Internal Control in Family Firms: Characteristics and Consequences

Xia Chen
Wisconsin School of Business, University of Wisconsin-Madison &
School of Accountancy, Singapore Management University
xchen@bus.wisc.edu

Mei Feng
Katz Graduate School of Business, University of Pittsburgh
mfeng@katz.pitt.edu

Chan Li
Katz Graduate School of Business, University of Pittsburgh
chanli@katz.pitt.edu

Abstract:

We examine the characteristics and consequences of internal control in family firms. We
document that family firms, particularly those where founders or their descendants are CEOs
(family CEO firms), are more likely to have ineffective internal controls than non-family firms.
This association is weaker when family CEO firms have more outside blockholders, indicating
that family CEO firms have weak internal controls not because better monitoring by family
owners makes strong internal controls less necessary, but because weak internal controls support
family owners’ entrenchment activities. Moreover, internal control weaknesses, particularly
those at the company-level, are more conducive to misstatements and accounting frauds in
family firms than in non-family firms, suggesting that weak internal controls have a more
negative impact on financial information quality in family firms than in non-family firms.

* We thank Qiang Cheng, Jongwoon (Willie) Choi, Karla Johnstone, Laura Swenson, Terry Warfield, Han Yi, Huai
Zhang, and workshop participants at University of Wisconsin-Madison, University of Pittsburgh, the 2011 AAA
meeting, the 2012 FARS meeting, and the 2011 Singapore Management University Accounting Symposium for
helpful comments. We thank Wisconsin School of Business, Singapore Management University School of
Accountancy Research Center, and Katz School of Business at University of Pittsburgh for financial support.
1. **Introduction**

We investigate the characteristics and consequences of internal control in family firms.\(^1\) The internal controls of family firms may differ from those of non-family firms because family owners, a class of shareholders unique to family firms, have both the ability and incentive to influence their firms’ internal control. Specifically, family owners usually act as top management, directors, or concentrated shareholders. People in those positions play a significant role in shaping firms’ internal controls (AS 5, PCAOB 2007). High internal control quality helps mitigate asset expropriation and promotes greater compliance with GAAP (AS 2, PCAOB 2004). Hence, high quality internal controls may further family owners’ interests by curbing managers’ rent-seeking activities, yet may also impede those interests by limiting family owners’ opportunities to extract private benefits of control (Shleifer and Vishny 1997).\(^2\) Given the potential impact of internal controls on their interests, family owners have incentives to utilize their influence in the firm to affect internal control quality.

How family owners affect internal control quality is complicated due to the intricate agency issues within family firms. On the one hand, their substantial ownership and long history of involvement in the firm motivate family owners to align managers’ incentives with those of shareholders. Effective internal controls help protect shareholders’ interest by limiting managers’ ability to conduct various rent-seeking activities at the expense of firm value, such as

---

\(^1\) We use ‘family’ synonymously with ‘founding family’ in this paper’s context to simplify the exposition. Following the literature (e.g., Anderson and Reeb 2003), we define a family firm as a firm where members of the founding family continue to hold positions in top management, are on the board, or are blockholders of the firm.

\(^2\) For example, the SEC found that John Rigas, founder and CEO of the now bankrupt Adelphia Communications, and his two sons, Timothy and Michael Rigas, who both served as senior executives, diverted more than $600 million of firm resources for personal use. The company paid out over $252 million on behalf of Rigas family brokerage accounts, granted more than $420 million in Adelphia stock to the Rigas family in exchange for nothing, and paid for a golf course, airplanes and luxury apartments for the personal use of the Rigas family. In a separate investigation, the SEC alleged that Tyson’s proxy statements for fiscal years 1997 through 2003 failed to disclose and describe perquisites totaling approximately $1.7 million provided to Don Tyson, former Chairman of the company. Both Adelphia and Tyson had failed to maintain an adequate system of internal controls regarding the personal use of company assets and the disclosure of perquisites and personal benefits, which in turn leads to accounting frauds. See more discussion in Section 2.2.
manipulating earnings to increase bonus and equity compensation. As a result, family firms may exhibit higher internal control quality than non-family firms (the incentive alignment effect).³

On the other hand, family firms may have lower internal control quality than non-family firms for at least two reasons. First, family owners may use their prominence in the firm to seek private benefits of control and engage in various entrenchment activities that benefit the families at the expense of firm value (Anderson et al. 2009). These activities include employing firm assets for personal use and other perks, and manipulating earnings to benefit family owners at the cost of other shareholders. Because strong internal controls emphasize both prevention and detection of such activities, family owners may prefer weak controls (the entrenchment effect).⁴ Second, family firms are usually under the tight control by the founding family, making a strong internal control system less necessary (the substitution effect).

We investigate these effects using hand-collected family firm data for S&P 1500 firms for the period 2004-2005. After controlling for various determinants of internal control weaknesses, we find that family firms are more likely to have internal control weaknesses than non-family firms by 2.2 percentage points, on average. This difference is economically significant given that the overall probability of having internal control weaknesses is only 9.8 percentage points. In addition, we find that the positive association between family firms and internal control weaknesses is mainly driven by family CEO firms, for which founders or their

³ We acknowledge that it is not necessarily always in the best interests of shareholders for firms to have effective internal control since the costs may outweigh the benefits. However, when it is in the best interests of shareholders to have an effective internal control system, family firms are more likely to establish one than non-family firms under the incentive alignment effect. See more discussion in Section 2.2.

⁴ A related issue is how the other shareholders in family firms, namely minority shareholders, react to family owners’ influence of internal control quality under the entrenchment effect. Minority shareholders may affect internal control quality directly (for example if they are blockholders and have influence over firm policies) or indirectly through pricing protection. We discuss the influence of outside blockholders in Section 2.3 and conduct the corresponding tests in Section 5. We discuss how the potential pricing protection of minority shareholders affects the association between family ownership and internal control quality and conduct the related tests in Section 7.2.
descendants serve as CEOs and family owners are more influential, rather than by family firms managed by professional CEOs.

The low internal control quality in family CEO firms is consistent with both the entrenchment effect and the substitution effect. To distinguish between these two explanations, we examine how outside blockholders affect the association between family control and internal control quality. If the association is due to the entrenchment effect, then we expect outside blockholders to moderate this association, as they have both the ability and the incentive to exhort family firms to improve their internal control quality. If the association is due to the substitution effect, then we do not expect outside blockholders to affect this association. Empirically, we find that outside blockholders weaken the negative association between family CEO firms and internal control quality, consistent with the entrenchment effect, not the substitution effect.

We next examine the consequences of internal control weaknesses in family CEO firms. Given the support for the entrenchment effect reported above, we expect that such weaknesses are more likely to be exploited by family owners, and thus result in more negative consequences, than in non-family firms. Consistent with this, we find that internal control weaknesses are more conducive to misstatements and accounting frauds in family CEO firms than in non-family firms.\(^5\)\(^6\)

In summary, family CEO firms are more likely to have material weaknesses in internal controls than non-family firms, particularly when there are fewer outside blockholders.

---

\(^5\) We do not examine the differential association between internal control quality and discretionary accruals in family CEO and non-family firms because the empirical findings on this association are mixed (e.g., Ashbaugh-Skaife et al. 2008; Doyle et al. 2007a).

\(^6\) This finding and our earlier finding that family CEO firms have lower internal control quality than non-family firms seem to contrast with the findings in Ali et al. (2007) and Wang (2006) that family firms have better accrual quality than non-family firms. We discuss in detail the relation between our misstatement and fraud measures and accrual quality measures in Section 7.5.
Moreover, material internal control weaknesses in family CEO firms are more likely to lead to accounting misstatements and frauds than in non-family firms. Overall, our findings suggest that family CEO firms exhibit low internal control quality, which appears to provide fertile ground for family owners to engage in entrenchment activities.

We conduct additional analyses to corroborate these findings. First, we investigate the role of family CEOs in earnings manipulations. If manipulations are due to the entrenchment activities of family owners, then we expect that family CEOs, who likely represent family owners’ interests, are more likely to be charged in SEC investigations than other CEOs. Our empirical results are consistent with this expectation. Conditional on accounting frauds being detected, family CEOs are more likely to be charged by the SEC than either CEOs in non-family firms or professional CEOs in family firms. Second, if the entrenchment effect drives low internal control quality in family firms, we expect stock prices of family firms to vary directly with internal control quality, to the extent that information on internal control quality is publicly available. The stock price pressures will, in turn, create incentives for family firms to improve their internal control quality. To investigate this, we examine the association between family CEO firms and internal control material weaknesses by year. We find that the association is strongest in 2004 when the information on internal control quality is first publicly disclosed, and becomes weaker in later years. Finally, we find that our results are robust to using an alternative definition of family firm – a firm for which founding family members own 5% or more of total equity.

Our paper contributes to the family firm literature. Family firms are a prevalent organization form among U.S. public companies. Approximately, one third of S&P 500 firms are family firms and more than 60 percent of small firms are family firms (Anderson and Reeb 2003;
Chen et al. 2008). Prior studies examine whether the unique ownership and management structure of family firms affect firm performance, valuation, and financial reporting quality (e.g., Anderson and Reeb 2003; Anderson et al. 2009; Ali et al. 2007; Wang 2006). However, there is limited evidence on whether internal governance and control differ between family and non-family firms. This paper takes a first look into the black box of family firms. Our evidence suggests that the entrenchment of founding families plays an important role in shaping family firms’ internal control systems. Furthermore, we show that the resulting weak internal controls support family owners’ rent-seeking activities.

Our paper also contributes to the internal control literature. First, prior studies (e.g., Bryan and Lilien 2005; Ge and McVay 2005; Ashbaugh-Skaife et al. 2007; Doyle et al. 2007b; Zhang et al. 2007) document that internal control weaknesses can exist due to limited resources, complex transactions, and weak corporate governance. We show that internal control weaknesses can also arise due to conflicts of interest between family owners and other shareholders. Moreover, such material weaknesses appear to generate more negative consequences (i.e., misstatements and frauds) because these weaknesses are more likely to be exploited to serve the interests of family owners. Second, prior studies have focused on shareholders in general and found mixed evidence on whether effective internal controls serve shareholders’ interests (e.g., Ogneva et al. 2007; Ashbaugh et al. 2008). Our findings suggest that family firms adopt weak internal controls to exploit non-family shareholders, but reduce such exploitation once internal control weaknesses must be publicly disclosed. Therefore, disclosure of internal control quality benefits non-family shareholders in family firms with weak

---

7 The corporate governance studies mainly focus on how good governance, such as audit committee financial expertise and overall board strength, alleviate the agency conflict between managers and shareholders.
internal control because it curbs family owners’ rent-seeking activities. This appears to be a previously unidentified benefit of Section 404.

The rest of the paper is organized as follows. The next section reviews prior literature and develops our predictions. Section 3 discusses the sample and research design. Sections 4, 5, and 6 present the main empirical results, Section 7 reports the additional analyses, and Section 8 concludes.

2. Literature review and hypothesis development

2.1. Extant literature on family firms and on internal control weaknesses

2.1.1. Prior literature on family firms

Extant literature finds that, as in the rest of the world, family firms are a prevalent organization form in the U.S. (e.g., Anderson and Reeb 2003; Chen et al. 2008). In our sample of the S&P 1500 firms, family firms account for approximately 42% of total firms.\(^8\) On average, founding families hold 16% of the equity, 22% of the directorships, and 57% of the CEO positions in family firms.\(^9\)

Given their unique and influential positions within their firms, family owners significantly impact agency conflicts. On one hand, because the agency problems between owners and managers tend to erode firm value, family owners may seek to align managers’ incentive with those of shareholders to alleviate such agency problems (the incentive alignment effect). On the other hand, family owners’ dominant control positions provide them with opportunities to extract private benefits of control at the expense of firm value, leading to conflicts of interest between

---

\(^8\) Due to our inclusion of S&P MidCap 400 firms and S&P SmallCap 600 firms, the percentage of family firms in our sample is larger than in prior research that examined only S&P 500 or Fortune 500 firms.

