Assessing Financial Reporting Quality of Family Firms: The Auditors' Perspective

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Abstract

Prior studies provide conflicting evidence on the reporting/disclosure quality of family firms. We provide unique insights by analyzing the pricing of audit engagements. Because financial reporting quality affects audit risk, which determines how auditors price engagements, we analyze audit fees to extract auditor's professional assessment of family firms' reporting quality. Relative to non-family firms, we find that audit fees are significantly lower for family firms, which suggests that auditors view family firms as having superior financial reporting quality (i.e. audit risk is low). Because a fee discount might also be attributable to lower litigation risk, we analyze litigation data and find no reliable difference in auditor lawsuits between family and non-family firms. Finally, we provide corroborating evidence on the financial reporting quality of family firms based on three audit risk tests. First, using a financial reporting metric for audit risk, we show that audit risk is lower for family firms. Second, we show that the fee discount is lower for family firms with high audit risk. Third, using audit report lag as a proxy for audit effort, we show that family firm auditors work less to provide the desired level of assurance. Our findings provide compelling evidence in favor of the explanation that auditors charge less from family firms because of superior reporting quality, which lowers audit risk and, therefore, the need for greater audit investments.

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1. Introduction

Evidence from the bond and stock markets suggest that family firms (i.e., where companies' founders or descendants continue to hold positions in top management, on the board, or are among the company's largest stockholders) are better at protecting the interests of non-controlling investors and creditors.[1] One explanation for the favorable market response to family firms is linked to lower information risk.[2] Consistent with this premise, Ali et al. (2007) conclude that family firms have better financial reporting and disclosure quality. However, because better performing firms have superior disclosure quality (Miller 2002), and family firms are associated with better performance, Hutton (2007) asserts that the relationship between family firms and disclosure quality may be spurious. Evidence from Chen et al. (2008) also suggests that family firms have less transparent disclosures. Thus, it remains ambiguous whether family firms have enhanced reporting/disclosure quality.

In this study, we extract auditors' proprietary evaluation of family firms' financial reporting quality from the pricing of audit engagements. Auditors are professionally trained to assess financial reporting quality and then determine the amount of audit effort needed to render an opinion which affects audit prices. Therefore, audit fees contain auditors' judgment of the clients' reporting quality that is comprehensive and reliable relative to reporting quality models which are prone to measurement problems and are mostly confined to analyzing one dimension of reporting quality (e.g., accruals, discretionary accruals). There are four distinct advantages of analyzing audit fees over reporting quality models. First, audit fee models are

[1]Firms with founding family ownership are associated with superior performance compared to non-family firms (Villalonga and Amit 2006, Anderson and Reeb 2003). The cost of debt is also lower for large public firms with founding family ownership relative to non-family firms (Anderson et al. 2003).

[2]Analytical studies conclude that information asymmetry, or the lack of precision in information, affects pricing decisions (e.g., Lambert et al. 2007, Easley and O'Hara 2004, Diamond and Verrecchia 1991). Empirically, Francis et al. (2008, 2005) find that voluntary disclosures and earnings quality influence the cost of capital.

typically well-specified with R-squares exceeding 70-80% which lessens concerns from omitted variables problem. Second, performance, which is highly correlated with reporting quality, is unlikely to be of major concern for auditors, especially for large clients. Performance as a source of audit risk is less critical for big clients who tend to be profitable. Third, audit fees incorporate information about the quality of financial statements and notes while financial reporting quality models tend to focus on accruals which is one of the sundry determinants of reporting quality. Fourth, audit fees contain auditor's proprietary information about reporting quality while accounting quality models are limited to public information.

The auditor's cost of gathering and verifying evidence and then rendering an opinion depends on the cost of audit effort, which is a function of audit risk (Simunic and Stein 1996, Simunic 1980). As earnings diverge from underlying cash flows because of managerial estimates and assumptions, auditors must adjust their audit planning to verify high risk accounts including accounts receivable, inventories, allowance for bad debt, accrued warranty expense, and accumulated depreciation, audit fees are expected to increase because of greater audit effort (Bedard and Johnstone 2004, Gul et al. 2003, Francis and Krishnan 1999). Fees may be higher as auditors bill for more hours or charge a higher billing rate from having specialized personnel as part of the engagement team (Bell et al. 2001).

If family firms are less prone to accounting manipulation because of direct monitoring by families, their knowledge of the business environment, and their superior understanding of the firm's relationship with customers/suppliers (Ali et al. 2007, Wang 2006), accounting estimates and assumptions would contain fewer estimation errors and are less susceptible to managerial distortions. Therefore, in planning the audit, auditors are more likely to evaluate family firms as having lower audit risk because their financial statements are less susceptible to material misstatements. Auditors respond to relatively lower audit risk by decreasing the scope (nature, timing, and extent) of audit procedures. Hence, auditors are expected to

charge less (more) from family (non-family) firms because less (more) substantive testing is needed to provide the desired level of assurance.

As in Anderson et al. (2009, 2012), our results are based on a comprehensive sample of 2,000 largest publicly traded firms with family ownership data from 2003 to 2010. Because audit quality and client characteristics are likely to vary between Big and non-Big audits (e.g., Behn et al. 2008, Khurana and Raman 2004, Craswell et al. 1995), and these factors also determine audit fees, we concentrate on a Big 4 sample to avoid injecting any bias from variations in sample composition.[3] Our univariate results indicate that the mean/median audit fees of family firms are both economically and statistically lower than those of non-family firms. Controlling for other factors that affect audit fees, we find that audit fees are negatively associated with family firm ownership. The regression estimates indicate that audit fees are about 8% lower for family firms, which is consistent with family firms having superior financial reporting quality. Because auditors pricing of various factors might depend on the ownership structure, we also estimate an augmented regression which allows factor loadings on control variables to vary between the two groups of firms. The results from the augmented fee regressions continue to show that audit fees are negatively associated with family firm ownership.

Since family firms tend to be smaller than non-family firms, and client size is a key determinant of audit fees (Simunic 1980), we conduct extensive tests to ensure that our results are not an artifact of size. First, as in prior studies (e.g., Davis et al. 1993), we rely on matched sample tests whereby each family firm is matched with a unique non-family firm based on total assets. Our results from the matched sample show that family firms are associated with a substantial audit fee discount. Second, we sort the sample into various

[3]If founding families are more effective in mitigating shareholder-management conflicts, they may demand a lower quality audit assurance which may lead to lower audit fees. By restricting the sample to Big 4 engagements, we inherently control for the quality of audit assurance. The presumption is that the Big 4 are willing to bear similar audit risk.

S&P ranked portfolios based on the market capitalization of each firm (e.g., S&P 500, S&P MidCap, S&P 1500) and then estimate the fee regressions for each S&P portfolio. We find that audit fees for family firms are consistently lower for each of the S&P portfolios.

Although lower audit fee is consistent with family firms having superior financial reporting quality, auditors might also charge less because family firms have lower litigation risk.[4] We address this alternative litigation-based explanation for lower audit fees by directly investigating whether auditors of family firms are less likely to be involved in lawsuits. Using a comprehensive sample of lawsuits filed against auditors, and their clients, in federal courts that are related to financial reporting matters, we find no evidence to suggest that family-firm auditors have lower litigation risk. Because litigation risk is an important determinant of audit fees (e.g., Simunic and Stein 1996), we re-estimate the audit fee regressions after additionally including the probability of lawsuit, which is derived from our litigation model. We find that auditors charge more when litigation risk is high but, more importantly, fees continue to be lower for family firms after we control for litigation risk.

In addition to the audit pricing tests, we construct three distinct audit risk tests assessing the financial reporting quality of family firms.[5] First, we directly examine whether audit risk varies between family and non-family firms using the modified Dechow-Dichev (2002) model, which we contend is a powerful audit risk proxy. Their model, which measures the extent to which accruals do not map into cash flows (Francis et al. 2005), serves as a

[4]Simunic (1980), among others (e.g., Choi et al. 2009, Seetharaman et al. 2002, Bell et al. 2001) model audit fees as a function of audit effort and expected legal liability. Therefore, auditors might charge less from family firms because of lower litigation risk and not because less substantive testing is needed to provide the desired level of assurance. Differences in litigation risk might also affect the production of valuable information which in turn affects reporting quality (Kothari et al. 1988).

[5]It is not surprising that the quality of *audited* financial reports varies in the cross-section (Dechow et al. 2010, Butler 2004). Founding families may have superior understanding of the operating environment, which could lead to more precise accounting measurement system. Consequently, family firms may have fewer measurement errors, lower uncertainty in the information environment, and more informative accruals. Also, if non-family firms are more likely to face poor performance or operational challenges, auditors may allow greater reporting discretion because of the inherent underlying uncertainty.

construct for audit risk because the residuals are more likely to be the product of errors, omissions or managerial biases. Our results indicate that audit risk is lower for family firms, which explains why auditors charge less from family firms. Second, if the family firm fee-discount is an outcome of superior financial reporting quality, which entails lower audit risk, the fee discount is expected to be smaller for family firms with higher audit risk. We find that the Dechow-Dichev based audit risk measure is highly correlated with audit fees. Moreover, the fee discount is smaller for family firms with relatively higher audit risk. Third, if auditors charge less from family firms because of lower audit risk, less audit tests are needed to provide the desired level of assurance. Using audit report lag (i.e., the number of days between the fiscal year end and audit report date) as a proxy for audit investments (Bamber et al. 1993, Ashton et al. 1987), we find that audit report lag is shorter for family firms which suggests auditors work less because less substantive testing is needed to provide the desired level of assurance.

We conduct sensitivity tests to examine the robustness of our results. We address any sample selection bias using an instrumental variables approach. It may be unrealistic to assume that family ownership is independent of risk. Families may choose not to own excessively risky companies because of their inability to diversify firm-specific risk or family ownership might restrict excessive risk taking, which in turn may lower audit risk. We address any sample selection bias using an instrumental variables approach whereby, among other variables, dual class share is used as an instrument to generate predicted probabilities of family ownership and the fitted values are used as an explanatory variable in fee regressions. Also, because of potential concerns from omitted variables problem (i.e., failing to account for time-invariant client characteristics or failing to control for performance), we estimate fee regressions using fixed firm effects, as in Adams and Ferreira (2009). Our results are robust to all our sensitivity tests.

Our study has implications for family ownership studies and audit fee research. Lower risk may be one explanation why family firms have less need for more transparent voluntary disclosures (Anderson et al. 2009, Chen et al. 2008). Our study also contributes to the growing audit pricing literature by documenting significant fee differences between family and non-family firms. Our results are based on a large sample of S&P 2,000 firms, which gives us greater confidence that our results are generalizable to a large subset of publicly traded firms. Finally, we add to the audit pricing literature by showing a robust and strong association between audit fees and audit risk based on a financial reporting metric constructed from the modified Dechow-Dichev (2002) model.

We organize the remainder of the paper as follows. Section 2 develops our hypotheses. Section 3 describes research methodologies. Section 4 shows data selection procedures. Section 5 presents empirical test results. Section 6 reports sensitivity analyses test results. Section 7 concludes the paper.

