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Family ownership and cash flow

Thitima Sitthipongpanich

Dhurakij Pundit University, Bangkok, Thailand

Abstract

Purpose – The purpose of this paper is to investigate the effect of family ownership on investment-cash flow sensitivity and on firm performance.

Design/methodology/approach – The author uses panel data to examine the relationship between investment and cash flow and between family ownership and the firm performance of Thai listed firms from 2001 to 2008. To account for the endogeneity of the lagged dependent variable, the investment equation is estimated by the generalized method of moments, following Arellano and Bond (1991).

Findings – The presence of family owners reduces the sensitivity of investment and cash flow. At low and high levels of family ownership, an increase in family shareholding leads to lower investment-cash flow sensitivity. In contrast, firms with medium family ownership levels have higher investment-cash flow sensitivity. Only at high levels of family ownership is firm performance positively related to family shareholding.

Originality/value – The ownership levels of family shareholders affect the investment-cash flow sensitivity in an *S*-shaped relation, supporting the interest alignment and entrenchment effects. When family shareholders have high ownership incentives, their interest alignment reduces the agency costs of free cash flow problems and leads to higher firm performance.

Keywords Performance, Thailand, Family ownership, Free cash flow, Agency problem, Investment-cash flow sensitivity

Paper type Research paper

1. Introduction

The ownership structure of firms in East Asian and continental European countries is highly concentrated (Claessens *et al.*, 2000; Faccio and Lang, 2002). La Porta *et al.* (1999) find that most firms outside the USA are family-owned. In such an institutional context, family shareholders seem to influence management through their voting rights and it is common to find their participation in the management team. Although the benefit of ownership concentration is to reduce conflicts of interest between large shareholders and minority shareholders, such a highly concentrated structure may lead to expropriation of minority shareholders.

Related to the agency costs of free cash flow, when the interests of managers are not aligned with those of the shareholders, managers may spend generated cash flow to exploit their own benefits, causing the overinvestment problem (Jensen, 1986). Thus, the investment of firms will be highly dependent on internal funds, reflecting the free cash flow agency problem. However, the agency costs could be alleviated if managerial ownership is increased to provide incentives for managers to maximize shareholder wealth, thus resulting in a negative relationship between managerial ownership and investment-cash flow sensitivity (Pawlina and Renneboog, 2005). These arguments are also applied to the setting of concentrated ownership and family firms in emerging markets. In such a context, family shareholders are often involved in management or could influence firms' policies through their voting rights. Because family shareholders have high incentives to maximize the value of their own stocks, it is likely that they have their interests aligned with those of minority shareholders and/or play a monitoring role to reduce agency problems between managers and shareholders. Thus, the investment of family-owned firms is expected to be less sensitive to internal cash flow.

However, when another type of agency cost, i.e. entrenchment problems, arises, the relationship between ownership levels and investment-cash flow sensitivity may become non-linear. The increase in ownership levels may induce family shareholders to pursue their

interests, leading to overinvestment problems and the aggravation of investment-cash flow sensitivity. Until the ownership levels appear to be sufficiently high, the interest alignment effects could be reflected by lower investment-cash flow sensitivity. Therefore, an S-shaped relation between the ownership levels of family shareholders and investment-cash flow sensitivity could be expected.

To examine whether family owners have interest alignment to maximize shareholder wealth and to reduce the agency costs of free cash flow, I also investigate the effect of family ownership on firm performance. If the family shareholders attempt to exploit their own benefits by spending available free cash flow to engage in empire building, such investment decisions could negatively affect firm performance. In contrast, if they have incentives to maximize total shareholder wealth, their investment decisions would be made effectively, thus leading to higher firm performance.

I use non-financial listed firms on the Stock Exchange of Thailand (SET) to investigate the dominance of family owners from 2001 to 2008 and compare the major characteristics of family and non-family firms. I examine whether the investment of Thai firms is related to their internal cash flow and whether family ownership affects firms' investment-cash flow sensitivity. I also investigate the effect of family ownership on firm performance to reflect the consequences of overinvestment and free cash flow agency problems.

The results show that a majority of Thai listed firms (61 percent of total firm-year observations) are owned by families with an average shareholding of 44 percent. The ratios of cash flow to capital and lagged sales to capital of family firms are significantly higher than those of non-family firms. Using panel data to estimate an investment model, I find that the investment of Thai listed firms is dependent on internal cash flow. The effect of cash flow on investment for family firms is significantly negative. Family firms have lower cash flow sensitivity of investment than non-family firms. The results of the generalized method of moments (GMM) estimator show an S-shaped relation between the investment-cash flow sensitivity and family ownership levels, which is consistent with both interest alignment and entrenchment effects (Morck et al., 1988; Mcconnell and Servaes, 1990). The findings show that a relationship between family ownership and firm performance is positive only at the high ownership levels of family shareholders.

The findings of this research provide a better understanding about the role of family shareholders and firms' investment behaviors in an emerging market and complement previous studies in various aspects. First, Espenlaub et al. (2012) show the impact of bank connections on investment-cash flow sensitivity of Thai firms between 1996 and 2000. I look at the impact of family ownership on firm investment policy in Thailand from 2001 to 2008. In particular, I examine whether family owners could affect firms' investment policies.

