Increased non-family ownership in family-owned firms: How does it affect CEO turnover-performance sensitivity?

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Running head: Non-family ownership in family-owned firms

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Research Summary: This paper investigates the impact of the increase in non-family ownership in family-owned firms on CEO turnover-performance sensitivity. Longitudinal analyses based on 717 family-owned Taiwanese public firms from 1997 to 2011 demonstrate a positive relationship between CEO turnover and poor firm financial performance (or CEO turnover-performance sensitivity). This positive relationship is stronger when non-family ownership is higher in the firms. Further, the positive effect of non-family ownership on CEO turnover-performance sensitivity is stronger when the lack of governance transparency or a higher deviation between control rights and cash flow rights enables entrenchment of families. The study contributes to the family business literature while also exploring the implications of corporate governance, particularly on CEO turnover.

Managerial summary: Corporate control in many economies, including emerging markets, has gradually transitioned from a family-dominated structure to one with substantial non-family ownership. How does the increase of non-family ownership influence the monitoring effectiveness in family-owned firms? To address this question, this study assesses the impact of non-family ownership on CEO turnover-performance sensitivity and its boundary conditions among 717 family-owned firms in Taiwan from 1997 to 2011. The findings show that CEO turnover-performance sensitivity increases with non-family ownership, especially in firms with weak governance conditions. The study highlights the key role of non-family owners for the best corporate governance design.

Family-owned firms, often defined as those with at least five percent of shares held by family members, are highly prominent in many economies (Villalonga & Amit, 2006; Villalonga & Amit, 2010). For instance, Anderson and Reeb (2003) noted that a third of the S&P 500 firms are dominated by family owners. Faccio and Lang (2002) found that 44 percent of 5,232 corporations in 13 Western European countries are family owned. As Gomez-Mejia *et al.* (2011) noted, while in the United States family-owned firms account for around 70 percent of public firms and approximately 50 percent of the Fortune 1000 firms, they comprise around 95 percent of firms in the Middle East and Asia.

The corporate governance literature recognizes the increase of other shareholders with significant stakes in family-owned firms worldwide (e.g., Carney & Child, 2012; Sacristán-Navarro, Cabeza-Garcia & Gómez-Ansón, 2015). For instance, in examining the separation of ownership and control for East Asia's largest companies in 1996 and 2008, Carney and Child (2012) pointed out that the 1997 financial crisis, the ensuing political transformations, and the governance reforms have contributed to ownership changes in firms in many countries. While family control remains dominant, other forms of ownership such as state and foreign financial institutions have increased in many countries, such as Japan and Taiwan. Moreover, Sacristán-Navarro *et al.* (2015) suggested as foreign and other arm's length investors have increasingly targeted family businesses, due to their significance and the globalized economy, the co-existence of family and non-family investors is common worldwide. With this increase in non-family ownership in family-owned firms, the question of what role non-family shareholders may play in the firms is important.

Multiple studies suggest possible interactions among different shareholders in public firms (e.g., Laeven & Levine, 2008). In particular, research has begun to examine the influence of non-

family shareholders on family-owned firms' firm performance and investment behaviors. For instance, Gomez-Mejia *et al.* (2011) reported that an increase in institutional ownership weakened the negative relationship between family ownership and R&D investment. More recently, Sacristán-Navarro *et al.* (2015) studied other large shareholders in family firms and concluded that the firm value was negatively affected when other large shareholders had more voting power than family owners.

This study extends prior line of research by examining the impact of increased non-family ownership on the monitoring effectiveness in family-owned firms, as reflected in CEO turnover-performance sensitivity. Based on the principal-agent literature, this study first predicts a positive relationship between CEO turnover and *poor* firm performance and then investigates the role of non-family ownership in affecting that relationship. Drawing upon the literature on principal-principal conflicts (Su, Xu, & Phan, 2008; Young, *et al.*, 2008), the study argues that the increasing influence of non-family shareholders in family-owned firms enhances the firms' emphasis on improving objective performance in regulating the CEOs, which then imposes high market pressure on the CEOs to improve the firms' performance. Consequently, CEO exits increase as firms fail to show improved financial performance. Moreover, the study proposes that non-family shareholders should be more likely to exert their disciplining influences when families are potentially entrenched. The study predicts two conditions—a lower governance transparency and a higher deviation between a firm's control rights and cash flow rights—will strengthen the positive impact of non-family ownership on CEO turnover-performance sensitivity.

The study tested the predictions with a panel of 717 family-owned non-financial firms in Taiwan from 1997 to 2011, using a recently developed simulation-based logistic regression.

Characterized by the prominence of family-owned firms and an increased presence of non-family shareholders over the years (Yeh & Woidtke, 2005), Taiwan is a very appealing context for this study. The findings support the prediction that non-family shareholders increase market-based discipline in firms and thus increase the sensitivity of CEO turnover to *poor* firm performance. In addition, the study shows that the influence of non-family shareholders is especially salient when family owners are more likely to be entrenched: a lower governance transparency and a higher deviation between control rights and cash flow rights.

The study contributes to the literature of corporate governance and family business in three respects. First, traditional corporate governance research assumes that family owners are in a great position to monitor CEOs because of their relatively concentrated shareholding (Anderson and Reeb, 2003). This paper supplements prior research by arguing that non-family shareholders in family-owned firms can also substantially increase firms' governance stringency by increasing the sensitivity of CEO turnover to *poor* performance. Second, this study indicates that in family-owned firms, a delicate balance between family ownership and the influence of non-family shareholders is critical for CEO leadership stability. In this vein, this study generates insights on shareholder management in family-owned firms. Third, the findings reveal two contingencies in which the involvement of non-family shareholders is most salient in affecting CEO turnovers. In doing so, this research extends the literature on CEO turnover as well as on principal-principal conflicts (Su, Xu, & Phan, 2008; Young, *et al.*, 2008).

THEORETICAL BACKGROUND AND HYPOTHESES

Research on corporate governance traditionally focuses on the consequences of a firm's ownership structure, in particular, as reflected in monitoring and controlling the agency costs and, in turn, shaping firm strategies, governance, and performance (see Connelly *et al.*, 2010).

Notably, studies have recorded significant differences in performance and strategic choices between family-owned businesses and non-family businesses (e.g., Anderson & Reeb, 2003; Maury, 2006). However, researchers have rarely considered the interactive dynamics between co-existing family and non-family owners in a firm (Gomez-Mejia *et al.*, 2011).

The presence of non-family shareholders in family-owned firms has been documented increasingly important. Faccio and Lang (2002) noted that non-family shareholders with significant stakes are common among family firms in Western Europe. Moreover, Claessens, Djankov, and Lang (2000) found that despite extensive family control in more than half of East Asian corporations, these firms often also include non-family owners such as states. More recently, Carney and Child (2012) reported that while family control remains the most dominant form of ownership in 1,386 public firms in East Asia, it has declined in many economies, especially Japan, Korea, and Taiwan. Non-family shareholders such as foreign states are on the rise.

The increasing co-existence of family and non-family shareholders in family-owned firms prompt scholars to call for more research into the potential interactions between the two. Notably, Gomez-Mejia *et al.* (2011) pointed out that non-family shareholders in family firms may moderate the influence of socio-emotional wealth preservation in managerial decisions. Sacristán-Navarro *et al.* (2015) stressed that scholars should consider how the presence of multiple large shareholders in family firms may affect family power.

Articles in the business press often discuss CEO turnovers in firms with both family owners and non-family shareholders. For instance, the Irish media group, Independent News & Media, is dominated by two large shareholders—Denis O'Brien, a non-family shareholder who owns 22 percent of the firms' stake, and the O'Reilly family with 13 percent. These two types of

shareholders have disagreed over the firm's strategies, including a recent dispute on whether to sell the poorly performing London papers. CEO Gavin O'Reilly resigned suddenly in April 2012, announcing at his departure:

> … It had become clear that recent and public shareholder tensions were proving an unnecessary distraction for both me and the company … what the company needs now is a board, management team and shareholder base that is purposefully unified and aligned. (O'Carroll, 2012).

Despite such anecdotal evidence, there lacks empirical research that explores the underlying mechanism and boundary conditions for the link between the co-existence of family and non-family shareholders and CEO turnover. A firm's owners shape the company's strategic goals and evaluate the CEO's efficacy, based on performance (Walsh & Seward, 1990; Wiseman & Gomez-Mejia, 1998; Hoskisson *et al.*, 2002). Consequently, this paper assesses how non-family ownership may affect CEO turnover-performance sensitivity. Specifically, the paper proposes that an increase in non-family ownership in family-owned firms will enhance the market-based disciplines on CEOs, that is, the emphasis on such objective evaluation criteria as immediate return on assets (ROA). This, in turn, will induce a higher sensitivity of CEO turnover to *poor* firm performance.