2. Hypothesis Development

2.1. Background

In the U.S., family owned businesses account for more than 80% of all firms (LaPorta et al. 1999). Although most family firms tend to be small, 35% of the firms listed in Standard and Poor's (S&P) 500 index continue to be owned or controlled by founding families who seem to generate greater return for stakeholders than non-family firms (Villalonga and Amit 2006, Anderson and Reeb 2003, Morck et al. 1988).[6] One common explanation why family firms are viewed more positively is linked to lower principal-agent problems. In large corporations, the owner-manager conflict described in Jensen and Meckling (1976) is largely mitigated because family firms with large shareholdings have stronger incentives to monitor

[6]Family firms are commonly defined as firms where members of the founding family continue to hold positions in top management, are on the board, or are blockholders of the company. Stricter definitions include family's equity holdings being at least 5%, or that family's continue to hold top management positions or serve on the board (Chen et al. 2010).

management (Villalonga and Amit 2006). In a related study, Ali et al. (2007) conclude that the quality of financial reporting and disclosure practices are superior for family firms because they are less likely to manipulate financial reports. They find that, relative to non-family firms, family firms have less positive discretionary accruals, reported earnings are better predictors of future cash flows, have larger earnings response coefficients, and are less likely to delay disclosing bad news. Wang (2006) also finds that earnings quality is high for family firms.

Several related studies provide linkages between financial reporting quality, information risk, and the cost of capital. For instance, Easley and O'Hara (2004) consider how financial reporting standards, reporting quality, and financial analysts influence the information structure. In their model, differences in information structure (private versus public) affect the cost of capital. Because private information increases the risk for uninformed investors, they require a higher return for bearing higher information risk. Similarly, Lambert et al. (2007) hypothesize that accounting information influences the cost of capital. Empirical studies provide evidence consistent with the hypothesis that information risk from low reporting quality increases the cost of capital (Francis et al. 2005). Collectively, these studies suggest that if family firms have higher reporting and disclosure quality, investors of family firms will demand a lower rate of return for bearing lower information risk.

However, some question whether family firms have superior financial reporting and disclosure quality. For instance, Hutton (2007) raises concerns that the relationship between disclosure quality and family firms may be an outcome of superior performance and not because family firms have more transparent disclosures practices.[7] Moreover, financial reporting quality is unobservable and researchers are rarely in agreement on what proxies best capture the underlying construct for reporting quality. In a related study, Chen et al. (2008) find that family firms are less likely to issue management forecasts and are less likely

[7]For instance, because disclosure quality is higher for firms with superior performance (Miller 2002), and family firms are associated with superior performance (Anderson and Reeb 2003), family firms are expected to be associated with superior reporting and disclosure quality.

to hold conference calls, which again raise questions about the transparency of family firm disclosures. Thus, it is difficult to unambiguously conclude that family firms prefer more transparent and superior disclosure practices and that lower information risk is a key explanation for the market premium associated with family firms.

2.2. Reporting quality, audit risk, and audit fees

We rely on the assessment of the independent external auditor, who is considered as an expert on financial reporting, to provide insights into the financial reporting quality of family firms. A standard U.S audit report states that

> "….We conducted our audits in accordance with the standards of the Public Company Accounting Oversight Board. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the financial statements are free of material misstatement. An audit includes assessing the accounting principles used and significant estimates made by management, as well as evaluating the overall financial statement presentation. In our opinion, the consolidated financial statements referred to above present fairly, in all material respects, the financial position of the company and the results of their operations and their cash flows in conformity with U.S. generally accepted accounting principles." (emphasis added)

One explicit task of the auditor is to evaluate the quality of financial reports and the associated disclosures and then render an opinion. Understanding how auditors assess financial reporting quality of family firms, relative to non-family firms, is likely to yield unambiguous evidence on whether the quality of financial reporting varies systematically between the two groups of firms.

SAS No. 47 requires auditors to use the audit risk model as part of the audit planning and audit pricing (AICPA 1997a) as follows:

$$\textit{Acceptable Audit Risk} = \textit{Inherent Risk} \times \textit{Control Risk} \times \textit{Detection Risk} \quad (1)$$

Where *Acceptable Audit Risk*, which is set by the auditor, is the probability that auditors are willing to accept that they will render unqualified opinions on materially misstated financial statements; *Inherent Risk* is the probability that an account balance or transactions contain material misstatements independent of the effectiveness of internal controls as assessed by the auditor; *Control Risk* is the probability that a material misstatement is not prevented or

detected on a timely basis by the internal control system as assessed by the auditor; and *Detection Risk* is the tolerable level of risk that auditing procedures will not detect material misstatements in financial statements. According to the audit risk model, auditors choose an acceptable level of audit risk and then assess *Inherent Risk* and *Control Risk,* which leads to the desirable level of *Detection Risk* (Houston et al 1999).

If auditors' judge that the clients' quality of financial reporting is low either because *Inherent Risk* or *Control Risk* is high, and therefore audit risk is high, normal audit procedures may not be sufficient to reduce audit risk to an acceptable level. Consequently, auditors need to gather additional audit evidence, conduct extensive testing and in-depth fieldwork, and increase audit investments.[8] Auditing standards require that auditors respond to engagement risk by altering the nature, timing, and extent of audit procedures (SAS No. 82, AICPA 1997b; SAS No. 47, AICPA 1997b), which affects auditor's planning and pricing decisions (Bedard and Johnstone 2004, Bell et al. 2001, Houston et al. 1999).

In general, audit planning and pricing decisions are made by senior members of the engagement team who also participate in the risk assessment of the client (Bedard and Johnstone 2004). If the quality of financial reporting is considered low, and the likelihood of financial statement manipulation is high, auditors are expected to expend more time verifying unusually high accruals or spending more time inspecting high-risk accounts (Gul et al. 2003). Also, auditors may question and challenge clients more frequently which lengthens time to complete the field work (Hirst 1994). Therefore, when auditors judge financial reporting as being low quality, audit fees are expected to be high because auditors need to make larger than expected audit investments (Simunic and Stein 1996, Simunic 1980). Also,

[8]Auditors can respond to increased audit risk in several ways. They can: (1) charge higher fees as a compensation for higher risk, (2) resign from high-risk engagements, (3) adjust audit effort to reduce the risk, which is expected to increase audit fees, (4) negotiate adjustments in financial statements, and (5) report more conservatively (Francis and Krishnan 1999).

auditors might bill at higher rates from having more specialized personnel as part of the engagement team in an attempt to reduce the audit risk which results in higher audit fees.

Therefore, if the financial reporting quality is high for family firms because of fewer errors in the accounting measurement system, less manipulation of financial reporting, tendency not to withhold bad news, and/or better mandated disclosures (e.g., notes to financial statements), a logical prediction is that auditors are expected to charge lower fees from family firms than non-family firms. Fees are lower because of lower audit investments and/or a lower hourly rate. In contrast, audit fees for family firms will be no different from non-family firms if the two types of firms have similar reporting and disclosure qualities.

Aside from the concerns related to model misspecification, prior studies examining reporting quality rely invariably on some numbers from the financial statements, but they completely disregard the quality of the notes which is a key component of the financial statements. An added advantage of examining audit fees is that it incorporates the quality of the financial statements and the quality of the disclosures in the notes.

3. Research Design

3.1. Audit fees and family firms

Simunic (1980) is the first study to develop a positive model on the determination of audit fees. We first test audit fee differences between family and non-family firms using Simunic's model:

$$\begin{aligned} \textit{Audit fees} = {} & \beta_0 + \beta_1 \textit{Family-firm} + \beta_2 \textit{Size} + \beta_3 \textit{H-index} + \beta_4 \textit{Foreign-sale} + \beta_5 \textit{Currentassets-to-currentliabilities} \\ & + \beta_6 \textit{Inventory} + \beta_7 \textit{Return-on-assets} + \beta_8 \textit{Loss} + \beta_9 \textit{Audit-opinion} + \\ & \beta_{10} \textit{Audit-tenure} + \beta_{11} \textit{Audit-specialization} + \beta_{12} \textit{Bank} + \beta_{13} \textit{Utility} + \varepsilon \end{aligned} \quad (1)$$

The dependent variable *Audit fees* is the logarithmic transformation of the total fees charged by the auditor for audit work. The independent variable of interest is *Family-firm* which is an indicator variable with a value of one if the firm is managed or controlled by founding family and zero otherwise. The control variables related to client characteristics are defined as follows. *Size* is the logarithmic transformation of total assets, *H-index* is the sum of the

squared value of segment sales to total sales ratio, and *Foreign-sale* is the ratio of firm's sales from foreign operations to its total sales, *Currentassets-to-currentliabilities* is the ratio of current assets to current liabilities, *Inventory* is the ratio of inventory to total assets, *Return-on-assets* is the ratio of operating income to total assets, and *Loss* is an indicator variable equal to one when net income is negative and zero otherwise. The control variables related to auditor characteristic variables are as follows. *Audit-Opinion* is an indicator variable equal to one when the auditor issues an unqualified opinion and zero otherwise, *Auditor-tenure* is number of years of the audit engagement, and *Auditor-specialization* is the auditor's market share of the client's industry, as in Neal and Riley (2004). *Bank* and *Utility* are indicator variables that equal one when the client is a bank and public utility company, respectively. In addition, we include year fixed effects.

Our main interest is on β_1, the coefficient of *Family-firm.* If auditors charge lower fees from family firms because of superior financial reporting quality, β_1 is expected to be negative.

Because the audit pricing literature has grown substantially since Simunic's seminal study on the pricing of audit services (e.g., Whisenant et al. 2003, Ghosh and Lustgarten 2006, Hogan and Wilkins 2008), we also estimate the following augmented audit fee pricing regression to reduce any omitted correlated variables concern:

$$\begin{aligned} \textit{Audit fees} = {} & \beta_0 + \beta_1 \textit{Family-firm} + \beta_2 \textit{Size} + \beta_3 \textit{H-index} + \beta_4 \textit{Foreign-sale} + \beta_5 \textit{Currentassets-to-currentliabilities} + \beta_6 \textit{Inventory} + \beta_7 \textit{Return-on-assets} + \beta_8 \textit{Loss} + \beta_9 \textit{Audit-opinion} \\ & + \beta_{10} \textit{Audit-tenure} + \beta_{11} \textit{Audit-specialization} + \beta_{12} \textit{Bank} + \beta_{13} \textit{Utility} + \beta_{14} \textit{Leverage} \\ & + \beta_{15} \textit{Currentassets-to-totalassets} + \beta_{16} \textit{Growth} + \beta_{17} \textit{Market-to-book} + \beta_{18} \textit{M\&A} + \\ & \beta_{19} \textit{Discontinued} + \beta_{20} \textit{Busy-season} + \beta_{21} \textit{Auditor-change} + \beta_{22} \textit{IC-opinion} + \beta_{23} \textit{IC-weakness} + \varepsilon \end{aligned} \quad (2)$$

The additional control variables in the augmented model include control variables measuring client and auditor characteristics. Variables measuring client characteristics are as follows. *Leverage* is the ratio of the sum of the long-term and short-term debt to total assets, *Currentassets-to-totalassets* is the ratio of current assets to total assets, *Growth* is the change in revenues between the current year and the prior year, *Market-to-book* is the ratio

of the sum of the market value of equity, the book values of preferred stock, and the book value of debt to total assets, *M&A* is an indicator variable when a firm engages in mergers and acquisitions and zero otherwise, and *Discontinued* is an indicator variable equal to one when a firm reports discontinued operations and extraordinary items and zero otherwise. The variables measuring auditor characteristics are as follows. *Busy-season* is an indicator variable equal to one when client's fiscal year-end is December or January and zero otherwise, *Auditor-change* is an indicator variable equal to one when the client engages a new auditor and zero otherwise, *IC-opinion* is an indicator variable equal to one when the auditor expresses an opinion on the internal control systems under Sections 401 or 404 of SOX (2002) and zero otherwise, and *IC-weakness* is indicator variable equal to one when the auditor reports a material weakness in internal control and zero otherwise. We also include fixed year effects.