Second, it is argued that the Asian financial crisis is caused by firms' overinvestment behaviors in the pre-crisis period (Sitthipongpanich, 2012). I examine the investment behaviors of Thai firms after the Asian crisis to shed light on whether the firms are highly concerned about such problems and pay attention to their investment policies. To the best of my knowledge, this paper is the first to answer how Thai firms invest their capital and whether they overinvest after the 1997 Asian financial crisis. In addition, the sample period of 2001-2008 reflects the behaviors of Thai listed firms in response to public attention on good governance practices.

Third, although several studies document the relationship between ownership structure and corporate investment policy, they focus on developed countries (Andres, 2011; Goergen and Renneboog, 2001; Pawlina and Renneboog, 2005; Gugler, 2003; Crespi and Scellato, 2007; Hadlock, 1998; Pindado et al., 2011). Evidence about the effect of ownership structure on a firm's investment behavior is scarce in emerging markets. Wei and Zhang (2008) investigate the effect of control and cash flow right of the largest shareholder of firms on investment policies in East Asian countries. This research extends prior literature by focusing the role of

family shareholders in mitigating agency costs of free cash flow in an emerging market. It also shows a non-monotonic relationship between family ownership and investment-cash flow sensitivity and between family ownership and firm performance.

Fourth, in this paper, a panel data set over an eight-year period allows me to investigate the impact of family ownership on investment-cash flow sensitivity. I use GMM estimators for investment equations. Therefore, this research complements the findings of previous literature, for example, the OLS results of Hadlock (1998) and Wei and Zhang (2008), and the Fixed Effects (FE) results of Pawlina and Renneboog (2005).

Finally, it is argued that the 1997 Asian financial crisis is triggered by poor corporate governance and management expropriation (Pomerleano, 1998; Joh, 2003; Johnson, Boone, Breach and Friedman, 2000; Backman, 1999). It casts some doubt about the monitoring role of major shareholders. I aim to present whether corporate governance measures could explain a firm's investment behavior. In particular, I attempt to show whether family shareholders are an effective part of corporate governance. The results of this study provide additional evidence for relevant authorities to strengthen good governance practices and to prevent firms' overinvestment problems, which may lead to a financial crisis in the future.

The research is structured into five sections as follows. In Section 2, I review existing literature about ownership structure and investment-cash flow sensitivity. In Section 3, I describe the data and methodology. In Section 4, I examine the differences in firm characteristics between family and non-family firms. I also examine whether family ownership has an impact on investment-cash flow sensitivity and on firm performance. In Section 5, I conclude the research and provide recommendations.

2. Literature review

2.1 Concentrated shareholdings

The extant literature shows that the ownership structure and control are concentrated in many countries. In particular, concentrated ownership and family-owned firms are commonly found in the East Asian and Continental European countries (Claessens *et al.*, 2000; Faccio and Lang, 2002). Concentrated ownership is a substitute for weak investor protection. If the legal protection of investors is weak, a large shareholding will overcome potential agency problems (Shleifer and Vishny, 1997).

Before the onset of the 1997 Asian financial crisis, a high level of ownership of firms in a large number of emerging markets is positively related to firms' value, measured by Tobin's *Q* ratio (Lins, 2003). In addition, the relationship between concentrated ownership and the quality of governance practices is positively significant, especially in countries with lower investor protection (Durnev and Kim, 2005). However, in the context of concentrated ownership, agency theory predicts that agency problems are due to conflicts of interest between major shareholders and minority shareholders. Although large shareholders have ownership incentives to maximize the firm's value, they may pursue their own interests if private benefits are higher than the shared benefits that would be allocated to all shareholders. Private benefits refer to benefits that major shareholders obtain at the expense of minority shareholders.

Large shareholders have sufficient voting rights to control the firm's management and may be entrenched in director positions (Volpin, 2002). They may pursue private benefits through internal transactions such as price transfer and debt guarantee (Khanna, 2000; Johnson, La Porta, Lopez De Silanes and Shleifer, 2000). They may also use resources of a well-performing firm to rescue another poorly performing firm in the same group through mergers (Bae *et al.*, 2002). In addition, Faccio *et al.* (2001) provide evidence that large shareholders pursue their private benefits by limiting dividend payments to the structure of group affiliation.

2.2 Effect of internal cash flow on investment policy

Previous studies document that the relation between internal funds and the investment of firms is positively significant (Devereux and Schiantarelli, 1990; Fazzari *et al.*, 1988; Kuh and Meyer, 1959). As a result of asymmetric information problems in imperfect markets, the cost of internal funds is lower than that of external finance (Leland and Pyle, 1977; Myers and Majluf, 1984). Firms' investments are dependent on an availability of internal funds and access to external funds because of the information asymmetry between firms and external finance providers (Leland and Pyle, 1977).

The impact of internal cash flow on firms' investment is investigated using a neo-classical model or the Tobin's Q investment model. In the Tobin's Q investment model, the proxy of Tobin's Q ratio should be the only factor determining a firm's investment under the concept of market perfection. Internal cash flow should not affect the firm's investment. Thus, if the proxy of Tobin's Q ratio is deterministic and incorporates all forward-looking expectations that are relevant to the firm's investment, internal cash flow will be a proxy for financial constraints on investment after controlling for all investment opportunities. In empirical specifications, the proxy of Tobin's Q ratio at the beginning of the period is used as a forward-looking measure of future profitability or investment opportunities.