\(^9\) Compared to other shareholders with concentrated holdings (such as institutional investors), founding families are likely more influential within the firm because they are represented on boards of directors and they usually hold top management positions (Anderson and Reeb 2003). Their influence is further enhanced because family owners are closely tied to the firm through their long-term investment and less diversified portfolios.
family and minority shareholders (the entrenchment effect) (Shleifer and Vishny 1997). Family owners may directly expropriate firm assets by, for example, requesting the firm to purchase goods and services for their personal use. Family owners may also sacrifice firm value in order to pursue personal objectives, such as firm growth, meeting or beating analyst forecasts, and firm survival (Anderson and Reeb 2003). The incentive alignment and entrenchment effects have important implications for family firms’ operations, performance, internal control and financial reporting.

Regarding firm performance and valuation, while the incentive alignment effect predicts better performance and higher valuation in family firms than in non-family firms, the entrenchment effect leads to an opposite prediction. The empirical findings are mixed as well. On one hand, consistent with the incentive alignment effect, Anderson and Reeb (2003) find that among S&P 500 firms, family firms exhibit significantly better accounting performance and have significantly higher Tobin’s Q than non-family firms. On the other hand, there is evidence consistent with the entrenchment effect in a broader sample than S&P 500 firms. For instance, Anderson et al. (2009) examine the 2,000 largest industrial firms in the U.S. and conclude that the entrenchment effect dominates the incentive alignment effect in publicly traded firms, and family valuation premiums only exist for the most transparent firms, where appropriation of firm resources is less likely. Even among the largest firms, prior studies have provided evidence that the entrenchment effect dominates in a subset of firms where entrenchment is more likely. For instance, Villalonga and Amit (2006) find that descendant CEO family firms are associated with
valuation discounts and Mock et al. (1988) find that founders negatively impact firm value in older firms.\textsuperscript{10}

With respect to financial reporting quality, prior studies also provide evidence consistent with both the incentive alignment and entrenchment effects. For example, using Fortune 500 firms, Ali et al. (2007) and Wang (2006) find that, compared with non-family firms, family firms have, on average, better earnings quality, measured by the magnitude of abnormal accruals, earnings persistence, and earnings response coefficients. On the other hand, both Dechow et al. (1996) and Feng et al. (2011) document that compared with other firms, firms with founder CEOs are more likely to have egregious earnings manipulations that are subject to SEC enforcement actions.

In sum, prior studies suggest that both incentive alignment and entrenchment effects are present in family firms. Which of the two effects dominates depends on both the sample of firms used and the phenomena investigated. Therefore, ex ante, it is unclear how the unique conflicts of interest in family firms influence the characteristics and consequences of internal controls.

\subsection*{2.1.2. Prior literature on internal control weaknesses}

Auditing Standard No. 5 defines internal control over financial reporting as:

\textit{a process designed by, or under the supervision of, the company's principal executive and principal financial officers, or persons performing similar functions, and effected by the company's board of directors, management, and other personnel, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with GAAP ...(PCAOB 2007).}

As can be seen from this definition, managers and directors play a significant role in shaping their firms’ internal control. Internal control aims to provide reasonable assurance that a firm’s financial reports are prepared in accordance with GAAP, including policies and procedures that

\footnote{\textsuperscript{10} Prior studies examining family firms in countries other than the U.S. have also provided evidence of both incentive alignment and entrenchment (for examples, see Claessens et al. 2002; Faccio et al. 2001; Cheung et al. 2006).}
protect assets from expropriation and ensure transactions are recorded in accordance with GAAP. In an effort to ensure that internal control serves its purposes, Section 404 of the Sarbanes-Oxley Act (SOX) requires managers to evaluate and disclose the effectiveness of the internal controls (404(a)), and requires auditors to attest to and report on the effectiveness of the internal controls (404(b)). A company’s internal controls are considered effective if no material weaknesses exist.\footnote{A material weakness exists if it is “reasonably possible that a material misstatement of the company’s annual or interim financial statements will not be prevented or detected on a timely basis.” (PCAOB, 2007, p. 434)}

Recent studies investigate whether internal controls help companies prepare their financial reports in accordance with GAAP. Nagy (2010) and Feng and Li (2011) find that internal control quality is negatively associated with restatements, consistent with good internal controls helping companies prepare financial reports in accordance with GAAP. Several studies also investigate whether internal controls affect accrual quality and find mixed results. For example, Doyle et al. (2007a) document that accrual quality is negatively associated with material weaknesses filed under Section 302, but not with material weaknesses filed under Section 404.\footnote{Section 302 took effect in August of 2002 and applies to all SEC registrants. Section 302 requires that CEOs and CFOs certify the effectiveness of internal control over financial reporting and disclose any material changes in internal control in the quarterly and annual financial statements.} Ashbaugh-Skaife et al. (2008) report that accrual quality improves following remediation of material weaknesses.

Prior studies also investigate other potential benefits associated with good internal controls, such as reduced audit costs, lower cost of capital, and improved efficiency of management decisions. For instance, Raghunandan and Rama (2006) document that auditors charge lower audit fees for firms with effective internal controls than for those with internal control weaknesses. Although Ogneva et al. (2007) do not find that internal control quality is significantly associated with the cost of capital, Ashbaugh-Skaife et al. (2009) show that
remediation of internal control problems is associated with reduced risk and cost of capital. Feng et al. (2009) find that internal control weaknesses result in lower management forecast accuracy, indicating that poor internal controls also lead to errors in internal management reports that managers rely on when making day-to-day operational decisions.

On the cost side, the incremental costs of implementing effective internal controls, relative to ineffective internal controls, include internal personnel costs and external consulting and professional advisory service fees (A.R.C. Morgan 2005; Sammer 2005). A firm’s internal control quality depends on the cost-benefit tradeoff. Even if the benefits of effective internal control for shareholders exceed the costs, managers may be reluctant to establish effective controls because doing so would limit their rent-seeking activities, such as taking extra perquisites and managing earnings to maximize compensation and insider trading profits. Consistent with this, studies find that internal control quality is higher when a firm has strong corporate governance, measured by audit committee financial expertise and overall board strength (e.g. Zhang et al. 2007; Hoitash et al. 2009). In addition, firms appear to take actions to remediate internal control weaknesses once such weaknesses are publicly disclosed. For example, Li et al. (2010) document that once material weaknesses are publicly disclosed, companies are more likely to fire old CFOs and hire new CFOs who are better qualified and who help remediate the material weaknesses.

2.2. The association between family ownership and internal control quality

Family owners can influence their firms’ internal control quality given that they often serve as CEOs and/or hold directorships. Hence, the internal control quality in family firms can reflect

---

13 It is possible that strong corporate governance also helps overcome family owners’ reluctance to implement effective internal controls and mitigate family entrenchment. As a result, the findings in these governance and internal control studies are broadly consistent with the entrenchment effect. However, we are cautious about interpreting these findings because corporate governance can also be affected by family owners.
family owners’ cost and benefit tradeoff, which may not coincide with that of other minority shareholders. *Ex ante*, it is unclear how the unique conflicts of interest within family firms affect internal control quality.

With better incentive alignment between owners and managers, family firms’ internal control quality may be more likely to reflect shareholders’ preferences than nonfamily firms’. As discussed in the previous section, shareholders are more likely to prefer effective internal controls than managers because good internal control helps shareholders monitor managers and limit managers’ rent-seeking activities. For example, managers may be reluctant to set the right “tone at the top” because doing so may curb their ability to manage earnings to maximize their own compensation. Such divergence of interests between managers and shareholders is alleviated in family firms because family owners are actively involved in management or are able to influence internal control quality via their membership on the firm’s board of directors. The above discussion leads to the prediction that family firms are more likely to have effective internal control than nonfamily firms (the incentive alignment effect).

At the same time, the greater agency conflict between family firms’ large and small shareholders can lead to an opposite prediction. Founding families hold dominant positions in the firms, through concentrated holdings, disproportionate board control, dual-class share structures, and management postings (Shleifer and Vishny 1997; Anderson et al. 2009). This provides them with opportunities to engage in entrenchment activities. The CEO and director positions that family owners hold make such activities relatively easy. Specifically, family owners can directly expropriate company assets by, for example, borrowing money at very low or no interest, enjoying perquisites, and receiving excessive compensation. Alternatively, family owners may pursue certain goals that deviate from firm value maximization. For example, family owners
may be keen on family control, company growth, high technology or creating the image of meeting analyst forecasts (Shleifer and Vishny 1997). To achieve these goals, family owners may have to resort to earnings manipulation. For instance, Ali et al. (2007) argue that family owners may manage earnings in order to hide the adverse effect of related party transactions on firm value. Family owners may also manipulate earnings upward to hide deteriorating performance in order to avoid stock price decreases and loss of control.

To prevent asset expropriation and earnings manipulation from being detected, family owners may prefer weak internal control. For example, if family owners would like to use the firm’s money to purchase goods and services for personal use, they would prefer weak internal controls in the purchasing system, so that they could record purchases of personal goods and service as company expenses. If family owners would like to engage in earnings manipulation in order to maintain their control of the firm or to create an image of high growth and profitability, they would prefer weak internal controls at the firm-wide level, because, for example, a lack of a fraud detection policy and whistle blower program would make it less likely that earnings manipulations would be detected.\(^\text{14}\) Therefore, the conflict of interests between family owners and minority shareholders leads to the prediction that family firms are less likely to have effective internal control than non-family firms (the entrenchment effect).

Finally, weak internal control in family firms is also consistent with tight control of managers and firm operation by family owners making effective internal control less necessary (the substitution effect). Family owners may believe that their active involvement in firm

\(^{14}\) Examples where family members engage in aggressive earnings management include American International Group (AIG), NCO Group, and OM Group. Over the period 2000-2005, AIG aggressively window-dressed financial results, by, for example, recording sham transactions and hiding control of subsidiaries to avoid consolidation, in order to paint a falsely rosy picture of AIG to investors and analysts. Over the period 1999-2003, NCO Group engaged in aggressive revenue recognition by consistently recognizing revenue too early. In 2001, 2002 and several prior years, OM Group used widespread fraudulent entries to manage earnings and meet targets. In all of these cases, SEC investigations concluded that internal controls were not effective enough to detect and prevent such conduct.
operations provides enough controls, and, as such, their firms do not need a costly internal control system. For example, family owners may not regard a whistle blower program as necessary, if they believe that employees will inform actively involved family owners of any abnormal activities in firms.

To summarize, because of the better incentive alignment between owners and managers in family firms, family firms are more likely to have effective internal controls. However, founding families’ potential entrenchment or the better monitoring of managers in family firms suggests the opposite. It is therefore an empirical question whether and how family owners exert significant influence over internal control quality.

2.3. The entrenchment effect vs. the substitution effect: the influence of outside blockholders

If we find that family firms have weaker internal control than non-family firms, it is consistent with both the entrenchment effect and the substitution effect. To distinguish between these two alternative explanations, we examine how outside blockholders affect the association between family ownership and internal control quality.