3.2. Litigation risk, family firms and audit fees

To investigate a competing litigation-based explanation for lower audit fees, we directly examine whether the frequency of auditor lawsuits varies between family and non-family firms. Drawing on the prior studies on auditor litigation (Heninger 2001, Shu 2000, Lys and Watts 1994, Stice 1991), we estimate the following Probit regression

$$\begin{aligned} \textit{Lawsuits} = {} & \beta_0 + \beta_1 \textit{Family-firm} + \beta_2 \textit{Size} + \beta_3 \textit{Growth} + \beta_4 \textit{Inventory} + \beta_5 \textit{Receivables} + \\ & \beta_6 \textit{Abnormal-accruals} + \beta_7 \textit{Z-score} + \beta_8 \textit{Loss} + \beta_9 \textit{Return} + \beta_{10} \textit{Volatility} + \beta_{11} \textit{Short-tenure} + \beta_{12} \textit{Hitech} + \varepsilon \end{aligned} \quad (3)$$

The dependent variable is one if the auditor and the client are both named as a defendant in a lawsuit filed in federal courts in any given year and zero otherwise. The control variables are defined as follows. *Receivables* is the ratio of accounts receivables to total assets, *Abnormal-accruals* is estimated from the cross-sectional version of the performance-adjusted modified Jones' model, *Z-score* is the Altman Z-score as defined in Heninger (2001), *Return* is the cumulative annual stock returns, *Volatility* is the standard deviation of the daily stock returns for the fiscal year, *Short-tenure* is an indicator variable which equals one when

auditor tenure is less than four, *Hitech* is an indicator variable which equals one when a client's is from one of the following three digit SIC codes: 283, 357, 737, and 873. The other control variables are defined previously. All control variables are measured one year before the filing date of a lawsuit.

Our main interest is on β_1, the coefficient of *Family-firm.* If litigation risk is lower for family firms, β_1 is expected to be negative. Further, to control for lower litigation risk as an alternative explanation for the family firm fee-discount, we estimate the audit fee regressions after including two additional control variables, (1) an estimate of the likelihood of an auditor lawsuit (*Lawsuit-risk*) based on estimated coefficients from the Probit model and, (2) including an interaction of *Family firm* and *Lawsuit-risk*.

3.3. Audit risk and family firms

Our contention is that the modified Dechow and Dichev (2002) model serves as a parsimonious construct for audit risk. In the Dechow-Dichev model, accruals reflect managerial estimates of cash flows and the extent to which accruals *do not* map into operating cash flows, changes in revenues and plant, property and equipment (because of intentional and unintentional errors) is an inverse measure of financial reporting quality (Francis et al. 2005, p. 196). Because this measure maps accruals to operating cash flows, a larger residual number suggests that accounting estimates and judgments are noisy, uninformative or subject to managerial manipulation which denotes high audit risk. Therefore, we estimate differences in audit risk based on the Dechow-Dichev model as follows.

$$\begin{aligned} \textit{Audit risk} = {} & \beta_0 + \beta_1 \textit{Family-firm} + \beta_2 \textit{Accruals}_{-1} + \beta_3 \textit{Size} + \beta_4 \textit{M\&A} + \beta_5 \textit{Financing} + \beta_6 \textit{Leverage} + \\ & \beta_7 \textit{Market-to-book} + \beta_8 \textit{Loss} + \beta_9 \textit{Cash-flow} + \beta_{10} \textit{Volatility} + \beta_{11} \textit{Beta} + \beta_{12} \textit{Return-on-assets} + \\ & \beta_{13} \textit{Return-on-assets}_{-1} + \beta_{14} \textit{Growth} + \varepsilon \end{aligned} \quad (4)$$

The dependent variable *Audit risk* is accrual quality from the modified Dechow and Dichev (2002) model (see Francis et al. 2005).[9] The control variables, as in Ali et al. (2007), include

[9]Discretionary/abnormal accruals based on the Jones (1991) model is another measure of reporting/accrual quality. A key concern with abnormal accruals is that higher abnormal accruals might

last year's total current accruals (*Accruals*$_{-1}$), an indicator variable which equals one if outstanding equity increased by at least 10%, or long-term debt increased by at least 20%, or the first year a firm becomes publicly traded, and 0 otherwise (*Financing*), operating cash flow deflated by the beginning of the year total assets (*Cash-flow*), the standard deviation of quarterly earnings for the prior six years including the current fiscal year (*Volatility*), and the systematic risk estimated from a regression of daily stock returns on equally weighted market returns over a year ending 90 days prior to the current fiscal year (*Beta*). All the other variables are as defined previously. The subscript -1 denotes one year prior to the current fiscal year.

The objectives for the audit risk tests are three-fold. First, we examine whether audit risk is lower for family firms using an accruals based measure of audit risk, i.e., β_1, is expected to be negative. Second, as an effective audit risk metric, the Dechow-Dichev measure should correlate with audit fees.[10] Third, a more powerful test of our hypothesis that fees are lower for family firms because of lower audit risk (or superior reporting quality) is to show that the fee-discount varies with audit risk in the cross-section. We test this hypothesis by estimating *Audit risk* for each firm-year based on Equation (4). We then add *Audit risk* and an interaction term between *Family-firm* and *Audit risk* in the audit fee regression.

3.4. Audit report lag and family firms

If auditors charge less from family firms because less substantive testing is needed to provide the desired level of assurance, audit effort is expected to be lower for family firms. Prior studies conclude that greater auditor effort leads to delays in audit reports (e.g., Ashton

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not necessarily suggest opportunistic earnings management. Higher abnormal accruals might also be consistent with informative reporting whereby current period abnormal accruals are more informative about future cash flows.

[10]Audit work is likely to be more involved when the accounting measurement system is noisy because of intentional or unintentional errors. Auditors need to make added investments to ensure that any errors do not lead to material misstatements. Therefore, lower financial reporting quality is expected to be associated with higher audit fees because it requires greater audit investments.

et al. 1987, Bamber et al. 1993). Therefore, we use audit report lag as a proxy for audit investments. When audit investment needs are greater, auditors are expected to work longer and therefore charge higher fees.

Drawing on prior studies (e.g., Ashton et al. 1989, Knechel and Payne 2001, Schwartz and Soo 1996), we estimate the following audit report lag specification.

$$ReportLag = \beta_0 + \beta_1 Family\text{-}firm + \beta_2 Size + \beta_3 Abnormal\text{-}accruals + \beta_4 Return\text{-}on\text{-}assets + \beta_5 Leverage + \beta_6 Audit\text{-}opinion + \beta_7 H\text{-}Indiex + \beta_8 Foreign\text{-}sale + \beta_9 Auditor\text{-}change + \beta_{10} Busy\text{-}season + \varepsilon \quad (5)$$

The dependent variable *ReportLag* is the logarithmic transformation of the number of days between the fiscal year end and the auditor signature date. If lower audit effort is needed in family firms because of higher reporting quality, we expect β_1 to be negative. The control variable includes abnormal accruals from the performance-adjusted modified Jones' model (*Abnormal-accruals*). All the other control variables are defined before.

4. Data and Sample Description

For our empirical investigation, we use the 2,000 largest industrial firms in the United States as of December 31, 2001 which is obtained from combining the samples from Anderson et al. (2009) and Anderson et al. (2012).[11] In their study, the 2,000 largest industrial firm sample is constructed as follows. The COMPUSTAT rank based on total assets as of year-end 2001 determines which firms are included. Data on family firm ownership are manually collected from corporate proxy statements and 10-Ks from 2001 and 2010. The following industries are excluded: (1) foreign firms, (2) master limited partnerships (21-firms), and (3) firms with share price less than $0.25. To control for survivorship bias, firms are allowed to exit and re-enter the sample. This sample selection results in the largest 2,000 industrial US firms from 2001 to 2010 with a total 16,153 firm-year observations.

[11]We are greatly indebted to David Reeb for sharing the family ownership data for the largest 2000 industrial firms.

We collect data other than family ownership from the following sources: (1) accounting data are from the S&P COMPUSTAT database, (2) audit fees are from Ives Group's *Audit Analytics* database, and (3) stock market data are from the CRSP database. Since data on internal control structure are not available until 2003, we exclude the years 2001 and 2002 from our analyses. Firm coverage and data availability reduces our final sample to 1,182 unique non-family firms (6,393 observations) and 600 family firms (2,798 observations).

For the litigation tests, we collect data on auditor lawsuits over the period 2003 to 2010 for our sample from *Audit Analytics*, *Stanford Class Action Clearinghouse*, and web search via Google. *Audit Analytics Litigation* file tracks individual legal cases filed in Federal Courts against an auditor by the nature of the suit (NOS), which is obtained from the court docket as designated by the plaintiff attorney. As in Lennox and Li (2014), we concentrate on federal lawsuits where an audit firm is named as a defendant (and third-party defendant) and the nature of the lawsuit involves financial reporting problems.[12] Each of the individual lawsuits is identified by distinctive case ID numbers. We then use the unique case ID numbers to identify the client firm whose auditor was named as defendant.

Table 1 presents the summary statistics of the variables used in the audit fee regressions based on the Simunic model. We report the mean values for the full sample (9,191 observations), the family subsample (2,798 observations), the non-family subsample (6,393 observations), and the difference between the means of the family and non-family subsamples. The mean (median) audit fees are $3.015 ($1.613) million for the full sample. For the family and non-family firm subsamples, the mean audit fees are $2.028 million and $3.447 million, respectively, and the difference in fees of $1.419 million is statistically

[12]We consider the following nature of lawsuits (NOS) to be associated with financial reporting problems: Accounting and Auditing Enforcement Release, Accounting Malpractice, Class Action, Financial Reporting, Fraud or Truth-in Lending, Initial Public Offering, Mergers, Securities Law, and Stockholder Suits.

significant. The mean (median) total assets are $5.510 ($1.351) billion for the full sample. The mean total assets are $3.473 billion for the family firm sample and $6.401 billion for the non-family firm sample. The difference in total assets between family and non-family firm is statistically significant.

The variables capturing audit complexity, or what Simunic (1980) labels loss exposure variables, are industrial and geographic diversification (*H-Index* and *Foreign-sale*), and risky current asset accounts including current assets ratio and inventory (*Currentassets-to-currentliabilities* and *Inventory*). The mean *H-Index*, *Foreign-sale*, *Currentassets-to-currentliabilities*, and *Inventory* are 0.66, 0.27, 2.26, and 0.12 for the full sample. The corresponding numbers for family and non-family firms are 0.67, 0.21, 2.28, 0.13 and 0.65, 0.30, 2.26, 0.11, respectively. All the differences are significant except for *Currentassets-to-currentliabilities*. Thus, relative to non-family firms, family firms are less diversified (industrially and geographically), and have higher inventory level. These results suggest that audit complexity might be lower for family firms.

The variables capturing auditors' business and litigation risk, or what Simunic (1980) labels loss sharing ratio variables, include performance (*Return-on-assets* and *Loss*), auditor's opinion (*Audit-opinion*). *Return-on-assets*, *Loss*, and *Audit-opinion* are 0.12, 0.21, and 0.42. The corresponding numbers for family and non-family firms are 0.13, 0.19, 0.47 and 0.12, 0.22, 0.40, respectively (all differences are significant). Thus, relative to non-family firms, family firms are more profitable, have fewer losses and are more likely to receive a clean opinion which suggests that auditors of family firms have lower business/litigation risk.