In addition, in previous empirical research, investment specifications may include lagged sales for accelerator effects[1]. The level of sales reflects future expectations and capacity utilization. Thus, it should indicate the need for investment spending. Abel and Blanchard (1988) demonstrate that a sequence of past sales affects investment when firms face delivery delays and adjustment costs of capital. Sales may also be correlated with internal cash flow. Therefore, lagged sales should be added to reduce the omitted variable bias and to reflect the accelerator effects on investment that may be captured by the coefficient of internal funds. After controlling for accelerator effects, the coefficient of internal cash flow, as a proxy for financial constraints on investments, should indicate the impact of internal liquidity on investment.

2.3 Ownership structure and investment-cash flow sensitivity

An increase in the ownership of large shareholders would raise interest alignment and provide incentives for them to prevent overinvestment problems in spending internal cash flow on unproductive investment projects, hence reducing agency costs of free cash flow shareholders (Crespi and Scellato, 2007; Pawlina and Renneboog, 2005; Andres, 2011). In consequence, the increase in ownership levels of large shareholders could decrease the investment-cash flow sensitivity (Shleifer and Vishny, 1986; Pawlina and Renneboog, 2005). The relationship between the investment-cash flow sensitivity and ownership levels is however not monotonic (Crespi and Scellato, 2007; Pawlina and Renneboog, 2005; Andres, 2011).

Related to the agency costs of free cash flow, managers of levered firms are likely to choose risky investment projects and overinvest because they have limited liability (Jensen, 1986; Jensen and Meckling, 1976). Managers may also extract private benefits by spending high free cash flow to engage in an empire building strategy. These arguments are also applied to the context of concentrated shareholdings (Wei and Zhang, 2008). Because a large shareholder may be involved in management, he could influence a firm's investment policy and pursue his own interests with an empire building strategy. As a result, a positive relationship between cash flow and investment could be expected to reveal the agency costs of the free cash flow problem. At moderate levels of ownership, large shareholders may become entrenched and exploit private benefits through aggressive investment decisions. Therefore, the relationship between ownership levels and the sensitivity of investment and cash flow could be reversed at these levels. Until the ownership levels become sufficiently high, the investment-cash flow sensitivity could be

lower as a result of increased interest alignment, thus showing an S-shaped relationship between the investment-cash flow sensitivity and ownership levels.

The hypotheses of this research are described as follows. I explore the impact of family ownership on firms' corporate investment. On the one hand, a family shareholder can control and influence a firm's policies to maximize shareholder wealth. The presence of a family owner potentially provides the discipline for management to invest in productive projects and to mitigate the agency costs of free cash flow, thus the investment of firms is expected to be less sensitive to cash flow. On the other hand, family shareholders can exert their power to extract private benefits from firms, thus increasing agency costs and investment-cash flow sensitivity. To examine the role of family shareholders in reducing agency costs and playing an active monitoring role, I expect the following hypothesis:

H1. The presence of a family large shareholder is negatively associated with the investment-cash flow sensitivity.

Related to the agency costs of free cash flow, family shareholders may be tempted to spend internal cash flow in empire building and engage in overinvestment behaviors. However, an increase in family shareholdings appears to alleviate conflicts of interest between major shareholders and minority shareholders. The interest alignment could prevent the family shareholders from spending free cash flow on unproductive investments, thus leading to lower investment-cash flow sensitivity (*H2*). However, at medium levels of ownership, the family shareholders may become entrenched and expropriate minority shareholders. They may overinvest and engage in aggressive investment strategies; therefore the investment-cash flow sensitivity is likely to increase (*H3*). Finally, at sufficiently high ownership levels, the family shareholders may be more concerned about total shareholder wealth and their investment decisions, which could reduce free cash flow problems. The investment-cash flow sensitivity could then be reserved at the extremely high ownership levels (*H4*). Therefore, I expect a non-monotonic relationship between family ownership levels and investment-cash flow sensitivity:

H2. At low levels of shareholdings, the family ownership percentage is negatively associated with investment-cash flow sensitivity.

H3. At moderate levels of shareholdings, the family ownership percentage is positively associated with investment-cash flow sensitivity.

H4. At high levels of shareholdings, the family ownership percentage is negatively associated with investment-cash flow sensitivity.

To examine the possibility of overinvestment problems, I investigate the effect of ownership levels on firm performance. At low ownership levels, if interest alignment and low investment-cash flow sensitivity are expected, an increase in family ownership will lead to higher firm performance. The alignment of interest hypothesis predicts that as the ownership level rises, agency costs will be reduced. Therefore, the family ownership level is expected to be positively related to firm performance (*H5*). However, the entrenchment hypothesis predicts that an increase in shareholdings will induce family owners to consume perks and engage in empire building instead of maximizing shareholder wealth. As a result, at moderate levels of shareholdings, if family shareholders are entrenched and engage in overinvestment problems, resulting in higher investment-cash flow sensitivity, the relationship between family ownership and firm performance is expected to be negative, showing free cash flow problems (*H6*). At high levels of ownership, it is expected that the interest alignment becomes tremendous and the

agency costs of free cash flow could be hugely alleviated. Much higher levels of ownership will ensure that incentives of family owners are aligned, thus it is possible that family ownership is positively related to firm performance (*H7*):

H5. At low levels of shareholdings, the family ownership percentage is positively associated with firm performance.