Baseline Hypothesis: Firm financial performance and CEO turnover

The paper first assesses whether CEO turnover in family-owned firms is greater when a firm's financial performance becomes poorer. According to the literature on principal-agent conflict, firm performance can effectively reflect the severity of the agency problem in a firm (Jensen & Meckling, 1976; Walsh & Seward, 1990). Because shareholders cannot directly engage in daily monitoring of managers' effort inputs, they often refer to the ultimate firm performance to assess the potential principal-agent problem in the firm (Eisenhardt, 1989). Poorer performance can signal to shareholders a greater agency problem in the firm. In such a condition, shareholders are

more likely to attribute the underperformance to the CEO and to intervene them to improve firm performance (Farrell & Whidbee, 2003). Indeed, firms facing low performance often tend to be under external pressure to demonstrate effective governance in the form of CEO turnover as a means to maintain the support of important external constituents (Daily & Dalton, 1995). In line with the above reasoning and existing empirical evidence (e.g., Weisbach, 1988; Puffer & Weintrop, 1991; Kang & Shivdasani, 1995; Parrino, 1997; Farrell & Whidbee, 2003), this paper proposes that CEO turnover will increase as firm performance decreases in family-owned firms.

Baseline Hypothesis: CEO turnover is positively associated with poor firm performance in family-owned firms.

Hypothesis 1: The positive impact of non-family ownership on CEO turnover-performance sensitivity

Next, this paper explores the impact of non-family shareholders on the relationship between CEO turnover and *poor* firm performance in family-owned firms. It predicts that the positive association between CEO turnover and *poor* firm performance (or CEO turnover-performance sensitivity) in Taiwanese family-owned firms will be stronger when the influence of non-family shareholders is greater. This is because potential principal-principal conflicts between family and non-family shareholders tend to increase the firm's orientation to enhance market-based disciplines.

Principal-principal conflicts refer to the likelihood for a majority shareholder to dampen minority shareholders' interests through such mechanisms as tunneling, self-dealing, or diverting corporate assets or profits away from focal companies to parent firms or subsidiaries (Su, Xu, & Phan, 2008; Young, et al., 2008). Principal-principal conflicts are often identified as a major concern of corporate governance in emerging economies such as Taiwan (Young *et al.*, 2008).

Principal-principal conflicts feature many family-owned firms as reflected in two observations. First, family owners are often majority shareholders who tend to entrench to dampen minority shareholders' interests (Yeh, Lee, & Woidtke, 2001). Second, non-family shareholders tend to act as a coherent group to prevent potential entrenchment of family owners. Indeed, Gomez-Mejia et al. (2003) found that the presence of institutional owners, regardless of type, discouraged the awarding of stocks to family CEOs. Furthermore, Gomez-Mejia et al. (2011) reported that the aggregate level of institutional investor ownership tended to moderate the negative relationship between family ownership and R&D investment.

The literature on principal-principal conflicts often highlights three pre-conditions for the conflicts to occur: (1) when the two types of shareholders have divergent interests; (2) when the majority shareholders hold sufficient ownership concentration; and (3) when the corporate governance or legal protection of minority shareholders is weak due to inherent flaws in institutional designs (Dharwadkar, George, & Brandes, 2000; Yoshikawa, Phan, & David, 2005; Young *et al.*, 2008).

Distinct interests between family and non-family owners and their influences on firm management is well recognized in the corporate governance literature (see Gomez-Mejia *et al.*, 2011 for a review). For instance, family owners and non-family shareholders often diverge in their risk preferences, and thus, their strategic orientations (Gomez-Mejia *et al.*, 2011; Connelly *et al.*, 2010). Families tend to be risk averse, which is reflected in higher diversification (Anderson & Reeb, 2003), lower R&D (Chrisman & Patel, 2012), and lower reliance on debt in a firm's capital structure (Mishra & McConaughy, 1999; Anderson, Mansi, & Reeb, 2003). In contrast, such strategies may not benefit non-family shareholders who often are more risk-taking, prefer diversified investment portfolios and desire for market-based investment returns.

Moreover, family owners may rely on non-economic gains or losses as their primary frame of reference in decision making, which in turn affects a firm's control process in distinct ways. Compared with non-family shareholders whose primary interest is maximizing firm value, family owners tend to embrace affective needs, and thus, may seek to preserve socio-emotional wealth (Cruz, Gomez-Mejia, & Becerra, 2010; Gomez-Mejia *et al.*, 2007, 2011). Indeed, several studies acknowledge the intermingling of emotional factors originating from family involvement with business factors as a distinctive attribute of family firms (e.g., Berrone, Cruz, & Gomez-Mejia, 2012). Family shareholders tend to prioritize socio-emotional criteria in managing their firms (Gomez-Mejia *et al.*, 2011), while non-family shareholders such as financial institutions stress economic-based criteria (Wiseman & Gomez-Mejia, 1998; Kim, Kim, & Lee, 2008).

Therefore, this paper proposes that an increase in non-family shareholders' ownership in family-owned firms may enhance the firm's market-based disciplines for two reasons. First, compared with family owners who tend to preserve socio-emotional wealth, non-family shareholders emphasize short-term economic returns on their investments. Second, potential entrenchment of family owners may motivate non-family investors to actively cross-monitor family owners and the CEO in a firm (Maury & Pajuste, 2005; Attig, Guedhami, & Mishra, 2008). Consistent with this argument, Laeven and Levine (2008) found that among 1,657 publicly traded firms across 13 European countries, large shareholders in family firms were more likely to cross-monitor each other when they were of distinct types.

The increased market-based disciplines imposed by non-family shareholders often increase the market pressures on CEOs as well as a firm's sensitivity to assessing its CEO based on the financial performance (Baysinger & Hoskisson, 1990; Wiseman & Gomez-Mejia, 1998). Due to bounded rationality and the scarcity of time and effort, CEOs who face more stringent and

immediate evaluation may only partially fulfill their job demands, leading to unsatisfactory performance and triggering dismissals. Moreover, increased pressure to improve firms' economic benefits also can increase CEOs' job insecurity and work stress, motivating them to seek other job opportunities (Hambrick, Finkelstein, & Mooney, 2005). Indeed, as pressure from non-family shareholders to improve firm performance mounts, CEOs may leave voluntarily rather than wait to be dismissed. Taken together, this paper predicts:

> *Hypothesis 1 (H1): The greater the non-family ownership in family-owned firms, the stronger the CEO turnover-performance sensitivity.*

Contingencies: The severity of principal-principal conflicts in family-owned firms

Next, this paper considers the literature on principal-principal conflicts to examine the contingencies for the impact of non-family ownership on the CEO turnover-performance sensitivity. It proposes that the relationship in Hypothesis 1 is likely to be stronger when principal-principal conflicts between family and non-family shareholders are severer. Thus, the greater family shareholders' entrenchment dampens non-family shareholders' economic interests. The literature posits that the principal-principal conflicts are likely when corporate governance or legal protection of minority shareholders is weak because of inherent flaws in institutional designs (Young *et al.*, 2008). Building on that knowledge, this paper focuses on two related firm governance contingencies: a firm's weak governance transparency and a high deviation between control and cash flow rights. It argues that in such conditions non-family shareholders with increased influence are most likely to rely on market-based criteria such as ROA to evaluate CEOs and pressure them to deliver immediate financial performance. This in turn may trigger CEO exits when firm performance is low.

Hypothesis 2: The positive moderating role of weak governance transparency

Governance transparency refers to the extent to which firms choose to disclose their governance and management conditions through such channels as corporate annual reports, social media, and other outlets (Mallin, 2002; Bushman, Piotroski, & Smith, 2004). In firms with high governance transparency, the information asymmetry between investors and managers is often low. By contrast, in firms with low governance transparency, investors may lack necessary information to determine whether CEOs or other shareholders are creating firm value rather than pursuing their own interests at the firm's expense.

In a less transparent governance environment, non-family owners are more likely to attribute *poor* firm performance to CEO incompetence, self-interest, or family owners' entrenchment because they lack sufficient information to make an accurate assessment (Walsh & Seward, 1990). As such, they tend to be impatient with the CEO to improve *poor* firm performance. They also are more likely to adhere strictly to objective criteria in evaluating the CEO, and therefore, to dismiss an underperforming CEO. In other words, weak transparency in firm governance tends to strengthen the impact of non-family ownership on CEO turnover-performance sensitivity. By contrast, when governance is more transparent, non-family shareholders tend to have more confidence or good will toward the CEO and are more willing to allow the CEO to have sufficient time to improve *poor* performance. Non-family shareholders also may be less likely to simply rely on objective metrics, such as ROA, in evaluating the CEO. This may in turn reduce the firm's CEO turnover-performance sensitivity. Therefore, this paper predicts that:

> *Hypothesis 2 (H2): The weaker the governance transparency in family-owned firms, the stronger the positive moderating effect of non-family ownership on CEO turnover-performance sensitivity.*

Hypothesis 3: The positive moderating role of deviation between control rights and cash flow rights

The literature on ultimate control defines control rights in a firm as the sum of direct and indirect voting rights held by the shareholder(s), whereas cash flow rights refer to the product of ownership in the intermediate companies along the ownership chain (e.g., La Porta *et al.,* 2000; Claessens *et al.*, 2000). Control rights and cash flow rights can differ because corporations can issue different classes of shares that provide different control rights for given cash-flow rights. In the context of this study, Taiwan, the deviation between control rights and cash flow rights may also relate to business group affiliation, pyramid ownership structures, or cross-holdings (Claessens *et al.,* 2000; Yeh, 2005; Yeh & Woidtke, 2005; Shyu & Lee, 2009).

