

## **Audit Quality: The Role of Board Structure in Family Firms**

Mervi Niskanen\*  
Jukka Karjalainen\*\*  
Tensie Steijvers\*\*\*

\*Professor, University of Eastern Finland  
\*\*Ph.D. candidate, University of Eastern Finland  
\*\*\*Professor, Hasselt University, Belgium

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### **Abstract**

This study investigates the role that board structure has on the demand for audit quality in connection with family ownership in a sample of private firms. In addition to this, we also shed light on whether ownership structure and board structure are substitute mechanisms in resolving agency costs in private family firms. Our main results show that the presence of outsiders on the board increases the demand for audit quality in the overall sample as well as in the presence of family ownership. Our results also confirm previous results and indicate that family firms are less likely to engage a Big 4 auditor even when we control for board structure. Additionally, we find that in a subsample of family firms the probability of choosing a Big 4 auditor decreases with an increase in CEO ownership and is higher in firms with outside boards. When we investigate the interaction between CEO ownership and outside boards, we find that role of outside boards is weaker when CEO ownership increases.

Keywords: Board Structure, Audit Quality, Private firms

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Corresponding author's address: Mervi Niskanen, Department of Business, University of Eastern Finland, PO Box 1627, FIN-70211 Kuopio, Finland.  
E-mail: Mervi.Niskanen@uef.fi

## **Audit Quality: The Role of Board Structure in Family Firms**

### **1. Introduction**

The aim of this study is to investigate the role that board structure has on the demand for audit quality in connection with family ownership in a sample of private firms. The approach to audit quality adopted in this study is based on a notion that there are differences in audit quality and that these differences can be inferred by comparing different groups of auditors. The bulk of this research concentrates on the dichotomy between large and small audit firms as the basis for differential audit quality. This line of research is based on DeAngelo (1981), who argues that accounting firm size can be used as a proxy for audit quality because no single client is important to the large firm and the auditor has a greater reputation to lose if they misreport.

The role that inside equity ownership in general and family ownership in particular has on the demand for audit quality in private firms has been given some attention in the literature. The role that board structure as an alternative or complimentary mechanism has in this context has, however, been mostly neglected. Lennox (2005) finds that managerial ownership is related to the demand for Big 4 audits in private firms but not in public firms. Carey, Simnett, and Tanewski (2000) suggest that the demand for voluntary audits increases when agency costs increase. Niskanen, Karjalainen and Niskanen (2010) find that the demand for audit quality is lower in family firms as opposed to other types of private firms. Their results further indicate that an increase in managerial ownership in a sample of family firms decreases the demand for audit quality.

Prevost's et al. (2002) suggests that board composition and inside equity ownership are substitute mechanisms in controlling agency problems. The role that outside boards have on the demand for audit quality is, however, not that clear. One line of thought suggests that firms with outside boards are less likely to demand higher quality audits, because the outside board members by definition serve to reduce agency costs, thus making it unnecessary to seek further monitoring. Alternatively, it can be argued that the board may seek to protect its own reputation, to avoid legal liability (see, e.g., Gilson, 1990) or to promote shareholder

interests by purchasing higher audit quality. To our knowledge, there is no previous research on the role that board structure has on the demand for audit quality in private family firms.

This study extends the findings of previous studies in two important ways. First, we extend the analysis on the role of the choice of auditor in private family firms to include the role that board structure plays in this selection. Furthermore, we are able to provide new information on the interaction between ownership and board structure in this context. Our results show that the presence of outsiders on the board increases the demand for audit quality. The results also confirm previous results and indicate that an increase in family ownership decreases the likelihood that the firm will engage a Big 4 auditor even when we control for board structure. We also find that in a subsample of family firms the probability of choosing a Big 4 auditor decreases with an increase in CEO ownership and is higher in firms with outside boards. When we investigate the interaction between CEO ownership and outside boards, we find that the role of outside boards is weaker when CEO ownership increases. And, additionally, the negative impact of CEO ownership is stronger in the firms with outsiders on the board.

Section two of the study discusses the relevant literature. Section three presents the data and motivates the use of variables applied in the analysis. Section four presents descriptive statistics on the variables. Section five presents the empirical tests explaining the associations between firm characteristics and the use of a Big 4 auditor or a certified auditor. Section six concludes the study.

## **Literature Review and Hypothesis Development**

Agency theory considers auditing as one of the main monitoring or bonding devices dedicated to preventing and regulating agency costs. Auditing leads to a reduction of information asymmetries on accounting numbers, which increases the reliability of accounting profits and resulting dividends. It minimizes residual loss resulting from managers' opportunism in financial reporting. Moreover, external auditors also verify the existence of appropriate internal control mechanisms. Efficient internal control systems would also reduce the agency costs. This monitoring makes it more difficult for managers to conceal the consequences of their actions from the other stakeholders. In addition, auditing

can also strengthen the reputation of family firms. The undiversified portfolio of private family firm owners implies a long term view of the owners and greater reputation concerns. Therefore, the role of the auditor to lend credibility to their disclosures can be very important for family firms (Ang, 1992; Fortin, 2007).

Piot (2005) and Burgstahler et al. (2006) argue that a firm would be more likely to appoint a high quality *auditor* if the firm copes with more agency problems. The appointment of a high profile auditor has to result in making the published accounts more credible, increasing the reliability of the firm's operations and management and reduce agency costs (Piot, 2005). Following extant research, large audit firms are postulated to have more incentive to produce high quality audits (Francis, 2004). This high quality is necessary to produce beneficial effects as a monitoring device. A decision to reduce quality to retain a client would lead to a higher loss for its whole portfolio compared to the retention benefits (De Angelo 1981). Auditor specific brand name investments have to be preserved. Craswell et al. (1995) find that large audit firms earn significantly higher audit fees and they attribute part of this premium to higher investments in expertise.

Many empirical studies have investigated the role of audit and audit quality in general. However, the results are by no means straightforward. Most studies focussing on the interaction between agency costs and auditor choice investigate large listed firms. Ball and Shivakumar (2005) and Beatty et al. (2002) point out that these results cannot be extended to private firms. Lennox (2005) suggests that the monitoring value of auditing may be higher in private firms because they are less vulnerable to takeover and are required to disclose much less accounting information to shareholders. Moreover, stock prices of listed firms provide information to shareholders, helping them to monitor manager's actions. If the literature on the role of auditing in private firms is scarce, it is virtually nonexistent for private family firms. Though the agency literature is suggestive of potential conflict in family businesses (Fama and Jensen, 1983), empirical research investigating the monitoring response is limited. To our knowledge, the studies by Carey et al. (2000) and Niskanen et al. (2009) are the only studies investigating the role of the auditor in private family firms. Their results suggest that higher agency costs increase the demand for voluntary or higher quality audits.