H6. At moderate levels of shareholdings, the family ownership percentage is negatively associated with firm performance.

H7. At high levels of shareholdings, the family ownership percentage is positively associated with firm performance.

3. Data and methodology
3.1 Family ownership
Sample firms are non-financial firms listed on the SET. The sample period is from 2001 to 2008, covering an eight-year period. This sample period will reflect the investment behaviors of firms during a normal economic situation in Thailand. I exclude firms in the banking and financial sector because of the differences in financial statements between corporations and financial institutions.

I collect lists of shareholdings and financial statements of Thai listed firms from the SETSMART database. An ultimate shareholder is a large shareholder who holds shares through related families, private companies or firms of related families. Therefore, tracing ultimate shareholders via cross shareholding and pyramidal control structure is required [2]. I define an ultimate shareholder as in the studies of Khanthavit *et al.* (2003). Additional sources of information are used to trace ultimate shareholders. Those information sources include the database of Department of Business Development, Ministry of Commerce, company files (Form 56-1), lists of family business groups, lists of affiliated firms and several books about wealthy families in Thailand.

Family is defined as members of a family and a group of related families, including their relatives. I define a family large shareholder of firms as one with a shareholding of at least 10 percent. The cut-off point of ownership at 10 percent is used to define a large shareholder as in prior literature, which suggests that such a stake lends sufficient power[3].

For each sample year, I have cross-section data. For each cross-section data, a family firm is defined as a firm owned by a family large shareholder according to the data on ownership in that year. The final observations after defining the presence of a family shareholder and collecting financial data include 2,558 firm-year observations[4]. In this study, all financial data are winsorized at 5 and 95 percent.

3.2 Methodology
The statistical significance of the differences in mean and median values between family and non-family firms is tested using equality tests of mean values and Mann-Whitney tests. To test *H1* to *H4* as described in Section 2, investment models are shown in the specifications (1) and (2). Specification (3) is used to investigate the effect of family ownership and firm performance for *H5* to *H7*:

(1) Impact of the presence of family large shareholder on investment-cash flow sensitivity:

$$\frac{I_{i,t}}{K_{i,t-1}} = \alpha_{i,t} + \beta_1 \frac{CF_{i,t}}{K_{i,t-1}} + \beta_2 Q_{i,t-1} + \beta_3 \frac{\text{Sales}_{i,t-1}}{K_{i,t-1}} + \beta_4 \, \text{Family}_{i,t} + \beta_5 \text{Family}_{i,t} * \frac{CF_{i,t}}{K_{i,t-1}} + \varepsilon_{i,t}$$

(2) Impact of family ownership levels on investment-cash flow sensitivity:

$$\frac{I_{i,t}}{K_{i,t-1}} = \alpha_{i,t} + \beta_1\frac{CF_{i,t}}{K_{i,t-1}} + \beta_2 Q_{i,t-1} + \beta_3\frac{\text{Sales}_{i,t-1}}{K_{i,t-1}} + \beta_4\text{Own}_{i,t} + \beta_5\text{Own}_{i,t}*\frac{CF_{i,t}}{K_{i,t-1}}$$

$$+ \beta_6\text{Own}_{i,t}^2*\frac{CF_{i,t}}{K_{i,t-1}} + \beta_7\text{Own}_{i,t}^3*\frac{CF_{i,t}}{K_{i,t-1}} + \varepsilon_{i,t}$$

(3) Impact of family ownership levels on firm performance:

$$\text{ROA}_{i,t} = \alpha_{i,t} + \beta_1\text{Own}_{i,t} + \beta_2\text{Own}_{i,t}^2 + \beta_3\text{Own}_{i,t}^3 + \beta_4\text{Size}_{i,t} + \beta_5\text{Lev}_{i,t} + \beta_5\text{Age}_{i,t} + \varepsilon_{i,t}$$

where $I_{i,t}$ is investment spending or capital expenditure during the year, $K_{i,t-1}$ is the capital stock (i.e. fixed assets) at the beginning of the year, $CF_{i,t}$ is cash flow or net income plus depreciation and depletion during the year, $Q_{i,t-1}$ is a proxy of lagged Tobin's Q ratio (measured by the ratio of market value of total assets to book value of total assets)[5] at the beginning of the year, $\text{Sales}_{i,t-1}$ is sales in the previous year, $\text{Family}_{i,t}$ is a dummy variable indicating a family-owned firm, $\text{Own}_{i,t}$ is an ownership percentage of the largest family shareholder, $\text{ROA}_{i,t}$ is a ratio of earnings before interest and taxes to total assets[6], $\text{Size}_{i,t}$ is the natural logarithm of total assets, $\text{Lev}_{i,t}$ is a ratio of long-term debt to total assets, and $\text{Age}_{i,t}$ is the number of years since establishment.

Cash flow scaled by capital at the beginning of the period is the main variable of interest to examine the impact of internal cash flow on investment. I expect a positive relationship between investment spending and internal cash flow. The positive sensitivity of investment to cash flow will indicate the dependence of investment on the availability of internal funds or financial constraints on internal funds for investments. A higher internal cash flow during the year may increase the investment spending of firms in that period.