Family-owned firms often have a significant deviation between control rights and cash flow rights, which allows the family members to control a firm using only a small cash flow (Claessens *et al.*, 2000). As a result, family owners can easily obtain large private benefits and dampen non-family shareholders' interests (La Porta *et al.* 2000). Indeed, Lee and Yeh (2004) found that the higher the deviation between control rights and cash flow rights, the higher the incentive for family shareholders to dampen outside shareholders' interests through such channels as stock transactions, non-operations income, and non-operations sales among controlling shareholders and their related parties. Moreover, a large deviation between control rights and cash flow rights in family-owned firms often reduces the profit variability (both gain and loss) that family owners face. As a result, firm investment often becomes less sensitive to cash flow. This also likely dampens non-family owners' economic interests.

Potential entrenchment of family owners as well as the low investment sensitivity to cash flow in family-owned firms tend to motivate non-family shareholders to monitor the firm

performance closely to protect their economic interests. Especially, they tend to rely more

strictly on such objective criteria as ROA to assess the CEO. This is because such information is

not costly to collect and not easily manipulated by family owners. In addition, non-family

shareholders tend to generate less confidence and good will among non-family owners toward

the CEO, especially when the CEO is appointed by the family owners. As such, non-family

shareholders are less likely to grant the CEO more time to improve *poor* firm performance.

Consequently, the impact of non-family ownership on the CEO turnover-performance sensitivity

increases with a greater deviation between control rights and cash flow rights.

> *Hypothesis 3 (H3): The greater the deviation between control rights and cash flow rights in*
>
> *family-owned firms, the stronger the positive moderating effect of non-family ownership on*
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> *CEO turnover-performance sensitivity.*

DATA AND METHODS

This study used data on Taiwanese non-financial firms listed on the Taiwan Stock Exchange

(TSE), excluding those in which families did not hold at least five percent of shares as owners.

Data were collected from three sources: First, this paper collected CEO turnover in all public

firms from 1997 to 2011 from the TWSE Market Observation Post System (M.O.P.S.), which

mandates reporting of turnover in a firm's top management team and board. The sample period is

determined based on data availability. Second, this paper used the Taiwan Economic Journal

(TEJ) database, the most comprehensive listing of public firms in the Asia-Pacific region, to

gather corporate governance information including ownership and board composition from 1997

to 2011. Recent studies have used this database (e.g., Luo & Chung, 2012). Third, the paper

collected financial information for all Taiwanese public firms from 1997 to 2011 from

Compustat Global, available on Wharton Research Data Services (WRDS). The study combined

these three datasets, took one-period lags for all independent variables, and excluded missing data; all these procedures yielded an unbalanced panel of 717 non-financial family-owned firms (7,248 firm-year observations) from 1997 to 2011. Financial firms in the banking, securities, and insurance sectors were excluded because they face different governance regulations (Luo & Chung, 2012).

As shown in Table 1, the final sample includes 19 Taiwanese industries, with about half (374 firms) from electronics, the globally most competitive industry in Taiwan. Non-family ownership is prominent in the family-owned firms, ranging from 56.83 percent (tourism) to 75 percent (electronics), with a mean of 66.74 percent ownership. On average ten percent of the sample experienced at least one CEO turnover per year. However, the number varied across industries, from 17 percent in high-tech industries such as the automobile industry to approximately six percent in more traditional industries such as cement, textile, and tourism.

***** Insert Table 1 about here *****

Dependent variable: CEO turnover

This paper defines CEO turnover as forced and voluntary CEO exits not due to sickness, death, retirements, or promotions. Following prior research (e.g., Wiersema & Zhang. 2011), this paper measured CEO turnover with a dummy variable indicating whether a turnover occurred in a firm in the year (t+1) following the changes in the explanatory variables (t), that is, with a one-period lag. It did not distinguish between forced and voluntary CEO turnovers for both theoretical and empirical reasons. Theoretically, the logic of market efficiency can apply to both CEO dismissals and pre-emptive CEO exits. Empirically, firms in Taiwan commonly disguise forced CEO dismissals with voluntary resignations to save face, which makes it impractical to distinguish between forced and voluntary dismissals exits based on the public disclosures. For instance,

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Acer's former CEO, Gianfranco Lanci, was pressured to step down in 2011 due to conflicts with the board. However, the firm's official announcement submitted to M.O.P.S. reported that "the CEO resigned as part of the company's efforts to reorganize its operations."

Independent variables

Poor financial performance

Consistent with prior studies on the relationship between firm performance and management turnover (e.g., Puffer & Weintrop, 1991; Farrell & Whidbee, 2003; Wowak, Hambrick, & Henderson, 2011), this paper assessed a firm's financial performance using prior ROA, calculated as operating return divided by total assets, with operating return indicated by EBITDA (earnings before interest, taxes, depreciation and amortization). To reflect *poor* financial performance, it reverse-coded ROA by adopting the following scheme: Reversed ROA = ROA (maximum value) + ROA (minimum value) – ROA (original value). The reversed ROA ranged from -0.66 to 0.48.

Non-family ownership

In Taiwan, the major types of non-family shareholders include the government and affiliated institutes, domestic and foreign individuals, domestic and foreign investment funds, domestic and foreign financial institutions, and related parties such as business groups (Yeh & Woidtke, 2005). To gauge the influence of non-family shareholders, this paper focused on the ownership percentage of all the non-family shareholders. This variable ranged from 0.89 percent to 95 percent in the final sample. The paper also used an alternative measure based on the total number of non-family *large* shareholders holding at least five percent ownership (Connelly et al., 2010). The alternative measure yielded comparable results (see Appendix, Figure A1 and Table A2).

Governance transparency

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Consistent with prior research (e.g., Chiang & He, 2010), to assess a firm's corporate governance transparency, this paper referred to a firm's *information disclosure*. Timely disclosure of a firm's governance conditions enables external investors to effectively monitor the enforcement of shareholder rights within the firm. This study obtained the sample firms' information disclosure rating from Information Disclosure and Transparency Rankings System (IDTRS) of Taiwan's Securities and Futures Institute (SFI) for 2005 to 2011. IDTRS provides seven grades (A++, A+, A, A-, B, C, C-) based on 113 corporate governance indices. Such indices include compliance with the mandatory disclosures, disclosure of financial forecasts, and reporting timeliness. To avoid significant sample reduction and obtain a firm's ranking for all years from 1997 to 2011, this paper averaged a firm's disclosure rankings from 2005 to 2011 and created a rating for each firm that was constant for all years, 1997 to 2011. The rating was the mean of seven number values assigned to the rankings, with seven corresponding to A++ and one corresponding to C-.

Following Shi, Zhang, and Hoskisson (2017) which divided sample based on the medians for non-linear models, this paper analyzed two subsamples with high versus low information disclosure ratings to assess the moderating role of governance transparency (Hypothesis 2). It compared a firm's rating to the median of all sample firms. Values above the median indicated high governance transparency, and below or equal to the median, low transparency.

Deviation between control rights and cash flow rights

TEJ Corporate Governance Module provides detailed information on the control rights and cash flow rights for Taiwanese listed firms. To calculate the deviation between control rights and cash flow rights, the paper divided the proportion of control rights by that of cash flow rights. For example, suppose the largest shareholder in a firm is family A which controls the voting of all the shears of the indirect companies. In particular, family A owns 30 percent of company B,

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which in turn owns 20 percent of company C. In addition, family A owns 20 percent of company

D, which owns 10 percent of company C. Family A's control rights over company C are Min

(30%, 20%) + Min (20%, 10%) = 30%, while the cash flow rights generated from company C

are 30% x 20% + 20% x 10% = 8%. Therefore, the deviation is 4.25 (30%/8%). In the final

sample, this variable ranged from zero to 413.

Control variables

This paper controlled for firm attributes that may lead to CEO turnovers, including the age, size,

cash flow, business group affiliation, and M&A involvement of the firm. *Firm age* is the number

of years since founding. *Firm size* is the logarithm of total assets. *Cash flow* is the ratio of a

firm's current assets to liability. To account for an important institutional idiosyncrasy of

Taiwanese firms, the paper also controlled for *business group affiliation* of the firms. Business

groups, coordinated business networks of legally independent firms, are highly visible in Taiwan

(Chang, Chung, & Mahmood, 2006) and often are considered an effective organization structure

that enables majority shareholders to expropriate minority ones (Chang, 2003; Young *et al.*,

2008). Therefore, business groups often lack market-based disciplines, resulting in lower CEO

turnover based on firm performance. Because *M&A activities* may lead to changes in ownership

structure and management (Krug & Hegarty, 1997; Walsh, 1988), this paper included a dummy

variable indicating a firm's M&A experience as acquirer or a target in the prior year. It also

controlled for *year* and *industry fixed effects.*

   This paper assessed four governance factors (ownership concentration, independent board

members, family influence on the board, and number of large shareholders) that may confound

the impact of non-family ownership on CEO turnover-performance sensitivity. In particular, this

paper measured *ownership concentration* as the total shareholding of the top two largest

shareholders in the firm. *Independent board members* was the proportion of unaffiliated board directors to the total number of board directors (Boeker, 1992; Huson, Parrino, & Starks, 2001; Weisbach, 1988). *Family presence in board* was the proportion of family members to the total number of board directors and supervisors. The *number of large shareholders* was the total number of shareholders with at least five percent of the firm's ownership.

