Agency Conflicts and Auditing in Private Firms

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Abstract

We are interested in understanding how agency conflicts in private firms arise through ownership structures and family relationships. Specifically, we analyze auditors' increase of effort and firms' choice of auditors in situations with higher level of agency conflicts. For a large sample of private firms, we use unique and confidential data (obtained through special permission by the government) to measure direct and ultimate ownership for each shareholder as well as extended family relationships (based on marriage and blood lines, going back four generations and extending out to fourth cousin) among all shareholders, board members, and CEOs. We first find that audit fees, our proxy for audit effort, vary as hypothesized with firm-level characteristics related to ownership structures and family relationships. Second, we find evidence that firms in higher agency cost settings respond by having their financial statements audited by a higher-quality auditor (i.e., a Big 4 firm). However, for CEO family-related settings (i.e., where the CEO is related to the major shareholder or as the number of board members related to the CEO increases), we find no evidence of a greater demand for a Big 4 auditor.

Keywords: Agency conflicts, auditing, private firms, family relationships, ownership, audit effort, audit demand

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1. Introduction

In this study, we seek to understand how ownership structures and family relationships influence agency costs in private firms. We do this by observing two aspects related to auditing. First, in higher agency cost settings, auditors are more likely to *supply* greater effort to prevent misstatement associated with moral hazard and adverse selection problems. We examine how auditors adjust their level of effort when auditing financial accounting information. Second, a subset of firms in higher agency cost settings likely have a greater *demand* to choose a higher-quality auditor to provide a credible signal of their commitment to higher-quality reporting. To test this, we examine the extent to which firms with various characteristics hire a Big 4 auditor.

Our examinations draw on very detailed data on ultimate ownership and extended family relationships provided by the Norwegian government. We find that audit fees (i.e., our proxy for auditor effort) increase with expected agency costs.[1] Audit fees relate negatively to ownership concentration and to the extent of ownership by the second-largest shareholder. Concentrated ownership increases the likelihood that a large shareholder closely monitors managerial actions, and an influential second shareholder monitors potential expropriation by the largest shareholder. Audit fees also relate negatively to the portion of shares held by the CEO, consistent with ownership aligning the incentives of the CEO and other stakeholders. Audit fees are positively associated with family relationships between the CEO and the major shareholder (consistent with these family relationships indicating reduced monitoring).

With respect to board independence, we find that audit fees decline as the number of board members related to the largest shareholder increases, consistent with fewer agency conflicts

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[1] The fee (or effort) regression includes controls for 24 client-firm characteristics, five audit-firm variables, as well as year and industry fixed effects.

between owners and the board. In contrast, as the number of board members related to the CEO increases, audit fees increase, suggesting less board independence and more agency conflicts.

For our tests of demand for Big 4 auditor, we report two interesting sets of results. First, for agency settings that are *not* CEO family-related, we observe results consistent with those obtained for our auditor effort tests. Specifically, the propensity to hire a Big 4 auditor increases as ownership concentration decreases, ownership of the second largest owner decreases, and the major shareholder's family influence on the board decreases. These results are consistent with the demand for a Big 4 auditor being greater in higher agency cost settings. In these settings, a higher-quality auditor plays a stronger role in reducing agency costs by sending a more credible signal of managers' commitment to higher-quality reporting. We do not find significant evidence of a relation between hiring a Big 4 auditor and the fraction of shares owned by the CEO for our main tests, but we do in sensitivity tests.

We find no association between the choice to hire a Big 4 auditor and CEO family-related agency variables. Specifically, we find no significant evidence that the demand for a Big 4 auditor is affected when a family relationship exists between the CEO and the major shareholder or as the number of board members related to the CEO increases. One explanation for the lack of significance could be that while some CEOs in family-related agency settings may wish to signal more credible reporting by hiring a Big 4 auditor, other CEOs in these settings may feel a Big 4 auditor is either unnecessary given close family ties or unwanted because of the gains from extracting private benefits which could be reduced by a Big 4 audit.[2]

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[2] As per Norway's Companies Act (§ 7-1), the annual meeting (or General Assembly) of the shareholders elects the auditor. While the selection of the auditor is technically the responsibility of the General Assembly (or in practice the board), it is almost certainly the case that the CEO plays a significant role in our setting. There is a large literature on how CEOs influence the selection of board members and more generally exercise "power" over the board (see, e.g., Bebchuk and Fried 2003). Even for large public firms in the U.S. and U.K. the CEO has an impact on which auditor is selected (e.g., Carcello, Neal, Palmrose, and Scholz 2011; Firth 1999; Beattie and Fearnley 1995). For our sample of smaller private firms, the CEO is expected to have a greater influence on auditor selection because the boards are

Our research is motivated by the need to understand agency conflicts facing private firms. Private firms make up a significant portion of the economic activity in Norway and nearly all other countries, yet prior research focuses primarily on public firms. Given the sometimes vast differences between public and private firms (e.g., Beatty, Ke, and Petroni 2002; Chaney, Jeter, and Shivakumar 2004; Ball and Shivakumar 2005), it is not apparent without testing that results for public firms will generalize to private firms. Thus, private firms offer an economically important sample worth testing. While the benefits to understanding agency conflicts accrue directly to the firm's investors, they will also be important to many other stakeholders (e.g., creditors, employees, suppliers, and customers), regulatory bodies supervising auditors and firms' financial reporting, and society in general.

A sample of private (as opposed to public) firms may also offer a stronger test of agency conflicts related to ownership structure and family relationships. As we discuss in more detail in Section 3, prior research sometimes provides conflicting evidence or conflicting predictions for the impact of ownership structures and family relationships on agency conflicts. Our study provides a potentially strong setting for testing agency conflicts because private firms exhibit heterogeneous ownership characteristics and family relationships. Public firms are more homogeneous, including wide-spread ownership, relatively low CEO ownership, and fewer family ties between managers and shareholders and between managers and board members. Private firms offer interesting ownership structures that potentially increase our understanding of the relation between agency conflicts and the supply of auditor effort. For example, private firms show considerable variation in ownership percentages by second largest shareholders. This allows us to provide a meaningful test of the impact of agency conflicts among shareholders (i.e., monitoring of largest shareholders by

typically smaller, CEO ownership is common (the CEO owns shares in 78% of our sample firms), and the largest owner often is related to the CEO.

second largest shareholders). Private firms also show greater variation in their choice of auditor (only 18.1 percent choose a Big 4 auditor). Nearly all public firms opt for a Big 4 auditor, limiting the ability to empirically test signaling through *demand* for a high-quality auditor.

Related to tests of the *supply* of auditor effort, a single-country setting (Norway) controls for cross-country variation in audit practices and fees and the strength of legal institutions. Cross-country differences could easily confound inferences. Norway also offers an environment where the impact of litigation on audit fees is relatively limited (Hope and Langli 2010). This increases our ability to make more reliable inferences from using audit fees to measure auditor effort, and adds to calls for research to better understand the role of firm governance in explaining audit fees (Hay, Knechel, and Wong 2006).

Finally, given the unique data we use in this study, we are able to measure attributes of ownership structure and family relationships that have been difficult to measure in the past. Specifically, for all private limited liability firms we have detailed information available to compute both direct and *ultimate* ownership for each owner, board member, and CEO.[3] In addition, we have detailed data on family relationships among *all* owners, board members, board chairs, and CEOs (based on both marriage and blood lines, going back four generations and extending out to fourth cousin). To our knowledge, no prior study has been able to test the effects of family relationship using such detailed data. These data, based on merging databases using social security numbers, are obtained through special permission from the Norwegian government. Having these data allows us to *simultaneously* test multiple sources of agency conflicts in a single test. In contrast, prior studies, because of data limitations, have been able to focus only on a particular test variable (and thus leave out potentially important ownership and family details). The full model better controls for multiple

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[3] For example, suppose an investor owns 30 percent of firm A and 30 percent of firm B, and firm A in turn owns 30 percent of firm B. The investor's direct ownership in firm B is 30 percent, while her ultimate ownership is 39 percent. Note that our data also account for cross-holdings.

agency settings. We show that the ability to simultaneously test the association of these variables on auditor effort and firms' selection of the auditor can affect conclusions in some cases.

We next briefly discuss the importance of accounting and auditing, the role of auditing in private firms, and the importance of auditing in the private firm market. Section 3 provides hypotheses of the expected impact that agency conflicts have on the supply of auditor effort and the demand for a Big 4 auditor. Section 4 introduces our research design. Section 5 provides details on the data underlying our study. We present empirical results in Section 6, and Section 7 concludes.

2. Background, Related Research, and Institutional Setting

2.1 Importance of Auditing in Private Firm Setting

An external audit plays a role in corporate governance by providing an independent assessment of the accuracy and fairness with which financial statements represent the results of operations in accordance with generally accepted accounting principles. While researchers commonly consider the role of auditing for public firms, audits for private firms can also play a role. Private firms typically disclose less non-accounting information, potentially increasing the importance of financial accounting information to external providers of capital in monitoring managerial activities. In addition, managerial activities of public firms are partially constrained by market-based mechanisms. For example, public firms are more susceptible to takeovers, indicating that such mechanisms help control for agency conflicts (Lennox 2005). In the absence of market-based measures of firm-value (and other sources of information such as financial analysts), high-quality reporting may be particularly relevant for evaluation of managerial performance and to support personnel and compensation decisions (Indjejikian and Matejka 2009), resulting in a

demand for high-quality audits (Chaney et al. 2004).[4]

2.2 Brief Review of Prior Research

Although there is a huge auditing literature, there is relatively limited prior evidence on auditing issues in private firms.[5] Some prior studies investigate private firms' *choice* to have an audit. Carey, Simnett, and Tanewski (2000) find that nonfamily involvement correlates positively with the voluntary demand for auditing in Australian family businesses. Blackwell, Noland, and Winters (1998) find that private U.S. firms that elect to have their financial statements audited pay significantly lower interest rates than nonaudited private firms. Similarly, Allee and Yohn (2009) use National Survey of Small Business Finances data from 2003 to examine the financial reporting practices of small privately held U.S. businesses. They find that firms with audited financial statements enjoy greater access to credit. Using a large sample of private firms from the World Bank Enterprise Surveys, Hope, Thomas, and Vyas (2011) show that firms which have their financial statements reviewed by an external auditor experience easier access to external financing and obtain those funds at lower costs.

In a recent study, Lennox and Pittman (2011) make use of a natural experiment in the United Kingdom. Starting in 2004, an external audit is no longer required for private U.K. companies.