The proxy of lagged Tobin's Q ratio is included to capture investment opportunities or the profitability of investments. Without the proxy of lagged Tobin's Q ratio, the cash flow variable may capture expected future profitability. The relationship between the proxy of lagged Tobin's Q ratio and the investment ratio is expected to be positive. A significantly positive coefficient of lagged Tobin's Q ratio will show that firms' investment is determined by investment opportunities at the beginning of the period. Higher investment opportunities at the beginning of the period may lead to an increased investment spending during the year.

The ratio of lagged sales to capital at the beginning of the year is used as a proxy of product demand or sales accelerator. The production level at the end of the previous year indicates the future expectation on investment and profitability. The coefficient of the ratio of lagged sales to capital is expected to be positively related to the investment ratio. A higher sales level at the beginning of the period may determine the desire for investments during the year. Therefore, the significant coefficient of the cash flow variable after controlling for investment opportunities and sales accelerator will confirm the role of internal cash flow in firms' investment.

All specifications are controlled by year effects between 2006 and 2008 when the military coup and the US financial crisis take place and affect the Thai economy. Only for specification (3), I control for firm-specific effects using the within-estimator approach (FE regressions)[7]. For other specifications, I allow for the dynamic nature of the investment equation. The dynamic investment model includes the lagged dependent variable as an endogenous explanatory variable, showing the effect of investment spending in the previous period on the current-period investment (Bond and Meghir, 1994). To account for the endogeneity of the lagged dependent variable, I estimate the dynamic investment equation using the GMM, following Arellano and Bond (1991). The GMM estimator also controls for the possible

endogeneity of the regressors, in particular, family ownership, using lagged values of the explanatory variables as valid instruments in the first-differenced equation. Moreover, I use the Sargan test of overidentifying restrictions to validate the GMM model that the instruments are not correlated with the error term in the equation. In addition, I use a pairwise correlation analysis between variables in the specification of investment-cash flow sensitivity and a test of variance inflation factor (VIF) to assess the multi-collinearity problem. Table I shows pairwise correlation coefficients between variables in the specification (1) for the full sample (2,558 firm-year observations) between 2001 and 2008.

Significant correlations were found between the ratio of investment to capital at the beginning of the year (as the dependent variable) and other independent variables, indicating the impact of financial factors on firms' investment behavior. All independent variables are positively related to the ratio of investment and the beginning period capital stock at the 1 percent significance level. As shown in Table I, none of the correlations exceeds 0.55. The VIFs of all independent variables are below 1.51. Therefore, multicollinearity is not a problem inthis specification.

4. Empirical analyses

4.1 Characteristics between family and non-family firms

Table II shows the difference in characteristics between family-owned firms and non-family firms in Thailand. In this sample, total observations are 2,558 firm-year observations. A majority of firms are family-owned, accounting for 61 percent of total observations (1,552 firm-year observations). The proportion of non-family firms is 39 percent (1,006 firm-year observations), compared to total observations. The results confirm that concentrated ownership is commonly found in Thai listed firms. Family owners hold an average ownership percentage of 44 percent, which is significantly different from the mean value of ownership percentage in non-family firms (38 percent on average). The median values of shareholdings are 44 percent in family firms and 40 percent in non-family firms. Using the Mann-Whitney test, the result confirms the difference in median values of ownership percentage between family and non-family firms.

The mean values of investment relative to capital between family and non-family firms are not different, while the median values of the investment ratio are marginally different between family and non-family firms. The mean and median values of both the cash flow relative to capital and lagged sales to capital are significantly different for family and non-family firms. Family firms have higher internal cash flow and sales in the previous year. The lagged Tobin's Q between family and non-family firms is not different. However, non-family firms have higher return on assets using median values and higher firm age using mean values. Family firms have lower total assets and leverage ratios, using both mean and median values.

	Investment/capital	Cash flow/capital	Lagged Tobin's Q	Lagged sales/capital
Investment/capital	1.000			
Cash flow/capital	0.394 (0.000)***	1.000		
Lagged Tobin's Q	0.248 (0.000)***	0.244 (0.000)***	1.000	
Lagged sales/capital	0.338 (0.000)***	0.549 (0.000)***	0.095 (0.000)***	1.000

Notes: Investment/capital is the ratio of investment spending during the year to capital stock (i.e. fixed assets) at the beginning of the year. Cash flow/capital measures the ratio of cash flow or net income plus depreciation and depletion during the year to capital stock at the beginning of the year. Lagged Tobin's Q is measured by the ratio of market value of total assets to book value of total assets at the beginning of the year. Lagged sales/capital is calculated as the ratio of sales in the previous year to capital stock at the beginning of the year. The figures in parentheses report the p-value of each correlation coefficient. ***Significant at the 1 percent level

Table I.
Pairwise correlations

		Mean			Median	
	Family	Non-family	p-value	Family	Non-family	p-value
Ownership percentage	44%	38%	0.00	44%	40%	0.00
Investment/capital	0.20	0.18	0.13	0.13	0.12	0.03
Cash flow/capital	0.44	0.37	0.00	0.28	0.25	0.00
Lagged Tobin's Q	1.14	1.14	0.94	0.99	1.02	0.66
Lagged sales/capital	4.63	4.08	0.00	2.61	2.06	0.00
Return on assets	0.08	0.08	0.36	0.08	0.09	0.08
Total assets (million baht)	6,525	9,397	0.00	2,231	3,493	0.00
Long-term debt/total assets	0.30	0.32	0.00	0.27	0.31	0.00
Firm age	26	28	0.00	24	24	0.54