To reflect the independent effects of CEO or executive entrenchment on CEO turnover, this paper included *CEO-chairman duality, CEO affiliation with family owners, management ownership,* and *CEO tenure* as control variables, as other scholars have done (e.g., Cannella & Lubatkin, 1993; Denis, Denis, & Sarin, 1997; Goyal & Park, 2002; Dahya, McConnell, & Travlos, 2002). In particular, *CEO-chairman duality* was operationalized with a dummy variable, with 1 indicating a CEO who also served as board chairman, and 0 otherwise. *CEO affiliation with family owners* was a dummy indicating that family owners appointed the CEO. *Management ownership* was the percentage of shareholding by the CEO and other senior executives. *CEO tenure* was the total number of years the individual had held the CEO position.

Table 2 displays descriptive statistics for the study variables, and Table 3 presents the correlation matrix among the variables. On average, during the sample period, ten percent of the Taiwanese public firms experienced CEO turnover. There was a substantial variation in CEO turnover (S.D.=0.29) as well as ownership of non-family shareholders (S.D.=16.79). On average, 6.98 percent of the firms' directors were independent, and 26 percent of the board chairs also served as CEOs. While CEO turnover correlated with firm ROA, it did not correlate with non-family ownership. CEO tenure and CEO affiliation with the family owners were both negatively correlated with CEO turnover. One notable correlation was between ownership concentration and the number of large shareholders (0.58; $p<0.05$). A reason for this correlation might be that

concentrated ownership structure could be perceived as a sign of effective governance in

emerging markets, which attracts more large shareholders to invest.

***** Insert Tables 2 and 3 about here *****

Model specification and simulation-based logistic regression for LDV models

The model specification for hypothesis tests was $Turnover_{it+1} = \beta_0 + \beta_1 ROA_{it} + \beta_2 Non\text{-}family_{it}$

$+ \beta_3 Non\text{-}family_{it}*ROA_{it} + \beta X_{it} + Year_t + Industry_i + \varepsilon_{it}$, where $Turnover_{it+1}$ represented whether or

not a CEO turnover occurs in a year following the predictors of the turnover. ROA_{it} indicated

poor financial performance, and $Non\text{-}family_{it}$ indicated the ownership percentage of non-family

shareholders in a firm. X_{it} represented the matrix of control variables, and ε_{it} is an error term.

To test the baseline hypothesis, the relevant coefficient was β_1, which indicated the positive

effect of *poor* firm performance on CEO turnover. To test Hypothesis 1, the relevant coefficient

was β_3, which indicated the positive moderating effect of non-family ownership on the CEO

turnover-performance sensitivity. To test Hypotheses 2 and 3, this paper compared the effect of

non-family ownership across subgroups of firms characterized by distinct levels of governance

transparency and deviation between control and cash flow rights.

This paper used a logistic estimator with random effects and robust standard errors for panel

data to test the baseline hypothesis. However, because of the difficulty of accounting for non-

linear interaction effects with logistic estimator, to test the two-way and three-way interaction

effects (Hypothesis 1 to Hypothesis 3), it used a simulation-based logistic estimator with robust

standard errors (Zelner, 2009) with random effects (STATA 14 command *Intgph logit,*

cmdopts(r)). Random effects estimates were preferable to fixed effects estimates for two reasons.

First, fixed effects estimates use only within-firm differences, essentially discarding any

information about differences between firms. Because the primary predictor variable in this

study, non-family ownership, varies greatly across firms but less so over time for each firm, fixed effects estimates will be imprecise. Second, logistic regression with fixed effects often imposes strong assumptions on the data structure that may not be warranted in this study.

Zelner's approach addresses difficulties in interpreting interaction effects in limited dependent variable (LDV) models (Ai & Norton, 2003; Hoetker, 2007; Zelner, 2009; Wiersema & Bowen, 2009; Bowen, 2012) in two ways. First, the approach derives the robust standard errors of the effect at each observation based on repeated simulations from the multivariate normal distribution. This simulation-based approach produces more accurate results because it does not rely on the "delta method" and corrects for a bias in the formula used for the calculation. Second, conventional approaches enable interpretations of the signs and significances of interaction effects based only on coefficients and standard errors reported in the tables. However, Zelner's approach depicts the signs and statistical significance of the estimated effect of each interaction term's constitutive variables, conditional on each observation of the other constitutive variable, with 95 percent confidence intervals.

RESULTS

Baseline hypothesis: CEO turnover-performance sensitivity

Table 4 reports the coefficient estimates for the logistic model for panel data to test the baseline hypothesis that there is a positive association between CEO turnover and *poor* firm performance. Model 1 includes control variables for CEO turnover. Model 2 includes reverse-coded ROA as an independent variable to assess the relationship between *poor* financial performance and CEO turnover. As shown in Model 2, the coefficient on reverse-coded ROA is positive (2.709) with a p-value of 0.000. As firm performance becomes *poorer* by 1 percent, the odds of CEO turnover increases by about 15 percent ($e^{2.709}$). This result support the baseline hypothesis.

Hypothesis 1: The positive moderating effect of non-family ownership on CEO turnover-performance sensitivity

Table 4 (Model 3) shows simulated coefficient estimates regarding Hypothesis 1, concerning the positive moderating effect of non-family shareholding on the relationship between CEO turnover and *poor* firm performance. The model suggests that non-family ownership tends to strengthen the CEO turnover-performance sensitivity (0.058), with a p-value of 0.048.

Figure 1, a graphical analysis of significance, provides a reference for interpreting the marginal impacts of non-family ownership, which are obtained by holding the other variables at their means. As shown in the Figure, the impact of *poor* firm performance on CEO turnover is not different from zero when non-family ownership is zero in a firm. But as non-family ownership increases, the CEO turnover-performance sensitivity becomes stronger. Notably, the 95 percent confidence intervals surrounding the mean differences of CEO turnover associated with a 1 percent increase in ROA overlap with the horizontal axis (zero) when firms have a lower level of non-family shareholding, ranging from zero to around 60 percent. However, the difference is positive when the non-family shareholding ranges from 60 percent to 95 percent.

As a supplemental analysis, Table A1 shows the size of the moderating effect of non-family ownership, holding the other variables at their means. Consistent with Figure 1, the table shows that the relationship between CEO turnover and *poor* firm performance is not different from zero when non-family ownership is below 60 percent. However, the effect becomes positive, with a p-value of 0.015 when non-family ownership is greater than 60 percent. Moreover, as the non-family ownership increases further, the positive relationship between CEO turnover and *poor* firm performance becomes even stronger.

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Together, Figure 1 and Table A1 suggest that the moderating effect of non-family ownership is not different from zero, when non-family ownership is below 60 percent. However, there is a positive moderating effect of non-family shareholders when it is at least 60 percent.

***** Insert Figure 1 and Table A1 about here *****

Robustness checks for Hypothesis 1

Table A2 reports results of robustness checks for Hypothesis 1. Model 1 assesses the main effect of ROA (without reverse coding) on CEO turnover. Model 2 examines the moderating effect of non-family ownership by adding an interaction term between ROA and non-family ownership in the traditional logistic regression. Consistent with the Zelner's approach, the coefficient on the interaction term in Model 2 is negative (-0.065) with a p-value of 0.039.

***** Insert Table A2 about here *****

This paper used an alternative measure for non-family shareholders' influence to further assess the robustness of Hypothesis 1. This measure focused on the total number of non-family *large* shareholders holding at least five percent ownership in the firm. As shown in Model 3 based on traditional logistic regression, the coefficient on the interaction term between the number of non-family *large* shareholders and *poor* firm performance is positive (0.104), with a p-value of 0.058. Additional tests with simulation-based logistic regression (Model 4) show consistently positive effect (0.093) with a p-value of 0.082. Figure A1 depicts the moderating effect of non-family large shareholders based on the estimates in Model 4 of Table A2, holding the other variables at their means. It shows a positive moderating effect when non-family large shareholders is above 2. Therefore, the results provide additional support to Hypothesis 1.

***** Figure A1 about here *****

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Hypothesis 2: The positive moderating effect of weak governance transparency

Models 1a and 1b in Table 5 present the simulated coefficient estimates for Hypothesis 2, concerning the impact of governance transparency on the relationship between non-family ownership and CEO turnover-performance sensitivity. Model 1a reports simulated coefficient estimates for the positive moderating effect of non-family ownership with CEO turnover-performance sensitivity in a subgroup of firms with a higher than median governance transparency. Model 1b reports the estimates for firms with a lower than or equal to median governance transparency. Figure 2 shows the graphical analysis of marginal effects of non-family ownership, holding other variables at their means.