The variables capturing auditor's production function are auditor's expertise (*Auditor-specialization*) and the experience from serving a client over consecutive years (*Auditor-tenure*). *Auditor-tenure* and *Auditor-specialization* are 12.45 and 0.008. The corresponding numbers for the family and non-family firms are 11.90, 0.0075, and 12.70 and 0.0082, respectively. All the differences are statistically significant. Thus, relative to non-family firms,

family firms have fewer specialized auditors and their auditors have shorter tenure which suggests that auditors of family firms have less economies in their production function.

5. Empirical Results

5.1. Univariate results

Table 2 reports the audit-fee differences between family and non-family firms. The results for the full sample are in Panel A. The mean (median) audit fees for family firms are $2.028 ($1.200) million, while that for non-family firms are $3.447 ($1.854) million. Thus, audit fee for an average (median) family firm is about 59% (65%) of that of a non-family firm. The difference in mean/median audit fees is statistically significant at less than 1% level.

Previous studies show that firm size explains a significant portion of the variation in audit fees. Our results indicate that a typical non-family firm is much larger than that of a family firm. Both mean and median total assets are larger for non-family firms than family firms. To incorporate the impact of size in our analyses, we sort the sample into S&P ranked portfolios and then report differences in audit fees across the two groups of firms in Panel B. For the largest S&P firms, the mean (median) audit fees are $5.345 ($3.706) million for family firms and $6.942 ($4.612) million for non-family firms. The difference in mean (median) audit fees between the two groups is statistically significant at less than 1% level. Similarly, for Midcap S&P 1000 firms, the mean (median) audit fees are $1.536 ($1.197) million for family firms and $1.923 ($1.465) million for non-family firms. The differences again are statistically significant at less than 1% level. For the S&P 1500 firms, audit fee differences between family and non-family firms are also economically and statistically significant. These results provide some evidence that audit fees are lower for family firms and these differences continue to remain lower across different size portfolios.

5.2. Multivariate regressions: Family firms and audit fees

Because audit fees are affected by client and auditor characteristics, we report estimate fee differences between family and non-family firms using a multivariate regression

framework where we control for client and auditor characteristics that are known to affect audit fees in Table 3. The coefficient on the key independent variable *Family-firm* is negative and significant (β=-0.0920, t-stat=-7.19) in the first regression when we use the full sample. Our results suggest that, after controlling for other factors, audit fees are 10% ($=1-e^{-0.0920}$) lower for family firms compared to non-family firms. Using the mean audit fees for non-family firms, which is $3.447 million, a 10% discount translates to a discount of about $344,700 for an average family firm. The Simunic model explains almost 73% of the total variation in audit fees. The results on the control variables are very similar to those reported in prior studies. Firm size is positive and highly significant which indicates that bigger clients pay more. In addition, clients pay more fees when they are more geographically and industrially diversified, have more inventory, report a loss, their auditor is industry specialist or has longer tenure. Clients pay less fees when they have more current assets, have superior performance, or receive a clean opinion. Audit fees are higher for banks but are lower for firms in the utility industry.

The regression results based on the full sample assume that the factors loadings on the control variables are stationary across family and non-family firms. However, audit risk, business risk and litigation risk might vary systematically between family and non-family firms which is why auditors might price these factors depending on the ownership structure. Therefore, we estimate the fee model separately for family and non-family firms and report those results in columns 2 and 3. The test for the differences in the estimated coefficients are reported in column 4. To test for the homogeneity in the pairwise estimated coefficients on the control variables, we use the *Q*-statistic, as in O'Keefe et al. (1994). Our test results indicate that three factor loadings are statistically different between family and non-family firms (*Foreign-sale*, *Currentasssets-to-currentliabilties,* and *Auditor-specialization*), which underscores the importance of allowing factor loadings to vary between family and non-family firms before drawing inferences about fee differences between the two groups.

In Table 4, we re-estimate the audit fee specification in Equation (1) after adding interactions between *Family-firm* (*FF*) and all control variables. We find that the coefficient on *Family-firm* continues to be negative and significant (β=-0.2663, t-stat=-2.75). Consistent with the results from Table 3, we find that only the interactions between *Family-firm* and (1) *Foreign-sale*, (2) *Currentasssets-to-currentliabilties*, and (3) *Auditor-specialization* are significant at less than 5% level. The first two interaction coefficients are positive which suggest that the fee discount is smaller as family firms become more geographically diversified or have high current assets ratio. The third interaction coefficient is negative which suggests that industry specialist auditors offer a larger fee discount to family firms than other non-specialist auditors.

To reduce potential concerns from omitted variables problem, we also estimate an expanded audit fee model which includes several additional determinants of audit fees while simultaneously including their interactions with the *Family-firm* (*FF*) indicator variable. We continue to find that the coefficient on *Family-firm* is negative and significant at the 5% level (β=-0.2410, t-stat=-2.34). All the control variables other than *Utility*, *M&A*, *Discontinued*, and *Auditor-change* are statistically significant. Several interactions are also significant at the 5% level. We find that the family firm fee discount becomes larger when the auditor is an industry specialist or the client has more current assets (relative to total assets). On the other hand, the fee discount becomes smaller as family firms are more geographically diversified, have higher current assets ratio, have more inventory, incur losses, have higher growth, acquire other companies, and their auditors render an opinion on internal controls.

As in prior studies, we control for firm size using the logarithmic transformation of total assets. However, given the large differences in firm size between family and non-family firms, our controls for size may be inadequate. We address potential concerns related to firm size differences using two alternative research designs. First, we use a matched sample approach whereby we match every family observation with a unique non-family observation with the

smallest difference in total assets.[13] The matching procedure results in 5,596 (=2x2,798) observations. We report the matched sample regression results in Panel A of Table 5. For brevity, we do not report the results of the control variables or their interactions with *Family-firm*. For the Simunic model, the coefficient on *Family-firm* remains negative and significant (β=-0.4528, t-stat=-3.65). Similarly, for the augmented model, coefficient on *Family-firm* is also negative and significant (β=-0.4153, t-stat=-3.16).

Second, we estimate audit fee regressions for separate subsets of firms based on S&P subgroups with varying sizes (i.e., S&P 500, S&P MidCap 1000, and S&P1500). The results from Panel B of Table 5 indicate that the coefficient on *Family-firm* is negative and significant at the 5% level or better for the Simunic and the augmented models for all the three S&P subgroups. Thus, our added analyses indicate that the audit fee differences between family and non-family firms are robust to differences in firm size.

Overall, the results from Tables 2 to 5 provide consistent and persuasive evidence that audit fees are lower for family firms compared to non-family firms, which is consistent with family firms having superior financial reporting quality.

5.3. Litigation risk: An alternative explanation for lower audit fees

Because litigation risk is a key determinant of audit fees (e.g., Choi et al. 2009, Simunic and Stein 1996), lower audit fees for family firms might be attributable to lower litigation risk. We explore the litigation risk explanation by first investigating whether the incidence of auditor lawsuits varies between family and non-family firms. In Panel A of Table 6, we report the frequency distribution of auditor lawsuits. For our sample of 9,191 observations, we identify a total of 82 lawsuits filed against an auditor related to client's

[13] As in prior studies, we do not allow the same observation to be matched more than once (i.e., we match without replacement). Our iterative procedure retains a matched pair of family and non-family observation with the smallest difference in total assets. Unreported results show that the mean/median differences in total assets between the two sets of matched firms are insignificant.

financial report matters.[14] Thus, the likelihood of an auditor being sued when clients are one of the largest 2,000 firms is less than 1%. Of the 82 lawsuits, 22 cases involve family firms or the likelihood of an auditor of a family firm being sued is 0.79% (=22/2,798). The remaining 60 cases involve non-family firms; the likelihood of an auditor of a non-family firm being sued is 0.94% (=60/6,393). Although the incidence of auditor lawsuits is lower in family firms, the difference in the likelihood of lawsuits is not statistically significant (-0.15; t-stat=0.74). When we analyze the yearly distribution of the lawsuits, other than 2005, we cannot say with any high level of confidence that the incidence of lawsuits against the auditor is lower for family firms in any given year.

We also analyze the incidence of lawsuits using a multivariate regression analysis where the dependent variable is one if the auditor is named as a defendant in a lawsuit and zero otherwise. We construct a matched control sample whereby we find a control firm from the same two-digit industry with similar asset size but whose auditor is not involved in a lawsuit. Using the matched sample procedure, we find that the coefficient on *Family-firm* is statistically insignificant (β=0.1045, χ^2 =0.14). In the second regression, the control sample consists of all observations that are not involved in a lawsuit. The coefficient on *Family-firm* remains statistically insignificant (β=0.1004, χ^2=0.82). Thus, we find no evidence to support the claim that auditors of family firms are less likely to be involved in lawsuits. The results on the control variables are consistent with prior studies (e.g., Stice 1991, Heninger 2001, Shu 2000, Lys and Watts 1994). For instance, in the second regression, we find that the likelihood of an auditor being involved in a lawsuit is high when clients are large, have more receivables, have more volatile stock returns, and when clients are from technology industry. The incidence of auditor lawsuits is lower when clients have more inventory and when they

[14]An auditor may be involved in more than one lawsuit pertaining to the audit of a client's financial reports because multiple parties filed lawsuits against the auditor. However, for our purposes, we include one observation per client/auditor.

perform poorly. The pseudo R-square is around 17% which is comparable with other studies (e.g., Heninger 2001).

Although we find no evidence to suggest that litigation risk is lower for family firms, we first estimate an ex-ante probability of litigation risk (*Litigation-risk*) based on the Probit model from Equation 3, and then include this estimate of litigation risk as an additional control variable in the audit fee regressions. The results are reported in Table 7. Since we explicitly control for litigation risk by including *Litigation-risk* and an interaction term (*Litigation-risk* x *Family-firm*), the significance of the *Family-firm* coefficient in the audit fee regressions is attributable to superior financial reporting quality and not to lower litigation risk.

Regression 1 results from Table 7, which is based on the Simunic model, shows that the coefficient on *Litigation-risk* is positive and highly significant (β=6.1804, t-stat=12.70). Consistent with the results from prior studies, Table 7 results suggest that auditors incorporate litigation risk into pricing decisions. More importantly, the coefficient on *Family-firm* continues to be negative and significant (β=-0.2866, t-stat=-2.75) even after we control for litigation risk which supports the superior financial reporting quality explanation. The coefficient on *Litigation-risk* x *Family-firm* is statistically insignificant (β=-1.7148, t-stat=-1.78). In Regression 2, when we estimate the augmented audit fee model, we continue to find that the coefficient on *Family-firm* is negative and significant. The results of the control variables and their interactions with *Family-firm* are similar to those reported in Table 4.

In summary, our results provide consistent and persuasive evidence that, *ceteris paribus*, auditors charge less from family firms because of superior financial reporting quality and not because of lower litigation risk.

5.4. Audit risk tests

We construct three additional audit risk based tests, which allow us to directly comment on the financial reporting quality of family firms. First, we examine whether audit

risk varies between family and non-family firms using the modified Dechow and Dichev (2002) as a proxy for audit risk.[15] We report the results from using both size-matched sample and the full sample in Panel A of Table 8. When we use the matched sample, the coefficient on *Family-firm* is negative and significant (β=-0.0034, t-stat=-4.60). When we use the full sample, the coefficient on *Family-firm* continues to be negative and significant (β=-0.0031, t-stat=-5.49). Because the residuals from the modified Dechow and Dichev model are likely to be the outcome of errors, omissions, fraud or managerial manipulation which increases audit risk, our results from Panel A of Table 8 indicate that audit risk is lower for family firms. The control variables results are consistent with those from prior studies. Audit risk is higher for firms that are growing, report losses, have high volatility, and are risky. On the other hand, audit risk is negatively associated with prior period accruals, firm size, leverage, cash flow, and prior period performance.