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[4] According to Van Tendeloo and Vanstraelen (2008), a choice to contract for high-quality auditing (e.g., proxied by choosing a Big 4 auditing firm) could signal financial reporting quality and perhaps deter a rigorous tax audit in the private firm market. They further argue that private firms may also want to convince suppliers, clients, or employees of the credibility of their financial statements. This may be especially important in an environment like Norway where financial statements of all limited liability companies (public and private) are publicly available. To illustrate, most information from the income statements and the balance sheet, in addition to names and shareholdings of owners, CEOs, and board members, is freely available through websites (e.g., www.proff.no). Information on family relationships between owners, CEOs, and board members, however, is not publicity available.

[5] The usefulness of accounting information for private firms has been shown in recent studies including Chen, Hope, Li, and Wang (2011) and Indjejikian and Matejka (2007). Chen et al. find that emerging market firms with higher financial reporting quality exhibit greater investment efficiency. Indjejikian and Matejka further show that accounting information is used in compensation contracting by U.S. private firms. Studies that compare the financial reporting quality of public and private firms include Ball and Shivakumar (2005), Burgstahler, Hail, and Leuz (2006), Asker, Farre-Mensa, and Ljungqvist (2011), and Hope, Thomas, and Vyas (2012).

Lennox and Pittman focus on the firms that are audited under both regimes (i.e., the firms that reveal their preference to be audited). They find that these companies attract upgrades to their credit ratings. In contrast, companies that no longer submit to an audit suffer credit rating downgrades. These findings provide further support for the usefulness of auditing in a private firm setting.

There is also research on how audit fees relate to ownership characteristics, primarily for publicly traded companies. For example, Chan, Ezzamel, and Gwilliam (1993) find that ownership control, defined in their study as "directors' beneficial and non-beneficial shareholdings and all disclosed shareholdings in excess of five percent," is negatively related to levels of audit fees for their full sample of 280 publicly traded U.K. companies from 1987. In contrast, they find no significant effect for smaller auditees (i.e., firms that are more similar to the private firms in our sample).

Mitra, Hossain, and Deis (2007) examine 358 NYSE-listed manufacturing and retail companies that were audited by Big 5 auditors in year 2000 (i.e., firms that are very different from the small private firms in our sample). They document that audit fees are positively associated with diffused institutional stock ownership (i.e., having less than 5% individual shareholding) and negatively associated with institutional blockholder ownership (i.e., having 5% or more individual shareholding).

Hay, Knechel, and Ling (2008) show that an indicator for whether there is a single shareholder who controls 20% or more of the company's stock is positively related to audit fees for New Zealand public companies in 1995 (sample size: 130). However, there is no significant correlation in 2005 (sample size: 83).

As discussed, almost all prior research is on public, not private firms. In addition, given that *all* private limited liability companies in Norway are audited during our sample period, voluntary demand for audits per se is *not* an issue for our study. The choice we examine is the demand for a

high-quality auditor (Big 4). Equally important, no prior study has employed detailed data on family relationships among shareholders, board members, and CEOs to measure agency conflicts, and to our knowledge few prior studies have as detailed measures of ownership as this study.[6] Finally, in contrast to most prior research, we examine the effects of several agency cost related factors simultaneously. In sum, although there is sufficient extant research ensuring that we have theoretical support for our hypotheses, we believe our study fills a void by examining a large sample of private firms and testing for potentially important effects for which prior research has had limited data.

2.3 Institutional Setting

In Norway, external auditing of all private limited liability companies is mandated by the government. In the rest of Europe, only private companies that meet certain size criteria are required to have their financial statements audited.[7] The statutory auditor is expected to provide different stakeholders of the company assurance concerning the accuracy of the financial statements, the non-existence of financial statement fraud, and the going concern status (e.g., Van Tendeloo and Vanstraelen 2008).

Norwegian auditing standards follow International Standards of Auditing (ISA). The ISAs require auditors to assess several agency conflicts when assessing audit risk. For example, from ISA 315, an auditor assesses risk of material misstatement by understanding the entity's ownership and governance structures and the way that the entity is structured (paragraph 11). This could include noting whether the client firm has an owner-manager, more than one owner, dispersed ownership,

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[6] Lennox (2005) investigates the relation between management ownership and audit firm size among private U.K. companies.
[7] Norway and Sweden were the two last countries in Europe that abandoned the requirement that all limited liability companies should disclose audited financial statements. Starting November 10, 2010 in Sweden and January 1, 2011 in Norway, the (very) smallest firms may decide not to engage an auditor.

etc.[8] In addition, IAS 315 suggests that assessing risk involves understanding the relations between owners and other people, which likely includes family relationships (paragraph A23). Referring to the audits of smaller firms (which are much more likely to be private), IAS 315 states that the presence of an owner-manager may mitigate certain risks arising from a lack of segregation of duties (paragraph A76). We believe that our investigation of the relation between audit and ownership characteristics and family relationships provides a unique setting for understanding the interplay between agency conflicts and auditing in the private firm segment of the economy.

3. Hypotheses

The framework for our tests can be understood by considering that there is a principal (i.e., the party for whom financial statements are prepared such as owners, creditors, regulators, suppliers, etc.) and two agents (the manager and the auditor). We observe the actions of these two agents – the manager's demand for a Big 4 auditor and the auditor's supply of effort – to understand the impact of ownership characteristics and family relationships on agency costs.

In the first principal-agent setting, the manager understands that her potentially suboptimal actions are unobservable to the principal, and therefore the principal will impose a monetary penalty on the manager. To avoid this penalty in high agency cost settings, the manager is willing to hire a higher-quality auditor to provide a more credible signal that financial statements are free of material misstatement and that the manager has committed to refrain from siphoning private benefits. Previous research suggests that larger auditors provide higher quality audits (e.g., DeAngelo 1981; Palmrose 1988) and that Big N auditors in particular provide higher-quality outcomes in a variety of settings (e.g., Becker, DeFond, Jiambalvo, and Subramanyam 1998; DeFond 1992; Mansi,

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[8] Standard auditing textbooks provide further support. For example, Arens, Elder, and Beasley (2012) note that the distribution of ownership has the potential to affect audit risk.

Maxwell, and Miller 2004). These arguments lead to the expectation that firms in higher agency cost settings are more likely to *demand* a Big 4 auditor. This is the typical principal-agent framework put forth in most auditor selection studies.[9]

The second agency setting involves the auditor acting as an agent, having a preference for compensation and a disutility for effort. In other words, the optimal action for the auditor is to *supply* the minimum amount of effort needed to "obtain reasonable assurance about whether the financial statements as a whole are free from material misstatement, whether due to fraud or error" (ISA 2010, paragraph 5). Doing so maximizes the auditor's utility. The higher the audit effort is, the less likely type II errors occur in audit reports (e.g., Dye 1993; Laux and Newman 2010). Consistent with prior research (e.g., Davis, Ricchiute, and Trompeter 1993; Whisenant, Sankaraguruswamy, and Raghunandan 2003), we measure auditor effort using audit fees. Due to transparency of the audit market and the large number of auditors and audit firms in Norway (Financial Supervisory Authority of Norway, Annual Report 2007), the market for auditing services is highly competitive. Audit fees should therefore reflect the effort assessed by the auditor in assuring the accuracy of financial statements.[10]

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[9] The obvious counterargument is that hiring a Big 4 auditor is more costly. For example, Chaney et al. (2004) conclude that U.K. private firms choose auditors that minimize their audit fees. However, they do not examine whether audit fees vary with agency conflicts as in our study. We contend that firms in higher agency cost settings are more willing to hire a Big 4 auditor (and incur the higher audit cost) because of the benefits received from signaling more credible reporting.

[10] Some prior research in other settings suggests that it is important to distinguish the component of audit fees that also reflects compensation for litigation risk. We do not view this distinction important for our tests. In addition, both the litigation risk and reputation risk of auditors are relatively low for private firms in Norway. For a detailed discussion of this issue, see Hope and Langli (2010), who examine all court cases and other legal proceedings against auditors over a 60-year period and conclude that auditors face much lower litigation risk in Norway than in other more litigious environments. It is important to note that, even in an environment with low litigation, there is still a role for agency costs. For example, debt and equity financing will be more costly when agency costs are high. To the extent that companies in settings with high agency problems are able to signal more credible reporting, financing will be less costly and more accessible. Firms can signal this credibility with an audit. As another example, suppliers may also be concerned about the viability of the firm when deciding whether to enter long-term contracts. To the extent that the supplier can adequately rely on financial reports to assess the firm's long-run viability and stability, they are more willing to enter those contracts, increasing the operating efficiency and profitability of the firm (e.g., Dou, Hope, and Thomas 2012).

In the next section, we develop our six hypotheses. The first three focus on ownership characteristics – ownership concentration among all shareholders, ownership by second largest shareholder, and fraction of shares held by the CEO. The second three hypotheses focus on family relationships – family ties between the CEO and largest owning family, percentage of board members related to largest owning family, and family ties between the CEO and board members. For each of these six settings, we consider whether agency concerns affect managers' decision to hire a Big 4 auditor or auditors' supply of effort.

3.1. Ownership Structures

3.1.1. Ownership Concentration

Prior research provides evidence that managers, when left unmonitored, are more likely to manage earnings, commit fraud, or make suboptimal investment decisions (e.g., Biddle and Hillary 2006; Hope and Thomas 2008). Thus, shareholder monitoring is an important mechanism by which agency costs can be reduced. However, while all shareholders have the responsibility to monitor managerial activities, the benefits of doing so by any individual shareholder are proportional to the percentage of shares owned. As the percentage of ownership by individual shareholders increases (i.e., concentration increases), the more willing individual shareholders are to incur necessary monitoring costs.

Monitoring by a large shareholder could take many forms. Perhaps the most commonly discussed means of monitoring discussed in the literature involves a large shareholder having a seat on the board. Several studies show in a variety of contexts the board's role in monitoring managers (e.g., Fama 1980; Fama and Jensen 1983; Adams, Hermalin, and Weisbach 2010; Beasley 1996; Dechow, Sloan, and Sweeney 1996; Byrd and Hickman 2002; Anderson, Mansi, and Reed 2004;

and Laksmana 2008, to name just a few).[11] Other forms of direct monitoring would be a large shareholder actively participating in the firm's operations or having routine meetings with managers. As the proportion of ownership increases, the more beneficial it is for large shareholders to engage in these types of costly direct monitoring activities. Large shareholders can also serve to block business decisions that may be considered suboptimal (e.g., aggressive expansion through negative net present value projects). Doing so involves an investment in time and expertise by the shareholder to understand the consequences of major business decisions. Large shareholders are also likely to have more control over the firm's dividend (or capital distribution) policy, as a way to further discipline managers' actions.

