and cash-flow rights is subject to measurement errors as we are unable to identify which shares only have cash-flow rights and which shares have voting and cash-flow rights. Therefore, the difference between voting rights and cash-flow rights is a crude proxy. Furthermore, we have assumed that the wedge in the years 2001 – 2005 is identical to the wedge in 2006 as 2006 is the first year we can estimate a proxy for the difference between voting rights and cash-flow rights. The identification of firm-year observations with dual class shares is very precise, but subject to the same limitation that the information is not available before 2006. As firms rarely make changes in their share class structure and very few firms have more than one share class, the assumption that the share class structure and the wedge in 2001 – 2005 is the same as in 2006 is unproblematic. We assume that firms that only occur in the sample in the years 2001 – 2005 have single class shares.

²⁵ For brevity, we do not report the coefficients on control variables in this table and the following tables.

1% level, while the coefficient on *Wedge_vote_CF* becomes insignificant. The results show that our main findings reported above (Column [1] in Table 3) are robust to the inclusion of dual-class shares, as the coefficients on all the test variables have the predicted sign and are significant at the 1% or 5% level.²⁶

Another factor that could affect our results is the generational effect. Arosa et al. (2010) show that it matters whether the firms are in their first generation or subsequent generations when studying the relationship between ownership concentration and firm performance. We therefore include an indicator variable, *Generation_1st*, which equals 1 if the firm is in its first generation and 0 otherwise.²⁷ The results are presented in the last column of Panel A in Table 6. The coefficients on the test variables are similar to the ones in the main test, and the coefficient on *Generation_1st* is positive and significant at the 1% level, consistent with Arosa et al. (2010).

Miller et al. (2007) distinguish lone founder businesses, in which no relatives of the founder are involved in the business, from family businesses in which two or more family members are involved in the businesses. We follow Miller et al. (2007) and create an indicator variable, which equals 1 if there is only one family owner, who also serves as

²⁶ We leave it to future research to investigate why the use of dual-class shares may serve different roles in private family firms and listed firms.

²⁷ Information on ownership of private limited liability firms is available from 2000 onwards. This means that for firms incorporated before 2000, it is impossible to identify which generation manages and/or owns the firm, or whether the firm was a lone founder firm at the outset. It is also difficult to perform such categorization for firms established after 2000 since some firms come into being in connection with reorganizations, for instance, demergers and change of organization form from sole proprietorship to a private limited liability firm. To test whether firms in their first generation perform differently from firms owned by later generations, we assume that a CEO with firm ownership is at least 25 years old and that s/he is no more than 50 years older than the firm s/he incorporated. Thus, we define *Generation_1st* = 1 when the difference between age of the CEO and age of the firm is 50 years or less and the CEO is at least 25 years, and 0 otherwise. We also used CEO age of at least 20 years or 30 years as the lower limit, and the difference between CEO age and firm age is less than 60 years, with results similar to those reported in the text. In addition, we approximate 1st generation firms as firms incorporated in year t or later with similar results as those reported in the text, t = 1970, 1975, and 1980.

(1) CEO (*One_owner_CEO*), (2) Chair of the Board (*One_owner_Chair*), (3) CEO or Chair of the Board (*One_owner_CEO_or_Chair*), and (4) CEO and Chair of the Board (*One_owner_CEO&Chair*), and 0 otherwise.²⁸ We add these different measures in the regression separately, and present the results in Panel B of Table 6. The coefficients on these variables are positive and significant, consistent with Miller et al. (2007). Most importantly, and the coefficients and significance levels on all the test variables are in line with the results in the main regression in Table 3, and our inferences hold.

4.6 Endogeneity

This study focuses on the relationship instead of the causality between ownership and board structure and firm performance in private family firms because it is difficult to test for causation. A common concern in studies that investigate a causal relationship between ownership and firm performance is that the ownership structure is endogenous. This argument assumes the presence of a liquid stock market that makes ownership structure endogenously adjustable. A key distinguishing feature of private firms is the absence of a liquid market. As a result, owners of private firms cannot easily adjust the ownership structure as situations change. According to Nagar et al. (2011), this makes ownership a predetermined state variable that is sufficient to motivate its use as an independent variable in a performance regression. Nagar et al. (2011) present strong argument for the substantially smaller causality problem in studies of private firms due to the high adjustment costs of ownership changes. Core & Larcker (2002), Gorton & Schmid

²⁸ We identify firms with only one family owner instead of lone founder firms, as our identification of lone founder firms is imprecise for the reasons given in footnote 27.

(2000), and Stiglitz (1994, Ch. 10) also use high trading costs to argue for the exogenous and predetermined nature of ownership.

If one test variable is constant over time for a firm, then this variable is not affected by firm performance or other potential variables. Therefore, it is more likely that the causality goes from the test variable to firm performance. We examine the stability of the test variables related to ownership and board structure by calculating their standard deviation for each firm. A variable with a standard deviation of zero indicates that this variable is constant over time in the sample. We present the number and percentage of observations that have constant test variables (zero standard deviation) over time and provide the regression results using the constant test variables in Table 7.

-- Insert Table 7 about here --

Column [1] in Panel A of Table 7 shows that there are 306,628 firm-year observations that have constant family ownership, which equals 60% of the sample. The rest of the columns in Panel A of Table 7 report the number and percentage of observations that have a standard deviation of zero for other test variables. The percentages of observations that have constant test variables are quite high, 58% for the second largest ownership and more than 70% for the others.