Notes: The total observations are 2,558 firm-year observations. Ownership percentage is the ownership percentage of the largest family shareholder. Investment/capital is the ratio of investment spending during the year to capital stock (i.e. fixed assets) at the beginning of the year. Cash flow/capital measures the ratio of cash flow or net income plus depreciation and depletion during the year to capital stock at the beginning of the year. Lagged Tobin's Q is measured by the ratio of market value of total assets to book value of total assets at the beginning of the year. Lagged sales/capital is calculated as the ratio of sales in the previous year to capital stock at the beginning of the year. Return on assets is the ratio of income after tax to total assets. Long-term debt/total assets is the ratio of long-term debt to total assets. Firm age is the number of years since establishment. Student t-statistics and Mann-Whitney tests are used to assess the significance of the differences in the means and medians between family and non-family firms, respectively

Table II.
Differences in characteristics between family and non-family firms

4.2 The impact of family ownership levels on investment-cash flow sensitivity
Whether or not the cash flow is a determinant of a firm's investment is shown in column (1) of Table III. The results of the GMM estimator confirm that the investment of Thai listed firms is significantly sensitive to internal cash flow. The investment decision of firms is dependent on the availability of internal cash flow. The coefficients of cash flow, lagged Tobin's Q and lagged sales to capital are significantly positive, indicating the association between investment and financial factors. Apart from the significant relationship between lagged Tobin's Q and investment at a 10 percent level, all other coefficients are positively related to investment at a 1 percent significance level. The coefficient of lagged investment to capital is also positively related to investment in the current period, confirming the dynamic nature of the investment equation and the significance of the GMM estimator for investment models[8].

Column (2) of Table III shows that family shareholders have an impact on a firm's investment policy. The presence of family owners is negatively related to investment-cash flow sensitivity. The coefficients of the interactive term between the family dummy and the cash flow variable are negatively significant at a 1 percent level. These findings support *H1* and are consistent with Andres (2011) and Pindado *et al.* (2011). The results also confirm the positive relationship between investment and internal cash flow at a 1 percent significance level.

The impact of family ownership levels on investment-cash flow sensitivity is shown in column (3) of Table III. The results of the GMM regression show that the relationship between family ownership and investment-cash flow sensitivity is non-monotonic (S-shaped), supporting the interest alignment and entrenchment problems. The investment-cash flow sensitivity reduces at low levels of family ownership as indicated by the negative coefficient of the interactive term between family ownership levels and the cash flow variable. The sensitivity of investment and cash flow becomes higher when family ownership levels increase as shown by the quadratic form of the model for family ownership. The positive coefficient of the quadratic term indicates the potential expropriation effects at moderate levels of family ownership. Interacting the cash flow variable with the cubic term of family ownership generates a significant

	Investment/capital		
	(1)	(2)	(3)
Constant	−0.021 (0.360)	−0.025 (0.357)	−0.033 (0.218)
Cash flow/capital	0.093 (0.000)***	0.142 (0.000)***	0.131 (0.000)***
Lagged Tobin's Q	0.029(0.055)*	0.029(0.055)*	0.029 (0.054)*
Lagged sales/capital	0.023 (0.000)***	0.023 (0.000)***	0.024 (0.000)***
Lagged (investment/capital)	0.256 (0.000)***	0.256 (0.000)***	0.256 (0.000)***
Family		0.013 (0.616)	
Family × (Cash flow/capital)		−0.079 (0.004)***	
Family ownership			0.045 (0.464)
Family ownership × (Cash flow/capital)			−1.087 (0.000)***
Family ownership^2 × (Cash flow/capital)			3.459 (0.002)***
Family ownership^3 × (Cash flow/capital)			−2.734 (0.006)***
Wald (χ^2)	308.27	315.98	318.32
Sargan (χ^2)	11.94	11.11	10.61

Notes: Investment/capital is the ratio of investment spending during the year to capital stock (i.e. fixed assets) at the beginning of the year. Cash flow/capital measures the ratio of cash flow or net income plus depreciation and depletion during the year to capital stock at the beginning of the year. Lagged Tobin's Q is measured by the ratio of market value of total assets to book value of total assets at the beginning of the year. Lagged sales/capital is calculated as the ratio of sales in the previous year to capital stock at the beginning of the year. Family is a dummy variable indicating a family-owned firm. Family ownership is the ownership percentage of the largest family shareholder. The investment equations are estimated using the GMM, following Arellano and Bond (1991). All specifications are controlled by year effects, which are not reported. The figures in parentheses report p-value for two-tailed tests. *,***Significant at 10 and 1 percent levels, respectively

Table III.
The impact of family ownership levels on investment-cash flow sensitivity

effect on investment. The investment-cash flow sensitivity starts to decrease when family ownership becomes considerably high. All interactive terms between family ownership levels and the cash flow variable are significantly related to investment at 1 percent significance levels. The findings support *H2*, *H3* and *H4*, and are in line with Morck *et al.* (1988), Mcconnell and Servaes (1990) and Pawlina and Renneboog (2005).