When ownership is widely dispersed, it is economically less feasible for any individual shareholder to incur significant monitoring costs, because she will receive only a small portion of benefits. This is the typical "vertical agency cost" (e.g., Gogineni, Linn, and Yadav 2010) argument (i.e., conflicts between managers and owners) and leads to the prediction that agency costs are expected to be lower as ownership concentration increases.[12] When agency costs are lower, we expect that auditors supply less effort and there is less demand for a Big 4 auditor.

H$_{1a}$: As ownership concentration increases, audit fees decrease.

H$_{1b}$: As ownership concentration increases, choice of Big 4 auditor decreases.

3.1.2 Second Largest Shareholder

While the previous discussion explains the need for shareholders to monitor managers, the literature also establishes the need for shareholders to monitor one another. For example, controlling

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[11] See Bhagat and Black (1999), Hermalin and Weisbach (2003), and Adams, Hermalin, and Weisbach (2010) for surveys on corporate boards.

[12] An alternative prediction is that greater ownership concentration leads to entrenchment, resulting in higher agency costs.

shareholders have the ability to exploit minority shareholders in closely-held corporations (e.g., Burkart, Gromb, and Panunzi 1997, 1998; Laeven and Levine 2008; Nagar, Petroni, and Wolfenson 2011). Such exploitation can include higher compensation to controlling shareholders, misappropriation of assets, and dilution of minority shareholders' interests through the issuance of stock or dividends (Gogineni et al. 2010). As the ownership stake of a second shareholder increases, so does her ability and willingness to effectively monitor the largest shareholder. The monitoring activities by the second largest shareholder would be similar to those used by the largest shareholder to monitor managers (see discussion above in Section 3.1.1).

Pagano and Roell (1998) specify conditions under which large shareholders monitor each other, reducing expropriation and improving firm performance. Their theoretical model predicts that expropriation of minority shareholders is likely to be less severe when the ownership stake of non-controlling shareholders is more concentrated, as such concentration makes it easier and more effective to monitor the controlling shareholder (see also Bloch and Hege 2001; Volpin 2002; Gogineni et al. 2010). This is the typical "horizontal agency cost" (e.g., Gogineni et al. 2010) argument (i.e., conflicts between majority and minority shareholders) and leads to the prediction that as ownership by the second largest shareholder increases, agency costs decrease.

H_{2a}: As ownership of the second largest owner increases, audit fees decrease.

H_{2b}: As ownership of the second largest owner increases, choice of Big 4 auditor decreases.

3.1.3 CEO Ownership

A dominant belief in the literature is that as CEO ownership increases, her incentives align more with those of other shareholders, reducing the agency problem that arises from separation of ownership and control (e.g., Jensen and Meckling 1976; Tirole 2006). This is known as the

alignment effect. In our sample, CEO ownership is high compared with prior studies (e.g., mean CEO ownership is 49% of the shares in our study). We predict that as CEO ownership increases, agency costs decline and therefore auditors supply less effort. Consistent with the belief that CEO ownership reduces agency costs, we also predict that firms with high CEO ownership are less likely to employ a Big 4 auditor.

H$_{3a}$: As CEO ownership increases, audit fees decrease.

H$_{3b}$: As CEO ownership increases, choice of Big 4 auditor decreases.

3.2. Family Relationships

3.2.1. CEO and Major Shareholder

Major shareholders are often family members of the CEO for private firms. There are interesting competing hypotheses when the CEO is related to the major shareholder. Because of the family relationship, these shareholders no longer act as independent monitors in disciplining CEOs' decisions. In addition, family-controlled firms are likely to suffer from greater horizontal agency costs. It may be easier for major shareholders, who are family members of the CEO, to extract private benefits from minority shareholders or other stakeholders (Anderson and Reeb 2004; Morck, Shleifer, and Vishny 1988; DeAngelo and DeAngelo 2000). The reason it may be easier to extract these benefits is that major family owners typically have strong influence over choosing members of the board (Johannisson and Huse 2000). Consequently, the monitoring effectiveness of the board may be impaired when its composition is determined primarily by the CEO's family. These arguments would support the idea that agency costs will increase when there is a family relation between the CEO and major shareholder. In this case, auditors are expected to supply more effort, and firms are expected to demand Big 4 auditors.

An alternative view is that family member CEOs are less likely to act in ways that opportunistically harm other family members. That is, installing a family member as the CEO could be a mechanism through which family-owned companies can increase their monitoring of management and reduce the need for external monitoring. If this effect dominates, the agency costs are smaller when the CEO is a family member because familial ties are likely to create closer alignment of the CEO's preferences with those of family owners.

The demand for a Big 4 in the presence of CEO-major shareholder family relationship also presents interesting counter-arguments. One the one hand, demand for a Big 4 auditor could increase to the extent that this family relationship increases agency costs. Agency costs would be higher for reasons discussed above (e.g., lack of independent monitoring by major shareholders and expropriation of minority shareholders). In this setting, CEOs potentially benefit by signaling their commitment to higher-quality reporting.

On the other hand, demand for a Big 4 could decrease under at least two conditions. First, while hiring a Big 4 auditor has commitment value for the firm (and the CEO), the CEO in a family-relationship setting may wish to reduce audit cost by not hiring a Big 4 auditor. Major shareholders' family relationship with the CEO may negate the need for costly independent verification by Big 4 auditors. The saved resources by using a less costly auditor increase firm value, which is in the best interest of both the CEO and major shareholders (who are in the same family). Second, the CEO also has incentives not to demand a higher-quality auditor when this means that her ability (or her family's ability, including the major shareholder's ability) to extract private benefits from the firm would be limited through such a hire. Presumably, Big 4 auditors would have a greater ability to limit these private benefits.

Thus, for this CEO family-related agency setting, the demand for a Big 4 auditor reflects the trade-off between the benefits from signaling higher-quality reporting versus the costs of additional

audit fees and reduced consumption of private benefits. Because of competing arguments, we state our fourth hypothesis as two-sided:

H_{4a}: When a family relationship exists between the major shareholder and the CEO, audit fees are affected.

H_{4b}: When a family relationship exists between the major shareholder and the CEO, choice of Big 4 auditor is affected.

3.2.2. Board Independence

Boards are meant to protect shareholders' assets and the interests of the company's other stakeholders (e.g., creditors and employees). In this sense, boards are directed to monitor the activities of managers. An extensive literature exists which supports the notion that more independent boards more effectively monitor managers' activities. Firms with more independent boards commit less financial statement fraud (Beasley 1996) and have less earnings management or provide fewer discretionary accruals (Dechow et al. 1996; Peasnell, Pope, and Young 2000; Xie, Davidson, and DaDalt 2003; Jaggi, Leung, and Gul 2009).

However, consistent with our two-sided predictions for H_{4a}, as the proportion of board members from the CEO's family increases, audit effort could either increase or decrease. With respect to the demand for a Big 4 auditor, the relation is also not obvious because the CEO faces conflicting incentives. The additional (potentially unnecessary) costs associated with hiring a Big 4 auditor and the reduced ability of the CEO or her family board members to privately benefit from these family relationships reduce the expected demand for a Big 4 auditor in this higher agency cost setting. As a result, the demand for a Big 4 auditor may be confounded in the presence of family relationships between the CEO and board members.

We propose two hypotheses related to board independence. First, we predict that family relationships between major shareholders and the board imply that owners have insiders to monitor managers, which makes audited information less important. In other words, fewer agency conflicts reduce the need for auditing. This setting would result in the reduced supply of auditor effort and less demand for a Big 4 auditor.

Second, if there are family ties between the CEO and board members, given that there are competing arguments as to whether the board will act more or less independently of the CEO, our hypothesis is two-sided. We summarize these hypotheses as:

H_{5a}: As the proportion of board members from the largest owning family increases, audit fees decrease.

H_{5b}: As the proportion of board members from the largest owning family increases, choice of Big 4 auditor decreases.

H_{6a}: As the proportion of board members from the CEO's family increases, audit fees are affected.

H_{6b}: As the proportion of board members from the CEO's family increases, choice of Big 4 auditor is affected.

4. Research Design

For our auditor effort tests, we use model (1) to test our six hypotheses of the relation between agency costs and the supply of auditor effort after controlling for numerous firm and audit

characteristics that explain normal audit fees.[13] Specifically, we regress the log of raw audit fees

(*LNFEE*) on our six test variables as well as 24 client-firm characteristics, five audit-firm variables,

and year and industry fixed effects (firm subscripts omitted).

$$LNFEE_t = \alpha_0 + \alpha_1 OWNER\_CONC_t + \alpha_2 OWNER\_SECOND_t + \alpha_3 OWNER\_CEO_t +$$

$$\alpha_4 FAM\_CEO/OWNER_t + \alpha_5 FAM\_BOARD/OWNER_t + \alpha_6 FAM\_BOARD/CEO_t +$$

$$\alpha_7 LNSALES_t + \alpha_8 LNEMPLOY_t + \alpha_9 LEV_t + \alpha_{10} CHLEV_t + \alpha_{11} INVREC_t +$$

$$\alpha_{12} GROWTH_t + \alpha_{13} ROA_t + \alpha_{14} INCPIC_t + \alpha_{15} DECPIC_t + \alpha_{16} INTANG_t +$$

$$\alpha_{17} UNITEMS_t + \alpha_{18} NOIND_t + \alpha_{19} FOREIGN_t + \alpha_{20} LNSUB_t + \alpha_{21} FYE_t + \qquad (1)$$

$$\alpha_{22} INVESTMENTS_t + \alpha_{23} ACQUISITION_t + \alpha_{24} LOSS_t + \alpha_{25} CURRATIO_t +$$

$$\alpha_{26} BIG4_t + \alpha_{27} GAAP_t + \alpha_{28} CHGAAP_t + \alpha_{29} INDSPEC_t + \alpha_{30} CHAUDITOR_t +$$

$$\alpha_{31} LASTYRAUDIT_t + \alpha_{32} MODOPINIONS_t + \alpha_{32} CHCEO_t + \alpha_{33} CITY_t +$$

$$\sum \alpha_{34,c} COUNTY_c + \sum \alpha_{35,i} IND_i + \sum \alpha_{36,y} YR_y + v_t$$

The Appendix lists all variables employed and their definitions. α_1 through α_6 test

hypotheses H_{1a} through H_{6a}, while the remaining variables serve as controls. We measure ownership

concentration (*OWNER_CONC*) using the Herfindahl index and expect that as ownership

concentration increases, agency costs decrease ($\alpha_1 < 0$). To test the second hypothesis, we use

ultimate ownership of the second largest owner (*OWNER_SECOND*), and expect that as ownership

increases, agency costs decrease ($\alpha_2 < 0$).[14] For the third hypothesis, we use the fraction of shares

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[13] This approach is similar to first estimating *abnormal* audit fees as the residuals from a regression of total audit fees on the control variables and then using the residuals as the dependent variable in a regression on our test variables. No inferences are affected if we use that approach instead.