Second, if, as we assert, the residuals from the Dechow and Dichev model serve as a parsimonious representation of audit risk, it is expected to be associated with audit fees. The results are reported in Panel B of Table 8 using the matched sample (the results are very similar using the full sample). For brevity, we do not report the results of the control variables. Consistent with our predictions, we find a positive and significant coefficient on *Audit risk* (β=3.1, t-stat=7.87). Further, the coefficient on *Family-firm* remains negative and significant (β=-0.5163, t-stat=-3.67). Finally, the interaction term between *Family-firm* and *Audit risk* is also positive and significant (β=1.5584, t-stat=2.08). When we use the augmented model, the results are very similar. Consistent with our conjecture that the Dechow-Dichev model serves as an audit risk proxy, we observe a strong positive association between *Audit risk* and audit fees. Further, when audit risk is judged high for family firms, the fee discount becomes smaller.

[15]As in Francis et al. (2005), *Audit risk* is measured as the standard deviation of firm-specific residuals between year t-4 and year t based on the annual cross-sectional modified Dechow-Dichev (2002) model. The mean (median) *Audit risk* is 0.036 (0.029).

Third, using audit report lag as a proxy for audit effort, we directly examine whether lower audit effort is needed for family firm because of their superior financial reporting quality. When we estimate model (5), we find a significantly negative coefficient on *Family-firm* (β=-0.0281, t-stat=-2.76) using the size matched sample in Panel A of Table 9. We get similar results using the full sample (β=-0.0245, t-stat=-3.04).[16] Our results suggest that audit effort is lower for family firms. Our regression specifications do not allow the control variables to vary between family and non-family firms in Panel A. In Panel B, we allow the factor loadings to vary between family and non-family firms by interacting *Family-firm* with each of the control variables. The reported results from this regression show that *Family-firm* continues to be negative and significant for the matched and the full sample.

Overall, our direct tests using an audit risk metric and an audit effort metric indicate that audit effort is lower for family firms because of lower audit risk which his consistent with family firms adhering to enhanced financial reporting quality. Further, when audit risk is relatively high, the fee discount associated with family firms is smaller.

6. Sensitivity Analysis

We conduct several additional sensitivity analyses to examine the robustness of our results. We only tabulate the results of the tests using instrumental variables.

6.1. Instrumental Variables Approach

Our regression analyses examining the influence of family ownership on audit fees assume that family ownership is determined exogenously, i.e., the treatment effect (family versus non-family ownership) is a random variable and, therefore, independent of risk. However, this assumption may be unrealistic. Because family owners have a major portion of their wealth tied to the firm, they may be unable to diversify firm specific risk which is why they may choose not to own excessively risky companies. Similarly, families firms might

[16]We exclude all firms with audit repot lag greater than 60 days, which is the 10-K filing deadline for large accelerated filers, to avoid contaminating the results from including filers with unusual delays in filing their annual reports.

follow a corporate culture and managerial policies that limit excessive risk taking, which might lower audit risk thereby injecting an upward bias on *Family-firm* coefficients.

To address any endogeneity concerns arising because of a sample selection bias, we use the instrumental variables approach (i.e., two-stage least square estimation). In the first stage, we estimate the probability of family ownership using three instruments: (1) an indicator variable which equals one when a firm has more than one class of voting stock and 0 otherwise (*Dual class*), (2) number of common shareholders deflated by the average number of shareholders in the same industry, where industry is defined using a two-digit SIC code (*Shareholders*), and (3) the percentage of shares owned by firm top executives (*Exec-ownership*).

Families firms often resort to dual class shares to increase their voting rights and thereby maintain effective control of the firm. Non-family firms rarely have dual class shares (Villalonga and Amit 2006). Thus, dual class share serves as an effective instrument because it is useful in defining ownership structure but it is unlikely to affect audit risk. Similarly, because of large block ownership, family firms are likely to be associated with fewer shareholders than typical non-family firms that tend to have dispersed shareholdings. Finally, founding families managing the firm are likely to have high executive ownership which provides greater control over the firm.

The results using the instrumental variables approach are reported in Table 10. In the first stage Probit regression, the three instruments (*Dual-class*, *Shareholders*, and *Exec-ownership*) are highly significant. We conduct several diagnostic tests to evaluate the validity of the instruments (Larcker and Rusticus 2010). The partial Wald χ^2-statistic (H0: $\beta_1=\beta_2=\beta_3=0$) that tests the joint effect of the instruments on *Family-firm* is highly significant (p-value < 0.0001). The Adjusted-R^2 is around 53% and the partial R^2 from including only the instruments is around 46%. Thus, almost 87% of the total explained variation in family firm

ownership is the outcome of the three instruments. Based on the diagnostics tests, the three instruments in the first stage model appear to be valid and effective.

In the second stage, we estimate the audit fee regression after replacing *Family-firm* indicator variable with the fitted values of *Family-firm* from the first stage [$Family\text{-}firm_{Prob}$]. The coefficient on $Family\text{-}firm_{Prob}$ in the second stage audit fee regression remains negative and significant (-0.0627, t-statistics=-2.81). We conduct the over-identifying restrictions test (e.g., Larcker and Rusticus 2010) to assess the validity of instruments by regressing the residuals (u) of second stage regression model on the instrument variables and the control variables as in first stage Probit model. In this test, we find R^2_u= -0.0041. The test statistics $2R^2_u$= 2 × (-0.0111) is less than the critical value χ^2=5.5991 at the 5% level with 2 degree of freedom. Thus, we do not reject the null hypothesis of no correlation between the instrument variables and error terms in the model.

The instrumental variables approach suggests that there is very little upward bias in the OLS coefficients when estimating audit fee regressions. After accounting for any sample selection bias, we continue to find that auditors charge a lower amount from family firms.

6.2. Econometric specifications

It is possible that we fail to account for unobservable client characteristics that are correlated with family firms and audit fees which might lead to spurious correlation. For instance, it is plausible that some clients (e.g., family firms), as part of their prevailing corporate culture, adhere to higher ethical and business professional standards which affect audit fees. As in prior studies (e.g., Adams and Ferreira 2009), we use fixed firm effects in our fee regressions to control for unobservable client characteristics. Under the assumption that corporate culture or ethical standards (or any other time-invariant client characteristic) does not vary over our time period, fixed firm effects would mitigate such problems.

Unreported results indicate that accounting for omitted variables problem using fixed firm effects does not affect our results on the main experimental variables. The coefficient on

Family firm is -0.11 (t-stat=-5.86). More important, the adjusted R-square of the model with fixed firm effects jumps to 91% which reduces any remaining concerns about omitted correlated variables problem. The fixed firm effect results increase the confidence in our assertion that family firms are associated with lower audit fees because of superior financial reporting quality and not because of other unobservable characteristics.[17]

7. Conclusions

Family firms account for 85% of all companies worldwide, employ 80% of the U.S. workforce, and produce more than half the GNP with unique ownership structure and control (Bukart et al. 2003, La Porta et al. 1999). By examining audit fees, we provide insights into the auditors' assessment of the financial reporting quality of family firms.

We document that, on average, family firms are associated with lower audit fees that are both economically and statistically significant. The audit fee results are robust to alternate fee measures and different econometric specifications. Finally, we provide corroborating evidence on the financial reporting quality of family firms using three audit risk based tests. First, using a financial reporting based metric for audit risk, we show that audit risk is lower for family firms. Second, we show that the fee discount declines when family firms have high audit risk. Third, using audit report lag as a proxy for audit effort, we find that audit report lag is shorter for family firms which suggest auditors work less to provide the desired level of assurance. We also examine litigation risk as an alternative explanation for lower audit fees but find no evidence to support this explanation.

Our study extends previous research (Wang 2006, Ali et al. 2007, Chen et al. 2008, Jaggi et al. 2009) by offering a complementary perspective, i.e. how auditors' assess family firm's financial reporting quality.

[17]Although our audit fee regressions include an indicator variable for family firms, we are able to estimate audit fee regressions after including firm fixed effects because there is sufficient variation in ownership structure within the groups.

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Table 1
Descriptive Statistics

	Full Sample					
	Mean	**Median**	**Family**	**Non-Family**	**Difference**	**(*t*-value)**
Audit fees ($ million)	3.0150	1.6125	2.0281	3.4469	-1.4189	(14.24)***
Total assets ($ million)	5,510	1,351	3,473	6,401	-2,928	(8.59)***
H-index	0.6588	0.6116	0.6734	0.6525	0.0209	(3.13)***
Foreign-sale	0.2736	0.2210	0.2106	0.3012	-0.0906	(14.86)***
Currentassets-to-currentliabilities	2.2633	1.8912	2.2797	2.2561	0.0236	(0.75)
Inventory	0.1173	0.0919	0.1295	0.1120	0.0175	(6.46)***
Return-on-assets	0.1226	0.1247	0.1272	0.1205	0.0067	(3.26)***
Loss	0.2127	0	0.1916	0.2220	-0.0304	(3.35)***
Audit-opinion	0.4223	0	0.4693	0.4017	0.0676	(6.05)***
Auditor-tenure	12.4553	10	11.8996	12.6986	-0.7990	(3.85)***
Auditor-specialization	0.0080	0.0057	0.0075	0.0082	-0.0007	(4.08)***
Bank	0.0016	0	0.0014	0.0017	-0.0003	(0.33)
Utility	0.0264	0	0.0686	0.0080	0.0606	(12.36)***
Observations	9,191		2,798	6,393		
Firms	1,653		600	1,182		

We report the mean and median values for the full sample and the mean values for the subsamples of family and non-family firms. The tests of the mean differences between family and non-family firms are based on t-tests. Variable definitions are as follows.

Audit fees = Fees charged by the external auditor for audit related work (in million dollars);
Total assets = Book value of total assets (in million dollars);
H-index = The sum of the squared value of the ratio of operating segment sales to total sales;
Foreign-sale = The ratio of sales from foreign operation to the firm's total sales;
Currentassets-to-currentliabilities = The ratio current assets to current liabilities;
Inventory = The ratio of inventory to total assets;
Return-on-assets = The ratio of operating income to total assets;
Loss = A dummy variable which equals 1 for negative earnings, and 0 otherwise;
Audit-opinion = A dummy variable which equals 1 when an auditor issues an unqualified opinion and 0 otherwise;
Auditor-tenure = The length of the audit engagement;
Auditor-specialization = Auditor's market share based on client sales (as in Neal and Riley 2004);
Bank = A dummy which equals 1 if the firm is a bank and 0 otherwise;
Utility = A dummy which equals 1 if the firm is a public utility and 0 otherwise.

*** denote significance at the 1% level.

Table 2
Audit fees for family and non-family firms

		Family	Non-Family	Difference	(t-value/ Wilcoxon Z)
Panel A: Full sample					
Firms		600	1,182		
Observations		2,798	6,393		
Audit fees	Mean	$2.028	$3.447	-$1.419	(17.42)***
	Median	$1.200	$1.854	-$0.654	(-20.334)***
Total assets	Mean	$3,473	$6,401	-$2,928	(9.94)***
	Median	$906	$1,653	-$747	(-17.355)***

	Family		Non-family		Difference	
	Mean	**Median**	**Mean**	**Median**	**Mean**	**Median**
Panel B: Subsamples						
S&P 500						
Observations	452		1,912			
Audit fees	$5.345	$3.706	$6.942	$4.612	-1.,597***	-0.906***
S&P MidCap 1000						
Observations	1,138		2,827			
Audit fees	$1.536	$1.197	$1.923	$1.465	-0.387***	-0.268***
S&P 1500						
Observations	1,590		4,739			
Audit fees	$2.619	$1.549	$3.948	$2.180	-1.329***	-0.631***

Panel A reports audit fees and total assets for the sample and for the subsample of family and non-family firms. We also report the difference in fees and assets between family and non-family firms. The tests of the mean (median) differences between family and non-family firms are based on t-values (Wilcoxon Z-test). Panel B reports the audit fee results for S&P 500, S&P MidCap 1000 and S&P 1500 firms. The variable definitions are as follows.