Traditional agency theory predicts that in private family firms, the *shareholder-manager agency conflict* is expected to be minimal. Concentrated ownership and owner-management would lead to a minimum or even zero level of agency costs between owners and managers (Jensen and Meckling, 1976; Fama and Jensen, 1983). Some studies by, e.g., Chrisman, Chua, and Litz (2004) suggest that agency problems are less severe in family firms than in non-family firms. The reasoning behind this argument is that family firms focus more on the firm's long-term survival, wishing to pass the firm onto their heirs, and good reputation, which is likely to promote trust in other stakeholders (James, 1999; Sirmon and Hitt, 2003). Moreover, the large undiversified equity position and control of management and directors places the family in an excellent position to influence and monitor the firm (Fama and Jensen, 1983). In addition, kinship and parental altruism are expected to temper self-interest of family agents (Schulze et al., 2003). However, there is now a debate going on whether private family firms incur higher or lower agency costs (e.g. Schulze et al., 2001; Schulze et al., 2003). These recent studies contest the traditional agency view and argue that agency costs in private family firms could be even higher than in non-family firms due to possible negative effects of self-control and parental altruism. So, parental altruism and family ownership may have a drawback or dark side (Schulze et al., 2003). Controlling owners may be more vulnerable for self-control problems, increasing the probability of risk shifting behaviour and hold up (Lubatkin et al., 2005). For example, once a family has enough ownership for unchallenged control, it can begin to abuse its power by taking resources out of the business (Claessens et al., 2002). Moreover, parents' altruism may lead them to be generous to their children even when these children free ride and lack the competences to lead the firm. In addition, family controlled firms have a higher likelihood to be characterized by special dividend payouts or excessive compensation (Anderson and Reeb, 2003). Therefore, family firms may be reluctant to allow monitoring of their behavior and thus may be less eager to hire a high quality auditor in order to preserve their perquisites. So even though private family firms may cope with higher agency costs, they may be reluctant to allow a high quality auditor. Thus, we argue:

*Hypothesis 1 : Private family firms are less likely to demand a high quality auditor*

However, there is a growing consensus that family firms cannot be viewed as a homogeneous entity (e.g. Chrisman et al., 2005, Villalonga and Amit, 2006, Westhead and Howorth, 2007).

Thus, it would be rash to conclude that *all* private family firms would be hesitant to hire a high quality auditor. Studying the effect of agency costs on auditing, Carey et al. (2000) only consider the effect of non-family management and non-family shareholders in private family firms that affect, through their impact on agency costs, the appointment of a high/low quality auditor. This leaves us with a wide array of other typical family firm characteristics that may influence the agency costs and the resulting choice of auditor. Therefore, we study CEO ownership share which may play an important role in determining the level of agency costs prevailing in the firm.

A *lower CEO ownership share* is mainly originated in an evolution of the firm throughout generations. Many prior studies (e.g Westhead et al., 2002; Schulze et al., 2003a; Sonfield and Lussier, 2004; Jaffe and Lane, 2004; Kellermanns and Eddleston, 2006; Bammens et al., 2008) argue that several family attributes may change throughout time as the ownership structure changes. If descendants join the firm, this will increase the potential for conflicts of interest concerning business issues, diverging views and information asymmetries between owners and manager. The family starts to lose cohesiveness, has different personal goals, values, commitment to the business (Lambrecht and Lievens, 2008) and copes with a lessened intensity of family ties which will engender shareholder-manager agency costs. Due to the changing nature of altruism, the descendant will put the welfare of the own nuclear household before the welfare of the extended family (Schulze et al., 2003a; Lubatkin et al., 2005). They may also enjoy excessive salaries and perks, they may shirk, or make risk avoidant decisions in their own interest (Hanlon et al., 2004). Therefore, it could be argued that if the CEO owns a lower fraction of shares, there will be a higher need for audit quality. Given the private benefits the CEO obtains from the firm, he will not be inclined to demand for high audit quality. However, other shareholders, together possessing a significant amount of the shares, being aware of these high agency costs, may urge for the appointment of a high quality auditor to mitigate these agency costs.

In case of a *high CEO ownership stake*, the CEO bears many of the costs and receives nearly all of the benefits of any of his actions. A CEO with a high ownership share is mainly worried by the preservation of the good reputation and passing the firm to his children. They may be less eager to engage in rent extraction because this may harm the firm. Parental altruism gives the controlling owner/CEO incentive to take actions that they believe would

benefit the nuclear family. They tend to focus on family goals at the expense of other financial goals (Westhead, 2003). In addition, the emotional attachment to the firm, the self identification with the firm and the utility derived from the ability to exercise authority are strong (Gomez-Mejia et al., 2007; Schulze et al., 2003). Therefore, shareholder-manager agency costs decrease as well as the need to hire a high quality auditor. Thus, we hypothesize:

*Hypothesis 2: A decrease in CEO ownership in family firms will increase the demand for high audit quality.*

In private family firms, boards of directors may perform several board roles (Voordeckers et al., 2007). Besides providing advice, counselling and networking, they serve to align the interests of managers with shareholders interests so as to safeguard shareholders' interests (Johannisson and Huse, 2000). The board of directors is responsible for monitoring and evaluating senior management. Within an effective corporate governance structure, the board of directors must verify whether the firm's management acts in the best interest of the family and/or nonfamily shareholders. Outside board members are believed to be independent from management and they are expected to provide superior performance benefits to the firm (Fama 1980; Dalton, Daily, and Ellstrand 1998). The governance literature generally suggests that as boards become increasingly independent of management, their monitoring effectiveness increases, thereby decreasing managerial opportunism (Harford et al., 2008). Independent board of directors can be considered as a power-balancing mechanism to resolve agency conflicts: they have an important control role to monitor management to ensure they do not expropriate stakeholders' interests. They act to prevent the misappropriation of firm's resources and to mitigate opportunistic behaviour. Outside board members are expected to possess the necessary expertise and commitment to monitor managers' behaviour (Minichilli et al., 2009). In order to perform this monitoring task effectively, the directors should have the necessary expertise and objectivity that ostensibly mitigate the agency costs. Previous literature suggests that an effective board should be comprised of outside directors (Zahra and Pearce 1989; Dalton et al. 1998). As outside board members are considered as effective monitors in reducing agency costs, the need for high audit quality as an agency cost reducing mechanism decreases.

However, even though audit quality and outside board representation can be both considered as monitoring tools, they could act as complementary tools. Fama (1980), Fama and Jensen (1983) and Gilson (1990) suggest that the board may seek to protect its own reputation or to avoid legal liability (see, e.g., Gilson, 1990). Alternatively, their motivation may lie in an attempt to promote shareholder interests by purchasing higher audit quality. There is, however little empirical evidence on the relationship between board independence and the demand for audit quality. Carcello et al. (2002) investigate the association between board independence and audit fees with a sample of large public companies. Their results indicate that there is a positive association between board independence and audit fees, suggesting that outside board members seek to protect their reputation and to avoid legal liability by demanding higher audit quality. Beasley et al. (1998) investigate the role that outside board members play in the choice of a brand name auditor in a sample of insurance companies. They find that the likelihood that the firm employs a brand name auditor increases with an increase in the percentage of outside board members. Therefore, we argue:

*Hypothesis 3: Outside board representation will increase the demand for audit quality.*

Based on the above argumentation, management can reduce the monitoring role of the board by implementing CEO duality. CEO duality refers to a board leadership structure in which the same person undertakes both of the roles of chief executive officer and chairman of the board (Bozec 2005). As the CEO significantly influences the membership of corporate boards, CEO duality is widespread. Proponents of agency theory argue that different individuals should hold the positions of CEO and chairman. Jensen (1993) suggests that boards are less effective monitors when the CEO doubles as the chairman of the board. Top management's influence over the board composition seems contrary to effective corporate governance. Gubitta and Gianecchini (2002) claim that, from an agency perspective, disproportionate concentration of power in the hands of a single person could favour opportunistic behaviour. Splitting the roles of CEO and chairman weakens the power of the CEO and reduces the potential for management to dominate the board.

*Hypothesis 4: CEO duality coincides with lower demand for audit quality.*

As CEO ownership share is argued to negatively affect the use of high audit quality, we posit that CEO ownership share will also affect the relationship between the outside board representation and audit quality. As argued in hypothesis 3, outside board representation will increase the demand for audit quality. However, as argued in hypothesis 2, if CEO ownership is high, the shareholder-manager agency costs decrease, reducing the need to hire a high quality auditor. Therefore, the positive relationship between outside board representation and audit quality will be weakened if the CEO ownership share is high and thus agency costs are low according to traditional agency theory.