Outside blockholders are shareholders with concentrated holdings (at least 5 percent) who are independent of family owners. These include wealthy individuals, corporations, private investment vehicles, or institutional investors (Shleifer and Vishny 1986; Mehran 1995; Holderness 2003). These blockholders have economic resources at their disposal and strong incentives to protect their investments in family firms. Their large stakes in the firms makes it worthwhile for them to try to improve firm operations (Shleifer and Vishny 1986). Prior studies provide evidence that outside blockholders significantly influence company policies, such as executive compensation and CEO turnover (Mehran 1995; Bertrand and Mullainathan 2000; Chen et al. 2009).
If low internal control quality in family firms is due to the entrenchment effect (i.e., ineffective internal controls facilitate family shareholders in rent-seeking activities, thereby reducing shareholder value), we expect outside blockholders to exert their influence and require family firms to improve the internal control quality. In other words, outside blockholders will moderate the negative association between family firms and internal control quality. In contrast, if low internal control quality in family firms is due to the substitution effect (i.e., the limited marginal benefits of effective internal controls cannot justify the marginal costs), we expect that the existence of outside blockholders will not be associated with improved internal control quality in family firms.

In sum, if the negative association between family ownership and internal control quality is due to the entrenchment effect, we expect outside blockholders to weaken the association between family ownership and internal control quality. Conversely, if the negative association is due to the substitution effect, we expect outside blockholders to have no effect on such an association.

2.4. The consequences of ineffective internal control: misstatements and frauds

As discussed earlier, poor internal controls in family firms could be consistent with either the entrenchment or substitution effect. If the low internal control quality in family firms is due to the entrenchment effect, we expect that internal control material weaknesses are more closely associated with material misstatements in family firms than in non-family firms, as low internal control quality is intentionally chosen by family owners to facilitate their entrenchment.

Alternatively, in order to protect their interests, outside blockholders may self-select to invest in family firms where family owners have a lower tendency to engage in entrenchment activities. If family owners use weak internal control to facilitate their entrenchment activities, we again expect to observe a weaker association between family ownership and internal control weaknesses for family firms with outside blockholders. Under this alternative scenario, our tests still help us distinguish between the entrenchment and substitution effects. The contrast is that outside blockholders do not play an active role in influencing internal control quality under this scenario.

Here we assume that outside blockholders can tell the entrenchment and substitution effects apart. This is a reasonable assumption given their large stake and potential interactions with managers.
activities. For example, to take advantage of minority shareholders through ways such as undertaking improper transactions, failing to disclose related party transactions or perks properly, creating the image of high growth by managing earnings upward, family owners need to have a weak internal control system to facilitate these schemes.

In contrast, if poor internal control quality is due to the substitution effect, we expect internal control material weaknesses in family firms to be less closely associated with material misstatements than in non-family firms, as tight controls and better monitoring by family owners will take the place of effective internal controls in mitigating misstatements. We measure material misstatements using both accounting restatements and frauds (SEC AAER investigations).

3. Sample and descriptive statistics

3.1. Sample and data

Our sample consists of 2,512 firm-years from 1,425 firms in the S&P 1500 index (S&P 500, S&P MidCap 400, and S&P SmallCap 600 indices) covering the period 2004-2005. These are the firm-years that have founding-family related information and the required data from the Audit Analytics (for SOX 404 internal control reports) and Compustat (for financial statement information) databases. For each firm-year, we hand-collect information about the founding family, including the identity of the founders, whether the founders or their family members are actively involved (e.g., hold key executive positions, are directors, or are blockholders), and if they are actively involved, the ownership of the founding family. We collect the above information through examining Hoover’s Company Records, company proxy statements, and company websites. These steps yield 2,763 firm-year observations. We then require the sample

Note that the material misstatements measured in our study are the ones that have been detected. To the extent that earnings manipulations are harder to detect when internal control quality is low, it will bias against finding a stronger association between internal control material weaknesses and misstatements in family firms.
to have SOX 404 reports, resulting in a sample of 2,516 firm-year observations. Next, we remove observations without the necessary financial data from Compustat, which yields our final sample of 2,512 firm-year observations over the period 2004-2005.

Following prior research (e.g., Anderson and Reeb 2003), our family firm indicator, Family, is one for firms in which founders or their family members (by either blood or marriage) are key executives, directors, or blockholders. While widely used in the literature, this definition might be viewed as rather “lenient,” particularly due to the lack of restriction on the level of family ownership. Thus, in our additional analyses, we also use an alternative definition of family firms—firms where the members of the founding family have an equity ownership of 5% or higher. We measure internal control quality using ICMW, which is equal to one if a firm reports internal control material weaknesses, and zero otherwise.

3.2. Descriptive Statistics

Table 1 provides descriptive statistics for the full sample, as well as separately for family firms and non-family firms. Of the 2,512 firm-years in our sample, 1,062 (42%) are from family firms and 1,450 (58%) are from non-family firms. The average family ownership in family firms is 16%. These statistics are comparable to prior studies (e.g., Chen et al. 2008; Chen et al. 2010). In the full sample, 9.8% of firm-years have internal control weaknesses. The percentage of observations with internal control material weaknesses is higher for family firms than for non-family firms (11.1% vs. 8.9%); the difference is statistically significant with a p-value of 0.066. Therefore, the univariate comparisons indicate that family firms are more likely to report internal control weaknesses than non-family firms.

The summary statistics on firm characteristics show that family firms are smaller, less likely to have Big 4 auditors, more profitable (higher ROA and lower percentage of previous...
losses), and more volatile (larger sales volatility and faster growth). They also have fewer segments, are less likely to be engaged in restructuring, and are younger. Because many of these differences between family and non-family firms are also associated with internal control quality, it’s important to control for these factors when testing the association between family control and internal control weaknesses.

Table 2 presents the Pearson correlation matrix of the likelihood of internal control weaknesses and its determinants. The internal control weakness indicator variable, $ICMW$, is positively correlated with the family firm indicator variable, suggesting that family firms are more likely to have internal control weaknesses, consistent with the results in table 1. The signs of the correlations between $ICMW$ and control variables are largely consistent with the results in prior research.

4. Empirical results – comparing internal control quality between family and non-family firms

4.1. The association between family ownership and internal control quality

To investigate internal control quality in family firms, we regress the probability of internal control weaknesses on a family firm indicator and control variables, using the following Logistic regression:

$$
PROB(ICMW_{i,t} = 1) = \alpha + \beta_1 Family_{i,t} + \beta_2 \ln TA_{i,t} + \beta_3 Big4_{i,t} + \beta_4 ROA_{i,t} + \beta_5 Loss_{i,t} + \beta_6 Sales_{std_{i,t}} + \beta_7 Growth_{i,t} + \beta_8 Seg_{Num_{i,t}} + \beta_9 Foreign_{i,t} + \beta_{10} Restructuring_{i,t} + \beta_{11} Restate_{i,t} + \beta_{12} Age_{i,t} + \sum Industry\_dummies + Year\_Dummy
$$

(1)

where:

$ICMW$ = an indicator variable that is equal to one if firm $i$ discloses ineffective internal controls, and zero if the firm discloses effective internal controls;

$Family$ = an indicator variable that is equal to one if firm $i$ is a family firm, and zero otherwise;

$\ln TA$ = the natural logarithm of total assets;

$Big4$ = an indicator variable that is equal to one if the auditor is a Big 4 auditor, and zero otherwise;
ROA = return on assets, measured as income before extraordinary items divided by total assets;

PLoss = the percentage of losses in the prior three years;

Sales_std = the standard deviation of annual sales over the prior 7 years (requiring at least three non-missing observations);

Growth = sales growth from year $t-1$ to year $t$;

Seg_Num = the natural logarithm of the total number of geographic and operating segments;

Foreign = an indicator variable that is equal to one if firm $i$ has foreign transactions in year $t$, and zero otherwise;

Restructuring = an indicator variable that is equal to one if firm $i$ recognizes restructuring charges in year $t$, and zero otherwise;

Restate = an indicator variable that is equal to one if firm $i$ restates its financial statement in year $t$, and zero otherwise;

Age = the natural logarithm of the number of years that firm $i$ is covered by CRSP.

We control for factors that affect internal control quality as documented by previous research. Prior studies (e.g., Ashbaugh-Skaife et al. 2007; Doyle et al. 2007b; Ge and McVay 2005) find that the likelihood of internal control weaknesses decreases with firm size ($Ln_{TA}$), auditor quality ($Big4$), performance ($ROA$ and $PLoss$), and firm age ($Age$), and increases with volatility ($Sales_{std}$), growth ($Growth$), and organizational complexity ($Seg_{Num}$, $Foreign$, and $Restructuring$). Therefore, we expect $Ln_{TA}$, $Big4$, $ROA$, and $Age$ to have negative coefficients and $PLoss$ (an inverse proxy for firm performance), $Sales_{std}$, $Growth$, $Seg_{Num}$, $Foreign$, and $Restructuring$ to have positive coefficients. We also control for the occurrence of accounting restatements ($Restate$) in the same period, as auditors are more likely to provide an adverse opinion on the internal control system if the company restates its financial statements during the year. Lastly, we include year and industry dummies (per Fama and French 1997) to control for the variation of internal control quality over time and across industries. Note that all the independent variables are measured contemporaneously with the dependent variable.

Table 3 reports the regression results. We find that, after controlling for other determinants of internal control weaknesses, relative to non-family firms, family firms are still more likely to report internal control weaknesses. The coefficient on the family firm indicator has a two-tailed
p-value of 0.102. The marginal change in the probability of internal control weaknesses indicates that the probability of having internal control weaknesses is 2.2 percentage points higher for family firms than for non-family firms. Such an impact is economically significant given that the mean probability of having internal control material weaknesses in our sample is only 9.8 percent.

The results for the control variables are largely consistent with the predictions and prior research. The likelihood of internal control weaknesses is higher for smaller firms, firms audited by non-Big 4 auditors, firms with weaker performance, higher sales volatility, a larger number of segments, foreign operations, and firms that announce restatements during the year.

4.2. Splitting family firms into family CEO firms and professional CEO family firms

Family firms can be managed either by family member CEOs (family CEO firms), or by someone hired from outside the founding family (professional CEO family firms). Family CEO firms differ more from non-family firms than do professional CEO family firms. Specifically, family CEO firms are less likely to be subject to the conflicts of interest between owners and managers than professional CEO family firms because owners are CEOs. However, family CEO firms are more likely to be subject to the entrenchment activities of family shareholders because when family members are in a position to make various business decisions, it is easier for them to sacrifice firm value to maximize their own interest. The substitution effect can also be stronger in family CEO firms because of the immediate control and involvement of family CEOs. Therefore, the incentive alignment, entrenchment and substitution effects could all be stronger in family CEO firms than in professional CEO family firms. In this section, we split the family firm sample into two subsamples: family CEO firms and professional CEO family firms.\(^\text{18}\) We then

\(^{18}\) We separately examine the effect of founder CEOs and descendant CEOs on internal control quality in our additional analyses.
examine whether the difference in internal control quality between family firms and non-family firms is driven by family CEO firms.