***** Insert Table 5 and Figure 2 about here *****

The 95 percent confidence intervals surrounding the mean differences of CEO turnover associated with a 1 percent increase in *poor* firm performance largely overlap with the horizontal axis (zero) when firms have a higher than median governance transparency (Figure 2.1). The confidence intervals are only marginally different from zero when non-family ownership exceeds 70 percent in family-owned firms. However, the difference with its confidence intervals is positive when the non-family shareholding ranges from over 60 percent to 95 percent in a subgroup of firms with lower than median governance transparency (Figure 2.2). Therefore, Figure 2 suggests a positive three-way moderating effect of weak governance transparency in firms with non-family shareholding between 60 percent and 70 percent.

Hypothesis 3: The positive moderating effect of the deviation between control rights and cash flow rights

Table 5 (Models 2a and 2b) present the simulated coefficient estimates for testing Hypothesis 3, concerning the three-way positive moderating relationship of the deviation between control

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rights and cash flow rights with non-family ownership and CEO turnover-performance

sensitivity. Model 2a reports simulated coefficient estimates for the relationship of non-family

shareholding with CEO turnover-performance sensitivity in a subgroup of firms with higher than

median deviation. Model 2b reports estimates with lower than or equal to median deviation.

Figure 3 reports the marginal effects of non-family ownership, holding other variables at

their means. The 95 percent confidence intervals surrounding the mean differences of CEO

turnover associated with a 1 percent increase in *poor* firm performance overlap with the

horizontal axis (zero) when firms have a lower than or equal to median deviation between

control rights and cash flow rights (Figure 3.2). The confidence intervals marginally differ from

zero when non-family ownership exceeds 75 percent. However, the marginal effect with its 95%

confidence intervals is positive when the non-family shareholding ranges from 45 percent to 95

percent in a subgroup of firms with higher than median discrepancy (Figure 3.1). Together,

Figure 3 suggests a positive moderating effect of deviation between control rights and cash flow

rights in firms with non-family shareholding between 45 percent and 75 percent. This result

supports Hypothesis 3.

***** Insert Figure 3 about here *****

CONCLUSION AND DISCUSSION

This study set out to investigate how an increase in non-family shareholders in family-owned

firms affects CEO turnover-performance sensitivity. In many countries, family corporate control

has gradually changed to an ownership structure with substantial non-family ownership (Carney

& Child, 2012; Sacristán-Navarro, Cabeza-Garcia & Gómez-Ansón, 2015). Non-family

shareholders must proactively exercise their control in response to what they might surmise

related to firms' governance issues. Therefore, examining the circumstances surrounding the loss

of family control can be illuminating.

Although distinct differences in the interests of family owners and non-family shareholders have been documented, little theoretical research exists on the impact of these differences on monitoring effectiveness as reflected in CEO turnover-performance sensitivity. This study developed a model that increased non-family ownership enhances a firm's market-based disciplines, leading to higher CEO turnover-performance sensitivity. In turn, it tested the contingencies in which firms are most likely to experience a lack of market-based disciplines, and thus, when non-family shareholders are more likely to pressure the CEOs, triggering turnovers based on *poor* firm performance.

Examining Taiwanese public firms, this paper found a positive association between CEO turnover and *poor* firm performance. Furthermore, the relationship was stronger with greater non-family ownership in family-owned firms, mostly among those with at least 60 percent shareholding. The patterns were stronger when non-family shareholders were more likely to improve a firm's market efficiency because of a greater threat of entrenchment of family owners. That threat is related to two conditions: the firm's weaker governance transparency or a higher deviation between control rights and cash flow rights.

The findings are consistent with the observation in previous literature on possible disciplining influences of non-family shareholders despite their low control in family-owned firms. For instance, Sacristán-Navarro et al. (2015) suggest that the market negatively values a family firm that has a one large owner. In other words, the mere presence of non-family shareholders such as foreign investors in a firm may change how it is valued by external market. The external pressure or the lack thereof, in turn, may affect the firm's internal governance decisions such as CEO turnovers. Moreover, non-family shareholders, despite their low control,

may provide alternative perspectives and bring critical information that the family might have overlooked (Miller & Le Breton-Miller, 2006). This in turn may lead to CEO turnovers.

The study makes three contributions to corporate governance literature and family business research. First, it advances the broad corporate governance literature on CEO turnovers (e.g., Fredrickson, Hambrick, & Baumrin, 1988), especially the impact of ownership structure on CEO turnovers. Prior studies have recognized the governance role of ownership structure (e.g., Connelly *et al.* 2010). However, the literature has focused on the influence of individual groups of powerful shareholders such as outsider "blockholders" or insiders and the impact of their ownership concentration on CEO turnovers (e.g., Helwege, Intintoli, & Zhang, 2012; Denis *et al.*, 1997). The studies have yet to consider interactions among different groups of shareholders. This study examined the impact of two co-existing groups of shareholders on CEO turnovers.

Second, this study advances research on leadership management in family businesses. Some studies of family businesses suggest that CEO turnover is low under family control (Allen & Panian, 1982; Denis *et al.*, 1997; Lausten, 2002) because of affective factors such as preservation of socio-emotional wealth (Gomez-Mejia *et al.*, 2011). However, we lack research on the contingencies in which such a tendency may be attenuated. This study shows that an increase in non-family ownership leads to a rise in underperforming CEOs' turnovers likely because non-family shareholders tend to place greater emphasis on improving market efficiency. In addition, the study discusses two contingencies that alter the relationship.

Finally, the study contributes to the literature on the principal-principal conflicts in family firms. Recent studies have examined the relationship between a firm's family owners and the minority shareholders (Young *et al.*, 2008), focusing on the expropriation of minority shareholders by family owners. This study supplements this line of research and suggests that

non-family shareholders can be effective monitors in family-owned firms, counterbalancing the influences of family shareholders.

Although based in Taiwanese firms, these findings and their potential implications are relevant to both developed and developing countries where family shareholders are prominent. Nonetheless, compared with many developed economies, the corporate takeover market in Taiwan is somewhat less active. As a result, shareholder compositions in Taiwanese firms have been relatively stable, historically dominated by family shareholders. Therefore, the impact of recently emerging non-family shareholders could be fiercer in Taiwan and similar settings.

This research has several limitations that suggest future research opportunities. First, limited data availability prevented the construction of more refined measures of non-family shareholders' influence (e.g., Herfindahl's measure based on ownership percentage and non-family shareholder's identity). Future research could seek new data to address this limitation. Moreover, the data did not allow distinguishing between forced dismissals and voluntary resignations. Future research is needed to determine whether the findings may vary across distinct types of CEO turnovers. Finally, the research model only included internal firm-level factors, without accounting for the country-specific institutional factors in Taiwan. Therefore, future work may assess how institutional contexts may alter the findings in this study.

In summary, this study shows that among Taiwanese family-owned firms, the CEO turnover-performance sensitivity increases with increased non-family ownership in the firms. The moderating effect of non-family ownership on CEO turnover-performance sensitivity tends to be stronger when firms are characterized by a lower governance transparency or a higher deviation between control rights and cash flow rights. The study contributes to the family business literature, while also generating corporate governance implications on CEO turnover.

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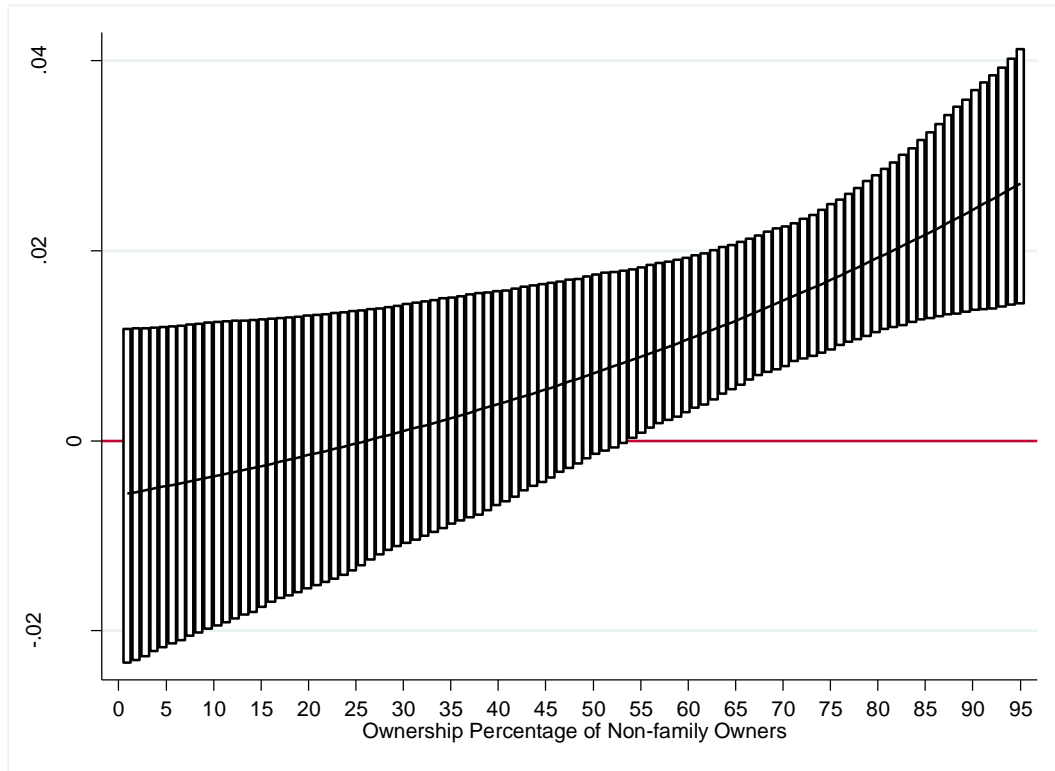
Figure 1 The moderating effect of non-family ownership on CEO turnover-performance
sensitivity (Hypothesis 1)