Figure 1 displays the *S*-shaped relation between family ownership levels and investment-cash flow sensitivity. The range of ownership levels from 0 to 21 percent
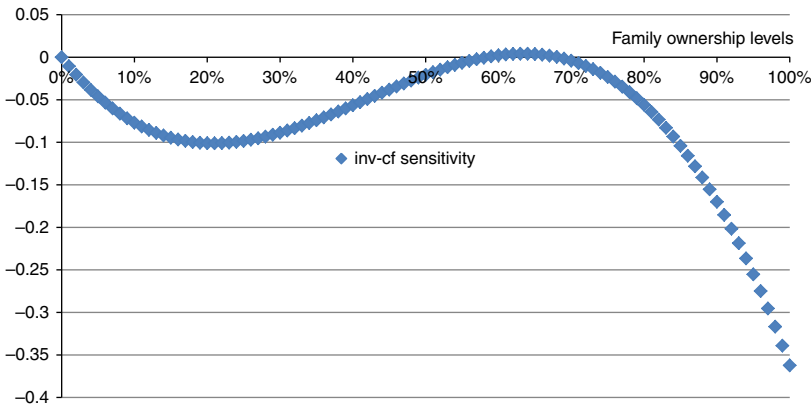
Figure 1.
The *S*-shaped relation between family ownership levels and investment-cash flow sensitivity

Note: The coefficients of model 3 in Table III are used to create the *S*-shaped relation between family ownership levels and investment-cash flow sensitivity

indicates the interest alignment that reduces free cash flow problems. Starting from an ownership level of 22 percent up to 63 percent, the entrenchment effect and potential overinvestment arise. However, the turning point back to the interest alignment takes place at 64 percent. An ownership level of 64-100 percent indicates higher incentives and increased interest alignment of family owners.

4.3 The effect of family ownership on firm performance

The results in Table IV show the effect of family ownership on firm performance. I investigate whether the family owners have incentives to reduce the agency costs of free cash flow and maximize shareholder wealth, thus leading to higher firm performance. Using the panel data set of 2,558 observations, the FE regressions show that only at the high levels of family ownership is the family shareholding positively related to firm performance, measured by the return on assets. Thus, the findings support *H7* and reject *H5* and *H6*. Firm size and leverage ratios are also major determinants of firm performance. Large firms have higher performance, while highly levered firms have lower firm performance. Controlling for investment and sales effects in column (2) of Table IV, the results remain the same.

The robustness check using the return on equity (ROE) as a measure of firm performance produces results that confirm the impact of family ownership on firm performance. The cubic term of family ownership generates a positive effect on ROE at the 10 and 5 percent significance levels for the same models as in column (1) and (2) of Table IV, respectively. However, other control variables no longer have a significant impact on firm performance[9].

Figure 2 shows the *S*-shaped relation between ownership levels and ROA in family firms. According to the findings in Table IV, Figure 2 shows that only an increase in ownership within a range of 40-100 percent is significantly associated with ROA, supporting the interest alignment hypothesis. The ownership levels of 0-14 percent and 15-39 percent in Figure 2, however, show the turning points of the *S*-shaped relation.

	ROA	
	(1)	(2)
Constant	−0.016 (0.662)	−0.012 (0.748)
Family ownership	0.061 (0.292)	0.061 (0.290)
Family ownership^2	−0.289 (0.144)	−0.293 (0.138)
Family ownership^3	0.364 (0.033)**	0.368 (0.031)**
Ln (total assets)	0.019 (0.000)***	0.018 (0.000)***
Long-term debt/total assets	−0.080 (0.000)***	−0.079 (0.000)***
Firm age	−0.001 (0.225)	−0.001 (0.194)
Investment/capital		0.008 (0.292)
Lagged sales/capital		0.000 (0.626)
R^2 within	0.0586	0.0594
R^2 between	0.0376	0.0371
R^2 overall	0.0349	0.0350

Notes: ROA is the ratio of earnings before interest and taxes to total assets. Family ownership is the ownership percentage of the largest family shareholder. Ln (total assets), or a proxy of firm size, is the natural logarithm of total assets. Long-term debt/total assets is the ratio of long-term debt to total assets. Firm age is the number of years since establishment. Investment/capital is the ratio of investment spending during the year to capital stock (i.e. fixed assets) at the beginning of the year. Lagged sales/capital is calculated as the ratio of sales in the previous year to capital stock at the beginning of the year. The performance models are estimated by fixed effects. All specifications are controlled by year effects, which are not reported. The figures in parentheses report *p*-value for two-tailed tests. **,***Significance at 5 and 1 percent levels, respectively

Table IV.
The effect of family ownership levels on firm performance

Figure 2.
The *S*-shaped relation
between family
ownership levels
and ROA

Note: The coefficients of model 2 in Table IV are used to create the *S*-shaped relation
between family ownership levels and ROA
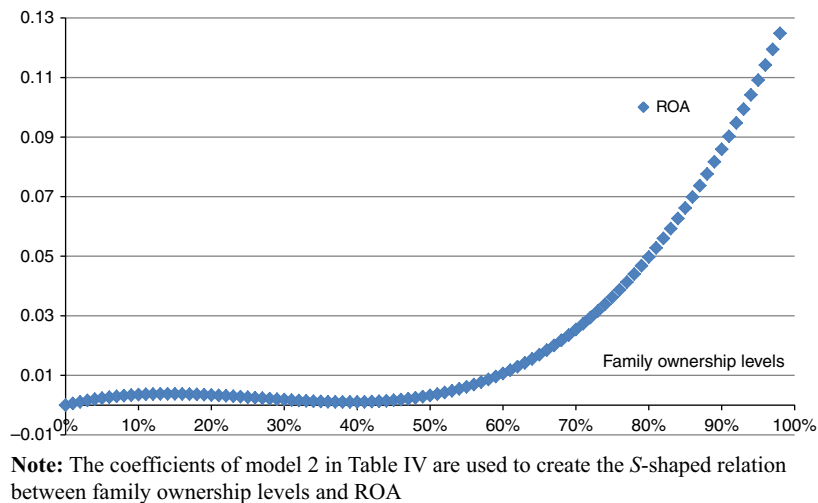
5. Summary