Since the test variables are relatively stable over time, it is less likely that severe endogeneity distorts our results. Nevertheless, we rerun tests using subsamples in which the test variables are not adjusted on an ongoing basis. This is the approach taken by Gorton & Schmid (2000) and Stiglitz (1994, Ch. 10). Results for the regression analysis on observations with constant family ownership are reported in column [1] in Panel B of Table 7. The rest columns in Panel B of Table 7 present results for regression analyses

requiring each of the other test variables to be constant over time. The results from all the regressions are generally in line with those documented previously. Furthermore, we have regressed return on assets (*ROAI*) on lagged test variables requiring that the test variables have been changing over time. The reason for requiring inconstant test variables is that whether we use contemporaneous or lagged test variables would not matter if the test variables have been stable over time. The results from these supplementary tests are qualitatively similar to those reported above and are not tabulated.

4.7 Earnings Management and Systematic Biases in Return on Assets²⁹

Several studies document earnings management among private firms (e.g., Ball & Shivakumar, 2005; Burgstahler et al., 2006; Szczesny & Valentincic, 2013; Van Tendeloo & Vanstraelen, 2008). We have assessed the effects of accrual-based earnings management, and do not consider accrual-based earnings management to be a threat to our results for the following reasons: (i) Norway has low book-tax alignment (Nobes & Schwencke, 2006; Hope, 1999; Hoogendoorn, 1996). The separation between the tax law and the accounting law substantially reduces the earnings management incentives caused by taxation, as accrual-based earnings management does not affect the firms' taxable income.³⁰ (ii) Szczesny & Valentincic (2013) show that firms may use write-off discretionary. We have rerun our main test after excluding firms with write-offs, and our results hold (see Table 8, column [1]). The results also holds if we exclude observations

²⁹ We thank the editor for encouraging us to consider earnings management and biases in return on assets.

³⁰ As an illustration of the separation between tax and accounting, only 0.5 % of the sample firms report taxable income in their tax filings that is identical to net income before taxes in their financial statements.

in year $t-1$, t , and $t+1$ for firms with write-offs in year t . (iii) Debt-motivated earnings management may be more likely for highly leveraged firms than for other firms. We repeat our analysis after excluding 10% of the most highly leveraged firms and our results hold (see Table 8, column [2]). (iv) A tax reform introduced taxes on dividends in Norway in 2006 (Bersinz et al., 2014). The tax reform could incentivize firms to increase earnings and thus their ability to pay dividends before dividends became taxed. We exclude various combinations of years surrounding the tax reform and rerun the tests, and our results hold. Column [3] in Table 8 presents the results when the years 2004-2006 are excluded. (v) An inherent property of accrual-based earnings management is that earnings management that takes place in one period must reverse in another period. We follow the same firms over many years and document in Table 7 that our results remain when we hold the test variables constant throughout the sample period. If our results should be attributed to earnings management, the firms must have been able to manage earnings in the same direction throughout the sample period, which we regard as highly unlikely.

-- Insert Table 8 about here --

Norwegian Generally Accepted Accounting Principles (NGAAP) are based on historical cost accounting. Historical cost produces systematic biases in firms' asset values because appreciations in asset values are not recognized (Brown et al., 1992), neither is there adjustment for inflation (Konchitchki, 2011). Since historical cost reports assets at lower values than their current values, return on assets is biased upwards (because book value of assets is used in the denominator). In their analysis of the comparability of accounting return for firms using historical costs, Curtis & Lewis (2011)

hypothesize and find that the age of a firm's property, plant, and equipment is positively related to return on net operation assets. To assess whether systematic biases in return on assets have an effect on our results, we re-estimate the main test on a subset of firms with age between the 25 and the 75 percentile of firm age because these firms more likely have assets of more comparable age than the rest of the firms in the sample. The results for this subsample are identical to those reported above (see Table 8 column [4]).

4.8 Summary

In summary, this section conducts various regression analyses of firm performance on test variables that are related to ownership and board structure, and control variables in private family firms. We find that firm performance for firms with family ownership between 50 and 67 percent and of 100 percent is higher than family ownership in-between, and hence show a U-shaped relationship between family ownership and firm performance. The ownership of the second largest owner, the percentage of board members belonging to the controlling family, and strong family power are positively related to firm performance. We only find partial evidence that board size is negatively associated with firm performance in the main test, but in many of the supplementary tests, we document a negative relationship between board size and firm performance. By comparing the relative importance of the test variables for firm performance, we show that ownership structure is more associated with firm performance than board structure in private family firms. The results are robust to tests, e.g., using an alternative definition of private family firms, different measures of firm performance, additional control variables, and subsamples based on firm size (total assets), among others.

5 CLOSING REMARKS

This paper examines the relationship between firm performance and ownership and board structure in private family firms and adds several contributions to the literature. First, although a large proportion of firms worldwide are private family firms, our understanding of private family firms is limited. There are increasing calls for research to enhance our understanding of private family firms (Chrisman et al., 2007). We follow the call and take advantage of a unique and detailed dataset of private family firms. The dataset nearly covers the entire population of private limited liability family firms in Norway from 2001 to 2011, uses ultimate ownership for all firms, and maps family relationships between owners, board members, and CEOs using confidential data on kinship, marriage, and adoption. To the best of our knowledge, this is the first large-scale empirical study on the relationship between governance structure and firm performance in private family firms.

Second, we provide new evidence to the literature by documenting a U-shaped relationship between family ownership and firm performance within private family firms. Westhead & Howorth (2006) and Sciascia & Mazzola (2008) find no relationship between family ownership and firm performance in private family firms. Our results show that private family firms having higher outside ownership (relatively lower family ownership, e.g., 50%-67%) are associated with higher firm performance. However, the benefits of having outside ownership outweigh the negative effects only when the outside ownership is high enough. For private family firms with lower outside ownership (higher family ownership, e.g., 67%-90%), they perform worse than firms that are wholly owned

by one family. In addition, we show that the ownership of the second largest owner, no matter the second largest owner is a family member or not, is positively related to firm performance. The association between firm performance and the ownership of the second largest owner is stronger if he or she is a non-family member.