Notes. Graphs are generated by STATA 14 program *intgph logit, cmdopts(r)* automatically based on simulation-based coefficient estimates in Model 3, Table 4. Confidence intervals are two-tailed, at 95 percent confidence level. Y-axis represents expected CEO turnover years associated with poor firm financial performance; X-axis in all figures shows ownership percentage of non-family shareholders. The marginal effects are obtained by holding the other variables at their means. Figure 1 shows that the moderating effect of non-family ownership in family-owned firms on CEO turnover-performance sensitivity is positive when non-family ownership is over 60 percent, supporting Hypothesis 1.
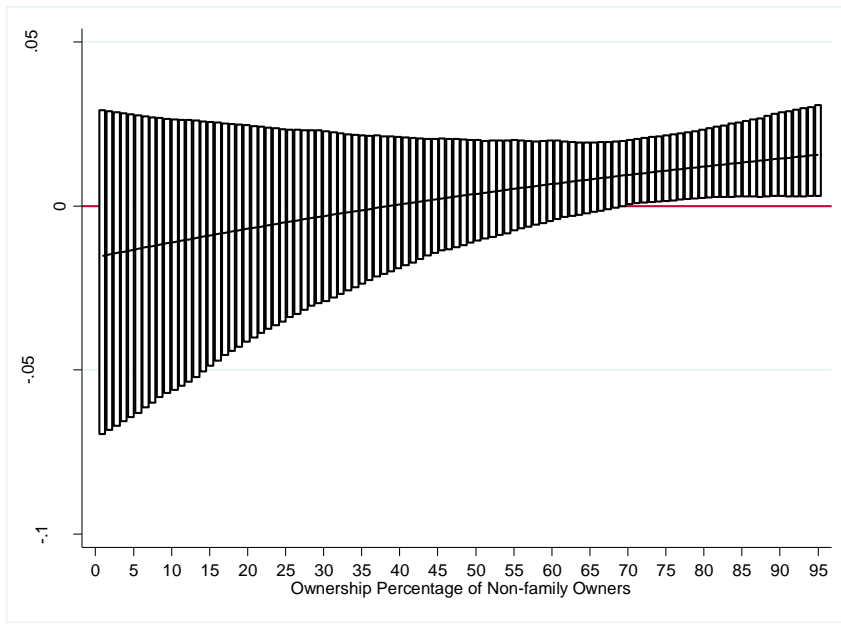
Figure 2.1 High governance transparency
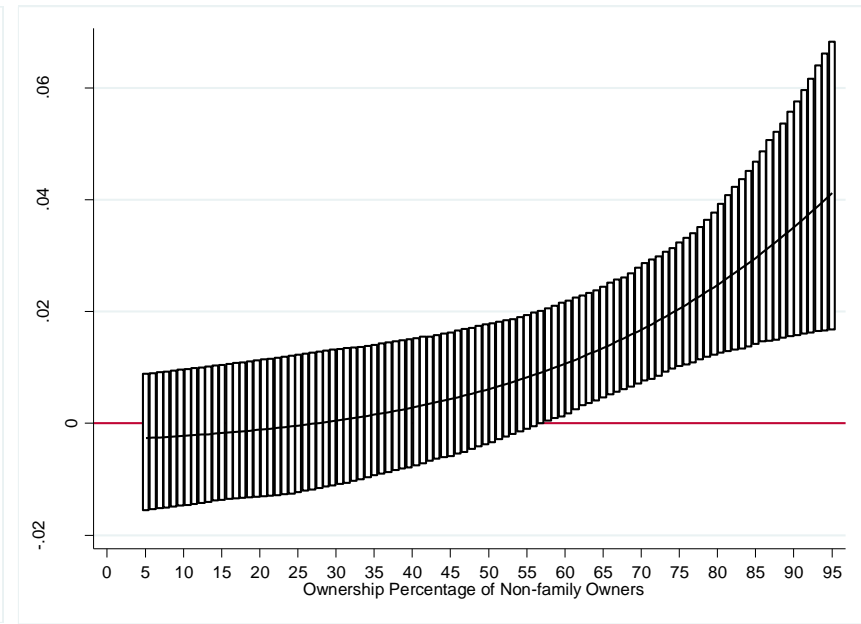
Figure 2.2 Low governance transparency

Notes. Graphs are generated by STATA 14 program *intgph logit, cmdopts(r)* automatically based on simulation-based coefficient estimates in Models 1a and 1b, Table 5. Confidence intervals are two-tailed, at 95 percent confidence level. Y-axis represents expected CEO turnover years associated with poor firm financial performance; X-axis in all figures shows ownership percentage of non-family shareholders. The marginal effects are obtained by holding the other variables at their means. Figure 2.1 and 2.2 show that the moderating effect of non-family ownership on the relationship between CEO turnover and poorer firm performance is stronger in firms with lower governance transparency when non-family ownership lies between 60 percent and 70 percent, supporting Hypothesis 2.
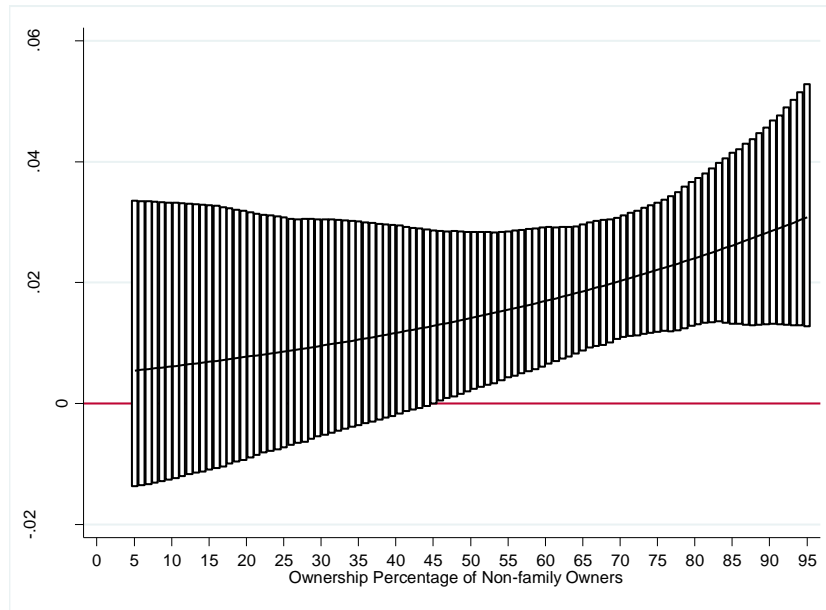
Figure 3.1 High deviation between control and cash flow rights   Figure 3.2 Low deviation between control and cash flow rights
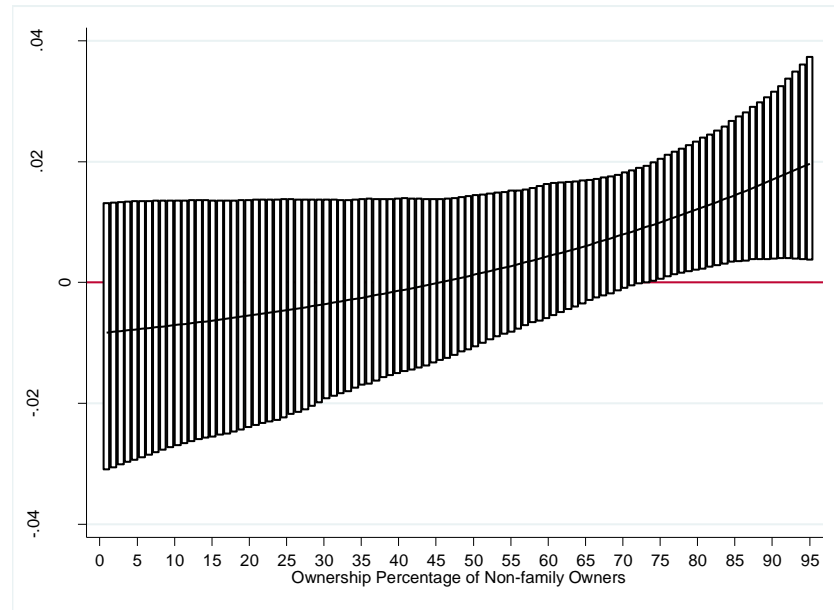
Notes. Graphs are generated by STATA 14 program *intgph logit, cmdopts(r)* automatically based on simulation-based coefficient estimates in Models 2a and 2b, Table 5. Confidence intervals are two-tailed, at 95 percent confidence level. Y-axis represents expected CEO turnover years associated with poor firm financial performance; X-axis in all figures shows ownership percentage of non-family shareholders. The marginal effects are obtained by holding the other variables at their means. Figure 3.1 and 3.2 show that the moderating effect of non-family ownership on the relationship between CEO turnover and poor firm performance is stronger in firms with a higher deviation between control rights and cash flow rights when non-family ownership lies between 45 percent and 75 percent, supporting Hypothesis 3.