We report the univariate and regression results in Table 4 (Panels A and B). We use the same model specification as in Table 3, except that we replace the family firm indicator variable with two indicator variables representing family CEO firms (FamilyCEO) and professional CEO family firms (ProfessionalCEO), respectively. The univariate tests show that the percentage of internal control weaknesses is 13.1% for family CEO firms, which is significantly higher than non-family firms (8.9%). In contrast, the percentage is 8.5% for professional CEO family firms and is not significantly different from non-family firms. Similarly, in the regression analyses, we find that the coefficient on the FamilyCEO dummy is significantly positive (with a two-tailed p-value of 0.018), while the coefficient on the ProfessionalCEO dummy is not significant. In other words, the higher frequency of internal control weaknesses among family firms compared to non-family firms is mainly driven by family CEO firms. With respect to economic magnitude, the probability of ineffective internal controls in family firms with a family member as the CEO is 3.6 percentage points higher than in non-family firms. Given the different findings on family CEO and professional CEO family firms, we separate these two types of family firms in our subsequent analyses.

5. Explanation of the negative association between family CEO firms and internal control quality

As discussed earlier, the low internal control quality in family CEO firms is consistent with both the entrenchment and substitution effects. To distinguish between the two explanations, we examine whether outside blockholders affect the negative association between
family CEO firms and internal control quality. Specifically, we estimate the following logistic regression:

\[
PROB(\text{ICMW}_{it} = 1) = \alpha + \beta_{1a}\text{FamilyCEO}_{it} + \beta_{1b}\text{ProfessionalCEO}_{it} \\
+ \beta_2\text{Ln_TA}_{it} + \beta_3\text{Big4}_{it} + \beta_4\text{ROA}_{it} + \beta_5\text{Ploss}_{it} + \beta_6\text{Sales_std}_{it} + \beta_7\text{Growth}_{it} \\
+ \beta_8\text{Seg_Num}_{it} + \beta_9\text{Foreign}_{it} + \beta_{10}\text{Restructuring}_{it} + \beta_{11}\text{Restate}_{it} + \beta_{12}\text{Age}_{it} \\
+ \beta_{13}\text{Block}_\text{Own}_{it} + \beta_{14}\text{FamilyCEO}_{it} \times \text{Block}_\text{Own}_{it} \\
+ \beta_{15}\text{ProfessionalCEO}_{it} \times \text{Block}_\text{Own}_{it} + \sum \text{Industry dummies} + \text{Year Dummy}
\] (2)

We measure outside blockholders using \text{Block}_\text{Own}, which is defined as the natural logarithm of the percentage of outside blockholders’ ownership. If the entrenchment effect is the driving factor, we expect the interaction between \text{Block}_\text{Own} and \text{FamilyCEO} to be negative as outside blockholders have incentives to improve the internal control quality and moderate the entrenchment activities of family owners. If the substitution effect drives the negative association between family CEO firms and internal control quality, we expect the interaction between \text{Block}_\text{Own} and \text{FamilyCEO} to be insignificant.

Table 5 reports the results. The coefficient on \text{Block}_\text{Own} \times \text{FamilyCEO} is significantly negative with a two-tailed p-value equal to 0.036, suggesting that family firms with a family member serving as CEOs are less likely to have internal control weaknesses if outside blockholders have higher ownership. This indicates that it is the entrenchment effect, not the substitution effect, that leads to the negative association between family CEO firms and internal control quality.

6. Consequences of internal control weaknesses in family firms

In this section, we explore whether the weak internal controls in family firms have more negative consequences. We expect that, compared with the internal control weaknesses caused by limited resources and complex transactions, the internal control weaknesses caused by the

---

19 We take the natural logarithm of outside blockholders’ ownership because its distribution is right-skewed. The interaction between outside blockholders’ ownership and \text{FamilyCEO} remains significantly negative if we do not take the logarithm of outside blockholders’ ownership (p-value = 0.015).
entrenchment of family owners are more likely to be taken advantage of for earnings management and asset expropriation, and thus yield more negative consequences. To test this, we examine the impact of family control on the association between internal control weaknesses and the likelihood of financial reporting misstatements and frauds.

6.1 Data sources of accounting misstatements and frauds

We collect information on misstatements from the restatement dataset of Audit Analytics.\(^{20}\) An accounting restatement is a correction of financial information previously issued by management because the original financial disclosures are inaccurate or misleading. For each restatement, we identify the period during which the misreporting occurred – the misstatement period. For the first internal control disclosure, the misstatement indicator is equal to one if the misstatement occurred within one year before or during the year for which the company discloses its internal control quality.\(^{21}\) For the subsequent internal control disclosures, the misstatement indicator is equal to one if the misstatement occurred during the year for which the company discloses its internal control quality. There are 499 firm-years that meet the above criterion.

In order to identify firms with accounting frauds, we collect information from the SEC’s Accounting and Auditing Enforcement Releases (AAERs) over 2005-2009.\(^{22}\) Following Dechow et al. (1996), we exclude cases where actions are taken against auditors for violations of auditing standards rather than companies’ violations of GAAP. For each fraud case, we read the AAER release to identify the period during which the fraud occurred – the fraud period. Similar to the

\(^{20}\) Audit Analytics does not consider a company’s adoption of a new accounting rule as a restatement. Only instances of accounting errors or fraud are included in its restatement dataset.

\(^{21}\) It is likely that material weaknesses existed prior to when companies disclosed material weaknesses in their first internal control reports (Doyle et al. 2007a). To increase power, we include misstatements that occurred one year prior to the first internal control disclosure.

\(^{22}\) We include AAERs until the end of 2009 when we collect the data in order to increase our sample size, since it may take up to several years from when the case is first detected to when the case is settled and the AAER becomes available.
misstatements, we require that the fraud falls within one year before or during the year for which the company discloses its first internal control report, and falls during the year for which the company discloses its subsequent internal control reports. There are 40 firm-years that meet our criterion.

6.2. Linking internal control weaknesses with accounting misstatements and frauds for different types of firms

The regressions are specified as follows:

\[ \text{PROB}(\text{DEP}_{it} = 1) = \alpha_0 + \alpha_{1a}\text{FamilyCEO}_{it} + \alpha_{1b}\text{ProfessionalCEO}_{it} + \alpha_2\text{ICMW}_{it} \\
+ \alpha_{3a}\text{ICMW}_{it} \times \text{FamilyCEO}_{it} + \alpha_{3b}\text{ICMW}_{it} \times \text{ProfessionalCEO}_{it} + \beta_1 \ln T A_{it} \\
+ \beta_2 \text{Big4}_{it} + \beta_3 \text{ROA}_{it} + \beta_4 \text{Loss}_{it} + \beta_5 \text{Sales}_{it} + \beta_6 \text{Growth}_{it} + \beta_7 \text{Seg_Num}_{it} \\
+ \beta_8 \text{Foreign}_{it} + \beta_9 \text{Restructuring}_{it} + \beta_{10} \text{Age}_{it} + \sum \text{Industry dummies} + \text{Year Dummy} \] (3)

The dependent variable is an indicator for one of the two events: accounting misstatements and frauds. The main variable of interest in the regression is the interaction between the material weakness indicator, ICMW, and the family CEO firm dummy, FamilyCEO. Specifically, if internal control weaknesses facilitate family owners’ rent-seeking (the entrenchment effect), we should observe a stronger association of internal control weaknesses with misstatements and frauds in these family firms than in non-family firms. That is, the coefficient on this interaction variable is predicted to be positive if internal control weaknesses are associated with family CEO’s rent-seeking. The control variables are the same as before except we exclude the restatement variable.

The results are reported in Table 6. Panel A provides descriptive statistics. Among accounting misstatement firms, the frequency of ICMW is much higher than the population percentage of 9.8% (Table 1); it is 31.0%, 36.1%, and 25.8% for non-family firms, family CEO firms, and professional CEO family firms, respectively. These higher percentages indicate a significant association between ICMW and misstatements. The highest percentage is observed in
family CEO firms, suggesting an even stronger association between ICMW and misstatements in such firms. We observe a similar pattern among fraud firms.

Panel B reports the regression results. We find that the interaction between the family CEO dummy and ICMW is not significant in the misstatement regression (p-value = 0.232). However, the interaction between the family CEO dummy and ICMW is significantly positive in the fraud regression (p-value = 0.025), consistent with our argument that weaker internal controls in family CEO firms facilitate families’ entrenchment. The interactions between the professional CEO family firm dummy and ICMW are not significant in either regression.

There are different types of material weaknesses. Specifically, internal control weaknesses can be grouped into general and specific material weaknesses. General material weaknesses are control weaknesses at the company-level which “might have a pervasive effect on the achievement of many overall objectives of the control criteria” (PCAOB, 2004, p. 163). Specific material weaknesses are control weaknesses at the account or transaction level. Doyle et al. (2007a) document that low accrual quality is associated with general material weaknesses and is not associated with specific material weaknesses. We conjecture that family CEOs are more likely to exploit general material internal control weaknesses than specific weaknesses to engage in entrenchment activities because general material weaknesses represent companywide problems, such as the tone at the top, management philosophy, risk appetite, and commitment to integrity and ethical value. Indeed, untabulated regression analyses indicate that the significant association between family CEO firms and internal control weaknesses documented earlier is

---

23 This finding also helps rule out an alternative explanation that the higher frequency of internal control weaknesses in family CEO firms is due to lack of financial expertise on the part of family CEOs. Under this alternative explanation, internal control weaknesses in family CEO firms arises from lack of financial expertise and therefore will not be intentionally taken advantage of by family CEOs. Accordingly we should not observe a stronger association between internal control weaknesses and misstatements/frauds in family CEO firms than in non-family firms.
driven by the higher incidences of general material weaknesses in family CEO firms. Therefore we divide internal control material weaknesses into general and specific material weaknesses and investigate whether general material weaknesses have a stronger association with misstatements and frauds in family CEO firms than in non-family firms.

We define *General MW* as one for firms with general internal control weaknesses, and zero otherwise, and define *Specific MW* as one for firms with specific internal control weaknesses, and zero otherwise. Table 6, Panel A reports the frequency of General MW among misstatement and fraud firms. Again we observe the highest percentage of General MW among family CEO firms with misstatement/frauds, relative to the other two types of firms with misstatements/frauds. Table 6, Panel C reports the regression results when we replace *ICMW* with *General MW* and *Specific MW* in model (3). We find that in both regressions of misstatement and fraud, the coefficient on the interaction between the family CEO dummy and the *General MW* indicator is significantly positive (p-value = 0.028 and 0.029, respectively). In contrast, the interaction between the family CEO dummy and the *Specific MW* indicator is not significant. The interactions of the professional CEO family firm dummy and the *General MW* indicator are insignificant. The results indicate that when family CEO firms have general internal control weaknesses, the consequences of such weaknesses are likely more serious.

7. Additional analyses

7.1. SEC lawsuit on CEOs

The previous section shows that family CEO firms are more likely to have misstatements and frauds when there are internal control weaknesses, particularly general material weaknesses. These findings are consistent with our argument that family owners are entrenched. Furthermore, if the entrenchment effect dominates, we should also observe that family CEOs are more likely
to be sued than other CEOs once a fraud has been detected. To investigate this, we utilize the AAER fraud sample and examine the likelihood that family CEOs are sued by the SEC. We collect SEC lawsuit data from AAER releases, the Audit Analytics litigation file, and internet searches using the company’s name and terms including lawsuit, SEC charge, litigation case, etc. We then identify whether the defendants include the company’s CEO. The univariate results (untabulated) suggest that within the AAER fraud firms, family CEOs are significantly more likely to be sued by the SEC than CEOs in non-family firms and professional CEO family firms, (69% vs. 41%, t-stat. = 1.71, one-tailed p-value = 0.048).24 Thus, the litigation results provide further support to the entrenchment explanation of the impact of family owners on internal controls.