[14] We provide a caveat that there is a possible negative mechanical relation between *OWNER_SECOND* and *OWNER_CONC* (see correlation in Table 2 below). When excluding either of these variables from the model, inferences remain the same for the demand model (discussed next). For the effort model, we find that *OWNER_CONC* becomes insignificant when *OWNER_SECOND* is dropped from the test.

owned by the CEO as our primary measure (*OWNER_CEO*) and predict a negative effect of CEO

ownership on agency costs ($\alpha_3 < 0$). In Section 6.3.4, we test whether this relation is non-linear.

For our fourth hypothesis, we use an indicator variable equal to one if the CEO is a member

of the largest owning family (*FAM_CEO/OWNER*). We predict that family ownership has an effect

on agency costs ($\alpha_4 \neq 0$). We refrain from making a directional hypothesis due to the opposing

forces that are at work. For the fifth hypothesis, we measure family influence of the largest

shareholder on the board as the proportion of board members related to the largest shareholder

(*FAM_BOARD/OWNER*). We expect a negative relation ($\alpha_5 < 0$). Finally, for our sixth hypothesis

the test variable is the proportion of board members related to the CEO (*FAM_BOARD/CEO*).

FAM_BOARD/CEO can thus be interpreted as a measure of the strength of family ties between the

CEO and the board.[15] As with our fourth hypotheses, we refrain from a directional hypothesis (i.e.,

$\alpha_6 \neq 0$).

Our choice of control variables is guided by prior research (e.g., DeFond, Raghunandan, and

Subramanyam 2002; Frankel, Johnson, and Nelson 2002; Choi, Kim, and Zang 2010; Hope and

Langli 2010) and we additionally employ other variables relevant for our private firm setting.

Therefore, model (1) examines whether our ownership characteristics and family relationships

explain audit fees beyond an extensive set of factors previously identified in the literature.

We include the natural log of sales (*LNSALES*), natural log of number of employees

(*LNEMPLOY*), leverage (*LEV*) and change in leverage (*CHLEV*), proportion of inventory and

receivables to total assets (*INVREC*), sales growth (*GROWTH*), return on assets (*ROA*), increases or

decreases in paid-in capital (*INCPIC* and *DECPIC*), proportion of intangible assets to total assets

(*INTANG*), the existence of special or unusual items (*UNITEMS*), the number of industries in which

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[15] Note that *FAM_BOARD/OWNER* and *FAM_BOARD/CEO* measure the *degree* of family influence rather than just the existence of such influence.

the firm operates (*NOIND*), the existence of foreign operations (*FOREIGN*), natural logarithm of the number of subsidiaries (*LNSUB*), a fiscal year-end other than December 31 (*FYE*), long- and short-term investments in securities scaled by sales (*INVESTMENTS*), acquisitions during the year (*ACQUISITIONS*), negative earnings (*LOSS*), current ratio (*CURRATIO*), Big 4 audit firm (*BIG4*), use of regular GAAP (*GAAP;* as opposed to simplified GAAP for smaller enterprises), changed to/from regular GAAP from/to simplified GAAP during the year (*CHGAAP*), auditor industry specialization (*INDSPEC*), change of auditor during the year (*CHAUDITOR*), an indicator for the last year of the incumbent auditor (*LASTYRAUDIT*), audit report modifications (*MODOPINIONS*), change in CEO during the year (*CHCEO*), and whether the client resides in a municipality officially classified as a city or not (*CITY*). In addition, we include fixed effects for the county in which the client firm is located (*COUNTY*), two-digit industry (*IND*), and year (*YR*).

To test our six hypotheses of the demand for a Big 4 auditor, we employ the following logit regression model with control variables (firm subscript omitted):

$$BIG4_t = \beta_0 + \beta_1 OWNER\_CONC_t + \beta_2 OWNER\_SECOND_t + \beta_3 OWNER\_CEO_t +$$
$$\beta_4 FAM\_CEO/OWNER_t + \beta_5 FAM\_BOARD/OWNER_t + \beta_6 FAM\_BOARD/CEO_t +$$
$$\beta_7 LNTA_t + \beta_8 LEV_t + \beta_9 UNSECURED_t + \beta_{10} LOSS_t + \beta_{11} FOREIGN_t +$$
$$\beta_{12} EXANTEFIN_t + \beta_{13} INCPIC_t + \beta_{14} ROA_t + \beta_{15} CITY_t + \sum \beta_{16,c} COUNTY_c +$$
$$\sum \beta_{17,i} IND_i + \sum \beta_{18,y} YR_y + \eta_t$$

(2)

β_1 through β_6 test hypotheses H_{1b} through H_{6b}, while the remaining variables serve as controls. *BIG4* is an indicator variable for whether the firm employs a Big 4 auditing firm or a forerunner. We expect that our agency variables relate to the demand for a Big 4 auditor in the same way that they relate to auditor effort. Specifically, our indicator variable for a Big 4 auditor is

expected to relate negatively to *OWNER_CONC*, *OWNER_SECOND*, *OWNER_CEO*, and *FAM_BOARD/OWNER*. For our two CEO family-related variables (*FAM_CEO/OWNER* and *FAM_BOARD/CEO*), we provide expectations consistent with those for auditor effort. That is, family relationships between the CEO and either the major shareholder (*FAM_CEO/OWNER*) or board members (*FAM_BOARD/CEO*) may decrease or increase the demand for Big 4 auditors.

We base the control variables on prior research that has examined the choice of Big 4 auditors (e.g., Khurana and Raman 2004; Knechel, Niemi, and Sundgren 2008). In particular, we control for firm size (*LNTA*), leverage (*LEV*), unsecured debt (*UNSECURED*), loss firms (*LOSS*), the percentage of foreign subsidiaries (*FOREIGN*), operating cash flow less net investments in tangible and intangible fixed assets scaled by current assets (*EXANTEFIN*), increase in paid-in capital (*INCPIC*), return on assets (*ROA*), and whether the client firm is located in a city or not (*CITY*). Finally, the logit regression models include county, industry, and year fixed effects. As an alternative specification, we additionally include controls for four alternative ownership characteristics (*INSTITUTIONAL, STATE, INTERNATIONAL*, and *INDUSTRIAL*).

5. Data on Ownership and Family Relationships

We obtain our data from two sources. First, firm-specific information, such as the firm's financial information, auditor, CEO, board members, and owners, comes from Experian AS. Experian 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. Second, information on family relationships comes from the National Register Office (NRO). In contrast to BRC data, NRO data are generally not publicly available. Specifically, the social security numbers of any person having roles as owners, CEOs, or board members are not available unless special permissions are obtained.

Family relationships among individuals are also not publicly available. We gained access to these data through a contract with the Centre for Corporate Governance Research (CCGR) at the Norwegian Business School. CCGR obtained permissions to gather and merge data from the two sources 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 are in accordance with the Norwegian Personal Data Act.

In Norway, *all* limited liability firms, independent of size and listing status, must send audited financial statements to the Center for Annual Accounts (CAA), which is part of the BRC. According to the Accounting Act (paragraph 7-26), limited liability firms that do not qualify as "small enterprises" are required to disclose its 20 largest shareholders and their shareholdings in the notes as long as individual shareholdings exceed one percent. Firms that qualify as small enterprises must disclose names and shareholdings of the ten largest shareholders as long as the shareholder owns five percent or more. In addition, the Accounting Act requires disclosure of names and shareholdings of *all* CEOs and members of the Board and the Corporate Assembly. Experian collects ownership information from the notes and to the extent possible looks up the social security number of each owner. The names of CEOs and board members are collected from the Central Coordinating Register for Legal Entities (CCRLE), which is also a part BRC. Data that identify CEOs and board members (from CCRLE) are merged with data on ownership (from CAA) using the social security number for each individual that occurs in the two databases.[16]

The notes to the accounts specify direct ownership for each firm. Utilizing the fact that direct ownership is available for all limited liability firms, data on *ultimate* ownership for each firm has been calculated by tracing ownership structures. Information on families' ultimate ownership

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[16] For any pair of individuals, our data source has classified the pair in terms of a basic family relationship type. These types are parent, grandparent, great grandparent, great-great grandparent, and marriage. Using these basic types, we have generated 18 types of family relationships between two individuals, including relationships like brother, sister, cousin, uncle/aunt, and nephew/niece.

and family influence on the CEO and boards has been constructed by checking for relationships by blood and/or marriage for *any pair of persons* that occurs for owners, board members, CEOs, and Chairman using data from NRO. Family relationships may cover up to four generations. We assigned persons to the same family if they (as of year-end 2007) are related through their parents, grandparents, or by marriage. A single person without relatives constitutes a family of size one.

6. Sample and Results

6.1 Sample and Descriptive Statistics

Our sample selection procedure is explained in Table 1. Our sample period spans 2000 through 2007. We include only firms that are not publicly traded on a stock exchange. We exclude firms with sales or total assets less than NOK 800,000 and firms with missing information concerning audit fees or with fees below NOK 3,000. We further eliminate financial firms, firms with missing information, subsidiaries, and firm controlled by unknown owners or the State.[17] Because the data provider did not provide a split between audit and non-audit fees for years 2003 through 2005, our sample covers the five-year period from 2000-2002 and 2006-2007. We have a final sample of 185,109 firm-year observations. Our tests are based on pooled samples, and we use robust standard errors clustered at the firm level.[18]

Panel A of Table 2 provides descriptive statistics. As can be expected for a sample of private firms, firms are small on average (mean *SALES* of NOK 16 million) but with a large standard deviation. Audit fees (*FEE*) have a mean of NOK 21,452, and 18.1 percent of firms employ Big 4 auditors. As expected, ownership concentration (*OWNER_CONC*) is quite high for private firms, with a mean Herfindahl index of 0.605. CEO ownership (*OWNER_CEO*) is also quite high (mean of

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[17] To mitigate the potential influence of outliers in such a large sample, we remove observations with (absolute) studentized residuals exceeding two. No inferences are affected by this choice. Similarly, no conclusions change if we instead winsorize all continuous variables at the 1st and 99th percentiles.
[18] Results are consistent when employing the Fama-MacBeth approach.

49.2 percent). On average, the CEO comes from the largest family (*FAM_CEO/OWNER*) in 70.6 percent of the cases, 71.2 percent of board members come from the largest family (*FAM_BOARD/OWNER*), and 15.1 percent of the board members are family members of the CEO (*FAM_BOARD/CEO*). Panel B presents Spearman correlation coefficients among the dependent variables, test variables, and primary control variables.[19] As expected, most of the variables are significantly correlated. However, unreported variance inflation factors and condition indices give no indication that multicollinearity is a serious issue in our multivariate analyses.[20] Important for our tests, and consistent with our unique data on ownership and family relationships, we are interested in testing the incremental effect of one agency characteristic while holding the others constant.