Audit fees ($million) = total audit fees charged by auditor for audit related work;
Total assets ($million) = total assets.

*** denote significance at the 1% level.

Table 3
Multivariate analysis of audit fee differences between family and the non-family firms

	Full Sample	Family	Non-family	Difference
Observations	9,191	2,798	6,393	
Adjusted R^2	0.728	0.6775	0.7320	
Intercept	11.3487 (227.31)***	11.1939 (120.60)***	11.3919 (195.92)***	-0.1981 (-2.75)***
Family-firm	-0.0920 (-7.19)***			
Control variables				
Size	0.4522 (96.21)***	0.4493 (47.29)***	0.4512 (83.77)***	-0.0019 (0.10)
H-index	-0.5915 (-29.52)***	-0.5777 (-15.12)***	-0.5928 (-25.26)***	0.0151 (0.25)
Foreign-sale	0.7136 (30.83)***	0.7977 (17.62)***	0.6796 (25.31)***	0.1181 (2.41)**
Currentassets-to-currentliabilities	-0.0624 (-14.48)***	-0.0188 (-2.26)**	-0.0793 (-15.82)***	0.0605 (6.31)***
Inventory	0.1494 (3.05)***	0.2093 (2.56)**	0.0867 (1.41)	0.1225 (1.25)
Return-on-assets	-0.5505 (-8.08)***	-0.5288 (-3.53)***	-0.5779 (-7.59)***	0.0491 (0.43)
Loss	0.1011 (6.12)***	0.1237 (3.88)***	0.0887 (4.60)***	0.0351 (1.19)
Audit-opinion	-0.1073 (-8.28)***	-0.1044 (-4.39)***	-0.1119 (-7.25)***	0.0076 (0.35)
Auditor-tenure	0.0019 (3.00)***	0.0007 (0.56)	0.0027 (3.63)***	-0.0020 (-1.06)
Auditor-specialization	14.026 (15.67)***	11.3257 (6.81)***	15.3699 (14.49)***	-4.0442 (-2.02)**
Bank	0.4877 (3.50)***	0.4512 (1.62)	0.4869 (3.04)***	-0.0357 (-0.16)
Utility	-0.1298 (-3.46)***	-0.0696 (-1.47)	-0.1534 (-2.03)**	0.0837 (0.94)

The dependent variable is the natural logarithm of *Audit fees*. We report the regression results based on the Simunic (1980) model for the full sample, the two subsamples, and the tests of the difference in the estimated coefficients which are based on *Q*-statistic, as in O'Keefe et al. (1994). The *t*-statistics are reported in parentheses. Variable definitions are as follows.

Audit fees = Fees charged by the external auditor for audit related work (in million dollars);
Family-firm (FF) = An indicator variable equals one if the firm is managed or controlled by founding family and zero otherwise;
Size = Natural logarithm of the book value of total assets;
H-index = The sum of the squared value of the ratio of segment sales to total sales
Foreign-sale = The ratio of sales from foreign operation to the firm's total sales.
Currentassets-to-currentliabilities = The ratio current assets to current liabilities;
Inventory = The ratio of inventory to total assets;
Return-on-assets = The ratio of operating income to total assets;
Loss = A dummy variable which equals 1 for negative earnings, and 0 otherwise;
Audit-opinion = A dummy variable which equals 1 when an auditor issues an unqualified opinion and 0 otherwise;
Auditor-tenure = The length of the audit engagement;
Auditor-specialization = Auditor's market share based on client sales (as in Neal and Riley 2004);
Bank = A dummy which equals 1 if the firm is a bank and 0 otherwise;
Utility = A dummy which equals 1 if the firm is a public utility and 0 otherwise.

***, and ** denote significance at the 1% and 5% levels, respectively.

Table 4
Multivariate analysis of audit fee differences between family and non-family firms after allowing the factor loadings to vary between family and non-family firms

	Simunic Model		Augmented Model	
Observations	9,191		9,191	
Adjusted R^2	0.7294		0.7616	
Intercept	11.4116	(198.9)***	10.5913	(166.6)***
Family-firm (FF)	-0.2663	(-2.75)***	-0.2410	(-2.34)**
Control variables				
Size	0.4504	(82.64)***	0.4799	(89.88)***
H-index	-0.5926	(-24.91)***	-0.5863	(-25.92)***
Foreign-sale	0.6781	(24.92)***	0.5741	(21.87)***
Currentassets-to-currentliabilities	-0.0794	(-15.62)***	-0.1075	(-20.88)***
Inventory	0.0848	(1.36)	-0.7036	(-10.23)***
Return-on-assets	-0.5811	(-7.53)***	-0.2225	(-2.90)***
Loss	0.0870	(4.47)***	0.0382	(2.02)**
Audit-opinion	-0.1121	(-7.41)***	-0.0931	(-6.49)***
Auditor-tenure	0.0025	(3.39)***	0.0022	(2.99)***
Auditor-specialization	15.2785	(14.22)***	12.9138	(12.49)***
Bank	0.4862	(3.00)***	0.3773	(2.47)**
Utility	-0.1537	(-2.00)**	-0.0744	(-1.02)
Leverage			0.2257	(6.46)***
Currentassets-to-totalassets			1.0995	(23.20)***
Growth			-0.1670	(-4.73)***
Market-to-book			-0.0471	(-5.22)***
M&A			-0.0112	(-0.67)
Discontinued			0.8591	(0.99)
Busy-season			0.0829	(5.83)***
Auditor-change			-0.0357	(-0.91)
IC-opinion			0.2341	(8.82)***
IC-weakness			0.3698	(12.93)***
FF x Size	0.0011	(0.10)	-0.0116	(-1.10)
FF x H-index	0.0109	(0.25)	0.0246	(0.59)
FF x Foreign-sale	0.1246	(2.41)**	0.1121	(2.27)**
FF x Currentassets-to-currentliabilities	0.0603	(6.31)***	0.0564	(5.82)***
FF x Inventory	0.1257	(1.25)	0.3328	(2.92)***
FF x Return-on-assets	0.0703	(0.43)	-0.1284	(-0.76)
FF x Loss	0.0429	(1.19)	0.0853	(2.41)**
FF x Audit-opinion	0.0087	(0.35)	0.0029	(0.12)
FF x Auditor-tenure	-0.0015	(-1.06)	-0.0004	(-0.33)
FF x Auditor-specialization	-3.9176	(-2.02)**	-5.6240	(-3.02)***
FF x Bank	-0.0509	(-0.16)	-0.0319	(-0.11)
FF x Utility	0.0845	(0.94)	0.0959	(1.12)
FF x Leverage			-0.0233	(-0.36)
FF x Currentassets-to-totalassets			-0.1686	(-2.02)**
FF x Growth			-0.0087	(-0.13)
FF x Market-to-book			0.0472	(2.74)***
FF x M&A			0.1257	(4.06)***
FF x Discontinued			-3.1935	(-1.93)
FF x Busy-season			-0.0068	(-0.26)
FF x Auditor-change			0.0190	(0.28)
FF x IC-opinion			0.0954	(3.31)***
FF x IC-weakness			-0.0640	(-1.22)

The dependent variable is the natural logarithm of *Audit fees*. We report the regression results for the Simunic (1980) model and an augmented model that includes many more control variables while including the interactions of the control variables with *Family-firm*. The *t*-statistics are reported in parentheses. The variable definitions are as follows:

Audit fees	=	Fees charged by the external auditor for audit related work (in million dollars);
Family-firm (FF)	=	an indicator variable equals one if the firm is managed or controlled by founding family and zero otherwise;
Size	=	Natural logarithm of the book value of total assets;
H-index	=	The sum of the squared value of the ratio of operating segment sales to total sales;
Foreign-sale	=	The ratio of sales from foreign operation to the firm's total sales;
Currentassets-to-currentliabilities	=	The ratio current assets to current liabilities;
Inventory	=	The ratio of inventory to total assets;
Return-on-assets	=	The ratio of operating income to total assets;
Loss	=	A dummy variable which equals 1 for negative earnings, and 0 otherwise;
Audit-opinion	=	A dummy variable which equals 1 when an auditor issues an unqualified opinion and 0 otherwise;
Auditor-tenure	=	The length of the audit engagement;
Auditor-specialization	=	Auditor's market share based on client sales (as in Neal and Riley 2004);
Bank	=	A dummy which equals 1 if the firm is a bank and 0 otherwise;
Utility	=	A dummy which equals 1 if the firm is a public utility and 0 otherwise;
Leverage	=	The ratio of the sum of long and short term debt to total assets;
Currentassets-to-totalassets	=	The ratio of current assets to total assets;
Growth	=	The growth in revenues between the current and the prior year;
Market-to-book	=	The ratio of the sum of the market value of common equity and the book value of preferred stock and the book value of total debt to the book value of total assets;
M&A	=	A dummy variable which equals 1 if a firm reports merger and acquisition activities, and 0 otherwise;
Discontinued	=	A dummy variable which equals 1 if a firm reports discounted operations and/or extra-ordinary items and 0 otherwise;
Busy-season	=	A dummy variable which equals 1 if the firm's fiscal year end is in December and January and 0 otherwise;
Auditor-change	=	A dummy variable which equals 1 if the firm engages a new auditor and 0 otherwise;
IC-opinion	=	A dummy variable which equals 1 if the auditor expressed an opinion on Sections 401 or 403 and 0 otherwise;
IC-weakness	=	A dummy variable which equals 1 if the auditor reported material weakness in internal controls, and 0 otherwise.

***, and ** denote significance at the 1% and 5% levels, respectively.

Table 5
Multivariate analysis of audit fee differences between family and non-family firms after incorporating differences in size

	Simunic Model	Augmented Model
Panel A: Matched sample		
Observation	5,596	5,596
Adjusted R^2	0.7324	0.7616
Intercept	11.4972 (155.47)***	10.7054 (129.53)***
Family-firm (FF)	-0.4528 (-3.65)***	-0.4153 (-3.16)***
Control variables	included	included
FF x Control variables	included	included
Panel B: S&P size portfolios		
S&P 500 firms		
Observation	2,364	2,364
Adjusted R^2	0.6639	0.731
Intercept	11.5270 (83.57)***	10.7854 (70.28)***
Family-firm (FF)	-1.1072 (-3.47)***	-0.6646 (-2.16)**
Control variables	included	included
FF x Control variables	included	included
S&P MidCap 1000 firms		
Observation	3,965	3,965
Adjusted R^2	0.4712	0.641
Intercept	11.0963 (90.97)***	10.7864 (89.53)***
Family-firm (FF)	-0.4523 (-2.00)**	-0.5729 (-2.67)***
Control variables	included	included
FF x Control variables	included	included
S&P 1500 firms		
Observation	6,329	6,329
Adjusted R^2	0.695	0.7747
Intercept	11.0723 (160.52)***	10.5030 (137.29)***
Family-firm (FF)	-0.5598 (-4.05)***	-0.4202 (-3.18)***
Control variables	included	included
FF x Control variables	included	included

The dependent variable is the natural logarithm of *Audit fees*. We report the regression results for the Simunic (1980) model and an augmented model that includes many more control variables while including the interactions of the control variables with *Family-firm*. The *t*-statistics are reported in parentheses. We do not report the results of the control variables or their interactions with *Family-firm*. The variable definitions are as follows:

Audit fees = Fees charged by the external auditor for audit related work (in million dollars);

Family-firm (FF) = an indicator variable equals one if the firm is managed or controlled by founding family and zero otherwise.