Third, we examine the relative importance of variables related to ownership and board structure for firm performance in private family firms by standardizing all the variables in the regressions to make the coefficients directly comparable. The results indicate that there are stronger associations between firm performance and ownership structure than between firm performance and board related characteristics.

Finally, this study provides new empirical evidence to the literature using unique data from a Nordic country with civil law and high protection of minority stockholders. Governance issues in different institutional settings might differ and this study enriches the literature using a different institutional setting. Furthermore, it deepens regulators' understanding of the private firm segment of the economy, and provides academics a better comprehension of the relationship between governance structure and firm performance within private family firms.

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Table 1 Definition of variables

Variable	Definition of variables
Dependent variable	
<i>ROA1</i>	= Earnings before interest and taxes (EBIT) divided by the average book value of total assets in the beginning and end of each year
<i>ROA2</i>	= Net income divided by the average book value of total assets in the beginning and end of each year
<i>ROE</i>	= Net income divided by the average of shareholders' equity in the beginning and end of each year
Test variables	
<i>Family_ownership</i>	= The aggregated fraction of shares held by all the owners related to the largest family using ultimate ownership
<i>FO50to67</i>	= <i>Family_ownership</i> if <i>Family_ownership</i> is higher than 0.5 and less than $\frac{2}{3}$, and $\frac{2}{3}$ if <i>Family_ownership</i> is at least $\frac{2}{3}$
<i>FO67to90</i>	= 0 if <i>Family_ownerships</i> is less than $\frac{2}{3}$, 0.9 if <i>Family_ownership</i> is larger than 0.9, and <i>Family_ownership</i> if <i>Family_ownership</i> is at least $\frac{2}{3}$ and no more than 0.9
<i>FO90to99</i>	= 0 if <i>Family_ownerships</i> is less than or equal to 0.9, 0.99 if family ownership is larger than 0.99, and <i>Family_ownership</i> if <i>Family_ownership</i> is larger than 0.9 and less than 1
<i>FO100</i>	= 1 if <i>Family_ownership</i> equals 1 and 0 otherwise
<i>2nd_largest_ownership</i>	= Fraction of shares held by the second largest owner using ultimate ownership
<i>Per_fam_board</i>	= Fraction of board members belonging to the largest family
<i>Board_size</i>	= Natural logarithm of the number of board members
<i>Family_power</i>	= 1 if both the Chair of the Board and the CEO belong to the controlling family and the CEO is a board member, and 0 otherwise
Control variables	
<i>Debt_ratio</i>	= The ratio of total debt to total assets
<i>ln(Total_assets)</i>	= Natural logarithm of total assets in million NOK
<i>ln(Sales)</i>	= Natural logarithm of total revenue from operations in million NOK
<i>ln(Firm_age)</i>	= Natural logarithm of the number of years since the firm's incorporation
<i>Sales_growth</i>	= Change in sales in year t = $(Sales_t / Sales_{t-1}) - 1$

Table 2 Descriptive Statistics and Correlation Coefficients

Panel A: Descriptive Statistics

Variables	N	mean	sd	p5	p25	p50	p75	p95
<i>Family_ownership</i>	511203	0.92	0.15	0.60	0.90	1.00	1.00	1.00
<i>FO50to67</i>	511203	0.66	0.03	0.60	0.67	0.67	0.67	0.67
<i>FO67to90</i>	511203	0.76	0.31	0.00	0.90	0.90	0.90	0.90
<i>FO90to99</i>	511203	0.74	0.44	0.00	0.00	1.00	1.00	1.00
<i>FO100</i>	511203	0.68	0.47	0.00	0.00	1.00	1.00	1.00
<i>2nd_largest_ownership</i>	511203	0.13	0.16	0.00	0.00	0.00	0.29	0.41
<i>Per_fam_board</i>	511203	0.85	0.27	0.33	0.67	1.00	1.00	1.00
<i>#Board_members</i>	511203	1.87	1.14	1.00	1.00	1.00	3.00	4.00
<i>Family_power</i>	511203	0.68	0.47	0.00	0.00	1.00	1.00	1.00
<i>ROA1</i>	511203	0.07	0.29	-0.34	-0.05	0.05	0.19	0.51
<i>ROA2</i>	511203	0.06	0.25	-0.26	-0.01	0.05	0.16	0.39
<i>ROE</i>	421467	0.38	0.78	-0.56	0.02	0.21	0.57	1.79
<i>Debt_ratio</i>	511203	0.79	0.52	0.21	0.55	0.76	0.90	1.40
<i>Total_assets(mNOK)</i>	511203	10,735	84,475	234	943	2,421	6,316	30,911
<i>Sales(mNOK)</i>	511203	10,683	63,792	166	954	2,744	7,868	39,164
<i>Firm_age</i>	511203	13.93	13.62	2.00	6.00	11.00	18.00	35.00
<i>Sales_growth</i>	511203	0.13	0.65	-0.49	-0.09	0.03	0.17	0.89

Panel B: Descriptive statistics for the distribution of *Family_ownership*

Variables	N	mean	sd	p5	p25	p50	p75	p95
<i>>0.50 and < 2/3</i>	72000	0.60	0.06	0.51	0.55	0.60	0.65	0.66
<i>≥ 2/3 and ≤ 0.9</i>	60238	0.78	0.07	0.67	0.72	0.80	0.84	0.90
<i>> 0.9 & < 1.0</i>	32638	0.97	0.03	0.91	0.95	0.97	0.99	1.00
<i>= 1.0</i>	346327	1.00	0.00	1.00	1.00	1.00	1.00	1.00