6.2 Tests of Hypotheses

6.2.1 Auditor Effort Tests

We report the results of tests of whether auditors' fees (i.e., auditors' effort) vary with agency conflicts in private firms in Table 3. Column 1 reports our primary specification with all test variables included simultaneously and measured as continuous variables (except *FAM_CEO/OWNER* which is an indicator variable). The regression has an adjusted R^2 of 52.8% and we note that most of the control variables are significant in the predicted direction. For example, audit fees are higher for firms that are larger, have more financial leverage, have unusual items, are more diversified (in terms of industries and subsidiaries), have greater foreign operations,

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[19] Note that correlation coefficients are provided for descriptive purposes only and do not constitute tests of our hypotheses. Specifically, we are testing our agency cost proxies against a proxy for *abnormal* audit fees; hence it is essential to control for the normal factors that explain fees (i.e., risk and effort variables). It is also important to control for other agency-related variables, as we do in our multiple regression tests.

[20] Specifically, no variance inflation factors are above 3.04 in any of the specifications tabulated in Table 3 and Table 4.

engage in acquisitions, and employ a Big 4 auditor.[21]

The estimated coefficient on *OWNER_CONC* is negative and significant, consistent with our prediction in H$_{1a}$ that greater ownership concentration leads to easier monitoring of managers, translating into less effort by external auditors. Next, the coefficient on *OWNER_SECOND* is negative and significant, a finding which is in line with H$_{2a}$ and recent research in finance suggesting that a strong second shareholder can mitigate potential exploitation of minority shareholders by the controlling shareholder. We further find a negative and significant coefficient on *OWNER_CEO*, consistent with H$_{3a}$ that CEO ownership aligns managers' interests with those of the firms' other stakeholders.

The next three variables, *FAM_CEO/OWNER, FAM_BOARD/OWNER,* and *FAM_BOARD/CEO*, measure differences in monitoring and independence. Whereas *FAM_CEO/OWNER* captures the family relationship between the CEO and major shareholders, the other two measure the degree of board independence based on family relationships. We find a positive and significant coefficient for *FAM_CEO/OWNER*. In other words, we document that when the CEO is also a member of the largest family, auditors increase their effort. Thus, our empirical findings support the idea that, because of the family relationship, these shareholders no longer act as independent monitors in disciplining CEOs' decisions, thus increasing agency costs.

We further find empirical support for H$_{5a}$. Auditor effort is decreasing in the proportion of board members related to the largest family owner (*FAM_BOARD/OWNER*), consistent with fewer agency conflicts between family owners and the board. Finally, the empirical results indicate that audit effort is increasing in the proportion of board members related to the CEO

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[21] The estimated coefficient on *INDSPEC* is negative. The Pearson correlation between audit fees and *INDSPEC* is significantly positive (0.109) and the negative regression coefficient is likely caused by correlation with the firm size controls and *BIG4* (i.e., *INDSPEC* is positive and significant when the model is estimated on a subset of firms with non-Big 4 auditors). In addition, *CHLEV* has the opposite sign of expectations. No inferences are affected if we exclude that (or any other) control variable from the test.

(*FAM_BOARD/CEO*). This finding is consistent with the loss of board independence when family relationships exist between the CEO and board members. Thus, to control for the increase in agency conflicts, auditors exert more effort.[22]

In the second column of Table 3 we report results of regressions in which we replace continuous test variables with indicator variables equal to one when equal to or above the mean, zero otherwise. Results are similar for five the six tests. For *FAM_CEO/OWNER* (H$_{4a}$), the coefficients changes from significantly positive to only marginally significant (t = 1.56).

In the next six columns, we provide results with one test variable included at a time. We note two differences from the full model results: *OWNER_SECOND* is no longer significant and *FAM_CEO/OWNER* is now significantly negative (as opposed to significantly positive). These differences highlight the importance of testing for multiple agency settings simultaneously. As we discussed previously, prior studies have been limited to looking at one or a few agency variables because of data limitations. We are able to provide detailed tests of six agency settings. Thus, we base our primary conclusions on the full model, which we believe better controls for multiple agency settings.

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[22] To assess the economic significance of our results, we conduct two tests. First, we consider the effect of a change from the first to the third quartile of the distribution of our test variables (holding other variables constant). The effect for each translates into approximately NOK 1,000 or NOK 6,000 in total. While this does not appear to be a large amount, note again that the sample firms in our study are very small compared with those examined in prior research. For example, using data from Statistics Norway, the aggregate effect is equivalent to 18.8 man-hours based on average salaries for full-time employed "senior officials and managers in professional, scientific, and technical activities," which includes auditors. Compared with all full-time employed persons in Norway (in the professional, scientific, and technical activities), the aggregate effect is equivalent to 34.9 (27.3) man-hours. In addition, we also compare these effects directly with the average audit fees in our sample. The average effect for our test variables is 4.7% and in aggregate the effect is 28.5% of average fees. Second, we compare the effects of the test variables with those of the control variables. In order to conduct such a comparison, we first standardize the estimated coefficients so that they are all directly comparable. Consistent with many prior studies, firm size is clearly the most important determinant of fees as well as the demand for a Big 4 auditor. However, for the fee regressions, in untabulated analyses we observe that *OWNER_SECOND* has an equal or greater effect than 12 of the other control variables. The other test variables also fare quite well in such a comparison. Overall we conclude that, although firm size is economically more significant than our test variables, the test variables have a non-trivial effect on both audit effort and audit demand.

6.2.2 Demand for High-Quality Auditor Tests

In Table 4 we report results of the analyses that measure the *demand* for higher-quality auditing by firms/owners to reduce agency conflicts. As predicted in H$_{1b}$, H$_{2b}$, and H$_{5b}$, we observe negative and significant coefficients on the three variables that capture non-CEO-related agency conflicts: *OWNER_CONC*, *OWNER_SECOND*, and *FAM_BOARD/OWNER*. These results are consistent with those obtained when testing audit fees (or auditor effort). In contrast, the coefficient for *OWNER_CEO* is negative, as predicted in H$_{3b}$, but not significant.

For our two CEO family-related variables, *FAM_CEO/OWNER* (H$_{4b}$) and *FAM_BOARD/CEO* (H$_{6b}$), we find no significant evidence that the demand for a Big 4 auditor is affected when a family relationship exists between the CEO and major shareholder or as the number of board members related to the CEO increases. One interpretation of these insignificant coefficients is that, while hiring a higher-quality auditor may bring value to the firm as a whole (in part by reducing agency conflicts), CEOs in these family-relationship settings may perceive that the additional costs of hiring a Big 4 auditor is not necessary. Major shareholders and board members could believe that independent verification of a CEO family member is not warranted, allowing firm value to increase through reduced audit fees. In addition, the CEO may have personal incentives not to demand a Big 4 auditor to the extent that these external monitors make it more difficult for the CEO (or the CEO's family) to extract resources from the firm. Thus, we attribute the weaker relation between *BIG4* and our CEO family-related agency variables to the trade-off that exists when deciding the net benefits to hiring a Big 4 auditor. These trade-offs are less apparent when CEO family-related agency settings are not considered. We conclude that firms *demand* greater audit quality in the presence of agency conflicts (that are not CEO family-related).[23,24]

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[23] Landsman, Nelson, and Rountree (2009) model the "match" (or "misalignment") between the audit firm and its client and use this binary variable in their empirical tests. Our regressions include proxies for all the variables included in their

We then provide results using indicator variables for the test variables (measured as above) in Column 2. Results are similar to those using continuous measures, except that *OWNER_CEO* changes from insignificantly negative (t = −1.26) to significantly negative (t = −3.45), consistent with H$_{3b}$. The remaining columns tabulate results with test variables included one at a time. Whereas *FAM_CEO/OWNER* and *FAM_BOARD/CEO* were insignificant in the full model, they are now significantly negative. These differences from the full model again highlight an advantage of controlling for multiple agency variables to provide more complete inferences.

6.3 Additional Analyses and Sensitivity Tests (Untabulated)

6.3.1. Additional Controls for Firm Size

In our tabulated analyses, we include two explicit controls for client firm size (*LNSALES* and *LNEMPLOY*). We also include additional variables that relate to size, including *BIG4*, *FOREIGN*, *LNSUB*, *ACQUISITIONS*, and *CITY*. However, given the potential importance of firm size as a control variable, we conduct a number of additional tests. First, we replace *LNEMPLOY* (or *LNSALES*) with log of total assets in the audit fee model. Second, to test for non-linear size effects, we add square root terms of both *LNSALES* and *LNEMPLOY* to the model. Third, we add the square of both the size variables. Fourth, we include interaction terms between the size controls and all variables included in the model. Fifth, as a related test, we either break our size controls into quintiles and introduce them separately as controls, or we include these as both main and interacting

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model (i.e., *LNSALES*; *LNEMPLOY*; *ACQUISITIONS*; *CHLEV*; *INCPIC*; *DECPIC*; *GROWTH*). No inferences are affected if we replace the individual control variables with a binary variable computed following Landsman et al.'s approach.

[24] The change in the probability of a firm choosing a Big 4 auditor increases by 55.5 % (i.e., from 0.076 to 0.13) when all six test variables change from the third to first quartile (holding all other variables constant at their mean values). The percentage changes in the probability of a firm choosing a Big 4 auditor vary between 2.4 % and 24.5 % for the six variables. We further observe that, using standardized coefficients, *OWNER_SECOND* has a greater effect than *all* non-size control variables. Again, the other test variables continue do compare well.

effects in the model. Finally, we exclude the smallest 10% of firms (based on sales). In all these tests, results are consistent with those tabulated.

6.3.2. Big 6 instead of Big 4

As the Big 4 audit firms have a relatively small market share among private firms (18.1 percent in our sample), as an additional test we replace Big 4 with Big 6. Specifically, in addition to the international Big 4 firms we also include two other large audit firms: BDO Noraudit and Inter Revisjon. Combined, the Big 6 firms have a market share of 29.9 percent. In fact, BDO Noraudit and Inter Revisjon are the two largest audit firms in terms of number of private client firms in Norway, with Ernst & Young and PWC close behind.

We first repeat the auditor effort tests of Table 3 by replacing *BIG4* with *BIG6* in the audit fee model. No inferences are affected.[25] More importantly, we redo the auditor demand test in Table 4 using Big 6 as the dependent variable. Again, results are quite similar.[26]

6.3.4. Non-linearity of CEO Ownership

To explore the possibility that the effect of CEO ownership is non-linear, we add the square root of CEO ownership to the models. We first note that adding this variable does not affect the inferences for the other variables and further observe that the square root variable is negative and marginally statistically significant for the effort regression. Thus, there is some support of a non-linear relation for CEO ownership.