7.2. The association between family ownership and internal control quality by year

As mentioned earlier, minority shareholders could price protect themselves in an efficient capital market (e.g., Chen et al. 2010). Thus, if family firms have poor internal control quality so that family members can engage in entrenchment activities, minority shareholders could punish such firms by bidding down their stock price. However, this can happen only if internal control quality is publicly observable, which is unlikely before the disclosure of the first SOX Section 404 report (2004).25 Thus, we examine the association between family control and internal control quality in three individual years: 2004, 2005 and 2006. The untabulated results suggest that the association between family control and internal control quality is the strongest in 2004. The association becomes weaker in 2005 and turns insignificant in 2006. Specifically, the

---

24 The results remain qualitatively the same if we exclude family firms with professional CEOs.
25 Internal control problems can also be disclosed under Section 302, which took effect in August 2002. The disclosure rules under Section 302, however, are more ambiguous and require a less rigorous assessment of internal controls. For example, a Glass Lewis & Company report states that 94% of the firms reporting ineffective internal controls under Section 404 had not disclosed a material weakness in internal control in the previous quarter, under Section 302 (Townsend and Grothe 2005).
coefficient on *FamilyCEO* is 0.568 with a p-value of 0.014 in 2004; it decreases to 0.332 with a p-value of 0.108 in 2005; and it becomes -0.003 with a p-value of 0.993 in 2006.\textsuperscript{26} Thus, the results are consistent with the argument that family CEO firms choose weak internal controls to exploit minority shareholders’ interests. Once the internal control quality becomes public information, however, these firms have to improve their internal controls to avoid punishments from minority shareholders. This supports the importance of publicly disclosing internal control quality in curbing family shareholders’ potential interest transfers from other shareholders.

7.3. The alternative definition of family firms

As mentioned earlier, our definition of family firms might be viewed as “lenient,” because of the lack of restriction on the level of family ownership. As an additional analysis, we use an alternative definition of family firm—firms where members of the founding family have an equity ownership of 5% or higher. Table 7 reports the regression results of internal control weaknesses when we use this definition and split family firms into family CEO and professional CEO family firms. The coefficients on both *Family* and *FamilyCEO* are significantly positive (p-values = 0.046 and 0.010, respectively). Again, we find that the coefficient on *ProfessionalCEO* is insignificant, consistent with our previous findings. Thus, our inferences do not change qualitatively when we use an alternative definition of family firm.

7.4. Founder CEO and descendant CEO family firms

In the main analyses, our measure of family CEO firms (*FamilyCEO*) includes two types of firms: those where founders are CEOs and those where the descendants of founders are CEOs. Prior studies (e.g., Villalonga and Amit 2006) suggest that founder and descendant CEOs can be

\textsuperscript{26} We use 2005’s firm type data to approximate the firm type in 2006 because prior research suggests that the family firm classification is quite sticky (e.g. Ali et al. 2007). Consistent with Ali et al., we find a high correlation (0.926) between family ownership in 2004 and 2005 in our data. Hence, it is less likely that the insignificant results in year 2006 are due to the measurement errors in firm type as we use family ownership data in 2005 to proxy for 2006.
different in expertise and incentives. For instance, relative to descendant CEOs, founder CEOs’ interests can be better aligned with other shareholders’. At the same time, founder CEOs enjoy more respect and power in the firm, which makes entrenchment activities easier. To shed light on the net influence of these potentially offsetting forces, we separate founder CEO firms and descendant CEO firms. Both types of firms are positively associated with material internal control weaknesses; both types of firms are less likely to have internal control weaknesses when outside blockholders’ ownership is higher. However, only founder CEO firms are more likely to have misstatements and frauds when there are weak general internal controls.

7.5. Discussions of internal control weaknesses and earnings quality

We find that due to family entrenchment, family CEO firms are more likely to have internal control weaknesses. This finding is broadly consistent with the result in Dechow et al. (1996) and Feng et al. (2011) that founder CEOs are more likely to engage in egregious earnings manipulation. However, our finding seems to be at odds with Ali et al. (2007) and Wang (2006) who show that, among Fortune 500 firms, family firms are associated with better earnings quality than non-family firms, where earnings quality is measured using discretionary accrual quality, earnings response coefficients and earnings persistence. Our inference can differ from Ali et al. and Wang due to different measures or due to different samples. To pinpoint the reason, we first compare earnings quality (measured as accrual quality) between family firms and non-family firms in our sample of S&P 1500 firms. We find that in our sample, accrual quality is also higher for family than for non-family firms. Therefore, the contrast in results is not explained by sampling differences. We further examine accrual quality in family firms with internal control weaknesses and those without internal control weaknesses. We find that family

27 Prior studies (e.g., Anderson et al. 2009) have shown that the entrenchment effect is more likely to dominate in a broader sample, which is the sample we use (i.e., S&P 1500).
firms with effective internal control exhibit better accrual quality than non-family firms with effective internal control. Interestingly, accrual quality is not significantly different between family and non-family firms with ineffective internal controls.

We conjecture that the seemingly contrasting results between our study (together with Dechow et al. 1996 & Feng et al. 2011) and Ali et al. (2007) & Wang (2006) can be explained by the differential distribution of the incentive alignment and entrenchment effect. It is possible that while the incentive alignment effect operates in all family firms, the entrenchment effect is concentrated in a subset of family firms. Consequently, we observe both better average accrual quality in family firms, due to the general effect of incentive alignment, and higher incidences of internal control weaknesses and extreme earnings manipulation due to the dominance of the entrenchment effect in a subset of family firms.

8. Conclusions

We examine the characteristics and consequences of internal controls in family firms. Our sample includes 2,512 firm-years from S&P 1500 firms over the period 2004-2005. We find that on average, family firms are more likely to report internal control weaknesses than non-family firms. After we split family firms into those run by family members (family CEO firms) and those run by outsiders (professional CEO family firms), we find that this result is driven by family CEO firms. To shed light on the underlying reason for the negative association between family CEO firms and internal control quality, we examine whether outside blockholders mitigate this association. We find that the negative association becomes weaker when outside blockholders’ ownership is higher, suggesting that outside blockholders help improve the internal control quality in family firms. This result indicates that the weaker internal control quality in family firms is likely due to the entrenchment effect rather than due to the substitution
effect. Finally, we find that internal control weaknesses in family CEO firms are associated with higher incidences of accounting misstatements and frauds than internal control weaknesses in non-family firms. These results suggest that internal control weaknesses in family firms are likely exploited by family owners for entrenchment activities.

Overall, our findings suggest that the unique conflict of interest between family owners and other shareholders in family CEO firms significantly influences the designs of internal control, which in turn affects misreporting. This study furthers our understanding of family firms’ internal controls as well as provides evidence on an important driver of internal control quality – interest conflicts between different types of shareholders.
References


Ge, W., McVay, S., 2005. The disclosure of material weaknesses in internal control after the Sarbanes-Oxley Act. Accounting Horizons 19, 137-158.


Public Company Accounting Oversight Board (PCAOB), 2004. Auditing standard no. 2 – an audit of internal control over financial reporting performed in conjunction with an audit of financial statements.

Public Company Accounting Oversight Board (PCAOB), 2007. Auditing standard no. 5 – an audit of internal control over financial reporting that is integrated with an audit of financial statements.


Table 1 Descriptive statistics

This table reports the firm characteristics of our sample, which consists of 2,512 firm-years from 1,425 firms in the S&P 1500 index (S&P 500, S&P MidCap 400, and S&P SmallCap 600 indices) covering the period 2004-2005. The last two columns report the two-tailed p-value for the difference between family and non-family firms in means and medians, respectively. T-tests (Z-tests) are used to test the difference in means (medians).

<table>
<thead>
<tr>
<th>Variable</th>
<th>Full sample (N=2,512)</th>
<th>Family firms (N=1,062)</th>
<th>Non-family firms (N=1,450)</th>
<th>p-value of the differences</th>
</tr>
</thead>
<tbody>
<tr>
<td>ICMW</td>
<td>Mean: 0.098 Median: 0.000 Q1: 0.000 Q3: 0.000 Std: 0.298</td>
<td>Mean: 0.111 Median: 0.000</td>
<td>Mean: 0.089 Median: 0.000</td>
<td>Mean: 0.066 Median: 0.066</td>
</tr>
<tr>
<td>FAMILY</td>
<td>Mean: 0.423 Median: 0.000 Q1: 1.000 Q3: 0.494</td>
<td>Mean: 0.163 Median: 0.083</td>
<td>Mean: 21.323 Median: 21.233</td>
<td>Mean: 21.923 Median: 21.810</td>
</tr>
<tr>
<td>FOWN</td>
<td>Mean: 0.175 Median: 0.062 Q1: 0.228 Q3: 0.173</td>
<td>Mean: 0.182 Median: 0.130</td>
<td>Mean: 0.169 Median: 0.122</td>
<td>Mean: 0.071 Median: 0.076</td>
</tr>
<tr>
<td>Big4</td>
<td>Mean: 0.961 Median: 1.000 Q1: 1.000 Q3: 1.000</td>
<td>Mean: 0.924 Median: 1.000</td>
<td>Mean: 0.983 Median: 1.000</td>
<td>Mean: 0.001 Median: 0.001</td>
</tr>
<tr>
<td>ROA</td>
<td>Mean: 0.066 Median: 0.056 Q1: 0.022 Q3: 0.106 Std: 0.081</td>
<td>Mean: 0.071 Median: 0.065</td>
<td>Mean: 0.061 Median: 0.049</td>
<td>Mean: 0.002 Median: 0.001</td>
</tr>
<tr>
<td>PLoss</td>
<td>Mean: 0.127 Median: 0.000 Q1: 0.000 Q3: 0.143 Std: 0.200</td>
<td>Mean: 0.120 Median: 0.000</td>
<td>Mean: 0.133 Median: 0.000</td>
<td>Mean: 0.094 Median: 0.190</td>
</tr>
<tr>
<td>Sales_std</td>
<td>Mean: 0.159 Median: 0.126 Q1: 0.062 Q3: 0.228 Std: 0.173</td>
<td>Mean: 0.182 Median: 0.130</td>
<td>Mean: 0.169 Median: 0.122</td>
<td>Mean: 0.071 Median: 0.076</td>
</tr>
<tr>
<td>Growth</td>
<td>Mean: 3.214 Median: 2.000 Q1: 1.000 Q3: 5.000 Std: 2.625</td>
<td>Mean: 3.097 Median: 2.000</td>
<td>Mean: 3.299 Median: 2.000</td>
<td>Mean: 0.056 Median: 0.258</td>
</tr>
<tr>
<td>Seg_Num</td>
<td>Mean: 0.358 Median: 0.000 Q1: 0.000 Q3: 1.000 Std: 0.479</td>
<td>Mean: 0.345 Median: 0.000</td>
<td>Mean: 0.368 Median: 0.000</td>
<td>Mean: 0.236 Median: 0.236</td>
</tr>
<tr>
<td>Foreign</td>
<td>Mean: 0.230 Median: 0.000 Q1: 0.000 Q3: 0.421 Std: 0.421</td>
<td>Mean: 0.178 Median: 0.000</td>
<td>Mean: 0.269 Median: 0.000</td>
<td>Mean: 0.001 Median: 0.001</td>
</tr>
<tr>
<td>Restructuring</td>
<td>Mean: 0.111 Median: 0.000 Q1: 0.000 Q3: 0.315 Std: 0.315</td>
<td>Mean: 0.121 Median: 0.000</td>
<td>Mean: 0.105 Median: 0.000</td>
<td>Mean: 0.217 Median: 0.217</td>
</tr>
<tr>
<td>Restate</td>
<td>Mean: 2.898 Median: 2.944 Q1: 2.398 Q3: 3.497 Std: 0.835</td>
<td>Mean: 2.785 Median: 2.833</td>
<td>Mean: 2.980 Median: 3.045</td>
<td>Mean: 0.001 Median: 0.001</td>
</tr>
</tbody>
</table>