*Hypothesis 5: The positive relationship between outside board representation and audit quality will be weakened if CEO ownership share is high*

## **Data**

### **Sample**

The data used in this study consist of ownership, financial, and auditing data of Finnish private firms for fiscal years 2000 to 2006. The data on family ownership, board structure and control variables are collected through a private survey directed to 1500 randomly selected Finnish private companies. The companies were selected from a commercial VOITTO database of Asiakastieto Ltd, a Finnish financial and credit information company. The financial and auditing data were collected from the same database and combined with survey data. In this database, firm-specific financial and auditing data are available for periods of different length ranging from one to five years. As a result, our database is in the form of an unbalanced panel containing firm-specific data from one to five fiscal years from 2000 to 2006. The final sample containing data on all variables needed in the regression analysis consists of 441 individual firms and 1,637 observations.

### **The Finnish Context**

The Finnish environment provides an interesting setting for investigating auditing in small and medium sized firms. One of the reasons behind this argument is that in Finland virtually all businesses regardless of size are required to report public financial statements that are subject to full financial statement audit (Knechel, Niemi, & Sundgren, 2008).

Our database also enables us to investigate the choice between three different types of auditors: Big 4, (non-Big 4) certified and non-certified auditors. Finland has a two-tier system of auditor professional qualifications. The lower level qualified auditors are called HTM auditors (auditors and audit firms authorized by a local Chamber of Commerce) and higher level qualified auditors KHT auditors (auditors and audit firms authorized by the Central Chamber of Commerce). Also, during the sample period (2000-2006) all Finnish firms were required to have a financial audit regardless of firm size. The firms were obligated to appoint a certified auditor if a legally determined size-threshold was exceeded in the fiscal year. This applied, if at least two of the following three criteria were exceeded: (1) book value of assets exceeds 340 000 euros, (2) turnover exceeds 680 000 euros, or (3) the firm had over 10 employees on average. If this size-threshold was not exceeded, the firms could choose an auditor without any professional certification as long as this auditor possessed sufficient knowledge and experience in financial auditing (Sundgren, 1998).

## **Research design**

### *Dependent variables*

Table 1 describes the variables used in the empirical analyses of this study. As the dependent variables in the main logistic regression analysis we apply a dichotomous indicator of firm's auditor choice. Our first dependent variable BIG\_4 indicates firms employing an auditor that represents one of the international Big 4 audit firms (i.e., PricewaterhouseCoopers, Deloitte Touche Tohmatsu, Ernst & Young, and KPMG). Because of their large clienteles and established international reputations, the Big 4 audit firms are expected to lose less (more) as a result of maintaining (losing) their independence in comparison to smaller audit firms (DeAngelo, 1981; Cano-Rodríguez, 2010). The validity of the Big 4 vs. non-Big 4 dichotomy as a proxy for audit quality is also supported by previous empirical findings (e.g., Becker et

al., 1998; Francis et al., 1999; Van Tendeloo & Vanstraelen, 2008; Cano-Rodríguez, 2010). Our Finnish dataset allows us to identify different groups of auditor. As the second dependent variable, we define KHT which indicates firms that employ KHT qualified auditors. The sample firms are small enough not to be required to engage KHT auditors and, therefore, an appointment of a KHT auditor is voluntary for these firms. Our third dependent variable CERTIFIED indicates firms that employ a certified HTM or KHT auditor. In the subsample of smaller firms allowed to use non-certified auditors, an appointment of a certified auditor is expected to indicate the demand for higher audit quality. We expect these variables to indicate firm's demand for differential audit quality.

#### TABLE 1

In the multinomial logit analysis we apply the dependent variable AUDITOR, which is defined as having the value of 1 for firms employing non-certified or a HTM auditors, the value of 2 for firms employing non-Big 4 KHT auditors, and the value of 3 for firms employing Big 4 KHT auditors.

#### *Board and ownership variables*

We employ two dichotomous variables as measures of board effectiveness in our analysis. The first variable CEO\_DUAL indicates firms with CEO duality, that is, the Chief Executive Officer of the firm is also serving as a Chairman of the Board. The second variable OUTSIDE\_BM indicates firms with at least one outside board member (i.e., other than family member, director, other personnel, or investor). In unreported analysis we employ one further measure of board structure, i.e., NONFAM\_BM indicates firms with at least one non-family board member. As a measure for board size we include B\_SIZE, defined as a natural logarithm of one plus the number of board members. Our ownership variables include CEO\_OS, defined as a percentage share of CEO's ownership, and FAMILY, indicating family held firms (family ownership > 50%).

#### *Control variables*

To control for the potential demand for audit quality arising from debt contracting we include the variable *LEVERAGE* defined as a ratio of total debt to total assets (Watts & Zimmerman, 1986). Following previous studies, we include a set of control variables for different aspects of audit complexity, which can have an impact on firm's demand for audit quality. To control for organizational complexity we define the variable *SIZE* as a natural logarithm of total assets, and the variable *GROUP*, indicating whether the firm belongs to a corporate group (i.e., the firm is a parent company, a subsidiary or a jointly controlled company) (Knechel et al., 2008). To control for the transactions complexity, we define the variable *A\_TURN* as a ratio of sales to total assets, and the variable *EXPORT*, indicating whether the firm has foreign sales (Chaney et al., 2004). Finally, to control for the audit effort required for verifying firm's risky assets, we define the variable *INV\_REC* as a ratio of inventory plus receivables to total assets (Healy, 1985).

To control for the firm's default risk which can have an impact on the demand for audit quality we include *AGE*, defined as a natural logarithm of one plus years since firm's incorporation; *ROA*, defined as a ratio of earnings before interest and taxes to total assets; *QUICK*, defined as a ratio of current assets minus inventory to current liabilities; and *DISTRESS*, indicating whether the firm's book value of equity is negative (Mansi et al., 2004; Fortin & Pittman, 2007). To control for legal requirements we define the variable *LAW*, indicating whether the firm is based on its size legally required to appoint a certified HTM or KHT auditor (i.e., when at least two of the following criteria is met: employees > 10, turnover > 680 TEUR, and total assets > 340 TEUR). Finally, we include controls for the fiscal year.

### **Descriptive statistics**

Table 2 presents descriptive statistics for the variables. With respect to the board variables, the reported statistics show that of the sample firms 48.75% have CEO duality, 77.34% have non-family board members, and 15.39% have outside board members according to our definition. Board size is on average 2.4 board members ranging from 0 to 12 members. The average share of CEO ownership is 46.80% whereas 54.49% of the sample firms are family held. Statistics also show that 13.44% of the sample firms employ a Big 4 audit firms,

31.52% employ KHT auditors, and 77.95% employ certified HTM or KHT auditors. The sample firms have total assets of 309 TEUR on average.

TABLE 2

Table 3 presents univariate Pearson (Spearman) correlations below (above) the diagonal. For brevity, we outline only the Pearson correlations. The variable CEO\_DUAL is negatively correlated with the dependent variables BIG\_4, KHT, and CERTIFIED. The variable NONFAM\_BM is positively correlated with KHT, whereas the variable OUTSIDE\_BM is positively correlated BIG4 and KHT. The variable CEO\_OS is negatively correlated with BIG\_4, KHT, and CERTIFIED, whereas FAMILY is negatively correlated with BIG\_4. Between the explanatory and control variables, we observe the largest correlations between the variables LAW and SIZE (0.735), CEO\_DUAL and CEO\_OS (0.385), as well as between CEO\_DUAL and B\_SIZE (0.378). Overall, the correlations do not indicate a problem of multicollinearity.