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[25] As an alternative to controlling for Big 4 in the audit fee model, we run the auditor effort tests separately for Big 4 and non-Big 4 client firms. Although this is not one of our hypotheses, it is interesting to note that four of the six estimated coefficients are larger in magnitude for the Big 4 than for the non-Big 4 subsample. This observation is consistent with Big 4 firms being more sophisticated than other audit firms and thus responding more strongly to variations in agency conflicts.

[26] Specifically, in this specification *OWNER_CONC*, *OWNER_SECOND*, and *FAM_BOARD/OWNER* remain significant in the hypothesized direction, while *OWNER_CEO* is now significantly negative (as predicted in H_{3b}) and *FAM_CEO/OWNER* also becomes significantly negative (as discussed in H_{4b}).

6.3.5. Controls for CEO Compensation

Executives can extract rents from the company by also receiving excessive compensation. We test if our results are robust to controlling for CEO compensation by including either raw CEO compensation or CEO compensation scaled by firm size. No inferences are affected in these tests.

6.3.6. Time Period Effects

In the aftermath of well-known international accounting scandals and the introduction of SOX in the U.S., changes were made to Norwegian accounting and auditing regulations that were aimed at increasing accounting and audit quality. The changes took effect between the two periods covered in our sample. Even though we control for time-period effects through year fixed effects, we separately examine the time periods 2000-2002 and 2006-2007 in order to assess if the relations have changed. We find almost identical results across the two periods. The only difference is that *OWNER_CONC* is not significant in the earlier time period for the audit fee test (H_{1a}). Overall, our robustness tests corroborate the main findings tabulated in the paper.

7. Concluding Remarks

This study provides empirical evidence of agency conflicts associated with ownership characteristics and family relationships for private firms in the Norwegian market. Using a detailed data set obtained by special permission from the government, we are able to measure ultimate ownership concentration, ultimate ownership of the second largest shareholder and of the CEO, and family relationships among owners, board members, and CEOs for all Norwegian private limited liability firms. These data allow us to simultaneously test multiple sources of agency conflicts.

We first test for the extent of agency conflicts using audit fees. Controlling for a large number of client-firm and audit-firm characteristics, we predict and find that ownership characteristics and family relationships explain audit fees. Specifically, we find that audit fees decrease (i.e., audit effort decreases) as ownership concentration increases and as the proportion of shares held by the second largest shareholder increases. The first result is consistent with greater ownership concentration alleviating agency costs between shareholders and the managers (i.e., vertical agency costs). Larger shareholders can more efficiently monitor managers. The second result is consistent with reduced agency costs between controlling shareholders and minority shareholders (i.e., horizontal agency costs). A second large shareholder serves as a monitor of a controlling shareholder who potentially has the ability to extract private benefits from minority shareholders.

Related to the CEO, we find that as CEO ownership increases, audit fees decrease. This is consistent with increased ownership aligning the incentives of the CEO with those of the firms' other stakeholders. In contrast, holding CEO ownership constant, we find that when the CEO is a member of the largest owning family, audit fees increase (i.e., auditor effort increases). This finding suggests that shareholders are less likely to act as independent monitors of the CEO when a family relationship exists, increasing the probability of misappropriation by the CEO or extraction of private benefits by controlling owners.

For board independence, we find that audit fees decrease as the proportion of board members from the largest owning family increases. This finding reflects the likelihood that those inside the firm (board members) are more likely to act as effective monitors on behalf of those outside the firm (controlling owners) when a family relation exists. We also find that boards seem to lose their independence as the proportion of board members from the CEO's family increases. This

result follows from the natural expectation that family relationships with the CEO impair the oversight responsibility of the board.

As our second test, we consider each of our agency settings and the firm's demand for a Big 4 auditor. Consistent with results found for the auditor effort tests, the demand for a Big 4 auditor decreases with ownership concentration, level of ownership by the second largest owner, and family relationships between the board and the largest owner. We find no relation between demand for a Big 4 auditor and CEO ownership for our main tests but we do in sensitivity tests. Finally, for our two CEO family-related agency cost settings, we observe no impact on the demand for a Big 4 auditor when the CEO is related to the major shareholder or as the number of board members related to the CEO increases. These insignificant relations likely reflect a trade-off between the benefits of more credible reporting from using a Big 4 auditor versus the potential costs of increased fees associated with a Big 4 auditor and the reduced ability of the CEO (or the CEO's family) to extract resources from the firm.

Our research makes a contribution by providing a detailed investigation of the agency settings for private firms. Several differences exist between private and public firms, and results for one group are not necessarily expected to be the same as those for the other. In addition, in aggregate private firms provide the majority of economic activity throughout the world. We obtain a unique database for private firms in Norway to provide tests of the impact of ownership characteristics and family relationships on agency conflicts. This database entails combining ownership characteristics and family relationships using social security numbers, available only through special permission from the government.

There is ample opportunity for future research to further explore the issues we examine in this study. Perhaps the most obvious suggestion would be to test for economic consequences of variations in the agency conflicts and/or audit variables that we consider. Another possibility is to

make further use of the register data available through linking databases using social security numbers. For example, auditor independence issues could be examined by considering auditors' personal income and wealth. Other research could make use of interesting aspects of alternative institutional environments, or use research methods other than archival data to explore agency conflicts in private firms.

Appendix: Definitions of Variables

Test variables

OWNER_CONC = Herfindahl ownership concentration ratio in year t based on ultimate ownership.

OWNER_SECOND = Fraction of shares held by the second largest owner in year t using ultimate ownership.

OWNER_CEO = Fraction of shares held by the CEO in year t, based on ultimate ownership.

FAM_CEO/OWNER = 1 if the CEO is related to the largest ultimate family owners through blood or marriage.

FAM_BOARD/OWNER = Family influence on the board in year t computed as the number of board members from the largest owning family divided by the total number of board members.

FAM_BOARD/CEO = Family relationships between the CEO and board members, defined as the number of family members of the CEO on the board divided by the total number of board members.

Other variables

ACQUISITIONS = 1 if the firm has increased long-term investments in other companies from t-1 to t, 0 otherwise.

AGE = Firm's age in year t measured as number of years since incorporation.

BIG4 = 1 if the auditing firm is one of the Big 4 auditing firms or their forerunners in year t, 0 otherwise.

CHAUDITOR = 1 if the firm changed auditor in year t, 0 otherwise

CHCEO = 1 if the firm appointed a new CEO in year t, 0 otherwise

CHGAAP = 1 if the firm has changed from simplified GAAP to regular GAAP or from regular GAAP to simplified GAAP during year t.

CHLEV = Change in interest bearing debt from t−1 to t = $LEV_t - LEV_{t-1}$.

CITY = 1 if firm is located in a city, 0 otherwise.

$COUNTY_c$ = 1 if firm is located in county c, 0 otherwise ($c = 0, 1, ..19$).

CURRATIO = Current ratio at the end of year t.

DECPIC = 1 if the firm decreased share capital from t−1 to t, 0 otherwise.

EMPLOY = Number of employees in year t is estimated as sum wages in year t divided by the average salary for full time male and female workers in year t if sum wages > 0, 0 otherwise. Data on average salary is taken from Statistics Norway.

EXANTEFIN = Operating cash flow less net investments in tangible and intangible fixed assets scaled by current assets in year t. As in Knechel et al. (2008) we use a square root transformation of the ratio multiplied by −1 if the unadjusted ratio was negative. Operating cash flow is estimated as operating income + depreciation + impairment − change in accounts receivables − change in inventory + change in accounts payable − change in taxes payable. Net investments in intangible and tangible fixed assets is estimated as change in intangible and fixed assets during the year plus depreciation and impairment since cash flow statements are not available.

FEE = Audit fee in NOK 1,000, computed as the total fee paid to the auditor

		for auditing services in year t.
FOREIGN	=	Percentage of foreign subsidiaries in year t = the number of foreign subsidiaries in year t * 100 / total number of subsidiaries in year t.
FYE	=	1 for fiscal years ending other than December 31 in year t, 0 otherwise.
GAAP	=	1 if firm uses regular GAAP in year t and 0 otherwise.
GROWTH	=	Change in sales in year t = $(SALES_t - SALES_{t-1}) / SALES_{t-1}$.
INCPIC	=	1 if the firm increased share capital from t−1 to t, 0 otherwise.
IND$_i$	=	1 if firm belongs to industry *i*, 0 otherwise. Two-digit industry codes are used to classify firms into industries. Firms in industries with 30 or less observations in a given year are reclassified to industry 99.
INDUSTRIAL	=	1 if industrial investors own 20% or more of the firm based on ultimate ownership, 0 otherwise
INSTITUTIONAL	=	1 if institutional investors own 20 % or more of the firm based on ultimate ownership, 0 otherwise
INTANG	=	Intangible assets at the end of year t scaled by $SALES_t$.
INTERNATIONAL	=	1 if international investors own 20 % or more of the firm based on ultimate ownership, 0 otherwise
INVESTMENTS	=	(Long and short term investments in securities + bank deposits + cash)$_t$ scaled by $SALES_t$.
INVREC	=	Inventory and accounts receivable at the end of year t scaled by $SALES_t$.
LASTYRAUDIT	=	1 in year t if the firm changed auditor in year t+1, 0 otherwise.
LEV	=	Long- and short-term interest bearing debt / total assets, both at the end of year t. Short-term interest bearing debt = total short term debt − accounts payable − dividends − taxes payable − VAT and social service taxes − other short term debt.
LNEMPLOY	=	Natural logarithm of 1+ number of employees = $\ln(1 + EMPLOY_t)$.
LNFEE	=	Natural logarithm of total fees paid to the auditor for auditing services in year t = $\ln(FEE_t)$.
LNSALES	=	Natural logarithm of total revenue from operations = $\ln(SALES_t)$.
LNSUB	=	Natural logarithm of 1 + number of subsidiaries in year t.
LNTA	=	Natural logarithm of total assets = $\ln(TA_t)$
LOSS	=	1 if net income after taxes before extraordinary item and taxes on extraordinary item < 0 in year t−1, 0 otherwise.
MODOPINONS	=	The number of deviations from a clean audit report. The contents of the audit report are categorized into different deviations from the audit report, and up to 4 deviations are registered for each firm (i.e., the variable goes from 0 to 4).
NOIND	=	Number of two digit industry codes the firm is registered with in year t.
ROA	=	Return on assets = Earnings before interest, taxes, and extraordinary items in year t scaled by $(TA_{t-1} + TA_t) * 0.5$
SALES	=	Total revenue from operating activities in year t in NOK 1,000.
STATE	=	1 if the state owns 20 % or more of the firm based on ultimate ownership, 0 otherwise
UNITEMS	=	1 for firms with impairments or extraordinary items in year t, 0 otherwise.