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Table 1 Final sample composition

Firm Sector (code)	# of Observations	# of Firms	Firm Age	CEO Turnover	ROA	Non-family Ownership
Cement (11)	104	7	45	0.06	0.02	63.40
Food (12)	276	20	47	0.09	0.03	68.60
Plastics (13)	287	21	39	0.09	0.03	67.16
Textiles (14)	641	47	33	0.06	0.01	68.14
Electric and machinery (15)	394	38	33	0.11	0.04	69.02
Electric Appliance and cable (16)	163	13	41	0.10	0.03	70.66
Chemical (17)	411	42	36	0.08	0.07	67.27
Glass and ceramics (18)	60	4	44	0.12	0.04	57.58
Paper and pulp (19)	105	7	43	0.13	0.02	72.07
Steel and iron (20)	366	29	31	0.09	0.05	70.94
Rubber (21)	129	10	40	0.09	0.07	71.32
Automobile (22)	66	5	49	0.17	0.04	60.99
Electronics (23)	3,039	374	21	0.09	0.06	75.00
Construction (25)	283	23	33	0.13	0.02	68.75
Transportation (26)	238	19	38	0.14	0.05	63.18
Tourism (27)	63	7	34	0.06	0.06	56.83
Wholesale and retail (29)	148	10	45	0.11	0.04	66.64
Gas and Petroleum (97)	92	8	28	0.08	0.05	61.59
Others (99)	383	33	31	0.09	0.07	68.98
Total	7,248	717	37	0.10	0.04	66.74

Table 2 Summary statistics of variables for regressions

	Mean	S.D.	Min	Max
1. CEO turnover (dummy)	0.10	0.29	0	1.00
2. ROA (reverse coded)	-0.23	0.07	-0.66	0.48
3. Non-family ownership (percentage)	66.74	16.79	0.89	95.00
4. Transparency (rating)	3.43	0.97	1.00	6.17
5. Control-cash flow deviation (ratio)	2.43	10.46	0	413
6. Top two large shareholders' ownership concentration (percentage)	21.29	13.77	0.42	99.03
7. Firm age (year)	37.26	14.75	1.00	112
8. Firm size (log assets)	9.03	1.29	4.80	14.14
9. Current ratio (ratio)	2.38	4.45	0.07	168.69
10. Business group affiliation (dummy)	0.53	0.50	0	1.00
11. Independent directors (percentage)	6.98	12.71	0	75
12. Family board presence (percentage)	65.32	21.99	0	100
13. CEO chairman duality (dummy)	0.26	0.44	0	1.00
14. Management ownership (percentage)	1.51	2.77	0	33.55
15. CEO affiliation with family owner (dummy)	0.46	0.50	0	1.00
16. CEO tenure (year)	16.47	9.95	0.08	50.08
17. M&A involvement (dummy)	0.05	0.21	0	1.00
18. Number of large shareholders (count)	3.21	2.69	0	20.00

N=7,248

Table 3 Correlation matrix among variables for regression

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
1. CEO turnover	1.00																	
2. ROA (reverse-coded)	0.08	1.00																
3. Non-family ownership	0.01	0.05	1.00															
4. Transparency	0.01	-0.15	-0.04	1.00														
5. Control cash flow deviance	0.03	-0.03	0.00	0.07	1.00													
6. Ownership concentration	0.03	-0.05	-0.72	0.13	0.07	1.00												
7. Firm age	0.02	0.17	-0.08	0.03	-0.07	-0.05	1.00											
8. Firm size	-0.02	-0.06	0.07	0.38	0.02	0.00	0.14	1.00										
9. Current ratio	0.01	-0.04	-0.05	0.05	-0.00	0.02	0.00	-0.11	1.00									
10. Business group affiliation	0.03	0.15	0.04	0.20	0.06	0.02	0.16	0.49	-0.07	1.00								
11. Independent directors	-0.02	-0.24	-0.00	0.07	0.11	0.06	-0.30	-0.08	0.01	-0.21	1.00							
12. Family board presence	0.01	0.17	-0.22	0.08	-0.03	0.09	0.31	0.29	0.02	0.35	-0.43	1.00						
13. CEO chairman duality	0.04	0.02	0.07	-0.07	-0.04	-0.10	-0.07	-0.12	0.05	-0.12	0.03	-0.09	1.00					
14. Management ownership	-0.02	-0.11	0.06	-0.03	0.08	-0.12	-0.24	-0.13	0.01	-0.12	0.12	-0.13	0.01	1.00				
15. CEO affiliation with family owner	-0.07	0.00	0.02	-0.15	-0.10	-0.18	0.03	-0.14	0.01	-0.17	-0.02	-0.06	0.48	-0.11	1.00			
16. CEO tenure	-0.11	-0.01	-0.03	-0.07	-0.07	-0.14	0.17	-0.02	0.06	-0.08	-0.16	0.10	0.21	-0.02	0.37	1.00		
17. M&A involvement	0.02	-0.01	0.05	0.12	0.04	0.01	-0.04	0.25	-0.02	0.08	0.03	0.03	-0.04	-0.00	-0.07	-0.05	1.00	
18. Number of large shareholders	0.02	-0.01	-0.53	0.12	0.01	0.58	0.10	0.04	0.10	0.04	-0.08	0.24	-0.08	-0.13	-0.15	-0.04	0.00	1.00

Notes. N=7,248; Correlations with absolute values higher than 0.03 are within 95% confidence intervals,

Table 4 Simulation-based logistic regression results with robust standard errors for Hypothesis 1

	Model 1	Baseline Hypothesis Model 2	Hypothesis 1: Model 3
1. ROA (reverse-coded)		2.709	-1.499
		(0.000)	(0.506)
2. Non-family ownership			0.019
			(0.009)
1*2			0.058
			(0.048)
3. Ownership concentration	0.003	0.003	0.007
	(0.492)	(0.442)	(0.136)
4. Firm age	0.005	0.004	0.003
	(0.212)	(0.341)	(0.458)
5. Firm size	-0.133	-0.094	-0.098
	(0.008)	(0.051)	(0.025)
6. Current ratio	0.014	0.015	0.013
	(0.072)	(0.030)	(0.111)
7. Business group affiliation	0.165	0.095	0.071
	(0.170)	(0.416)	(0.485)
8. Independent director percentage	-0.006	-0.003	-0.002
	(0.183)	(0.440)	(0.565)
9. Family presence in board	0.002	0.001	0.002
	(0.468)	(0.614)	(0.353)
10. CEO chairman duality	0.905	0.866	0.780
	(0.000)	(0.000)	(0.000)
11. Management ownership	-0.026	-0.020	-0.021
	(0.217)	(0.325)	(0.253)
12. CEO affiliation with family owners	-0.580	-0.573	-0.541
	(0.000)	(0.000)	(0.000)
13. CEO tenure	-0.044	-0.042	-0.042
	(0.000)	(0.000)	(0.000)
14. M&A involvement	0.347	0.307	0.309
	(0.057)	(0.093)	(0.099)
15. Number of large shareholders	-0.030	-0.027	-0.014
	(0.178)	(0.217)	(0.492)
Year fixed effects	Yes	Yes	Yes
Industry fixed effects	Yes	Yes	Yes
Constant	-1.091	-0.812	-2.069**
	(0.130)	(0.253)	(0.021)
Observations	7,248	7,248	7,248

Notes. p-values in parentheses; year fixed effects and industry fixed effects are included for estimation but not reported here due to space limit.