Panel C: Correlation coefficients

		v1	v2	v3	v4	v5	v6	v7
<i>ROA1</i>	v1	1.00						
<i>FO50to67</i>	v2	0.00	1.00					
<i>FO67to90</i>	v3	-0.02#	0.74#	1.00				
<i>FO90to99</i>	v4	-0.01#	0.51#	0.76#	1.00			
<i>FO100</i>	v5	0.01#	0.44#	0.65#	0.87#	1.00		
<i>2nd_largest_ownership</i>	v6	0.01#	-0.37#	-0.50#	-0.51#	-0.52#	1.00	
<i>Per_fam_board</i>	v7	0.03#	0.33#	0.36#	0.41#	0.39#	-0.17#	1.00
<i>Board_size</i>	v8	-0.03#	-0.19#	-0.22#	-0.30#	-0.36#	0.36#	-0.54#
<i>Family_power</i>	v9	0.04#	0.16#	0.17#	0.20#	0.21#	-0.12#	0.44#
<i>ln(Firm_age)</i>	v10	0.02#	0.02#	0.03#	0.00	-0.05#	0.05#	0.00
<i>Debt_ratio</i>	v11	-0.38#	-0.01#	-0.00#	-0.01#	0.00	-0.01#	-0.02#
<i>ln(Total_assets)</i>	v12	0.11#	-0.05#	-0.03#	-0.08#	-0.13#	0.10#	-0.19#
<i>ln(Sales)</i>	v13	0.14#	-0.08#	-0.07#	-0.11#	-0.13#	0.10#	-0.22#
<i>Sales_growth</i>	v14	0.16#	0.00	0.00	0.00*	0.00#	-0.01#	0.00

		v8	v9	v10	v11	v12	v13	v14
<i>Board_size</i>	v8	1.00						
<i>Family_power</i>	v9	-0.23#	1.00					
<i>ln(Firm_age)</i>	v10	0.10#	-0.01#	1.00				
<i>Debt_ratio</i>	v11	-0.04#	-0.01#	-0.10#	1.00			
<i>ln(Total_assets)</i>	v12	0.30#	-0.17#	0.21#	-0.25#	1.00		
<i>ln(Sales)</i>	v13	0.25#	-0.10#	0.09#	-0.04#	0.59#	1.00	
<i>Sales_growth</i>	v14	-0.01#	-0.01#	-0.05#	0.00*	0.04#	0.06#	1.00

Panel A provides descriptive statistics (mean, standard deviation, the 5-, 25-, 50-, 75- and 95 percentile) for the sample used in the main tests. Panel B presents similar statistics for different intervals of *Family_ownership*, the variable used in the construction of variables using the piecewise linear specifications. The categories correspond to the continuous part of *FO50to67*, *FO67to90*, *FO90to99*, and *FO100*, respectively. Panel C provides the Spearman correlations among the variables. *Ln(Firm_age)*, *Debt_ratio*, *ln(Total_assets)*, *ln(Sales)*, and *Sales_growth* are one-year lagged. Please see Table 1 for variable definitions.

Table 3 Regression results for firm performance on test and control variables

	Predicted	[1]	[2]	[3]	[4]
	sign	<i>ROA1</i>	<i>ROA1</i>	<i>ROA2</i>	<i>ROE</i>
<i>FO50to67</i>	+	0.112*** 5.54	0.159*** 6.38	0.105*** 6.09	0.352*** 5.79
<i>FO67to90</i>	-	-0.027*** -9.92	-0.032*** -9.85	-0.025*** -10.71	-0.080*** -10.01
<i>FO90to99</i>	-	-0.005** -2.41	-0.004 -1.58	-0.004** -2.45	-0.012** -2.12
<i>FO100</i>	+	0.011*** 6.53	0.012*** 6.00	0.010*** 6.88	0.018*** 4.12
<i>2nd_largest_ownership</i>	+	0.016*** 5.00	0.020*** 5.65	0.012*** 4.50	0.033*** 3.75
<i>Per_fam_board</i>	+	0.022*** 9.56	0.008*** 2.77	0.020*** 9.75	0.015** 2.52
<i>Board_size</i>	-	-0.002 -1.58	-0.005*** -4.19	-0.002* -1.84	-0.015*** -5.58
<i>Family_power</i>	+	0.007*** 6.88	0.010*** 6.61	0.007*** 7.69	0.010*** 3.44
<i>L.ROA1</i>		0.387*** 105.46	0.376*** 91.91		
<i>L.ROA2</i>				0.310*** 69.28	
<i>L.ROE</i>					0.482*** 134.64
<i>L.ln(Firm_age)</i>		0.002*** 4.81	0.001** 2.40	0.003*** 7.83	-0.001 -0.71
<i>L.Debt_ratio</i>		0.013*** 5.31	0.016*** 5.72	0.031*** 13.20	0.551*** 105.12
<i>L.ln(Total_assets)</i>		-0.009*** -21.75	-0.009*** -19.88	-0.002*** -5.29	-0.030*** -32.51
<i>L.ln(Sales)</i>		0.009*** 27.81	0.010*** 25.59	0.005*** 17.96	0.011*** 13.16
<i>L.Sales_growth</i>		-0.016*** -25.37	-0.016*** -21.72	-0.011*** -19.68	-0.046*** -29.4
<i>Constant</i>		-0.041*** -3.22	-0.045*** -2.85	-0.074*** -6.79	-0.256*** -6.82
<i>Observations</i>		511203	401994	511203	421467
<i>Adjusted R²</i>		0.154	0.145	0.092	0.304

This table presents results of regressing firm performance, measured by return on assets (*ROA1*, *ROA2*) and return on equity (*ROE*), on test and control variables. The test variables are contemporary and the control variables, with prefix L., are one-year lagged. The variables are defined in Table 1. Column [1] reports the regression results for private family firms where the largest family's shareholding is higher than 50%. Column [2] presents the regression results for the alternative definition of family firm where the largest family's shareholding is more than 50% and the CEO is a family member of the controlling family. Column [3] and [4] apply the same definition of family firms as column [1], but use *ROA2* and *ROE* as measures of firm performance, respectively. Indicator variables for years are included in all the tests, but not reported. The t-values are reported in the rows below the coefficients and are adjusted for within-cluster

correlation using the Huber White Sandwich Estimator. * (**) [***] indicates significance at the 1 (5) [10] percent level using two-tailed tests.