TABLE 3

## Results

Table 4 presents pooled (cross-sectional time-series) logistic regressions for the likelihood that the private firm employs a Big 4 audit firm using the overall sample. These regressions control for family ownership (FAMILY) and allow the effect of board effectiveness on the auditor choice to differ between family firms and nonfamily firms. Regressions in columns (1) and (2) use CEO\_DUAL and OUTSIDE\_BM as measures for board effectiveness, respectively. The results in column (2) of Table 4 show that the presence of outside board members (OUTSIDE\_BM) increases the likelihood that the private firm will employ a Big 4 audit firm. This result confirms hypothesis 3, suggesting that either the board seeks to protect its own reputation, to avoid legal liability or to promote shareholder interests by purchasing higher audit quality. However, CEO duality (CEO\_DUAL) does not appear to have an impact on the likelihood to choose a Big 4 audit firm in our sample of private firms. In addition, the results in columns (1) and (2) indicate that the likelihood to appoint a employ a Big 4 audit firm is lower in private family firms as opposed to nonfamily firms (FAMILY), which is well

in line with hypothesis one and previous studies indicating that the demand for audit quality is lower in family firms. Based on the insignificant coefficients of the interaction terms, this ownership effect appears to be insensitive to the board structure in place.

TABLE 4

Table 5 presents the regressions for the subsample of private family firms (FAMILY = 1) in columns (1) and (2), and for larger private family firms (FAMILY = 1, LAW = 1) in columns (3) and (4). These regressions control for CEO ownership (CEO\_OS) instead of family ownership. The results in columns (2) and (4) confirm the results obtained for the overall sample by showing that board effectiveness in terms of the presence of outside board members (OUTSIDE\_BM) increases the likelihood that the private family firm will employ a Big 4 auditor, giving further support for hypothesis 3. In addition, the results suggest that the effect of CEO ownership (CEO\_OS) on the Big 4 auditor choice is negative, as suggested in hypothesis 2. The results for the subsample of family firms also indicate that the effect that the outside board members have on the demand for audit quality decreases as CEO ownership decreases. This supports hypothesis 5. The results also imply that the negative association between CEO ownership and the likelihood to appoint a Big 4 auditor is stronger for private family firms with outside board members (CEO\_OS x OUTSIDE\_BM). Furthermore, this pattern of results appears to be even more pronounced for larger private family firms. Combined, the results seem to suggest that CEO ownership is a more powerful determinant of the demand for audit quality than an outside board, even if the latter has some impact.

TABLE 5

As an attempt to take into account the Finnish auditing environment with the different types of auditors, we also run the regressions of Tables 4 and 5 by using KHT as the dependent variable instead of BIG\_4 and CERTIFIED as the dependent variable for smaller private firms that are allowed to use non-certified auditors using (not reported). In the models with CERTIFIED as the dependent variable, none of the board variables were significant. In the models with KHT as the dependent variable, in the overall sample of private firms, CEO duality is inversely related (at the 10% level) to the likelihood to employ a KHT auditor. Furthermore, in the subsample of private family firms, CEO ownership is inversely related (at

the 10% level) to the likelihood to employ a KHT auditor only when CEO is also the Chairman of the Board

To investigate the different types of auditors in relation to each other, we re-estimate the regressions in Table 5 by using multinomial logit analysis. These results are presented in Tables 6 and 7. These regressions use AUDITOR as the dependent variable by treating firms employing non-certified and HTM auditors as the comparison group of observations. In our sample of private firms, the choice of a non-Big 4 KHT or a Big 4 auditor is expected to represent voluntary choice of a higher quality auditor and, therefore, demand for audit quality. The regressions in columns (1) to (2) and (3) to (4) use CEO\_DUAL and OUTSIDE\_BM as a measure for board effectiveness, respectively.

TABLE 6

The results in column (4) of Table 6 and 7 confirm the main results by showing that for private family firms the presence of outside board members (OUTSIDE\_BM) increases the likelihood to employ a Big 4 auditor in comparison to non-certified and HTM auditors. The nonsignificant results for non Big 4 KHT auditor imply that this auditor type does not seem to have the similar status as the Big 4 audit firms in the eyes of outside board members. The results in column (1) of Table 6 also show that for private family firms CEO ownership appears to be inversely related to the likelihood to employ a non-Big 4 KHT auditor if the CEO is also the Chairman of the board (CEO\_OS x CEO\_DUAL). In addition, the results in column (4) of Table 7 show that for larger family firms CEO ownership (CEO\_OS) is inversely related to the likelihood to employ a Big 4 audit firm and that this association is stronger for family firms with outside board members (CEO\_OS x OUTSIDE\_BM). However, the results in columns (1) and (2) of Table 7 show no evidence that CEO duality has an impact on the auditor choice for larger family firms.

TABLE 7

We also ran multinomial logit regressions using NONFAM\_BM as a measure for board effectiveness. These untabulated regressions suggest that board effectiveness in terms of non-family-board members increase the likelihood to employ a non-Big 4 KHT auditor in

comparison to non-certified and HTM auditors in the overall sample of private firms and in the subsample of larger private family firms.

With respect to the control variables, the results in Tables 6 and 7 reveal the following. In the overall sample of private firms (Table 6), the demand for higher quality auditors in terms of non-Big 4 KHT and Big 4 KHT auditor is positively related to private firm size, and negatively related to profitability. In addition, financial distress and organizational complexity in terms of group membership appears to increase the likelihood to choose a non-Big 4 KHT auditor. In the subsample of private family firms (Table 6), the demand for higher quality audits appears to be similarly driven by firm size and financial distress. For larger private family firms (Table 7), however, the effect of financial distress appears to be reversed. For these firms, the demand for Big 4 audits appears to increase with reduced default risk as a result of improved liquidity (QUICK).

## **Conclusion**

The aim of this study is to investigate the role that board structure has on the demand for audit quality in connection with family ownership. The approach to audit quality adopted in this study is based on a notion that there are differences in audit quality and that these differences can be inferred by comparing different groups of auditors. The role that inside equity ownership in general and family ownership in particular has on the demand for audit quality in private firms has been given some attention in the literature. The role that board structure as an alternative or complimentary mechanism has in this context has, however, been mostly neglected. One line of thought suggests that firms with outside boards are less likely to demand higher quality audits, because the outside board members by definition serve to reduce agency costs, thus making it unnecessary to seek further monitoring. Alternatively, it can be argued that the board may seek to protect its own reputation, to avoid legal liability or to promote shareholder interests by purchasing higher audit quality.

This study extends the findings of previous studies in two important ways. First, we extend the analysis on the role of the choice of auditor in private family firms to include the role that board structure plays in this selection. Furthermore, we are able to provide new information

on the interaction between ownership and board structure in this context. Our results confirm previous results and indicate that an increase in family ownership decreases the likelihood that the firm will engage a Big 4 auditor even when we control for board structure. Our results also show that the presence of outsiders on the board increases the demand for audit quality. We also find that in a subsample of family firms the probability of choosing a Big 4 auditor decreases with an increase in CEO ownership and is higher in firms with outside boards. When we investigate the interaction between CEO ownership and outside boards, we find that role of outside boards is weaker when CEO ownership increases. Our results imply that outside board members require higher audit quality and that CEO ownership is important in determining how important this demand is. When it comes to the different types of auditors that Finnish environment allows us to examine, the results suggest that Big 4 audit firms seem to be valued higher than the Finnish non Big 4 KHT auditors. This implies that the quality or the credibility of a Big 4 audit firm is higher than that of other certified auditors.