***, and ** denote significance at the 1% and 5% levels, respectively.

Table 6
Auditor litigation differences between family firms and non-family firms

	Family firms			Non-family firms			Difference	t-value
	Lawsuits	Obs	%	Lawsuits	Obs	%		
Panel A: Incidence of auditor lawsuits								
2003	5	504	0.99	14	851	1.65	-0.66	1.05
2004	4	450	0.89	10	874	1.14	-0.25	0.45
2005	1	410	0.24	11	880	1.25	-1.01	2.25**
2006	3	339	0.88	12	793	1.51	-0.63	0.94
2007	2	299	0.67	2	795	0.25	0.42	0.83
2008	5	266	1.88	4	721	0.55	1.33	1.51
2009	1	275	0.36	5	739	0.68	-0.32	0.66
2010	1	255	0.39	2	740	0.27	0.12	0.28
Total	22	2,798	0.79	60	6,393	0.94	-0.15	0.74

Panel B: Probit estimation of litigation risk				
	Match Sample		**Full Sample**	
Observations	150		8,208	
Adjusted R^2	0.1946		0.1660	
Intercept	-2.4016	(4.63)**	-5.3501	(113.70)***
Family-firm	0.1045	(0.14)	0.1004	(0.82)
Size	0.1120	(1.95)	0.2323	(36.31)***
Growth	0.2262	(0.09)	0.0527	(0.11)
Inventory	-0.6061	(0.16)	-1.6464	(6.39)**
Receivables	0.0458	(0.01)	2.0062	(24.49)***
Abnormal-accruals	0.6591	(0.08)	-1.0000	(1.45)
Z-score	-0.0065	(0.03)	-0.0003	(0.00)
Loss	0.3038	(0.82)	-0.0327	(0.05)
Return	-0.2499	(1.02)	-0.3054	(7.24)***
Volatility	19.3039	(1.72)	10.2597	(5.84)**
Short-tenure	-0.0084	(0.34)	0.0606	(0.27)
Hitech	-0.0579	(0.04)	0.5182	(22.93)***

Panel A reports the incidence of lawsuits filed against auditors for family and non-family firms. We also report the difference in the likelihood of lawsuits between the two groups of firms. In Panel B, we estimate the likelihood of a lawsuit against an auditor using a Probit regression where the dependent variable is one when if the auditor of a client is named as a defendant in a lawsuit filed in federal courts in any given year and zero otherwise. The number in parentheses are Wald χ^2 scores. The control variable definitions are as follows:

Family-firm	=	An indicator variable equals one if the firm is managed or controlled by founding family and zero otherwise;
Size	=	Natural logarithm of the book value of total assets;
Growth	=	The change in revenues between the current and the prior year;
Inventory	=	The ratio of inventory to total assets;
Receivables	=	The ratio of accounts receivable to total assets;
Abnormal accruals	=	Abornmal accruals estimated from the cross-sectional version of the performance adjusted modified Jones' model;
Z-score	=	Altman's Z-score;
Loss	=	An indicator variable which equals 1 for negative earnings, and 0 otherwise;
Return	=	Annual stock return for the current fiscal year;
Volatility	=	The standard deviation of daily stock returns for the fiscal year;
Short-tenure	=	A dummy variable which equals one when auditor tenure less than 4 years;
Hitech	=	A dummy variable when a client is from one of the following three digit SIC codes: 283, 357, 737, and 873.

***, and ** denote significance at the 1% and 5% levels, respectively.

Table 7
Multivariate analysis of audit fee differences between family firms and non-family firms after controlling for litigation risk

	Simunic Model		Augmented Model	
Observations	8,208		8,208	
Adjusted R^2	0.7231		0.7518	
Intercept	11.5049	(183.88)***	10.6466	(152.9)***
Family-firm (FF)	-0.2866	(-2.75)***	-0.2239	(-2.00)**
Control variables				
Litigation-risk	6.1804	(12.70)***	3.2779	(6.68)***
Size	0.4300	(69.03)***	0.4647	(73.26)***
H-index	-0.5933	(-23.88)***	-0.5854	(-24.60)***
Foreign-sale	0.6855	(24.09)***	0.6055	(21.83)***
Currentassets-to-currentliabilities	-0.0775	(-14.47)***	-0.1037	(-18.84)***
Inventory	0.3009	(4.56)***	-0.5338	(-6.90)***
Return-on-assets	-0.4386	(-5.40)***	-0.1556	(-1.92)*
Loss	0.0710	(3.46)***	0.0282	(1.40)
Audit-opinion	-0.1140	(-7.23)***	-0.0915	(-6.07)***
Auditor-tenure	0.0032	(4.16)***	0.0026	(3.57)***
Auditor-specialization	11.7802	(10.33)***	11.2449	(10.25)***
Bank	0.5522	(3.30)***	0.4214	(2.65)***
Utility	-0.1960	(-2.01)**	-0.1482	(-1.59)
Leverage			0.2234	(5.95)***
Currentassets-to-totalassets			1.0076	(19.26)***
Growth			-0.1412	(-3.76)***
Market-to-book			-0.0482	(-5.05)***
M&A			-0.0238	(-1.36)
Discontinued			0.6390	(0.70)
Busy-season			0.0935	(6.23)***
Auditor-change			-0.0181	(-0.43)
IC-opinion			0.2717	(9.57)***
IC-weakness			0.3427	(11.06)***
FF x Litigation-risk	1.7148	(1.78)	1.1406	(1.15)
FF x Size	-0.0015	(-0.13)	-0.0125	(-1.02)
FF x H-index	0.0163	(0.36)	0.0157	(0.36)
FF x Foreign-sale	0.1237	(2.31)**	0.0892	(1.72)*
FF x Currentassets-to-currentliabilities	0.0694	(6.86)***	0.0636	(6.09)***
FF x Inventory	0.1622	(1.52)	0.3917	(3.02)***
FF x Return-on-assets	0.1112	(0.64)	-0.1380	(-0.76)
FF x Loss	0.0631	(1.68)*	0.1028	(2.77)***
FF x Audit-opinion	0.0045	(0.18)	-0.0008	(-0.04)
FF x Auditor-tenure	-0.0012	(-0.87)	-0.0001	(-0.03)
FF x Auditor-specialization	-5.3622	(-2.63)***	-6.9448	(-3.54)***
FF x Bank	-0.0224	(-0.07)	-0.0024	(-0.01)
FF x Utility	0.2109	(1.94)*	0.2267	(2.15)**
FF x Leverage			-0.0624	(-0.92)
FF x Currentassets-to-totalassets			-0.1680	(-1.80)*
FF x Growth			-0.0251	(-0.35)
FF x Market-to-book			0.0583	(3.13)***
FF x M&A			0.1447	(4.46)***
FF x Discontinued			-2.2257	(-1.27)
FF x Busy-season			-0.0182	(-0.67)
FF x Auditor-change			0.0278	(0.39)
FF x IC-opinion			0.0618	(2.00)**
FF x IC-weakness			-0.0040	(-0.07)

The dependent variable is the natural logarithm of *Audit fees*. We report the regression results for the Simunic (1980) model and an augmented model that includes many more control variables while including the interactions of the control variables with *Family-firm*. The *t*-statistics are reported in parentheses. The variable definitions are as follows:

Audit fees = Fees charged by the external auditor for audit related work (in million dollars);

Family-firm (FF)	=	An indicator variable equals one if the firm is managed or controlled by founding family and zero otherwise;
Litigation-risk	=	An estimate of the likelihood of an auditor lawsuit based on the Probit model from Equation 3;
Size	=	Natural logarithm of the book value of total assets;
H-index	=	The sum of the squared value of the ratio of operating segment sales to total sales;
Foreign-sale	=	The ratio of sales from foreign operation to the firm's total sales;
Currentassets-to-currentliabilities	=	The ratio current assets to current liabilities;
Inventory	=	The ratio of inventory to total assets;
Return-on-assets	=	The ratio of operating income to total assets;
Loss	=	A dummy variable which equals 1 for negative earnings, and 0 otherwise;
Audit-opinion	=	A dummy variable which equals 1 when an auditor issues an unqualified opinion and 0 otherwise;
Auditor-tenure	=	The length of the audit engagement;
Auditor-specialization	=	Auditor's market share based on client sales (as in Neal and Riley 2004);
Bank	=	A dummy which equals 1 if the firm is a bank and 0 otherwise;
Utility	=	A dummy which equals 1 if the firm is a public utility and 0 otherwise;
Leverage	=	The ratio of the sum of long and short term debt to total assets;
Currentassets-to-totalassets	=	The ratio of current assets to total assets;
Growth	=	The change in revenues between the current and the prior year;
Market-to-book	=	The ratio of the sum of the market value of common equity and the book value of preferred stock and the book value of total debt to the book value of total assets;
M&A	=	A dummy variable which equals 1 if a firm reports merger and acquisition activities, and 0 otherwise;
Discontinued	=	A dummy variable which equals 1 if a firm reports discounted operations and/or extra-ordinary items and 0 otherwise;
Busy-season	=	A dummy variable which equals 1 if the firm's fiscal year end is in December and January and 0 otherwise;
Auditor-change	=	A dummy variable which equals 1 if the firm engages a new auditor and 0 otherwise;
IC-opinion	=	A dummy variable which equals 1 if the auditor expressed an opinion on Sections 401 or 403 and 0 otherwise;
IC-weakness	=	A dummy variable which equals 1 if the auditor reported material weakness in internal controls, and 0 otherwise.

***, and ** denote significance at the 1% and 5%, respectively.

Table 8
Audit risk as an explanation for variations in audit fees between family and non-family firms

	Dependent variable: Audit risk	
	Matched Sample	**Full Sample**
Panel A: Audit risk regressions		
Observations	4,682	7,779
Adjusted R^2	0.1588	0.1614
Intercept	0.0656 (25.73)***	0.0649 (34.3)***
Family-firm	-0.0034 (-4.60)***	-0.0031 (-5.49)***
Control variables		
Accruals$_{-1}$	-0.0156 (-2.42)**	-0.0135 (-2.68)***
Size	-0.0042 (-16.79)***	-0.0041 (-21.28)***
M&A	-0.0004 (-0.50)	0.0000 (-0.04)
Financing	0.0007 (0.85)	0.0008 (1.40)
Leverage	-0.0068 (-3.84)***	-0.0077 (-5.55)***
Market-to-book	0.0014 (2.99)***	0.0015 (4.18)***
Loss	0.0065 (6.38)***	0.0061 (7.72)***
Cash flow	-0.0159 (-2.38)**	-0.0157 (-3.15)***
Volatility	0.0001 (3.02)***	0.0001 (2.87)***
Beta	0.0029 (5.36)***	0.0025 (6.98)***
Return-on-assets	0.0043 (0.50)	0.0058 (0.91)
Return-on-assets$_{-1}$	-0.0229 (-3.11)***	-0.0285 (-5.15)***
Growth	0.0013 (0.56)	0.0013 (0.75)

	Dependent Variable: ***Audit fees***	
	Simunic Model	**Augmented Model**
Panel B: Audit fee regressions		
Observations	4,866	4,866
Adjusted R^2	0.7471	0.7713
Intercept	11.1891 (134.46)***	10.5716 (117.47)***
Family-firm (FF)	-0.5163 (-3.67)***	-0.4381 (-3.05)***
Audit risk	3.100 (7.87)***	1.8044 (4.64)***
FF x Audit risk	1.5584 (2.08)**	1.2765 (1.72)*
Other control variables	included	included
FF x Other control variables	included	included