Table 4 Regression results for firm performance on test and control variables using standardized variables

	Predicted sign	[1]	[2]
		<i>ROAI</i>	<i>ROAI</i>
<i>FO50to67</i>	+	0.004*** 5.54	0.005*** 6.38
<i>FO67to90</i>	-	-0.009*** -9.92	-0.010*** -9.85
<i>FO90to99</i>	-	-0.002** -2.41	-0.002 -1.58
<i>FO100</i>	+	0.005*** 6.53	0.006*** 6.00
<i>2nd_largest_ownership</i>	+	0.008*** 5.00	0.010*** 5.65
<i>Per_fam_board</i>	+	0.005*** 9.56	0.002*** 2.77
<i>Board_size</i>	-	-0.001 -1.58	-0.003*** -4.19
<i>Family_power</i>	+	0.004*** 6.88	0.005*** 6.61
<i>L.ROAI</i>		0.387*** 105.46	0.376*** 91.91
<i>L.ln(Firm_age)</i>		0.002*** 4.81	0.001** 2.40
<i>L.Debt_ratio</i>		0.007*** 5.31	0.008*** 5.72
<i>L.ln(Total_assets)</i>		-0.017*** -21.75	-0.018*** -19.88
<i>L.ln(Sales)</i>		0.031*** 27.81	0.033*** 25.59
<i>L.Sales_growth</i>		-0.016*** -25.37	-0.015*** -21.72
<i>Constant</i>		0.047*** 24.99	0.046*** 21.08
Observations		511203	401994
Adjusted R^2		0.154	0.145

This table presents results of regressing firm performance, measured by return on assets (*ROAI*), on test and control variables, where all the variables are standardized to have a mean of zero and a standard deviation of one. The test variables are contemporary and the control variables, with prefix L., are one-year lagged. The variables are defined in Table 1. Column [1] reports the regression results for private family firms where the largest family's shareholding is higher than 50%. Column [2] presents the regression results for the alternative definition of family firm where the largest family's shareholding is more than 50% and the CEO is a family member of the controlling family. Indicator variables for years are included in all the tests, but not reported. The t-values are reported in the rows below the coefficients and are adjusted for within-cluster correlation using the Huber White Sandwich Estimator. * (**) [***] indicates significance at the 1 (5) [10] percent level using two-tailed tests.

Table 5 Regression results for firm performance on test and control variables using subsamples of firms based on firm size

	Predicted	[1]	[2]	[3]	[4]
	sign	Small	Medium	Large	Matched
<i>FO50to67</i>	+	0.289*** 5.64	0.059** 2.19	0.041* 1.88	0.109*** 3.04
<i>FO67to90</i>	-	-0.064*** -9.55	-0.024*** -6.72	-0.003 -1.17	-0.032*** -6.67
<i>FO90to99</i>	-	-0.002 -0.25	-0.006** -2.11	-0.005*** -2.61	-0.004 -1.04
<i>FO100</i>	+	0.028*** 4.63	0.012*** 4.95	0.002 1.28	0.013*** 3.49
<i>2nd_largest_ownership</i>	+	0.023*** 2.91	0.011*** 2.58	0.013*** 3.89	0.021*** 3.32
<i>Per_fam_board</i>	+	0.051*** 8.73	0.009*** 2.79	0.006*** 2.82	0.033*** 7.72
<i>Board_size</i>	-	0.001 0.23	-0.007*** -4.92	-0.001 -1.10	-0.004** -2.34
<i>Family_power</i>	+	0.017*** 6.42	0.007*** 4.97	0.000 0.01	0.011*** 5.79
<i>L.ROA1</i>		0.314*** 55.78	0.498*** 109.41	0.448*** 77.31	0.388*** 64.68
<i>L.ln(Firm_age)</i>		0.004*** 3.85	0.000 0.31	0.002*** 2.96	0.003*** 3.59
<i>L.Debt_ratio</i>		0.009*** 2.71	0.010*** 3.00	-0.020*** -6.34	0.007* 1.84
<i>L.ln(Total_assets)</i>		-0.038*** -17.83	-0.113*** -64.5	-0.029*** -42.59	-0.015*** -10.71
<i>L.ln(Sales)</i>		0.003*** 3.19	0.006*** 13.16	0.010*** 29.38	0.007*** 9.64
<i>L.Sales_growth</i>		-0.016*** -12.34	-0.019*** -21.8	-0.013*** -18.56	-0.019*** -14.88
<i>Constant</i>		0.016 0.47	0.845*** 40.14	0.230*** 15.72	0.019 0.80
<i>Observations</i>		170387	170404	170412	154941
<i>Adjusted R²</i>		0.096	0.323	0.269	0.151

This table presents results of regressing firm performance, measured by return on assets (ROA1) on test and control variables for the three subsamples based on total assets (*TA*) in columns [1] - [3]. The test variables are contemporary and the control variables, with prefix *L.*, are one-year lagged. The variables are defined in Table 1. All the firms in the sample are divided into three equal-sized groups based on *TA*. Column [1] reports the regression results for the observations in the lowest *TA* group. Column [2] presents the results for the observations in the midmost *TA* group. Column [3] presents the results for firms in the largest *TA* group. The last column reports results on the matched sample where firms in the largest *TA* category (Column [3]) are matched on *Board_size* and *Family_power* with small and medium-sized firms. Indicator variables for years are included in all the tests, but not reported. The t-values are reported in the rows below the coefficients and are adjusted for within-cluster correlation using the Huber White Sandwich Estimator. * (**) [***] indicates significance at the 1 (5) [10] percent level using two-tailed tests.