Variable definitions:

ICMW = an indicator variable that is equal to one if the firm has material weaknesses in internal controls in year t, and zero otherwise;

FAMILY = an indicator variable that is equal to one if the firm is a family firm in year t, and zero otherwise;

FOWN = the percentage of family ownership in family firms;

Ln_TA = the natural logarithm of total assets (Compustat #6) at the end of year t;

Big4 = an indicator variable that is equal to one if the auditor is a Big 4 auditor, and zero otherwise;

ROA = return on assets, measured as income before extraordinary items (Compustat #18) divided by total assets (Compustat #6);

Pl_loss = the percentage of negative earnings before extraordinary items (Compustat #18) in the last three years;

Sales_std = the standard deviation of annual sales (Compustat #12) over the prior 7 years (requiring at least three non-missing observations);

Growth = sales growth from year t-1 to year t (sales (Compustat #12) in year t – sales in year t - 1) / sales in year t – 1);

Seg_Num = the natural logarithm of the total number of geographic and operating segments in year t;

Foreign = an indicator variable that is equal to one if the firm has foreign transactions (Compustat #150) in year t, and zero otherwise;

Restructuring = an indicator variable that is equal to one if the firm recognizes restructuring charges (Compustat #376) in year t, and zero otherwise;

Restate = an indicator variable that is equal to one if the firm announces restatement in year t, and zero otherwise;

Age = the natural logarithm of the number of years that the firm is covered by CRSP.
Table 2 Pearson correlation matrix of test variables
(p-values in parentheses)

This table reports the Pearson correlations of our test variables. The sample consists of 2,512 firm-years from 1,425 firms in the S&P 1500 index (S&P 500, S&P MidCap 400, and S&P SmallCap 600 indices) covering the period 2004-2005. Family is a dummy variable with the value of 1 for family firms, and zero otherwise. See Table 1 for the definitions of other variables.

<table>
<thead>
<tr>
<th></th>
<th>Family</th>
<th>Ln_TA</th>
<th>Big4</th>
<th>ROA</th>
<th>PLoss</th>
<th>Sales_std</th>
<th>Growth</th>
<th>Seg_Num</th>
<th>Foreign</th>
<th>Restructuring</th>
<th>Restate</th>
<th>Age</th>
</tr>
</thead>
<tbody>
<tr>
<td>ICMW</td>
<td>0.037</td>
<td>-0.071</td>
<td>-0.057</td>
<td>-0.114</td>
<td>0.091</td>
<td>0.075</td>
<td>-0.023</td>
<td>0.049</td>
<td>0.057</td>
<td>0.045</td>
<td>0.197</td>
<td>-0.021</td>
</tr>
<tr>
<td></td>
<td>(0.066)</td>
<td>(0.001)</td>
<td>(0.004)</td>
<td>(0.001)</td>
<td>(0.001)</td>
<td>(0.256)</td>
<td>(0.014)</td>
<td>(0.004)</td>
<td>(0.025)</td>
<td>(0.001)</td>
<td>(0.289)</td>
<td></td>
</tr>
<tr>
<td>Family</td>
<td>-0.181</td>
<td>-0.137</td>
<td>0.061</td>
<td>-0.033</td>
<td>0.036</td>
<td>0.033</td>
<td>-0.038</td>
<td>-0.024</td>
<td>-0.107</td>
<td>0.025</td>
<td>-0.115</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.001)</td>
<td>(0.001)</td>
<td>(0.002)</td>
<td>(0.094)</td>
<td>(0.071)</td>
<td>(0.103)</td>
<td>(0.056)</td>
<td>(0.236)</td>
<td>(0.001)</td>
<td>(0.217)</td>
<td>(0.001)</td>
<td></td>
</tr>
<tr>
<td>Ln_TA</td>
<td>0.175</td>
<td>-0.124</td>
<td>-0.234</td>
<td>-0.294</td>
<td>-0.056</td>
<td>0.080</td>
<td>-0.034</td>
<td>0.034</td>
<td>-0.023</td>
<td>0.308</td>
<td></td>
<td>0.308</td>
</tr>
<tr>
<td></td>
<td>(0.001)</td>
<td>(0.001)</td>
<td>(0.001)</td>
<td>(0.001)</td>
<td>(0.005)</td>
<td>(0.001)</td>
<td>(0.092)</td>
<td>(0.089)</td>
<td>(0.247)</td>
<td>(0.001)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Big4</td>
<td>-0.016</td>
<td>0.003</td>
<td>-0.052</td>
<td>-0.012</td>
<td>0.021</td>
<td>0.036</td>
<td>0.038</td>
<td>-0.013</td>
<td>0.020</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.431)</td>
<td>(0.887)</td>
<td>(0.009)</td>
<td>(0.548)</td>
<td>(0.289)</td>
<td>(0.071)</td>
<td>(0.057)</td>
<td>(0.522)</td>
<td>(0.311)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ROA</td>
<td>-0.189</td>
<td>0.123</td>
<td>0.177</td>
<td>0.050</td>
<td>-0.007</td>
<td>-0.174</td>
<td>-0.089</td>
<td>-0.049</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.001)</td>
<td>(0.001)</td>
<td>(0.001)</td>
<td>(0.012)</td>
<td>(0.743)</td>
<td>(0.001)</td>
<td>(0.001)</td>
<td>(0.014)</td>
<td>(0.014)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PLoss</td>
<td>0.211</td>
<td>0.120</td>
<td>0.079</td>
<td>0.150</td>
<td>0.222</td>
<td>0.049</td>
<td>-0.190</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.001)</td>
<td>(0.001)</td>
<td>(0.001)</td>
<td>(0.001)</td>
<td>(0.001)</td>
<td>(0.014)</td>
<td>(0.014)</td>
<td>(0.014)</td>
<td>(0.014)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sales_std</td>
<td>0.101</td>
<td>0.012</td>
<td>0.048</td>
<td>0.064</td>
<td>0.016</td>
<td>-0.168</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.001)</td>
<td>(0.559)</td>
<td>(0.016)</td>
<td>(0.001)</td>
<td>(0.424)</td>
<td>(0.001)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Growth</td>
<td>0.008</td>
<td>0.008</td>
<td>-0.102</td>
<td>-0.043</td>
<td>-0.153</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.700)</td>
<td>(0.681)</td>
<td>(0.001)</td>
<td>(0.031)</td>
<td>(0.001)</td>
<td>(0.001)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Seg_Num</td>
<td>0.331</td>
<td>0.193</td>
<td>-0.007</td>
<td>0.099</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.001)</td>
<td>(0.001)</td>
<td>(0.720)</td>
<td>(0.001)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Foreign</td>
<td>0.167</td>
<td>-0.003</td>
<td>-0.002</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.001)</td>
<td>(0.873)</td>
<td>(0.940)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Restructuring</td>
<td>0.016</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.411)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Restate</td>
<td>-0.016</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.424)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Table 3 Logistic regression of the probability of internal control weaknesses on the family firm indicator and control variables

This table reports the logistic regression results from the following regression:

\[
PR(\text{ICMW}_{it} = 1) = \alpha + \beta_1 \text{Family}_{it} + \beta_2 \ln(\text{TA})_{it} + \beta_3 \text{Big4}_{it} + \beta_4 \text{ROA}_{it} + \beta_5 \text{PLoss}_{it} + \\
\beta_6 \text{Sales_std}_{it} + \beta_7 \text{Growth}_{it} + \beta_8 \text{Seg_Num}_{it} + \beta_9 \text{Foreign}_{it} + \beta_{10} \text{Restructuring}_{it} + \\
\beta_{11} \text{Restate}_{it} + \beta_{12} \text{Age}_{it} + \sum \text{Industry dummies} + \text{Year Dummy}
\]  

(1)

The sample consists of 2,512 firm-years from 1,425 firms in the S&P 1500 index (S&P 500, S&P MidCap 400, and S&P SmallCap 600 indices) covering the period 2004-2005. ICMW is an indicator variable that is equal to one if the firm has material weaknesses in internal controls, and zero otherwise. Family is a dummy variable with the value of 1 for family firms, and zero otherwise. See Table 1 for the definitions of other variables. The p-values (in parentheses) are one-tailed for signed predictions and two-tailed for unsigned predictions. Year and industry dummies are included and for the sake of brevity, the results for these dummies are not reported. Marginal Δ in prob. equals to the change in the probability of reporting internal control weaknesses when there is a one standard deviation’s change in the continuous independent variable, or when there is a change from zero to one in the dichotomous independent variable.

<table>
<thead>
<tr>
<th>Predicted signs</th>
<th>Coef. (p-value)</th>
<th>Marginal Δ in prob. (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intercept</td>
<td>?</td>
<td>0.725 (0.566) n/a</td>
</tr>
<tr>
<td><strong>Family</strong></td>
<td>?</td>
<td><strong>0.250 (0.102)</strong> 2.21%</td>
</tr>
<tr>
<td>Ln_TA</td>
<td>-</td>
<td>-0.142 (0.011) -2.04%</td>
</tr>
<tr>
<td>Big4</td>
<td>-</td>
<td>-0.609 (0.023) -5.40%</td>
</tr>
<tr>
<td>ROA</td>
<td>-</td>
<td>-3.899 (0.001) -2.80%</td>
</tr>
<tr>
<td>PLoss</td>
<td>+</td>
<td>1.041 (0.004) 1.85%</td>
</tr>
<tr>
<td>Sales_std</td>
<td>+</td>
<td>1.050 (0.005) 1.61%</td>
</tr>
<tr>
<td>Growth</td>
<td>+</td>
<td>-0.323 (0.337) -0.63%</td>
</tr>
<tr>
<td>Seg_Num</td>
<td>+</td>
<td>0.082 (0.004) 1.90%</td>
</tr>
<tr>
<td>Foreign</td>
<td>+</td>
<td>0.297 (0.039) 2.63%</td>
</tr>
<tr>
<td>Restructuring</td>
<td>+</td>
<td>0.093 (0.304) 0.83%</td>
</tr>
<tr>
<td>Restate</td>
<td>+</td>
<td>1.374 (0.001) 12.18%</td>
</tr>
<tr>
<td>Age</td>
<td>-</td>
<td>0.114 (0.268) 0.84%</td>
</tr>
<tr>
<td>Year &amp; industry dummies</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>Pseudo R²</td>
<td></td>
<td>17.5%</td>
</tr>
<tr>
<td>N</td>
<td></td>
<td>2,512</td>
</tr>
<tr>
<td>Number of material weaknesses</td>
<td></td>
<td>247</td>
</tr>
</tbody>
</table>
Table 4 Splitting family firms based on the identity of CEO

The full sample consists of 2,512 firm-years from 1,425 firms in the S&P 1500 index (S&P 500, S&P MidCap 400, and S&P SmallCap 600 indices) covering the period 2004-2005. The family firm sample (1,062 firm-years) is split into two sub-samples: family CEO firms (603 firm-years) and professional CEO family firms (459 firm-years).