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**Table 1: Variable definitions**

Variable	Definition
Dependent variables	
BIG_4	An indicator variable equal to 1 if an auditor represents one of the Big 4 audit firms, 0 otherwise
CERTIFIED	An indicator variable equal to 1 in case of a certified KHT or HTM auditor, 0 otherwise
KHT	An indicator variable equal to 1 in case of a certified KHT auditor, 0 otherwise
AUDITOR	(1 = non-certified auditor or HTM auditor, 2 = non-Big 4 KHT auditor, 3 = Big4 KHT auditor)
Board and ownership variables	
CEO_DUAL	An indicator variable equal to 1 if CEO is Chairman of the Board, 0 otherwise
NONFAM_BM	An indicator variable equal to 1 if at least one non-family board member, 0 otherwise.
OUTSIDE_BM	An indicator variable equal to 1 if at least one outside board member (i.e., other than family member, director, other personnel, or investor), 0 otherwise.
FAMILY	An indicator variable equal to 1 if family ownership is higher than 50 percent, 0 otherwise.
CEO_OS	A percentage share of CEO's ownership
B_SIZE	A natural logarithm of one plus the number of board members
Control variables	
AGE	A natural logarithm of one plus years since firm's incorporation
LAW	An indicator variable equal to 1 if a firm is legally obligated to have an audit by a HTM or KHT auditor (when at least two of the following criteria is met: employees > 10, turnover > 680 000 €, and total assets > 340 000 €), 0 otherwise
SIZE	A natural logarithm of total assets
LEVERAGE	A ratio of total debt to total assets
ROA	A ratio of earnings before interest and taxes to total assets
DISTRESS	An indicator variable equal to 1 if the book value of equity is negative, 0 otherwise
QUICK	A ratio of current assets minus inventory to current liabilities
A_TURN	A ratio of sales to total assets
INV_REC	A ratio of inventory plus receivables to total assets
EXPORT	An indicator variable equal to 1 if a firm has foreign sales, 0 otherwise
GROUP	An indicator variable equal to 1 if a firm is a member of group, 0 otherwise

**Table 2: Descriptive statistics**

Variables							
Continuous:		<i>N</i>	Mean	Std. dev.	Median	Min	Max
CEO_OS		1,637	46.801	33.884	50.000	0.000	100.000
B_SIZE		1,637	1.221	0.335	1.099	0.000	2.565
AGE		1,637	2.442	0.805	2.485	0.000	4.317
SIZE		1,637	5.735	1.214	5.628	1.988	10.119
LEVERAGE		1,637	0.204	0.339	0.112	0.000	8.826
ROA		1,637	0.154	0.231	0.145	-1.990	1.228
QUICK		1,637	1.683	1.936	1.100	0.000	15.700
A_TURN		1,637	2.363	1.588	2.031	0.000	15.879
INV_REC		1,637	0.392	0.255	0.350	0.000	0.998
Discrete:		<i>N</i>	%				
BIG_4	= 1	220	13.44				
CERTIFIED	= 1	1,276	77.95				
KHT	= 1	516	31.52				
AUDITOR	= 1	1,082	66.10				
	= 2	335	20.46				
	= 3	220	13.44				
CEO_DUAL	= 1	798	48.75				
OUTSIDE_BM	= 1	252	15.39				
FAMILY	= 1	892	54.49				
LAW	= 1	624	38.12				
DISTRESS	= 1	65	3.97				
EXPORT	= 1	370	22.60				
GROUP	= 1	133	8.12				

This table presents descriptive statistics for the overall sample. CEO\_OS is a percentage share of CEO's ownership. B\_SIZE is a natural logarithm of one plus the number of board members. AGE is a natural logarithm of one plus years since firm's incorporation. SIZE is a natural logarithm of total assets. LEVERAGE is a ratio of total debt to total assets. ROA is a ratio of earnings before interest and taxes to total assets. QUICK is a ratio of current assets minus inventory to current liabilities. A\_TURN is a ratio of sales to total assets. INV\_REC is a ratio of inventory plus receivables to total assets. BIG\_4 is an indicator variable equal to 1 if an auditor represents one of the Big 4 audit firms, 0 otherwise. CERTIFIED is an indicator variable equal to 1 in case of a certified KHT or HTM auditor, 0 otherwise. KHT is an indicator variable equal to 1 in case of a certified KHT auditor, 0 otherwise. AUDITOR is a categorical variable equal to 1 in case of a non-certified or HTM auditor; 2 in case of a non-Big 4 KHT auditor, and 3 in case of a Big 4 KHT auditor. CEO\_DUAL is an indicator variable equal to 1 if CEO is Chairman of the board, 0 otherwise. OUTSIDE\_BM is an indicator variable equal to 1 if at least one outside board member (i.e., other than family member, director, other personnel, or investor), 0 otherwise. FAMILY is an indicator variable equal to 1 if family ownership is higher than 50 percent, 0 otherwise. LAW is an indicator variable equal to 1 if a firm is legally obligated to have an audit by a certified HTM or KHT auditor, 0 otherwise. DISTRESS is an indicator variable equal to 1 if the book value of equity is negative, 0 otherwise. EXPORT is an indicator variable equal to 1 if a firm has foreign sales, 0 otherwise. GROUP is an indicator variable equal to 1 if a firm is a member of group, 0 otherwise. *N* denotes the number of firm-year observations. Data cover years from 1999 to 2006.