Table 6: Regression results including additional control variables

Panel A: Controlling for dual class shares and generational effects

	Predicted sign	[1] <i>ROAI</i>	[2] <i>ROAI</i>	[3] <i>ROAI</i>	[4] <i>ROAI</i>
<i>FO50to67</i>	+	0.117*** 5.52	0.121*** 5.68	0.121*** 5.66	0.122*** 5.83
<i>FO67to90</i>	-	-0.028*** -9.68	-0.028*** -9.62	-0.028*** -9.72	-0.028*** -10.01
<i>FO90to99</i>	-	-0.005** -2.31	-0.004** -2.07	-0.005** -2.25	-0.005** -2.28
<i>FO100</i>	+	0.011*** 6.38	0.010*** 5.75	0.011*** 6.09	0.011*** 6.49
<i>2nd_largest_ownership</i>	+	0.012*** 3.67	0.012*** 3.77	0.011*** 3.40	0.016*** 5.07
<i>Per_fam_board</i>	+	0.018*** 7.53	0.018*** 7.73	0.018*** 7.46	0.022*** 9.68
<i>Board_size</i>	-	-0.003*** -2.92	-0.003*** -2.73	-0.003*** -2.92	0.000 -1.25
<i>Family_power</i>	+	0.007*** 6.32	0.007*** 6.43	0.007*** 6.51	0.007*** 6.62
<i>Dual_class</i>		0.021*** 10.12		0.020*** 7.94	
<i>Wedge_vote_CF</i>			0.042** 2.39	-0.001 -0.06	
<i>Generation_1st</i>					0.004*** 3.16

Panel B: Controlling for one-owner effects

	Predicted sign	[1] <i>ROAI</i>	[2] <i>ROAI</i>	[3] <i>ROAI</i>	[4] <i>ROAI</i>
<i>FO50to67</i>	+	0.115*** 5.69	0.117*** 5.78	0.120*** 5.91	0.114*** 5.63
<i>FO67to90</i>	-	-0.026*** -9.31	-0.025*** -9.05	-0.024*** -8.82	-0.026*** -9.36
<i>FO90to99</i>	-	-0.005** -2.43	-0.005** -2.34	-0.005** -2.35	-0.005** -2.42
<i>FO100</i>	+	0.011*** 6.55	0.011*** 6.55	0.011*** 6.50	0.011*** 6.58
<i>2nd_largest_ownership</i>	+	0.023*** 6.01	0.026*** 6.49	0.029*** 7.15	0.022*** 5.67
<i>Per_fam_board</i>	+	0.023*** 9.94	0.021*** 9.18	0.022*** 9.67	0.022*** 9.70
<i>Board_size</i>	-	-0.001 -0.93	-0.001 -0.60	0.000 -0.47	-0.001 -0.92
<i>Family_power</i>	+	0.005*** 4.50	0.006*** 6.00	0.007*** 6.41	0.005*** 4.06
<i>One_owner_CEO</i>		0.004*** 3.19			
<i>One_owner_Chair</i>			0.005*** 3.91		
<i>One_owner_CEO_or_Chair</i>				0.006*** 4.87	
<i>One_owner_CEO&Chair</i>					0.004*** 2.62

This table presents results of regressing firm performance, measured by return on assets (*ROAI*), on test and control variables, including additional variables. Panel A controls for dual class shares and generational effects and panel B controls for one-owner effects. *Dual_class* is an indicator variable, which equals 1 if one firm has dual class shares and 0 otherwise. *Wedge_vote_CF* is a proxy for the difference between voting rights and cash-flow rights. *Generation_1st* is an indicator variable, which equals 1 if the firm is in its first generation and 0 otherwise. *One_owner_CEO*, *One_owner_Chair*, *One_owner_CEO_or_Chair*, and *One_owner_CEO&Chair* are indicator variables that equal 1 if there is only one owner in the controlling family, who also serves as CEO, Chair, CEO or Chair, and CEO and Chair, respectively, and 0 otherwise. For definition of other variables, please see Table 1. Results on the test variables and the additional variables are reported, while results on the control variables (same as in Table 3) are dropped for brevity. Indicator variables for years are included in all the tests, but not reported. The t-values are reported in the rows below the coefficients and are adjusted for within-cluster correlation using the Huber White Sandwich Estimator. * (**) [***] indicates significance at the 1 (5) [10] percent level using two-tailed tests.

Table 7: Tests of endogeneity

Panel A: Number and percentage of observations with constant test variables

	[1]	[2]	[3]	[4]	[5]
	Family ownership	Second largest ownership	Percentage of board members that are family members	Number of board members	Family power
# Observations	306628	295306	383487	377688	400469
Percentage	59.98%	57.77%	75.02%	73.88%	78.34%

Panel B: Tests of endogeneity by regressing firm performance on constant test variables

	Predicted sign	[1] <i>ROAI</i>	[2] <i>ROAI</i>	[3] <i>ROAI</i>	[4] <i>ROAI</i>	[5] <i>ROAI</i>
<i>FO50to67</i>	+	0.022	0.042	0.125***	0.114***	0.128***
		0.66	1.22	4.79	4.52	5.57
<i>FO67to90</i>	-	-0.019***	-0.017***	-0.029***	-0.029***	-0.030***
		-3.63	-3.58	-8.33	-8.56	-9.8
<i>FO90to99</i>	-	-0.007	-0.006	-0.002	-0.003	-0.002
		-1.27	-1.47	-0.92	-1.29	-1.03
<i>FO100</i>	+	0.012***	0.010***	0.009***	0.009***	0.010***
		2.86	2.86	4.37	4.51	5.07
<i>2nd_largest_ownership</i>	+	0.013***	0.014***	0.017***	0.016***	0.013***
		2.89	2.89	4.73	4.15	3.72
<i>Per_fam_board</i>	+	0.016***	0.015***	0.016***	0.020***	0.020***
		5.05	4.45	5.17	6.97	7.49
<i>Board_size</i>	-	-0.001	-0.002	-0.002**	-0.002*	-0.001
		-1.01	-1.19	-2.09	-1.85	-1.27
<i>CEO_duality</i>	+	0.006***	0.005***	0.005***	0.006***	0.005***
		4.55	3.72	4.04	5.13	3.89
<i>Observations</i>		306628	295306	383487	377688	400469
<i>Adjusted R²</i>		0.136	0.134	0.146	0.147	0.154

Panel A exhibits the number and percentage of observations that have constant test variables in the sample period in the first row and second row, respectively. The total number of firm-year observations is 511,203. Column [1] presents the number and percentage of firm-year observations that have constant family ownership. The rest columns present the number and percentage of observations with constant variable of the second largest ownership, the percentage of board members belonging to the controlling family, the number of board members, and family power on the board, respectively.