Panel A Comparison of the likelihood of internal control weaknesses across firm types

This panel compares the likelihood of the firm disclosing ineffective internal controls across firm-types. The last column reports the two-tailed p-values for the difference in means between a certain type of family firms (family CEO/professional CEO family firms) and non-family firms. T-tests are used to test the significance of the differences.

<table>
<thead>
<tr>
<th></th>
<th>Number of observations</th>
<th>Mean % of internal control weaknesses</th>
<th>p-value of the difference between this type of family firms and non-family firms</th>
</tr>
</thead>
<tbody>
<tr>
<td>Non-family firms</td>
<td>1,450</td>
<td>8.9%</td>
<td>n/a</td>
</tr>
<tr>
<td>Family CEO firms</td>
<td>603</td>
<td>13.1%</td>
<td>0.004</td>
</tr>
<tr>
<td>Professional CEO family firms</td>
<td>459</td>
<td>8.5%</td>
<td>0.792</td>
</tr>
</tbody>
</table>
Table 4 (Cont’d)
Panel B: Logistic regression using the likelihood of internal control weaknesses as the dependent variable

This panel reports the logistic regression results from the following regression:

$$
PROB(\text{ICMW}_{it} = 1) = \alpha + \beta_{1a}\text{FamilyCEO}_{it} + \beta_{1b}\text{ProfessionalCEO}_{it} + \beta_2\text{Ln}_{TA_{it}}
 + \beta_3\text{Big4}_{it} + \beta_4\text{ROA}_{it} + \beta_5\text{PLoss}_{it} + \beta_6\text{Sales_std}_{it} + \beta_7\text{Growth}_{it} + \beta_8\text{Seg_Num}_{it}
 + \beta_9\text{Foreign}_{it} + \beta_{10}\text{Restructuring}_{it} + \beta_{11}\text{Restate}_{it} + \beta_{12}\text{Age}_{it}
 + \sum \text{Industry dummies} + \text{Year Dummy}
$$

(1’)

ICMW is an indicator variable that is equal to one if the firm has material weaknesses in internal controls, and zero otherwise. FamilyCEO (ProfessionalCEO) is a dummy variable with the value of 1 for family CEO firms (professional CEO family firms), and zero otherwise. See Table 1 for the definitions of other variables. The p-values (in parentheses) are one-tailed for signed predictions and two-tailed for unsigned predictions. Year and industry dummies are included and for the sake of brevity, the results for these dummies are not reported. See Table 3 for the calculation of Marginal Δ in probability.

<table>
<thead>
<tr>
<th>Predicted signs</th>
<th>Coef. (p-value)</th>
<th>Marginal Δ in prob. (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intercept</td>
<td>0.255 (0.839)</td>
<td>n/a</td>
</tr>
<tr>
<td>FamilyCEO</td>
<td>0.410 (0.018)</td>
<td>3.63%</td>
</tr>
<tr>
<td>ProfessionalCEO</td>
<td>-0.009 (0.966)</td>
<td>-0.08%</td>
</tr>
<tr>
<td>Ln_TA</td>
<td>-0.136 (0.014)</td>
<td>-1.96%</td>
</tr>
<tr>
<td>Big4</td>
<td>-0.484 (0.058)</td>
<td>-4.29%</td>
</tr>
<tr>
<td>ROA</td>
<td>-3.966 (0.001)</td>
<td>-2.85%</td>
</tr>
<tr>
<td>PLoss</td>
<td>1.020 (0.005)</td>
<td>1.81%</td>
</tr>
<tr>
<td>Sales_std</td>
<td>1.108 (0.003)</td>
<td>1.70%</td>
</tr>
<tr>
<td>Growth</td>
<td>-0.267 (0.424)</td>
<td>-0.52%</td>
</tr>
<tr>
<td>Seg_Num</td>
<td>0.078 (0.005)</td>
<td>1.82%</td>
</tr>
<tr>
<td>Foreign</td>
<td>0.301 (0.037)</td>
<td>2.67%</td>
</tr>
<tr>
<td>Restructuring</td>
<td>0.113 (0.268)</td>
<td>1.00%</td>
</tr>
<tr>
<td>Restate</td>
<td>1.301 (0.001)</td>
<td>11.54%</td>
</tr>
<tr>
<td>Age</td>
<td>0.110 (0.284)</td>
<td>0.82%</td>
</tr>
<tr>
<td>Year &amp; industry dummies</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>Pseudo R²</td>
<td>17.7%</td>
<td></td>
</tr>
<tr>
<td>N</td>
<td>2,512</td>
<td></td>
</tr>
<tr>
<td>Number of material weaknesses</td>
<td>247</td>
<td></td>
</tr>
</tbody>
</table>
Table 5 Internal control weaknesses and outside blockholding

The full sample consists of 2,512 firm-years from 1,425 firms in the S&P 1500 index (S&P 500, S&P MidCap 400, and S&P SmallCap 600 indices) covering the period 2004-2005. The family firm sample (1,062 firm-years) is split into two sub-samples: family CEO firms (603 firm-years) and professional CEO family firms (459 firm-years).

This table reports the logistic regression results from the following regressions:

\[
PROB(\text{ICMW}_{it} = 1) = \alpha + \beta_{1a} \text{FamilyCEO}_{it} + \beta_{1b} \text{ProfessionalCEO}_{it} \\
+ \beta_2 \text{Ln_TA}_{it} + \beta_3 \text{Big4}_{it} + \beta_4 \text{ROA}_{it} + \beta_5 \text{P}0\text{ss}_{it} + \beta_6 \text{Sales_std}_{it} + \beta_7 \text{Growth}_{it} \\
+ \beta_9 \text{Seg_Num}_{it} + \beta_6 \text{Foreign}_{it} + \beta_{10} \text{Restructuring}_{it} + \beta_{11} \text{Restate}_{it} + \beta_{12} \text{Age}_{it} \\
+ \beta_{13} \text{Block\_Own}_{it} + \beta_{14} \text{FamilyCEO}_{it} \times \text{Block\_Own}_{it} \\
+ \beta_{15} \text{ProfessionalCEO}_{it} \times \text{Block\_Own}_{it} + \sum \text{Industry dummies} + \text{Year Dummy}
\]  

(2)

ICMW is an indicator variable that is equal to one if the firm has material weaknesses in internal controls, and zero otherwise. FamilyCEO (ProfessionalCEO) is a dummy variable with the value of 1 for family CEO firms (professional CEO family firms), and zero otherwise. Block Own is the natural logarithm of the percentage of outside blockholders’ shareholdings. See Table 1 for the definitions of other variables. The p-values (in parentheses) are one-tailed for signed predictions and two-tailed for unsigned predictions. Year and industry dummies are included and for the sake of brevity, the results for these dummies are not reported.
<table>
<thead>
<tr>
<th>Predicted signs</th>
<th>Coef. (p-value)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intercept</td>
<td>-0.204 (0.881)</td>
</tr>
<tr>
<td>FamilyCEO</td>
<td>1.255 (0.004)</td>
</tr>
<tr>
<td>ProfessionalCEO</td>
<td>-0.197 (0.752)</td>
</tr>
<tr>
<td>Ln_TA</td>
<td>-0.124 (0.026)</td>
</tr>
<tr>
<td>Big4</td>
<td>-0.557 (0.037)</td>
</tr>
<tr>
<td>ROA</td>
<td>-3.764 (0.001)</td>
</tr>
<tr>
<td>PLoss</td>
<td>1.045 (0.004)</td>
</tr>
<tr>
<td>Sales_std</td>
<td>1.070 (0.004)</td>
</tr>
<tr>
<td>Growth</td>
<td>-0.277 (0.410)</td>
</tr>
<tr>
<td>Seg_Num</td>
<td>0.073 (0.010)</td>
</tr>
<tr>
<td>Foreign</td>
<td>0.308 (0.035)</td>
</tr>
<tr>
<td>Restructuring</td>
<td>0.113 (0.269)</td>
</tr>
<tr>
<td>Restate</td>
<td>1.361 (0.001)</td>
</tr>
<tr>
<td>Age</td>
<td>0.140 (0.175)</td>
</tr>
<tr>
<td>Block_Own</td>
<td>0.161 (0.139)</td>
</tr>
<tr>
<td>FamilyCEO x Block_Own</td>
<td>-0.309 (0.036)</td>
</tr>
<tr>
<td>ProfessionalCEO x Block_Own</td>
<td>0.101 (0.626)</td>
</tr>
</tbody>
</table>

Year & industry dummies: Yes
Pseudo R²: 18.6%
N: 2,441
Number of material weaknesses: 247
Table 6 Internal control weaknesses and accounting misstatements and frauds

The full sample consists of 2,512 firm-years from 1,425 firms in the S&P 1500 index (S&P 500, S&P MidCap 400, and S&P SmallCap 600 indices) covering the period 2004-2005. The family firm sample (1,062 firm-years) is split into two sub-samples: family CEO firms (603 firm-years) and professional CEO family firms (459 firm-years).

Panel A reports the probability of internal control weaknesses for firms with misstatements and frauds. Panel B and C report the logistic regression results from the following regression:

\[
\text{PROB}(\text{DEP}_{i,t} = 1) = \alpha_0 + \alpha_{1a}\text{FamilyCEO}_{i,t} + \alpha_{1b}\text{ProfessionalCEO}_{i,t} + \alpha_2\text{ICMW}_{i,t} \\
+ \alpha_{3a}\text{ICMW}_{i,t} \times \text{FamilyCEO}_{i,t} + \alpha_{3b}\text{ICMW}_{i,t} \times \text{ProfessionalCEO}_{i,t} + \beta_1\text{Ln_TA}_{i,t} \\
+ \beta_2\text{Big}_{i,t} + \beta_3\text{ROA}_{i,t} + \beta_4\text{PLoss}_{i,t} + \beta_5\text{Sales_std}_{i,t} + \beta_6\text{Growth}_{i,t} + \beta_7\text{Seg_Num}_{i,t} \\
+ \beta_8\text{Foreign}_{i,t} + \beta_9\text{Restructuring}_{i,t} + \beta_{10}\text{Age}_{i,t} + \sum\text{Industry dummies} + \text{Year Dummy} \tag{3}
\]

The dependent variable can be one of the following two: Misstatement$_{i,t}$, Fraud$_{i,t}$. The two indicator variables take the value of one if the firm-year is associated with a misstatement and fraud, respectively; and the value of zero otherwise. ICMW is an indicator variable that is equal to one if the firm has material weaknesses in internal controls, and zero otherwise. ICMW is replaced by General MW and Specific MW in Panel C. General MW is an indicator variable that is equal to one if the firm discloses general internal control material weaknesses in the current year, and zero otherwise. Specific MW is an indicator variable that is equal to one if the firm discloses specific internal control material weaknesses in the current year, and zero otherwise. FamilyCEO (ProfessionalCEO) is a dummy variable with the value of 1 for family CEO firms (professional CEO family firms), and zero otherwise. See Table 1 for the definitions of other variables. The p-values (in parentheses) are one-tailed for signed predictions and two-tailed for unsigned predictions. Year and industry dummies are included and for the sake of brevity, the results for these dummies are not reported.
**Table 6 (Cont’d)**

*Panel A The likelihood of internal control material weaknesses for firms with misstatements/frauds*

This panel reports the likelihood of internal control material weaknesses for firm-years associated with misstatements/frauds. *ICMW* is an indicator variable that is equal to one if the firm has material weaknesses in internal controls, and zero otherwise. General MW is an indicator variable that is equal to one if the firm discloses general internal control material weaknesses in the current year, and zero otherwise.