UNSECURED   =   Unsecured debt measured as property, plant and equipment less total debt scaled by total assets, measured at end of year t.

YR$_y$ =   1 if observations belong to year *y*, 0 otherwise.

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TABLE 1

Sample Selection Criteria

	2000	2001	2002	2003	2004	2005	2006	2007	Total
Private and public limited liability companies	136,140	138,745	141,146	141,991	144,426	157,710	180,709	192,011	1,232,878
Exclusion criteria:									
Public limited liability companies	582	571	529	492	463	459	471	384	3,951
Operating revenue less than 800,000 NOK	55,180	56,092	57,081	56,142	55,151	64,325	81,038	87,257	512,266
Total assets less than 800,000 NOK	14,218	13,747	13,836	14,286	14,427	14,598	13,933	13,652	112,697
Missing information on audit fees, audit fees less than 3,000 NOK, or unknown auditor	2,465	2,239	2,034	71,071	74,385	78,328	13,904	2,831	247,257
Missing information (e.g. industry affiliation, founding date, prior year financial statement) or firm using IFRS	6,419	7,400	6,862	0	0	0	9,252	11,690	41,623
Subsidiaries	11,088	12,131	12,199	0	0	0	16,274	25,242	76,934
Information on family ownership not available	7,439	6,134	7,058	0	0	0	8,421	8,635	37,687
Aggregate ownership less than 50%	238	381	420	0	0	0	266	383	1,688
Controlled by unspecified owners or by the State	1,298	724	678	0	0	0	781	693	4,174
Observations with absolute value of studentized residuals greater than two	1,898	2,008	2,079	0	0	0	1,694	1,814	9,493
Sample size	35,315	37,318	38,370	0	0	0	34,675	39,431	185,109

Note that the data provider does not provide a breakdown of audit remuneration into audit fees and non-audit fees for the years 2003, 2004, and 2005.

TABLE 2
Descriptive Statistics

Panel A: Distribution of variables (N = 185,109)

	Mean	St.dev.	5%	25%	Median	75%	95%
Corporate governance							
OWNER_CONC	0.605	0.296	0.194	0.355	0.500	1	1
OWNER_SECOND	0.219	0.184	0	0	0.226	0.35	0.5
OWNER_CEO	0.492	0.370	0	0.143	0.5	0.923	1
FAM_CEO/OWNER	0.706	0.455	0	0	1	1	1
FAM_BOARD/OWNER	0.712	0.341	0	0.4	1	1	1
FAM_BOARD/CEO	0.151	0.268	0	0	0	0.333	0.667
INSTITUTIONS	0.012	0.108	0	0	0	0	0
STATE	0.003	0.053	0	0	0	0	0
INTERNATIONAL	0.010	0.101	0	0	0	0	0
INDUSTRIAL	0.011	0.106	0	0	0	0	0
Financial variables							
ACQUISITIONS	0.047	0.213	0	0	0	0	0
CHLEV	−0.007	0.143	−0.221	−0.055	0	0.019	0.242
CURRATIO	1.679	1.727	0.401	0.968	1.246	1.772	4.067
DECPIC	0.012	0.111	0	0	0	0	0
EXANTEFIN	0.237	0.686	−0.871	−0.241	0.357	0.591	1.222
FEE	21.452	17.930	7	12	17	25	49
GROWTH	0.279	1.080	−0.307	−0.038	0.069	0.236	1.150
INCPIC	0.066	0.248	0	0	0	0	1
INTANG	0.020	0.066	0	0	0	0.006	0.109
INVESTMENTS	0.326	0.784	0.006	0.036	0.111	0.272	1.215
INVREC	0.181	0.170	0	0.061	0.147	0.249	0.487
LEV	0.267	0.286	0	0	0.180	0.457	0.832
LNFEE	2.868	0.602	1.946	2.485	2.833	3.219	3.892
LOSS	0.214	0.410	0	0	0	0	1
ROA	0.160	0.212	−0.131	0.042	0.124	0.256	0.561
SALES	16,242.9	182,098.9	1,096.0	2,523.0	5,020.0	11,186.0	43,862.0
TA	13,860.4	133,659.0	935.0	1,621.0	3,139.0	7,185.0	32,575.0
UNITEMS	0.036	0.186	0	0	0	0	0
UNSECURED	−0.272	0.286	−0.884	−0.452	−0.153	−0.037	0.000
Other variables							
AGE	12.814	12.100	2	5	10	16	33
EMPLOY	9.434	61.611	0	1.605	3.669	7.648	26.717
BIG4	0.181	0.385	0	0	0	0	1
CHAUDITOR	0.083	0.276	0	0	0	0	1
CHCEO	0.051	0.219	0	0	0	0	1
CHGAAP	0.006	0.077	0	0	0	0	0
CITY	0.558	0.497	0	0	1	1	1
FOREIGN	0.015	0.120	0	0	0	0	0
FYE	0.001	0.028	0	0	0	0	0
GAAP	0.036	0.187	0	0	0	0	0
INDSPEC	0.027	0.064	0	0.000	0.001	0.005	0.175
LASTYRAUDIT	0.084	0.277	0	0	0	0	1

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MODOPINONS	0.287	0669	0	0	0	0	2
NOIND	1.514	0.843	1	1	1	2	3
SUB	0.267	1.507	0	0	0	0	1

TABLE 2 (continued)
Descriptive Statistics

Panel B: Spearman correlation coefficients (N = 185,109)

Variables:	LNFEE	1	2	3	4	5	6	7	8	9	10	11	12	13
1 BIG4	0.092 *													
2 OWNER_CONC	-0.121 *	-0.050 *												
3 OWNER_SECOND	0.015 *	-0.030 *	-0.572 *											
4 OWNER_CEO	-0.084 *	-0.052 *	0.589 *	-0.369 *										
5 FAM_CEO/OWNER	-0.044 *	-0.042 *	0.286 *	-0.135 *	0.663 *									
6 FAM_BOARD/OWNER	-0.171 *	-0.062 *	0.493 *	-0.227 *	0.376 *	0.416 *								
7 FAM_BOARD/CEO	0.029 *	0.002	-0.107 *	0.138 *	-0.031 *	0.342 *	0.273 *							
8 GROWTH	-0.053 *	-0.006 *	-0.023 *	0.012 *	-0.015 *	-0.022 *	-0.039 *	-0.038 *						
9 LEV	-0.001	0.015 *	-0.012 *	-0.002	-0.042 *	-0.012 *	-0.001	-0.040 *	-0.015 *					
10 LOSS	0.013 *	0.010 *	-0.011 *	-0.016 *	-0.022 *	-0.021 *	-0.041 *	-0.065 *	0.037 *	0.251 *				
11 ROA	-0.101 *	-0.032 *	0.044 *	0.026 *	0.054 *	0.029 *	0.065 *	0.305 *	-0.107 *	-0.397 *	-0.273 *			
12 SALES	0.609 *	0.082 *	-0.130 *	0.035 *	-0.068 *	-0.038 *	-0.189 *	-0.129 *	0.171 *	-0.087 *	-0.063 *	0.017 *		
13 UNSECURED	0.062 *	-0.011 *	0.009 *	0.010 *	0.043 *	0.004	-0.045 *	-0.104 *	0.317 *	-0.524 *	-0.062 *	0.190 *	0.130 *	
14 EMPLOY	0.549 *	0.051 *	-0.149 *	0.051 *	-0.056 *	-0.030 *	-0.220 *	-0.173 *	0.184 *	-0.122 *	-0.050 *	-0.028 *	0.772 *	0.082 *

The table reports Spearman correlation coefficients between dependent variables and tests and main control variables. The sample is described in Table 1 and variables are defined in the Appendix. * denotes significant correlation coefficient at p<0.01.

TABLE 3

OLS Regression of Audit Fees on Test Variables and Control Variables

	Predicted sign	Model							
		1	2	3	4	5	6	7	8
OWNER_CONC (H_{1a})	−	−0.032***	−0.024***	−0.039***					
		(−4.16)	(−5.22)	(−8.37)					
OWNER_SECOND (H_{2a})	−	−0.070***	−0.032***		0.004				
		(−7.15)	(−7.56)		(0.63)				
OWNER_CEO (H_{3a})	−	−0.030***	−0.023***			−0.034***			
		(−5.20)	(−6.82)			(−9.01)			
FAM_CEO/OWNER (H_{4a})	+/−	0.012***	0.007*				−0.009***		
		(3.11)	(1.79)				(−3.16)		
FAM_BOARD/OWNER (H_{5a})	−	−0.038***	−0.021***					−0.039***	
		(−7.83)	(−6.83)					(−9.52)	
FAM_BOARD/CEO (H_{6a})	+/−	0.028***	0.017***						0.020***
		(4.91)	(5.24)						(3.98)
LNSALES	+	0.234***	0.235***	0.236***	0.237***	0.236***	0.236***	0.235***	0.237***
		(97.16)	(97.36)	(97.93)	(98.34)	(97.86)	(98.14)	(97.70)	(98.38)
LNEMPLOY	+	0.150***	0.150***	0.151***	0.153***	0.152***	0.153***	0.151***	0.152***
		(53.56)	(53.70)	(54.12)	(54.59)	(54.47)	(54.59)	(53.81)	(54.58)
LEV	+	0.078***	0.078***	0.078***	0.078***	0.077***	0.078***	0.078***	0.077***
		(13.67)	(13.60)	(13.63)	(13.62)	(13.56)	(13.62)	(13.62)	(13.57)
CHLEV	+	−0.064***	−0.064***	−0.066***	−0.066***	−0.065***	−0.066***	−0.065***	−0.066***
		(−8.66)	(−8.66)	(−8.88)	(−8.90)	(−8.83)	(−8.90)	(−8.81)	(−8.87)
INVREC	+	0.261***	0.262***	0.263***	0.265***	0.264***	0.265***	0.262***	0.265***
		(32.36)	(32.44)	(32.61)	(32.82)	(32.74)	(32.81)	(32.44)	(32.84)
GROWTH	+	−0.049***	−0.049***	−0.049***	−0.049***	−0.049***	−0.049***	−0.049***	−0.049***
		(−43.35)	(−43.34)	(−43.22)	(−43.27)	(−43.34)	(−43.31)	(−43.39)	(−43.22)
ROA	−	−0.153***	−0.154***	−0.160***	−0.162***	−0.159***	−0.161***	−0.157***	−0.161***
		(−23.62)	(−23.85)	(−24.75)	(−25.10)	(−24.67)	(−24.96)	(−24.37)	(−25.06)
INCPIC	+	0.066***	0.067***	0.069***	0.071***	0.069***	0.070***	0.068***	0.071***
		(16.01)	(16.21)	(16.69)	(17.20)	(16.83)	(17.09)	(16.53)	(17.26)
DECPIC	+	0.100***	0.101***	0.105***	0.107***	0.105***	0.106***	0.103***	0.107***
		(10.67)	(10.73)	(11.14)	(11.35)	(11.18)	(11.30)	(10.95)	(11.37)
INTANG	+	0.104***	0.106***	0.110***	0.114***	0.112***	0.113***	0.109***	0.114***