Panel B presents results of regressing firm performance, measured by return on assets (*ROAI*), on test and control variables, taking into account endogeneity issues. The test variables are contemporary and the control variables, with prefix *L.*, are one-year lagged. The variables are defined in Table 1. Column [1] presents results for private family firms that have constant family ownership throughout the sample period. The rest of the columns report results using samples that have constant observations of the second largest ownership, the percentage of board members belonging to the controlling family, the number of board members, and family power, respectively. Control variables (same as in Table 3) are included in the tests, but not tabulated. Indicator variables for years are included in all the tests, but not reported. The t-values are reported in the rows below the coefficients and are adjusted for within-cluster correlation using the Huber White Sandwich Estimator. * (**) [***] indicates significance at the 1 (5) [10] percent level using two-tailed tests.

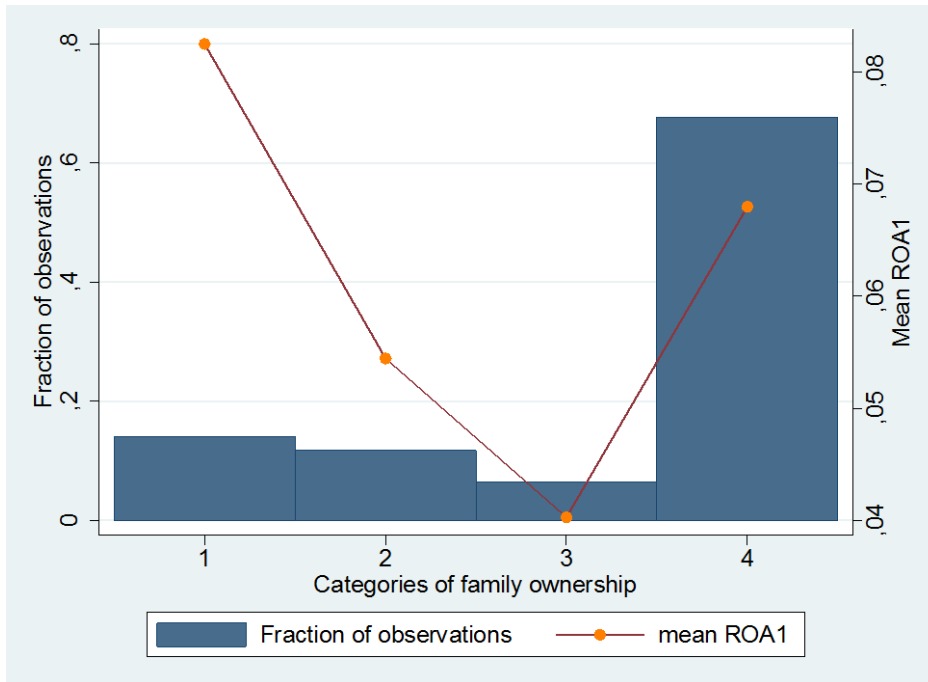
Table 8: Robustness tests related to earnings management and biases in return on assets

<i>Model:</i>	Pred.	(1)	(2)	(3)	(4)
	sign	Ex write-off firms	Ex high leverage firms	Ex 2004-2006 (tax reform yrs)	Firms with age betw 25p-75p of age
<i>FO50to67</i>	+	0.111*** 5.49	0.113*** 6.17	0.101*** 4.47	0.054** 1.97
<i>FO67to90</i>	-	-0.027*** -9.82	-0.025*** -10.14	-0.021*** -6.93	-0.020*** -5.39
<i>FO90to99</i>	-	-0.005** -2.35	-0.001 -0.56	-0.007*** -2.87	-0.009*** -2.83
<i>FO100</i>	+	0.011*** 6.49	0.004** 2.53	0.010*** 5.48	0.015*** 6.10
<i>2nd_largest_ownership</i>	+	0.016*** 4.91	0.006** 2.18	0.014*** 4.10	0.023*** 5.21
<i>Per_fam_board</i>	+	0.021*** 9.24	0.010*** 5.18	-0.002* -1.88	0.017*** 5.41
<i>Board_size</i>	-	-0.002* -1.77	0.00 -0.05	0.022*** 8.57	-0.004*** -2.69
<i>Family_power</i>	+	0.007*** 6.52	0.004*** 3.80	0.006*** 5.62	0.007*** 5.01
<i>Observations</i>		507427	460082	391535	262693
<i>Adjusted R²</i>		0.154	0.175	0.155	0.149