**Table 3: Correlation matrix**

	CEO_OS	B_SIZE	AGE	SIZE	LEVERAGE	ROA	QUICK	A_TURN	INV_REC	BIG_4	CERTIFIED	KHT	CEO_DUAL	OUTSIDE_BM	FAMILY	LAW	DISTRESS	EXPORT	GROUP
CEO_OS		<b>-0.360</b>	0.000	<b>-0.184</b>	-0.021	<b>0.129</b>	0.003	<b>0.066</b>	<b>-0.070</b>	<b>-0.132</b>	<b>-0.084</b>	<b>-0.210</b>	<b>0.377</b>	<b>-0.210</b>	<b>0.108</b>	<b>-0.154</b>	-0.031	<b>-0.111</b>	<b>-0.234</b>
B_SIZE	<b>-0.347</b>		<b>0.145</b>	<b>0.338</b>	0.062	<b>-0.135</b>	-0.007	<b>-0.137</b>	-0.044	<b>0.134</b>	<b>0.153</b>	<b>0.168</b>	<b>-0.379</b>	<b>0.390</b>	<b>-0.195</b>	<b>0.282</b>	<b>-0.077</b>	<b>0.197</b>	<b>0.184</b>
AGE	-0.009	<b>0.106</b>		<b>0.248</b>	-0.021	-0.046	-0.037	<b>-0.163</b>	-0.016	<b>0.079</b>	<b>0.163</b>	0.055	<b>-0.102</b>	-0.026	<b>0.122</b>	<b>0.180</b>	-0.046	<b>0.074</b>	<b>0.082</b>
SIZE	<b>-0.222</b>	<b>0.354</b>	<b>0.240</b>		<b>0.150</b>	-0.021	-0.010	<b>-0.394</b>	0.013	<b>0.128</b>	<b>0.346</b>	<b>0.235</b>	<b>-0.144</b>	<b>0.113</b>	<b>0.117</b>	<b>0.757</b>	<b>-0.103</b>	<b>0.201</b>	<b>0.293</b>
LEVERAGE	-0.053	0.024	-0.017	0.035		<b>-0.386</b>	<b>-0.375</b>	<b>-0.291</b>	<b>-0.163</b>	0.040	-0.017	0.002	-0.038	0.038	0.055	0.028	<b>0.127</b>	<b>0.180</b>	0.059
ROA	<b>0.153</b>	<b>-0.115</b>	-0.012	-0.006	<b>-0.358</b>		<b>0.399</b>	<b>0.168</b>	-0.059	-0.036	-0.050	-0.059	<b>0.084</b>	<b>-0.128</b>	0.000	0.022	<b>-0.149</b>	<b>-0.119</b>	<b>-0.075</b>
QUICK	0.009	-0.063	-0.012	0.005	<b>-0.104</b>	<b>0.170</b>		<b>-0.177</b>	<b>-0.195</b>	0.014	0.009	0.009	0.008	0.032	<b>-0.109</b>	<b>-0.071</b>	<b>-0.226</b>	<b>-0.083</b>	0.003
A_TURN	<b>0.069</b>	<b>-0.133</b>	<b>-0.158</b>	<b>-0.340</b>	<b>-0.164</b>	0.061	<b>-0.222</b>		<b>0.418</b>	-0.044	-0.030	-0.056	0.007	<b>-0.078</b>	-0.044	-0.033	<b>0.113</b>	<b>-0.122</b>	<b>-0.138</b>
INV_REC	-0.063	<b>-0.070</b>	-0.009	0.024	<b>-0.152</b>	-0.059	<b>-0.213</b>	<b>0.338</b>		-0.006	0.054	0.035	-0.016	-0.034	0.001	<b>0.146</b>	0.014	<b>0.123</b>	0.039
BIG_4	<b>-0.133</b>	<b>0.125</b>	0.056	<b>0.135</b>	0.025	<b>-0.083</b>	0.032	-0.043	-0.010		<b>0.210</b>	<b>0.430</b>	<b>-0.083</b>	<b>0.174</b>	<b>-0.097</b>	<b>0.100</b>	0.039	<b>0.104</b>	<b>0.073</b>
CERTIFIED	<b>-0.095</b>	<b>0.135</b>	<b>0.154</b>	<b>0.339</b>	-0.007	-0.062	-0.015	-0.023	0.049	<b>0.210</b>		<b>0.361</b>	<b>-0.091</b>	0.043	0.035	<b>0.317</b>	-0.043	<b>0.118</b>	<b>0.147</b>
KHT	<b>-0.212</b>	<b>0.156</b>	0.043	<b>0.237</b>	0.024	<b>-0.130</b>	-0.019	-0.030	0.035	<b>0.430</b>	<b>0.361</b>		<b>-0.154</b>	<b>0.133</b>	-0.059	<b>0.196</b>	<b>0.064</b>	<b>0.143</b>	<b>0.222</b>
CEO_DUAL	<b>0.385</b>	<b>-0.378</b>	<b>-0.100</b>	<b>-0.164</b>	-0.050	<b>0.069</b>	0.010	0.020	-0.006	<b>-0.083</b>	<b>-0.091</b>	<b>-0.154</b>		<b>-0.209</b>	<b>0.165</b>	<b>-0.119</b>	-0.054	<b>-0.127</b>	<b>-0.098</b>
OUTSIDE_BM	<b>-0.217</b>	<b>0.377</b>	-0.044	<b>0.155</b>	<b>0.074</b>	<b>-0.169</b>	-0.028	<b>-0.076</b>	-0.044	<b>0.174</b>	0.043	<b>0.133</b>	<b>-0.209</b>		<b>-0.273</b>	0.056	0.061	<b>0.109</b>	<b>0.189</b>
FAMILY	<b>0.101</b>	<b>-0.194</b>	<b>0.122</b>	<b>0.093</b>	-0.004	0.057	<b>-0.090</b>	-0.046	0.014	<b>-0.097</b>	0.035	-0.059	<b>0.165</b>	<b>-0.273</b>		<b>0.078</b>	<b>-0.109</b>	-0.043	-0.056
LAW	<b>-0.162</b>	<b>0.275</b>	<b>0.172</b>	<b>0.735</b>	-0.022	0.013	<b>-0.086</b>	0.002	<b>0.138</b>	<b>0.100</b>	<b>0.317</b>	<b>0.196</b>	<b>-0.119</b>	0.056	<b>0.078</b>		-0.050	<b>0.159</b>	<b>0.218</b>
DISTRESS	-0.031	<b>-0.067</b>	-0.043	<b>-0.105</b>	<b>0.262</b>	<b>-0.258</b>	<b>-0.120</b>	<b>0.172</b>	0.013	0.039	-0.043	<b>0.064</b>	-0.054	0.061	<b>-0.109</b>	-0.050		0.017	0.008
EXPORT	<b>-0.117</b>	<b>0.191</b>	<b>0.070</b>	<b>0.217</b>	<b>0.103</b>	<b>-0.165</b>	<b>-0.092</b>	<b>-0.098</b>	<b>0.114</b>	<b>0.104</b>	<b>0.118</b>	<b>0.143</b>	<b>-0.127</b>	<b>0.109</b>	-0.043	<b>0.159</b>	0.017		<b>0.112</b>
GROUP	<b>-0.243</b>	<b>0.204</b>	<b>0.092</b>	<b>0.314</b>	0.020	<b>-0.118</b>	-0.049	<b>-0.082</b>	0.034	<b>0.073</b>	<b>0.147</b>	<b>0.222</b>	<b>-0.098</b>	<b>0.189</b>	-0.056	<b>0.218</b>	0.008	<b>0.112</b>	

This table presents Pearson (Spearman) correlations below (above) the diagonal. CEO\_OS is a percentage share of CEO's ownership. B\_SIZE is a natural logarithm of one plus the number of board members. AGE is a natural logarithm of one plus years since firm's incorporation. SIZE is a natural logarithm of total assets. LEVERAGE is a ratio of total debt to total assets. ROA is a ratio of earnings before interest and taxes to total assets. QUICK is a ratio of current assets minus inventory to current liabilities. A\_TURN is a ratio of sales to total assets. INV\_REC is a ratio of inventory plus receivables to total assets. BIG\_4 is an indicator variable equal to 1 if an auditor represents one of the Big 4 audit firms, 0 otherwise. CERTIFIED is an indicator variable equal to 1 in case of a certified KHT or HTM auditor, 0 otherwise. KHT is an indicator variable equal to 1 in case of a certified KHT auditor, 0 otherwise. CEO\_DUAL is an indicator variable equal to 1 if CEO is Chairman of the board, 0 otherwise. NONFAM\_BM is an indicator variable equal to 1 if at least one non-family board member, 0 otherwise. OUTSIDE\_BM is an indicator variable equal to 1 if at least one outside board member (i.e., other than family member, director, other personnel, or investor), 0 otherwise. FAMILY is an indicator variable equal to 1 if family ownership is higher than 50 percent, 0 otherwise. LAW is an indicator variable equal to 1 if a firm is legally obligated to have an audit by a certified HTM or KHT auditor, 0 otherwise. DISTRESS is an indicator variable equal to 1 if the book value of equity is negative, 0 otherwise. EXPORT is an indicator variable equal to 1 if a firm has foreign sales, 0 otherwise. GROUP is an indicator variable equal to 1 if a firm is a member of group, 0 otherwise. Data cover years from 1999 to 2006 and contains 1,637 observations. Correlations significant at the 1% confidence level are reported with bold characters.

**Table 4: Logistic regressions: Overall sample**

Dependent variable: BIG_4				
	(1)		(2)	
Variable	Coef.	<i>p</i> -value	Coef.	<i>p</i> -value
Intercept	<b>-3.5500</b>	<b>0.001</b>	<b>-3.6476</b>	<b>0.000</b>
FAMILY	<b>-0.6802</b>	<b>0.029</b>	<b>-0.4816</b>	<b>0.058</b>
CEO_DUAL	-0.3326	0.351	-	-
FAMILY x CEO_DUAL	0.4148	0.386	-	-
OUTSIDE_BM	-	-	<b>0.6543</b>	<b>0.054</b>
FAMILY x OUTSIDE_BM	-	-	0.5422	0.323
B_SIZE	0.3894	0.367	0.1540	0.716
LAW	0.0752	0.813	0.1347	0.672
AGE	0.1108	0.446	0.1598	0.268
SIZE	0.2355	0.103	0.2167	0.128
LEVERAGE	-0.0543	0.794	-0.0506	0.805
ROA	<b>-0.7588</b>	<b>0.047</b>	-0.6162	0.120
DISTRESS	0.4173	0.323	0.4004	0.341
QUICK	0.0684	0.247	0.0746	0.196
A_TURN	0.0413	0.516	0.0475	0.460
INV_REC	-0.2037	0.697	-0.1674	0.750
EXPORT	0.3526	0.156	0.3733	0.130
GROUP	0.0375	0.911	-0.0818	0.805
Year controls	Yes		Yes	
<i>N</i>	1,637		1,637	
Pseudo <i>R</i> <sup>2</sup>	0.080		0.091	
Correctly classified (%)	86.56		86.87	