The dependent variable in Panel A is *Audit risk* defined as the residuals from the regressions of accruals on operating cash flows, changes in revenues and plant, property and equipment. The dependent variable in Panel B is the natural logarithm of *Audit fees*. We report the results using the matched sample for the Simunic and Augmented models after additionally including *Audit risk* and an interaction between *Audit risk* and *Family-firm*. Our audit fee regressions include the interactions of the control variables with *Family-firm* but we do not report those results for brevity. The *t*-statistics are reported in parentheses. The variable definitions are as follows:

Family-firm (FF)	=	A dummy variable which equals 1 if a firm is a family controlled and 0 otherwise;
Audit risk	=	Standard deviation of firm specific residuals from years t-4 to t where the model is based on annual cross-sectional estimation of the Dechow-Dichev (2002) model as in Francis et al. (2005) for each industry (two-digit SIC code);
Accruals	=	Total current accruals, TCA=ΔCA - ΔCL - ΔCash + ΔSTDEBT, where ΔCA = change in current assets, ΔCL = change in current liabilities, ΔCash = change in cash, and ΔSTDEBT = change in debt in current liabilities; any change is measured between the current and the prior fiscal year;
Size	=	Natural logarithm of the book value of total assets;
M&A	=	dummy variable which equals 1 if a firm reports merger and acquisition

activities, and 0 otherwise;

Financing = A dummy variable which equals one if outstanding equity increased by at least 10%, or long-term debt increased by at least 20%, or the first year a firm becomes publicly traded, and 0 otherwise;

Leverage = The ratio of the sum of long and short term debt over total assets;

Market-to-book = The ratio of the sum of the market value of common equity, and the book value of preferred stock, and the book value of total debt to the book value of total assets;

Loss = A dummy variable for negative earnings;

Cash Flow = Cash from operations scaled by beginning of year total assets;

Volatility = The standard deviation of quarterly earnings measured over six years ending with the current year;

Beta = Systematic risk estimated from a regression of daily stock returns on equally weighted market returns over a year ending 90 days prior to the current fiscal year;

Return-on-assets = Total operating income over average total assets;

***, and ** denote significance at the 1% and 5%, respectively.

Table 9

Audit report lag differences between family and non-family firms

	Match Sample		Full Sample	
Panel A: Base model				
Observations	3,200		5,342	
Adjusted R^2	0.0366		0.0424	
Intercept	3.8149	(114.46)***	3.806	(146.17)***
Family-firm (FF)	-0.0281	(-2.76)***	-0.0245	(-3.04)***
Control variables				
Size	0.0029	(0.78)	0.0028	(0.95)
Abnormal-accruals	-0.06	(-0.69)	0.024	(0.34)
Return-on-assets	0.2121	(4.24)***	0.2022	(5.15)***
Leverage	0.0932	(3.79)***	0.1113	(5.63)***
Audit-opinion	-0.0172	(-1.88)*	-0.0128	(-1.79)*
H-index	-0.0559	(-3.58)***	-0.0613	(-5.03)***
Foreign-sale	0.0314	(1.79)*	0.0234	(1.72)*
Auditor-change	0.0231	(0.82)	0.0302	(1.28)
Busy-season	0.0692	(7.17)***	0.0816	(10.62)***
Panel B: Base model with interactions				
Observations	3,200		5,342	
Adjusted R^2	0.04		0.045	
Intercept	3.8757	(101.89)***	3.8452	(129.02)***
Family-firm (FF)	-0.2777	(-3.68)***	-0.1828	(-3.10)***
Control variables				
Size	-0.0035	(-0.83)	-0.0005	(-0.14)
Abnormal-accruals	-0.1343	(-1.34)	-0.0694	(-0.86)
Return-on-assets	0.1775	(3.16)***	0.166	(3.77)***
Leverage	0.0827	(2.88)***	0.0916	(3.9)***
Audit-opinion	-0.0227	(-2.11)**	-0.0219	(-2.6)***
H-index	-0.0572	(-3.16)***	-0.0632	(-4.49)***
Foreign-sale	0.0334	(1.67)*	0.0183	(1.18)
Auditor-change	0.012	(0.36)	0.0174	(0.63)
Busy-season	0.0668	(5.88)***	0.0832	(9.23)***
FF x Size	0.0264	(3.04)***	0.0129	(1.89)*
FF x Abnormal-accruals	0.3211	(1.57)	0.4135	(2.54)**
FF x Return-on-assets	0.1644	(1.34)	0.1907	(1.95)*
FF x Leverage	0.0373	(0.67)	0.0671	(1.54)
FF x Audit-opinion	0.0181	(0.89)	0.0314	(1.95)*
FF x H-index	0.0075	(0.21)	0.0078	(0.28)
FF x Foreign-sales	-0.011	(-0.26)	0.0186	(0.58)
FF x Auditor-change	0.0336	(0.54)	0.039	(0.74)
FF x Busy-season	0.0178	(0.82)	-0.0003	(-0.02)

The dependent variable is *Report lag* defined as the logarithmic transformation of the number of days between the fiscal year-end and the auditor signature date. Panel A reports the results of the base model and Panel B reports the results of an expanded model that includes the interactions between the control variables and *Family-firm*. The *t*-statistics are reported in parentheses. The variable definitions are as follows:

Family-firm (FF) = A dummy variable which equals 1 if a firm is a family controlled and 0 otherwise;
Size = Natural logarithm of the book value of total assets;
Abnormal-accruals = Abornmal accruals estimated from the cross-sectional version of the performance adjusted modified Jones' model;
Return-on-assets = Total operating income over average total assets;
Leverage = The ratio of the sum of long and short term debt over total assets;
Audit-opinion = A dummy variable which equals 1 when an auditor issues an unqualified opinion and 0 otherwise;
H-index = The sum of the squared value of the ratio of operating segment sales to total sales;
Foreign-sale = The ratio of sales from foreign operation to the firm's total sales;
Auditor-change = A dummy variable which equals 1 if the firm engages a new auditor and 0 otherwise;
Busy-season = A dummy variable which equals 1 if the firm's fiscal year end is in December and January and 0 otherwise.

***, **, and * denote significance at the 1%, 5%, and 10%, respectively.

Table 10
Audit fee differences between family and non-family firms using instrumental variables approach

	First stage: Probit Regression		Second stage: OLS Regression	
Dependent variables:	**Family firm**		**Audit fees**	
Observations	6,945		6,945	
Adjusted R^2 (%)	0.5325		0.7632	
Intercept	-2.0775	(2.68)	10.521	(159.98)***
Family-firm$_{Prob}$			-0.0627	(-2.81)***
Instruments				
Dual-class	2.1934	(557.96)***		
Shareholders	-0.016	(5.22)**		
Exec-ownership	27.2541	(474.64)***		
Control variables				
Size	-0.0771	(13.81)***	0.4809	(92.97)***
H-index	-0.2165	(7.37)***	-0.6069	(-28.89)***
Foreign-sale	-0.1885	(3.57)*	0.6485	(25.45)***
Currentassets-to-currentliabilities	0.0231	(1.46)	-0.0874	(-17.21)***
Inventory	1.3807	(20.56)***	-0.5264	(-8.38)***
Return-on-assets	0.7257	(3.92)**	-0.4392	(-4.54)***
Loss	-0.2064	(8.24)***	0.0323	(1.67)*
Audit-opinion	0.087	(3.30)*	-0.096	(-6.97)***
Audit-tenure	0.0093	(16.43)***	0.0021	(3.21)***
Auditor-specialization	12.7383	(6.23)**	11.7915	(12.08)***
Bank	-2.1959	(0.00)	0.3871	(3.04)***
Utility	1.8569	(2.14)	-0.1905	(-3.46)***
Leverage	-0.9192	(36.0)***	0.2589	(6.73)***
Currentassets-to-totalassets	-0.6539	(12.36)***	0.992	(22.08)***
Growth	-0.0474	(0.12)	-0.1587	(-4.34)***
Market-to-book	0.0115	(0.11)	-0.031	(-3.37)***
M&A	0.0065	(0.01)	0.0234	(1.52)
Discontinued	2.1412	(0.46)	0.5684	(0.65)
Busy-season	0.0942	(3.82)*	0.0934	(7.14)***
Auditor-change	-0.0052	(0.00)	-0.0388	(-1.02)
IC-opinion	-0.0842	(0.64)	0.2673	(8.71)***
IC-weakness	-0.0674	(0.36)	0.28	(8.98)***
Partial Wald-statistic	W=1,216.91***			
Partial R-squared	46.30%			
Over-identifying restrictions test	R^2_u= -0.0041 (χ^2=5.5991 at 5% with 2 DF)			

The first stage estimation is based on the Probit model where the dependent variable is *Family-firm*. The second stage estimation is based on OLS estimators where the dependent variable is natural logarithm of audit fees (*Audit-fee*). Numbers in parentheses are Wald Chi-Squares (t-values) for the Probit (OLS) models. We include year fixed effects in each regression estimation. The variable definitions are as follows:

Family-firm$_{Prob}$	=	The estimated probability that a firm is family owned based on the coefficient estimates from the first stage regression;
Dual class	=	An indicator variable if a firm has more than one class of common stock;
Shareholders	=	Number of common shareholders deflated by the average number of shareholders in the same 2-digit SIC code and fiscal year;
Exec-ownership	=	The percentage of common shares owned by the firm's top five executives.
Size	=	Natural logarithm of total assets;
Currentassets-to-totalassets	=	The ratio of current assets to total assets;
Currentassets-to-currentliabilities	=	The ratio current assets to current liabilities;

Inventory	=	The ratio of inventory to total assets;
Leverage	=	The ratio of the sum of long and short term debt to total assets;
Return-on-assets	=	The ratio of operating income to total assets;
Loss	=	A dummy variable which equals 1 for negative earnings, and 0 otherwise;
Big4	=	A dummy which equals 1 if the auditor is one of the Big 4/Big 6/Big 8, and 0 otherwise;
Audit-opinion	=	A dummy variable which equals 1 when an auditor issues an unqualified opinion and 0 otherwise;
Auditor-change	=	A dummy variable which equals 1 if the firm engages a new auditor and 0 otherwise;
M&A	=	A dummy variable which equals 1 if a firm reports merger and acquisition activities, and 0 otherwise;
Growth	=	The growth in revenues between the current and the prior year;
Market-to-book	=	The ratio of the sum of the market value of common equity, and the book value of preferred stock, and the book value of total debt to the book value of total assets;
Discontinued	=	A dummy variable which equals 1 if a firm reports discounted operations and/or extra-ordinary items and 0 otherwise;
Busy-season	=	A dummy variable which equals 1 if the firm's fiscal year end is in December and January and 0 otherwise;
IC-opinion	=	A dummy variable which equals 1 if the auditor expressed an opinion on Sections 401 or 403 and 0 otherwise;
IC-weakness	=	A dummy variable which equals 1 if the auditor reported material weakness in internal controls, and 0 otherwise;
Auditor-specialization	=	Auditor's market share based on client sales (as in Neal and Riley 2004);
Auditor-tenure	=	The length of the audit engagement;
H-index	=	The sum of the squared value of the ratio of operating segment sales to total sales;
Foreign-sale	=	The ratio of sales from foreign subsidiaries to the firm's total sales.

***, **, and * denote significance at the 1%, 5%, and 10%, respectively.