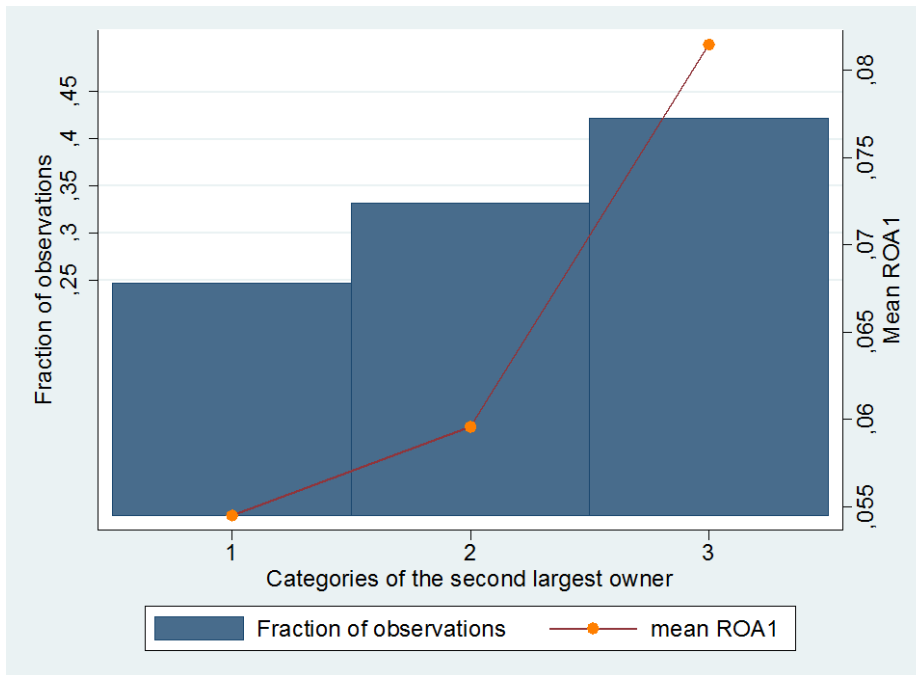
This table presents results of regressing firm performance, measured by return on assets (*ROA*), on test and control variables for various subsets of firms. The variables are defined in Table 1. Column [1] presents results after excluding firm-year observations in year *t* for firms with write-offs in year *t*. Column [2] presents results after excluding highly leveraged firms (defined as firms with *DebtRatio* above the 90-percentile of *DebtRatio*). Column [3] presents results when excluding observations in the years around the tax reform in 2006, specifically the years 2004-2006. Column [4] presents results for the subsample of firms with firm age between the 25th and 75th percentiles of *FirmAge*.

Figure 1: Relationships between firm performance and governance variables

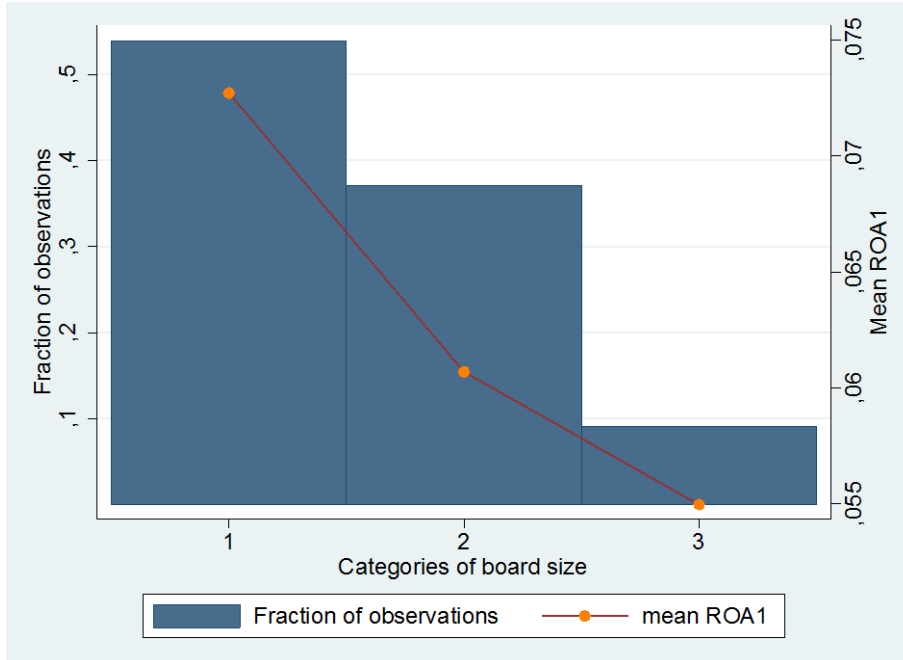
Panel A. The relationship between family ownership and firm performance



Panel B. The relationship between the 2nd largest ownership and firm performance



Panel C. The relationship between board size and firm performance



Panel A illustrates the relationship between family ownership and firm performance. The sample ($N = 511,203$) is divided into four groups based on the ownership of the controlling family, and the bars and the left y-axis show the fraction of firms in each group. The connected-dot-line connects the average return on assets (*ROA1*) for each group. The x-axis indicates the four groups. Group 1 consists of family firms with ownership larger than 50% and smaller than 67%. Group 2 consists of family firms with ownership of at least 67% and less than 90%. Group 3 consists of family firms with ownership of at least 90% and less than 100%. Group 4 consists of wholly owned family firms. Panel B illustrates the relationship between the ownership of the 2nd largest owner and firm performance. The firms that have a second largest owner ($N = 248,930$) is divided into three groups based on the ownership of the 2nd largest owner, and the groups are indicated on the x-axis. In group 1, the ownership of the 2nd largest owner is greater than 0% and less than 20%, in group 2 the ownership is at least 20% and less than 33% in group 2, and in group 3 the ownership is at least 33% and less than 50%. The bars and the left y-axis show the fraction of firms in each group while the connected-dot-line and the right y-axis show the average return on assets (*ROA1*) for each group. Panel C illustrates the relationship between board size and firm performance. The sample ($N = 511,203$) is divided into three groups based on the number of board members, and the groups are indicated on the x-axis. Group 1 consists of firms with one board member, group 2 consists of firms with two or three board members, and group 3 consists of firms with four or more board members. The bars and the left y-axis show the fraction of firms in each group while the connected-dot-line and the right y-axis show the average return on assets (*ROA1*) for each group.