B\_SIZE is a natural logarithm of one plus the number of board members. AGE is a natural logarithm of one plus years since firm's incorporation. SIZE is a natural logarithm of total assets. LEVERAGE is a ratio of total debt to total assets. ROA is a ratio of earnings before interest and taxes to total assets. QUICK is a ratio of current assets minus inventory to current liabilities. A\_TURN is a ratio of sales to total assets. INV\_REC is a ratio of inventory plus receivables to total assets. BIG\_4 is an indicator variable equal to 1 if an auditor represents one of the Big 4 audit firms, 0 otherwise. CEO\_DUAL is an indicator variable equal to 1 if CEO is Chairman of the board, 0 otherwise. OUTSIDE\_BM is an indicator variable equal to 1 if at least one outside board member (i.e., other than family member, director, other personnel, or investor), 0 otherwise. FAMILY is an indicator variable equal to 1 if family ownership is higher than 50 percent, 0 otherwise. LAW is an indicator variable equal to 1 if a firm is legally obligated to have an audit by a certified HTM or KHT auditor, 0 otherwise. DISTRESS is an indicator variable equal to 1 if the book value of equity is negative, 0 otherwise. EXPORT is an indicator variable equal to 1 if a firm has foreign sales, 0 otherwise. GROUP is an indicator variable equal to 1 if a firm is a member of group, 0 otherwise. *N* denotes the number of firm-year observations per model. *p*-Values are based on standard errors clustered at the firm level. Coefficients significant at 10 % level or better (based on two-tailed test) are reported with bold characters. Data cover years from 1999 to 2006.

**Table 5: Logistic regressions: Subsample of family firms**

Dependent variable: BIG_4	(1)		(2)		(3)		(4)	
Sample	Family firms (FAMILY = 1)				Larger family firms (FAMILY = 1, LAW = 1)			
Variable	Coef.	<i>p</i> -value	Coef.	<i>p</i> -value	Coef.	<i>p</i> -value	Coef.	<i>p</i> -value
Intercept	<b>-3.8297</b>	<b>0.033</b>	<b>-3.7090</b>	<b>0.037</b>	-1.6243	0.586	-2.0299	0.519
CEO_OS	-0.0149	0.165	<b>-0.0134</b>	<b>0.005</b>	<b>-0.0281</b>	<b>0.068</b>	<b>-0.0165</b>	<b>0.019</b>
CEO_DUAL	0.3206	0.526	–		0.3039	0.679	–	
CEO_OS x CEO_DUAL	-0.0026	0.825	–		0.0096	0.611	–	
OUTSIDE_BM	–		<b>2.2488</b>	<b>0.001</b>	–		<b>4.0845</b>	<b>0.000</b>
CEO_OS x OUTSIDE_BM	–		<b>-0.0300</b>	<b>0.091</b>	–		<b>-0.0519</b>	<b>0.006</b>
B_SIZE	-0.5465	0.369	-0.8452	0.133	-0.4255	0.583	<b>-1.6070</b>	<b>0.053</b>
LAW	-0.0817	0.873	0.0526	0.922	–		–	
AGE	0.2955	0.218	<b>0.4078</b>	<b>0.052</b>	0.0584	0.875	<b>0.5732</b>	<b>0.099</b>
SIZE	0.3847	0.122	0.3289	0.193	0.1926	0.587	0.1950	0.588
LEVERAGE	0.4980	0.525	0.5403	0.500	1.1078	0.355	1.3787	0.300
ROA	-0.3936	0.715	-0.3471	0.762	-2.0822	0.237	-1.3516	0.445
DISTRESS	0.7093	0.269	0.5798	0.417	-0.0981	0.930	-1.2629	0.244
QUICK	0.1021	0.125	<b>0.1181</b>	<b>0.073</b>	<b>0.2995</b>	<b>0.023</b>	<b>0.3285</b>	<b>0.005</b>
A_TURN	0.0740	0.496	0.0826	0.454	-0.0611	0.670	-0.0063	0.969
INV_REC	-0.2156	0.786	-0.0194	0.981	-0.2467	0.800	0.0209	0.984
EXPORT	-0.3418	0.434	-0.4552	0.271	-0.3571	0.516	-0.9093	0.127
GROUP	-0.7618	0.300	-1.2048	0.154	-0.5266	0.520	-0.7024	0.378
Year controls	Yes		Yes		Yes		Yes	
<i>N</i>	892		892		371		371	
Pseudo <i>R</i> <sup>2</sup>	0.100		0.128		0.170		0.261	
Correctly classified (%)	89.80		89.69		87.33		88.41	

CEO\_OS is a percentage share of CEO's ownership. B\_SIZE is a natural logarithm of one plus the number of board members. AGE is a natural logarithm of one plus years since firm's incorporation. SIZE is a natural logarithm of total assets. LEVERAGE is a ratio of total debt to total assets. ROA is a ratio of earnings before interest and taxes to total assets. QUICK is a ratio of current assets minus inventory to current liabilities. A\_TURN is a ratio of sales to total assets. INV\_REC is a ratio of inventory plus receivables to total assets. BIG\_4 is an indicator variable equal to 1 if an auditor represents one of the Big 4 audit firms, 0 otherwise. CEO\_DUAL is an indicator variable equal to 1 if CEO is Chairman of the board, 0 otherwise. OUTSIDE\_BM is an indicator variable equal to 1 if at least one outside board member (i.e., other than family member, director, other personnel, or investor), 0 otherwise. FAMILY is an indicator variable equal to 1 if family ownership is higher than 50 percent, 0 otherwise. LAW is an indicator variable equal to 1 if a firm is legally obligated to have an audit by a certified HTM or KHT auditor, 0 otherwise. DISTRESS is an indicator variable equal to 1 if the book value of equity is negative, 0 otherwise. EXPORT is an indicator variable equal to 1 if a firm has foreign sales, 0 otherwise. GROUP is an indicator variable equal to 1 if a firm is a member of group, 0 otherwise. *N* denotes the number of firm-year observations per model. *p*-Values are based on standard errors clustered at the firm level. Coefficients significant at 10 % level or better (based on two-tailed test) are reported with bold characters.