Table 5 Simulation-based logistic regression results with robust standard errors for Hypothesis 2 and Hypothesis 3

	Hypothesis 2: Governance Transparency		Hypothesis 3: Control to Cash Flow Deviation	
	Model 1a High Transparency	Model 1b Low Transparency	Model 2a High Deviation	Model 2b Low Deviation
1. ROA (reverse-coded)	-2.010	-2.112	1.064	-2.480
	(0.514)	(0.544)	(0.743)	(0.409)
2. Non-family ownership	0.006	0.035	0.018	0.020
	(0.534)	(0.002)	(0.116)	(0.032)
1*2	0.053	0.074	0.039	0.056
	(0.187)	(0.107)	(0.365)	(0.151)
3. Ownership concentration	0.001	0.015	0.007	0.013
	(0.918)	(0.059)	(0.305)	(0.047)
4. Firm age	0.006	0.006	0.002	0.001
	(0.286)	(0.352)	(0.762)	(0.818)
5. Firm size	-0.020	-0.216	-0.062	-0.190
	(0.723)	(0.004)	(0.308)	(0.004)
6. Current ratio	0.013	0.004	0.029	0.009
	(0.130)	(0.903)	(0.233)	(0.322)
7. Business group affiliation	-0.100	0.302	0.044	0.207
	(0.506)	(0.039)	(0.786)	(0.152)
8. Independent director percentage	-0.004	0.001	-0.004	-0.003
	(0.504)	(0.847)	(0.516)	(0.627)
9. Family presence in board	0.004	0.000	0.004	0.002
	(0.268)	(0.978)	(0.305)	(0.571)
10. CEO chairman duality	1.050	0.644	1.034	0.524
	(0.000)	(0.000)	(0.000)	(0.002)
11. Management ownership	-0.030	-0.015	-0.018	0.072
	(0.331)	(0.533)	(0.408)	(0.197)
12. CEO affiliation with family owners	-0.638	-0.483	-0.468	-0.614
	(0.001)	(0.003)	(0.008)	(0.000)
13. CEO tenure	-0.049	-0.041	-0.049	-0.036
	(0.000)	(0.000)	(0.000)	(0.000)
14. M&A involvement	0.168	0.460	0.313	0.325
	(0.476)	(0.137)	(0.214)	(0.266)
15. Number of large shareholders	-0.035	0.026	-0.019	-0.005
	(0.176)	(0.433)	(0.527)	(0.875)
Year fixed effects	Yes	Yes	Yes	Yes
Industry fixed effects	Yes	Yes	Yes	Yes
Constant	-2.199	-2.661	-2.588	-2.005
	(0.078)	(0.109)	(0.059)	(0.099)
Observations	3,681	3,567	3,603	3,645

Notes. p-values in parentheses; year fixed effects and industry fixed effects are included for estimation but not reported here due to space limit.
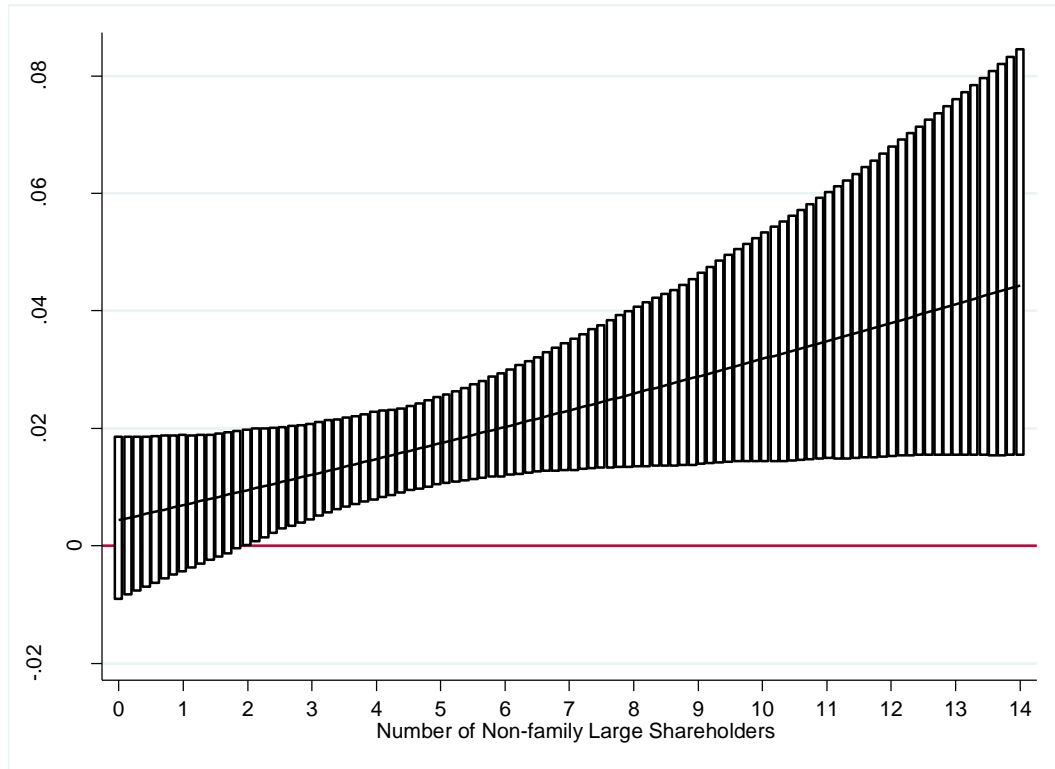
Figure A1 The impact of non-family large shareholders on CEO turnover-performance sensitivity

Notes. Graphs are generated by STATA 14 program *intgph logit, cmdopts(r)* automatically based on simulation-based coefficient estimates in Model 4, Table A2. Confidence intervals are two-tailed, at 95 percent confidence level. Y-axis represents expected CEO turnover years associated with poor firm financial performance; X-axis in all figures shows the number of non-family large shareholders. The marginal effects are obtained by holding the other variables at their means. Figure A1 shows that the moderating effect of number of non-family large shareholders on CEO turnover-performance sensitivity is positive when non-family ownership reaches 2, supporting Hypothesis 1.

Table A1 Effect size of the impact of non-family ownership on CEO turnover-performance sensitivity (Hypothesis 1)

Y=CEO turnover; X=Reverse ROA	dy/dx	Delta-method Robust S.E.	Z	P>|Z|	[95% Confidence Interval]	
Non-family ownership						
0%	-0.10	0.14	-0.76	0.448	-0.37	0.16
10%	-0.07	0.12	-0.61	0.54	-0.31	0.16
20%	-0.04	0.11	-0.39	0.695	-0.25	0.17
30%	-0.01	0.09	-0.05	0.957	-0.19	0.18
40%	0.04	0.08	0.46	0.645	-0.12	0.19
50%	0.08	0.07	1.25	0.211	-0.05	0.21
60%	0.13	0.06	2.42	0.015	0.03	0.24
70%	0.19	0.05	3.86	0.00	0.09	0.29
80%	0.26	0.05	4.76	0.00	0.15	0.36
90%	0.33	0.07	4.69	0.00	0.19	0.46
95%	0.41	0.10	4.21	0.00	0.22	0.59

Notes. The effect sizes (dy/dx) are calculated based on traditional logit regression with robust standard errors, which tests the moderating effect of non-family ownership on the linkage between CEO turnover and poor firm performance. The marginal effects reported here are obtained by holding the other variables at their means. The relevant command for calculating the effect sizes are *margins* in STATA 14. The table shows that the moderating effect of non-family ownership on the relationship between CEO turnover and poor firm performance is positive at 95% confidence intervals when non-family ownership is equal to and above 60 percent. The moderating effect becomes stronger and more positive when the non-family ownership further increases.

Table A2 Robustness checks for Hypothesis 1

	Model 1	Model 2	Model 3	Model 4
	Logistic Regression with Robust Standard Errors	Logistic Regression with Robust Standard Errors	Logistic Regression with Robust Standard Errors	Simulation-based Logistic Regression with Robust Standard Errors
1. ROA	-2.709	2.023		
	(0.000)	(0.401)		
2. Non-family ownership		0.009		
		(0.045)		
1*2		-0.065		
		(0.039)		
3. ROA (reverse-coded)			0.478	0.802
			(0.704)	(0.513)
4. Number of non-family large shareholders			0.104	0.093
			(0.058)	(0.082)
1*4			0.509	0.445
			(0.032)	(0.054)
5. Ownership concentration	0.003	0.008	0.003	0.002
	(0.442)	(0.098)	(0.415)	(0.514)
6. Firm age	0.004	0.004	0.004	0.003
	(0.341)	(0.346)	(0.309)	(0.397)
7. Firm size	-0.094	-0.098	-0.089	-0.091
	(0.051)	(0.042)	(0.069)	(0.041)
8. Current ratio	0.015	0.016	0.016	0.013
	(0.030)	(0.021)	(0.025)	(0.120)
9. Business group affiliation	0.095	0.088	0.097	0.080
	(0.416)	(0.448)	(0.406)	(0.438)
10. Independent director percentage	-0.003	-0.003	-0.003	-0.003
	(0.440)	(0.499)	(0.462)	(0.526)
11. Family presence in board	0.001	0.002	0.001	0.001
	(0.614)	(0.396)	(0.600)	(0.543)
12. CEO chairman duality	0.866	0.854	0.869	0.793
	(0.000)	(0.000)	(0.000)	(0.000)
13. Management ownership	-0.020	-0.015	-0.020	-0.026
	(0.325)	(0.474)	(0.344)	(0.165)
14. CEO affiliation with family owner	-0.573	-0.547	-0.575	-0.567
	(0.000)	(0.000)	(0.000)	(0.000)
15. CEO tenure	-0.042	-0.041	-0.042	-0.043
	(0.000)	(0.000)	(0.000)	(0.000)
16. M&A involvement	0.307	0.300	0.303	0.312
	(0.093)	(0.102)	(0.097)	(0.095)
17. Number of large shareholders	-0.027	-0.022	-0.030	-0.020
	(0.217)	(0.319)	(0.175)	(0.317)
Year fixed effects	Yes	Yes	Yes	Yes
Industry fixed effects	Yes	Yes	Yes	Yes
Constant	-1.302	-2.081	-1.335	-1.035
	(0.065)	(0.008)	(0.085)	(0.157)
Observations	7,248	7,248	7,248	7,248

Notes. p-values in parentheses; year fixed effects and industry fixed effects are included for estimation but not reported here due to space limit.