		(4.89)	(4.97)	(5.18)	(5.35)	(5.24)	(5.32)	(5.14)	(5.37)
UNITEMS	+	0.072***	0.072***	0.072***	0.072***	0.072***	0.072***	0.072***	0.072***
		(12.22)	(12.25)	(12.22)	(12.21)	(12.24)	(12.23)	(12.23)	(12.22)
NOIND	+	0.032***	0.032***	0.032***	0.032***	0.032***	0.032***	0.033***	0.032***
		(18.76)	(18.66)	(18.90)	(18.75)	(18.82)	(18.80)	(18.96)	(18.65)
FOREIGN	+	0.111***	0.112***	0.113***	0.114***	0.114***	0.114***	0.112***	0.115***
		(8.43)	(8.51)	(8.57)	(8.66)	(8.62)	(8.63)	(8.48)	(8.70)
LNSUB	+	0.046***	0.046***	0.046***	0.045***	0.045***	0.045***	0.046***	0.045***
		(9.20)	(9.10)	(9.18)	(8.99)	(8.99)	(8.99)	(9.20)	(8.96)
FYE	+	0.117**	0.117**	0.128***	0.128***	0.120**	0.128***	0.118**	0.130***
		(2.43)	(2.45)	(2.66)	(2.66)	(2.51)	(2.66)	(2.47)	(2.69)
INVESTMENTS	+	0.066***	0.066***	0.067***	0.067***	0.067***	0.067***	0.067***	0.067***
		(31.22)	(31.17)	(31.63)	(31.45)	(31.28)	(31.45)	(31.74)	(31.31)
ACQUISITIONS	+	0.065***	0.066***	0.066***	0.066***	0.066***	0.066***	0.066***	0.067***
		(11.36)	(11.43)	(11.53)	(11.57)	(11.57)	(11.57)	(11.42)	(11.58)
LOSS	+	0.045***	0.045***	0.046***	0.047***	0.046***	0.046***	0.045***	0.047***
		(16.30)	(16.42)	(16.86)	(17.05)	(16.85)	(16.97)	(16.52)	(17.11)
CURRATIO	+	0.001*	0.001*	0.002**	0.002**	0.002**	0.002**	0.002**	0.002**
		(1.86)	(1.92)	(2.16)	(2.31)	(2.16)	(2.28)	(2.23)	(2.25)
BIG4	+	0.116***	0.116***	0.118***	0.118***	0.117***	0.118***	0.117***	0.118***
		(21.19)	(21.21)	(21.50)	(21.61)	(21.46)	(21.57)	(21.41)	(21.61)
GAAP	?	−0.074***	−0.074***	−0.074***	−0.075***	−0.076***	−0.075***	−0.073***	−0.075***
		(−7.13)	(−7.15)	(−7.13)	(−7.20)	(−7.27)	(−7.22)	(−7.05)	(−7.20)
CHGAAP	+	0.083***	0.083***	0.085***	0.086***	0.085***	0.086***	0.084***	0.086***
		(5.65)	(5.66)	(5.75)	(5.82)	(5.75)	(5.80)	(5.72)	(5.82)
INDSPEC	+	−0.390***	−0.390***	−0.390***	−0.394***	−0.391***	−0.394***	−0.392***	−0.393***
		(−11.67)	(−11.64)	(−11.64)	(−11.70)	(−11.64)	(−11.69)	(−11.67)	(−11.67)
CHUDITOR	+	0.006*	0.006*	0.006*	0.006*	0.006*	0.006*	0.006*	0.006*
		(1.67)	(1.71)	(1.70)	(1.67)	(1.65)	(1.68)	(1.67)	(1.67)
LASTYRAUDIT	+/−	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
		(0.30)	(0.31)	(0.24)	(0.23)	(0.28)	(0.24)	(0.24)	(0.23)
MODOPINIONS	+	0.033***	0.033***	0.033***	0.032***	0.032***	0.032***	0.033***	0.032***
		(18.69)	(18.61)	(18.28)	(17.63)	(18.02)	(17.70)	(18.19)	(17.67)
CHCEO	+/−	0.021***	0.023***	0.030***	0.033***	0.023***	0.030***	0.027***	0.033***
		(4.61)	(5.10)	(6.53)	(7.17)	(4.99)	(6.49)	(6.03)	(7.17)
CITY	+	0.064***	0.065***	0.065***	0.064***	0.064***	0.064***	0.064***	0.064***

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	(18.73)	(18.76)	(18.77)	(18.63)	(18.66)	(18.60)	(18.51)	(18.73)
Constant	0.376***	0.349***	0.317***	0.282***	0.311***	0.292***	0.327***	0.278***
	(14.61)	(13.86)	(12.74)	(11.53)	(12.60)	(11.86)	(13.12)	(11.38)
County fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	185,109	185,109	185,109	185,109	185,109	185,109	185,109	185,109
Adjusted R^2	0.529	0.529	0.528	0.528	0.528	0.528	0.528	0.528

This table presents OLS−regression coefficients (t−values in parentheses) for the impact of ownership characteristics and family relationships on audit fees. The dependent variable is *LNFEE*, the natural log of audit fees in NOK 1,000. The sample is described in Table 1 and variables are defined in the Appendix except for the test variables in Model 2 which are measured as indicator variables defined as 1 if the test variable is greater than or equal to the mean and 0 otherwise. County, industry, and year fixed effects are included but omitted from table to conserve space. All regressions employ robust standard errors clustered at the firm level. *, **, and *** denote statistical significance at the 0.10, 0.05, and 0.01 levels (two−sided), respectively.

TABLE 4

Logit Regressions of Choice of Big 4 Auditor on Ownership, CEO, and Board Characteristics, as well as Control Variables

	Predicted sign	Model 1	2	3	4	5	6	7	8
OWNER_CONC (H$_{1b}$)	−	−0.227***	−0.096***	−0.078**					
		(−4.16)	(−2.89)	(−2.22)					
OWNER_SECOND (H$_{2b}$)	−	−0.753***	−0.258***		−0.357***				
		(−10.06)	(−8.70)		(−6.58)				
OWNER_CEO (H$_{3b}$)	−	−0.052	−0.087***			−0.106***			
		(−1.26)	(−3.45)			(−3.81)			
FAM_CEO/OWNER (H$_{4b}$)	+/−	−0.027	−0.023				−0.109***		
		(−0.93)	(−0.88)				(−5.27)		
FAM_BOARD/OWNER (H$_{5b}$)	−	−0.219***	−0.139***					−0.248***	
		(−6.04)	(−5.96)					(−8.35)	
FAM_BOARD/CEO (H$_{6b}$)	+/−	0.027	0.010						−0.119***
		(0.61)	(0.39)						(−3.06)
LNTA	+	0.335***	0.339***	0.357***	0.360***	0.355***	0.356***	0.347***	0.361***
		(34.58)	(35.12)	(37.49)	(38.21)	(37.18)	(37.69)	(36.53)	(38.32)
LEV	+	−0.442***	−0.450***	−0.467***	−0.465***	−0.466***	−0.468***	−0.466***	−0.473***
		(−9.92)	(−10.11)	(−10.49)	(−10.47)	(−10.48)	(−10.54)	(−10.46)	(−10.63)
UNSECURED	+	0.361***	0.365***	0.381***	0.384***	0.380***	0.377***	0.361***	0.378***
		(7.84)	(7.92)	(8.29)	(8.37)	(8.28)	(8.21)	(7.82)	(8.21)
LOSS	?	0.130***	0.133***	0.148***	0.147***	0.147***	0.146***	0.140***	0.148***
		(7.24)	(7.39)	(8.27)	(8.19)	(8.17)	(8.14)	(7.76)	(8.26)
FOREIGN	+	0.319***	0.321***	0.340***	0.338***	0.340***	0.338***	0.327***	0.337***
		(4.23)	(4.26)	(4.52)	(4.48)	(4.52)	(4.49)	(4.33)	(4.47)
EXANTEFIN	+	0.036***	0.037***	0.037***	0.038***	0.037***	0.037***	0.037***	0.038***
		(3.37)	(3.43)	(3.48)	(3.53)	(3.44)	(3.44)	(3.47)	(3.53)
INCPIC	+	−0.017	−0.011	0.012	0.016	0.011	0.009	−0.002	0.014
		(−0.64)	(−0.41)	(0.44)	(0.60)	(0.41)	(0.36)	(−0.07)	(0.54)

ROA	−	−0.374***	−0.389***	−0.443***	−0.439***	−0.438***	−0.439***	−0.414***	−0.449***
		(−8.39)	(−8.73)	(−9.94)	(−9.89)	(−9.85)	(−9.89)	(−9.30)	(−10.11)
CITY	+	0.081***	0.081***	0.084***	0.082***	0.083***	0.082***	0.080***	0.081***
		(3.21)	(3.21)	(3.31)	(3.23)	(3.28)	(3.23)	(3.15)	(3.20)
Constant		−4.300***	−4.523***	−4.945***	−4.945***	−4.917***	−4.902***	−4.731***	−5.002***
		(−25.84)	(−28.01)	(−31.07)	(−31.71)	(−31.17)	(−31.24)	(−29.79)	(−32.16)
Count fixed effects		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry fixed effects		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations		185,109	185,109	185,109	185,109	185,109	185,109	185,109	185,109
Pseudo R^2		0.101	0.101	0.099	0.099	0.099	0.099	0.099	0.099

This table presents logistic regression coefficients (z−values in parentheses) for the impact of ownership characteristics and family relationships on the choice of Big 4 auditors. The sample is described in Table 1 and variables are defined in the Appendix except for the test variables in Model 2 which are measured as indicator variables defined as 1 if the test variable is greater than or equal to mean and 0 otherwise. County, industry, and year fixed effects are included in the models but omitted from the table in order to conserve space. Robust standard errors clustered at the firm level are employed. *, **, and *** denote statistical significance at the 0.10, 0.05, and 0.01 levels (two−sided), respectively.