**Table 6: Multinomial logistic regressions: Subsample of family firms (FAMILY = 1)**

Dependent variable: AUDITOR								
	(1)		(2)		(3)		(4)	
Outcome: (Base outcome = 1)	2: Non-Big 4 KHT auditor		3: Big 4 KHT auditor		2: Non-Big 4 KHT auditor		3: Big 4 KHT auditor	
Variable	Coef.	<i>p</i> -value	Coef.	<i>p</i> -value	Coef.	<i>p</i> -value	Coef.	<i>p</i> -value
Intercept	<b>-3.6758</b>	<b>0.037</b>	<b>-4.1491</b>	<b>0.034</b>	<b>-3.3133</b>	<b>0.042</b>	<b>-3.9677</b>	<b>0.040</b>
CEO_OS	0.0082	0.344	-0.0130	0.274	-0.0055	0.273	<b>-0.0148</b>	<b>0.005</b>
CEO_DUAL	0.5399	0.381	0.4528	0.427	–	–	–	–
CEO_OS x CEO_DUAL	<b>-0.0195</b>	<b>0.074</b>	-0.0069	0.597	–	–	–	–
OUTSIDE_BM	–	–	–	–	-1.0059	0.253	<b>1.9773</b>	<b>0.009</b>
CEO_OS x OUTSIDE_BM	–	–	–	–	-0.0219	0.373	-0.0280	0.134
B_SIZE	-0.5732	0.296	-0.6754	0.290	-0.1648	0.770	-0.8871	0.130
LAW	0.0436	0.934	-0.0929	0.866	0.0281	0.958	0.0302	0.958
AGE	-0.1712	0.404	0.2412	0.352	-0.2419	0.245	0.3472	0.130
SIZE	<b>0.5038</b>	<b>0.036</b>	<b>0.5133</b>	<b>0.068</b>	<b>0.4829</b>	<b>0.052</b>	0.4540	0.111
LEVERAGE	-1.1395	0.174	0.2345	0.783	-1.0926	0.180	0.3023	0.726
ROA	0.4252	0.613	-0.3153	0.785	0.4577	0.577	-0.2365	0.843
DISTRESS	<b>1.4701</b>	<b>0.026</b>	1.0725	0.141	<b>1.3942</b>	<b>0.034</b>	0.9251	0.244
QUICK	-0.0809	0.310	0.0897	0.192	-0.0922	0.251	0.1025	0.133
A_TURN	0.1371	0.281	0.1164	0.371	0.1116	0.370	0.1232	0.363
INV_REC	-0.7954	0.285	-0.4306	0.618	-0.8283	0.254	-0.2434	0.787
EXPORT	0.5966	0.143	-0.1784	0.707	0.6184	0.133	-0.2970	0.515
GROUP	0.4921	0.458	-0.5899	0.467	0.4189	0.549	-1.0569	0.253
Year controls	Yes				Yes			
<i>N</i>	892				892			
Pseudo <i>R</i> <sup>2</sup>	0.097				0.106			

CEO\_OS is a percentage share of CEO's ownership. B\_SIZE is a natural logarithm of one plus the number of board members. AGE is a natural logarithm of one plus years since firm's incorporation. SIZE is a natural logarithm of total assets. LEVERAGE is a ratio of total debt to total assets. ROA is a ratio of earnings before interest and taxes to total assets. QUICK is a ratio of current assets minus inventory to current liabilities. A\_TURN is a ratio of sales to total assets. INV\_REC is a ratio of inventory plus receivables to total assets. AUDITOR is a categorical variable equal to 1 in case of a non-certified or HTM auditor; 2 in case of a non-Big 4 KHT auditor, and 3 in case of a Big 4 KHT auditor. CEO\_DUAL is an indicator variable equal to 1 if CEO is Chairman of the board, 0 otherwise. OUTSIDE\_BM is an indicator variable equal to 1 if at least one outside board member (i.e., other than family member, director, other personnel, or investor), 0 otherwise. FAMILY is an indicator variable equal to 1 if family ownership is higher than 50 percent, 0 otherwise. LAW is an indicator variable equal to 1 if a firm is legally obligated to have an audit by a certified HTM or KHT auditor, 0 otherwise. DISTRESS is an indicator variable equal to 1 if the book value of equity is negative, 0 otherwise. EXPORT is an indicator variable equal to 1 if a firm has foreign sales, 0 otherwise. GROUP is an indicator variable equal to 1 if a firm is a member of group, 0 otherwise. *N* denotes the number of firm-year observations per model. *p*-Values are based on standard errors clustered at the firm level. Coefficients significant at 10 % level or better (based on two-tailed test) are reported with bold characters.

**Table 7: Multinomial logistic regressions: Subsample of larger family firms (FAMILY = 1, LAW = 1)**

Dependent variable: AUDITOR		(1)		(2)		(3)		(4)	
Outcome: (Base outcome = 1)		2: Non-Big 4 KHT auditor		3: Big 4 KHT auditor		2: Non-Big 4 KHT auditor		3: Big 4 KHT auditor	
Variable	Coef.	<i>p</i> -value	Coef.	<i>p</i> -value	Coef.	<i>p</i> -value	Coef.	<i>p</i> -value	
Intercept	-0.2962	0.928	-1.1955	0.717	0.0409	0.989	-1.4912	0.672	
CEO_OS	0.0018	0.876	-0.0271	0.106	-0.0051	0.520	<b>-0.0177</b>	<b>0.032</b>	
CEO_DUAL	0.5293	0.528	0.4932	0.539	–		–		
CEO_OS x CEO_DUAL	-0.0120	0.437	0.0056	0.784	–		–		
OUTSIDE_BM	–		–		-0.1375	0.912	<b>4.1112</b>	<b>0.000</b>	
CEO_OS x OUTSIDE_BM	–		–		-0.0137	0.575	<b>-0.0554</b>	<b>0.011</b>	
B_SIZE	-0.7606	0.493	-0.6166	0.469	-0.4636	0.652	<b>-1.7170</b>	<b>0.057</b>	
AGE	-0.3044	0.357	-0.0462	0.908	-0.3804	0.243	0.4534	0.246	
SIZE	0.0317	0.931	0.2121	0.604	0.0031	0.993	0.2097	0.614	
LEVERAGE	0.2078	0.865	1.1834	0.361	0.2104	0.865	1.4166	0.331	
ROA	-1.1677	0.378	-2.3923	0.197	-1.1198	0.386	-1.6686	0.374	
DISTRESS	<b>-12.436</b>	<b>0.000</b>	-0.5285	0.651	<b>-12.207</b>	<b>0.000</b>	-1.7471	0.149	
QUICK	0.0456	0.751	<b>0.3140</b>	<b>0.046</b>	0.0384	0.788	<b>0.3393</b>	<b>0.020</b>	
A_TURN	0.1929	0.196	0.0030	0.986	0.1663	0.253	0.0489	0.802	
INV_REC	-0.4912	0.668	-0.3931	0.713	-0.5395	0.629	-0.1431	0.901	
EXPORT	0.6605	0.233	-0.1335	0.816	0.6845	0.233	-0.6866	0.281	
GROUP	0.5136	0.478	-0.3535	0.688	0.5227	0.470	-0.5247	0.540	
Year controls	Yes				Yes				
<i>N</i>	371				371				
Pseudo <i>R</i> <sup>2</sup>	0.110				0.148				

CEO\_OS is a percentage share of CEO's ownership. B\_SIZE is a natural logarithm of one plus the number of board members. AGE is a natural logarithm of one plus years since firm's incorporation. SIZE is a natural logarithm of total assets. LEVERAGE is a ratio of total debt to total assets. ROA is a ratio of earnings before interest and taxes to total assets. QUICK is a ratio of current assets minus inventory to current liabilities. A\_TURN is a ratio of sales to total assets. INV\_REC is a ratio of inventory plus receivables to total assets. AUDITOR is a categorical variable equal to 1 in case of a non-certified or HTM auditor; 2 in case of a non-Big 4 KHT auditor, and 3 in case of a Big 4 KHT auditor. CEO\_DUAL is an indicator variable equal to 1 if CEO is Chairman of the board, 0 otherwise. OUTSIDE\_BM is an indicator variable equal to 1 if at least one outside board member (i.e., other than family member, director, other personnel, or investor), 0 otherwise. FAMILY is an indicator variable equal to 1 if family ownership is higher than 50 percent, 0 otherwise. LAW is an indicator variable equal to 1 if a firm is legally obligated to have an audit by a certified HTM or KHT auditor, 0 otherwise. DISTRESS is an indicator variable equal to 1 if the book value of equity is negative, 0 otherwise. EXPORT is an indicator variable equal to 1 if a firm has foreign sales, 0 otherwise. GROUP is an indicator variable equal to 1 if a firm is a member of group, 0 otherwise. *N* denotes the number of firm-year observations per model. *p*-Values are based on standard errors lustered at the firm level. Coefficients significant at 10 % level or better (based on two-tailed test) are reported with bold characters.