**Accounting misstatements**

<table>
<thead>
<tr>
<th></th>
<th># of misstatements</th>
<th>The frequency of MW in misstatement firms</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>ICMW=1</td>
</tr>
<tr>
<td>Non-family firms</td>
<td>248</td>
<td>31.0%</td>
</tr>
<tr>
<td>Family CEO firms</td>
<td>158</td>
<td>36.1%</td>
</tr>
<tr>
<td>Professional CEO family firms</td>
<td>93</td>
<td>25.8%</td>
</tr>
</tbody>
</table>

**Frauds**

<table>
<thead>
<tr>
<th></th>
<th># of frauds</th>
<th>The frequency of MW in fraud firms</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>ICMW=1</td>
</tr>
<tr>
<td>Non-family firms</td>
<td>18</td>
<td>22.2%</td>
</tr>
<tr>
<td>Family CEO firms</td>
<td>15</td>
<td>60.0%</td>
</tr>
<tr>
<td>Professional CEO family firms</td>
<td>7</td>
<td>28.5%</td>
</tr>
</tbody>
</table>
Table 6 (Cont’d)

*Panel B Logistic regression examining the likelihood of misstatements and frauds*

<table>
<thead>
<tr>
<th>Predicted Signs</th>
<th>Dependent Variable</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Misstatement</td>
</tr>
<tr>
<td>Intercept</td>
<td>-2.133</td>
</tr>
<tr>
<td></td>
<td>(0.033)</td>
</tr>
<tr>
<td>FamilyCEO</td>
<td>0.588</td>
</tr>
<tr>
<td></td>
<td>(0.001)</td>
</tr>
<tr>
<td>ProfessionalCEO</td>
<td>0.368</td>
</tr>
<tr>
<td></td>
<td>(0.272)</td>
</tr>
<tr>
<td>ICMW</td>
<td>2.294</td>
</tr>
<tr>
<td></td>
<td>(0.026)</td>
</tr>
<tr>
<td>ICMWxFamilyCEO</td>
<td>0.272</td>
</tr>
<tr>
<td></td>
<td>(0.232)</td>
</tr>
<tr>
<td>ICMWxProfessionalCEO</td>
<td>-0.132</td>
</tr>
<tr>
<td></td>
<td>(0.766)</td>
</tr>
<tr>
<td>Ln_TA</td>
<td>-0.020</td>
</tr>
<tr>
<td></td>
<td>(0.336)</td>
</tr>
<tr>
<td>Big4</td>
<td>0.752</td>
</tr>
<tr>
<td></td>
<td>(0.026)</td>
</tr>
<tr>
<td>ROA</td>
<td>-0.734</td>
</tr>
<tr>
<td></td>
<td>(0.175)</td>
</tr>
<tr>
<td>PLoss</td>
<td>0.326</td>
</tr>
<tr>
<td></td>
<td>(0.154)</td>
</tr>
<tr>
<td>Sales_std</td>
<td>0.144</td>
</tr>
<tr>
<td></td>
<td>(0.345)</td>
</tr>
<tr>
<td>Growth</td>
<td>-0.143</td>
</tr>
<tr>
<td></td>
<td>(0.596)</td>
</tr>
<tr>
<td>Seg_Num</td>
<td>0.028</td>
</tr>
<tr>
<td></td>
<td>(0.132)</td>
</tr>
<tr>
<td>Foreign</td>
<td>0.035</td>
</tr>
<tr>
<td></td>
<td>(0.399)</td>
</tr>
<tr>
<td>Restructuring</td>
<td>0.285</td>
</tr>
<tr>
<td></td>
<td>(0.027)</td>
</tr>
<tr>
<td>Age</td>
<td>-0.028</td>
</tr>
<tr>
<td></td>
<td>(0.365)</td>
</tr>
<tr>
<td>Year &amp; industry dummies</td>
<td>Yes</td>
</tr>
<tr>
<td>Pseudo R²</td>
<td>25.8%</td>
</tr>
<tr>
<td>Number of misstatement/Fraud</td>
<td>499</td>
</tr>
<tr>
<td>N</td>
<td>2,512</td>
</tr>
</tbody>
</table>
**Table 6 (Cont’d)**  
*Panel C Logistic regression examining the likelihood of misstatements and frauds (General MW represents general internal control material weaknesses and Specific MW represents specific internal control material weaknesses)*

<table>
<thead>
<tr>
<th>Predicted Signs</th>
<th>Dependent Variable</th>
<th>Misstatement</th>
<th>Fraud</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intercept</td>
<td>-2.124</td>
<td>-16.348</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.034)</td>
<td>(0.001)</td>
<td></td>
</tr>
<tr>
<td>FamilyCEO</td>
<td>0.561</td>
<td>0.377</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.001)</td>
<td>(0.484)</td>
<td></td>
</tr>
<tr>
<td>ProfessionalCEO</td>
<td>0.345</td>
<td>0.298</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.037)</td>
<td>(0.592)</td>
<td></td>
</tr>
<tr>
<td>General MW</td>
<td>1.888</td>
<td>2.296</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.001)</td>
<td>(0.002)</td>
<td></td>
</tr>
<tr>
<td>General MWxFamilyCEO</td>
<td>+</td>
<td>1.117</td>
<td>1.982</td>
</tr>
<tr>
<td></td>
<td>(0.028)</td>
<td>(0.029)</td>
<td></td>
</tr>
<tr>
<td>General MWxProfessionalCEO</td>
<td>?</td>
<td>0.301</td>
<td>1.352</td>
</tr>
<tr>
<td></td>
<td>(0.727)</td>
<td>(0.415)</td>
<td></td>
</tr>
<tr>
<td>Specific MW</td>
<td>2.320</td>
<td>0.070</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.001)</td>
<td>(0.951)</td>
<td></td>
</tr>
<tr>
<td>Specific MWxFamilyCEO</td>
<td>?</td>
<td>0.081</td>
<td>1.506</td>
</tr>
<tr>
<td></td>
<td>(0.858)</td>
<td>(0.294)</td>
<td></td>
</tr>
<tr>
<td>Specific MWxProfessionalCEO</td>
<td>?</td>
<td>-0.034</td>
<td>1.268</td>
</tr>
<tr>
<td></td>
<td>(0.947)</td>
<td>(0.446)</td>
<td></td>
</tr>
<tr>
<td>Ln_TA</td>
<td>-0.022</td>
<td>0.559</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.323)</td>
<td>(0.001)</td>
<td></td>
</tr>
<tr>
<td>Big4</td>
<td>0.772</td>
<td>-0.545</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.026)</td>
<td>(0.255)</td>
<td></td>
</tr>
<tr>
<td>ROA</td>
<td>-0.806</td>
<td>3.352</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.152)</td>
<td>(0.205)</td>
<td></td>
</tr>
<tr>
<td>PLoss</td>
<td>0.393</td>
<td>1.939</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.109)</td>
<td>(0.027)</td>
<td></td>
</tr>
<tr>
<td>Sales_std</td>
<td>0.175</td>
<td>-0.676</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.313)</td>
<td>(0.589)</td>
<td></td>
</tr>
<tr>
<td>Growth</td>
<td>-0.157</td>
<td>-0.545</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.560)</td>
<td>(0.567)</td>
<td></td>
</tr>
<tr>
<td>Seg_Num</td>
<td>0.031</td>
<td>-0.174</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.109)</td>
<td>(0.044)</td>
<td></td>
</tr>
<tr>
<td>Foreign</td>
<td>0.052</td>
<td>0.178</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.353)</td>
<td>(0.338)</td>
<td></td>
</tr>
<tr>
<td>Restructuring</td>
<td>0.286</td>
<td>-0.439</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.026)</td>
<td>(0.352)</td>
<td></td>
</tr>
<tr>
<td>Age</td>
<td>-0.018</td>
<td>0.076</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.410)</td>
<td>(0.772)</td>
<td></td>
</tr>
<tr>
<td>Year &amp; industry dummies</td>
<td>Yes</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>Pseudo R$^2$</td>
<td>25.5%</td>
<td>29.9%</td>
<td></td>
</tr>
<tr>
<td>Number of Misstatement/Fraud</td>
<td>499</td>
<td>40</td>
<td></td>
</tr>
<tr>
<td>N</td>
<td>2,512</td>
<td>2,512</td>
<td></td>
</tr>
</tbody>
</table>
Table 7 Logistic regression of the probability of internal control weaknesses on the alternative family firm measure and control variables

The full sample consists of 2,512 firm-years from 1,425 firms in the S&P 1500 index (S&P 500, S&P MidCap 400, and S&P SmallCap 600 indices) covering the period 2004-2005. Compared with previous tables, we add the restriction of higher than 5% family ownership when defining family firms. The family firm sample (671 firm-years) is split into two sub-samples: family CEO firms (429 firm-years) and professional CEO family firms (242 firm-years). The regression specifications in the two columns are the same as Table 3 and Table 4, Panel B, respectively.

<table>
<thead>
<tr>
<th>Predicted signs</th>
<th>Coef. (p-value)</th>
<th>Coef. (p-value)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intercept</td>
<td>?</td>
<td>0.612 (0.628)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>0.420 (0.741)</td>
</tr>
<tr>
<td>Family</td>
<td>?</td>
<td>0.333 (0.046)</td>
</tr>
<tr>
<td></td>
<td>?</td>
<td>0.487 (0.010)</td>
</tr>
<tr>
<td>FamilyCEO</td>
<td>?</td>
<td>0.007 (0.978)</td>
</tr>
<tr>
<td>ProfessionalCEO</td>
<td>?</td>
<td></td>
</tr>
<tr>
<td>Ln_TA</td>
<td>-</td>
<td>-0.137 (0.014)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>-0.131 (0.018)</td>
</tr>
<tr>
<td>Big4</td>
<td>-</td>
<td>-0.574 (0.031)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>-0.509 (0.051)</td>
</tr>
<tr>
<td>ROA</td>
<td>-</td>
<td>-3.927 (0.001)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>-3.957 (0.001)</td>
</tr>
<tr>
<td>PLoss</td>
<td>+</td>
<td>1.053 (0.004)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1.055 (0.004)</td>
</tr>
<tr>
<td>Sales_std</td>
<td>+</td>
<td>1.067 (0.004)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1.100 (0.003)</td>
</tr>
<tr>
<td>Growth</td>
<td>+</td>
<td>-0.300 (0.371)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>-0.298 (0.370)</td>
</tr>
<tr>
<td>Seg_Num</td>
<td>+</td>
<td>0.079 (0.005)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>0.076 (0.007)</td>
</tr>
<tr>
<td>Foreign</td>
<td>+</td>
<td>0.300 (0.038)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>0.291 (0.043)</td>
</tr>
<tr>
<td>Restructuring</td>
<td>+</td>
<td>0.105 (0.284)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>0.121 (0.254)</td>
</tr>
<tr>
<td>Restate</td>
<td>+</td>
<td>1.379 (0.001)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1.368 (0.001)</td>
</tr>
<tr>
<td>Age</td>
<td>-</td>
<td>0.108 (0.292)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>0.111 (0.280)</td>
</tr>
<tr>
<td>Year &amp; industry dummies</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Pseudo R²</td>
<td></td>
<td>17.6% 17.9%</td>
</tr>
<tr>
<td>N</td>
<td>2,512</td>
<td>2,512</td>
</tr>
<tr>
<td>Number of material weaknesses</td>
<td>247</td>
<td>247</td>
</tr>
</tbody>
</table>