The results show that ownership of Thai family firms is relatively high with an average
shareholding of 44 percent. Family firms have higher internal cash flow and sales in
the previous year, while non-family firms are larger and have higher leverage ratio. Using
the GMM estimator, I find that the investment of Thai listed firms is sensitive to internal
cash flow. The existence of family owners reduces the investment-cash flow sensitivity.
I find an *S*-shaped relation between family ownership levels and the investment-cash flow
sensitivity, confirming the interest alignment and entrenchment hypotheses of large
shareholders[10]. In addition, when family shareholders hold significantly high ownership
levels, their interests are greatly aligned with those of other shareholders, thus leading to
higher firm performance.

The findings imply that the ownership incentives of family shareholders influence
firms' investment strategies. Although family owners can reduce the investment-cash flow
sensitivity, entrenchment problems could possibly be found when ownership levels
increase. However, the positive effect of family ownership levels on firm performance
shows that there is no evidence of overinvestment problems in Thai family firms after the
1997 Asian financial crisis. Family shareholders do not spend firms' free cash flow to
engage in empire building and appear to be an effective part of corporate governance.
To avoid the agency costs of free cash flow in family firms, minority shareholders should
invest in firms with significantly high family ownership levels. In normal situations,
minority shareholders should also actively monitor management or participate in
shareholders' meetings to prevent entrenchment and potential overinvestment problems
in family-owned firms.

Suggestions for future research are as follows. Other corporate governance mechanisms
could be related to investment-cash flow sensitivity. For example, future research could
determine what kind of boards of directors could effectively monitor managers to reduce
firms' investment-cash flow sensitivity and what characteristics of CEOs could decrease
agency costs and lead to lower investment-cash flow sensitivity. Whether the second largest
shareholders in family-owned firms affect the investment-cash flow sensitivity could also be
examined to show their role in investment decision making. They could play either a
monitoring role or a colluding role with the family owners.

Notes

1. The sales accelerator effect states that the higher sales in the previous period, in other words "higher respective lagged sales", determine the production demand, hence future investments.

2. The databases of ownership structure used in this paper define the patterns of pyramidal shareholding and cross shareholding as provided by La Porta *et al.* (1999). A Firm C is controlled by Family A via a pyramid if it is controlled by a listed Firm B that is controlled by Family A. In addition, there is cross shareholding by Firm C in its control chain if Firm C holds shares in its controlling shareholder or in other companies along that chain of control. For example, there is a cross shareholding by Firm C if it owns any shares in Firm B.

3. A major/large shareholder is defined as a shareholder with more than 10 percent shareholding, following La Porta *et al.* (1999), Claessens *et al.* (2000) and Charumilind *et al.* (2006). The first article is based on 27 countries around the world and the second article is focused on the ownership and control in nine East Asian countries. The sample firms in the last article of Charumilind *et al.* (2006) are Thai listed firms. The authors also describe legal reasons that a shareholder with a 10 percent ownership has sufficient control over his/her firm in Thailand (see footnote 10, page 195 of their paper).

4. The total number of firm-year observations (excluding financial firms listed in the SET) is 3,007. Observations are excluded from the sample if the firm data are in the year of rehabilitation (262 observations) and if financial and ownership data of observations is missing (187 observations). The final sample includes 2,558 firm-year observations.

5. The market value of total assets is calculated as the market capitalization of equity plus the book value of total assets minus the book value of shareholders' equity.

6. I also examine the robustness of the performance measure using the return on equity (ROE) as the dependent variable and I discuss the results in Section 4.3.

7. The within, or fixed effects, estimator is used to remove the unobserved effects from the estimates by taking deviations from the mean. The assumption of the fixed effects estimator is that the firm-specific effects or unobserved variables may be correlated with the independent (or observed) variables (Wooldridge, 2003).

8. Using the GMM estimator, total observations are 1,726 firm-year observations.

9. Using market-based performance, measured by stock returns, the results differ from those in Table IV which reports the effect of family ownership levels on accounting-based performance, measured by return on assets (ROA). I find that family ownership levels are not related to stock returns but to ROA. The reason that explains why I do not find significant results using stock returns is as follows. Stock returns are typical measures of firm value in market-based studies and event studies on the assumption that, under the market efficiency hypothesis, stock returns indicate the market reaction to all relevant information and unanticipated events. In addition, stock returns are based on the future expectations on firms, while accounting earnings like ROA is a measure of corporate performance based on historical period. Prior research also documents that stock returns and accounting-based performance are not related and are not interchangeable measures of firm performance (Hillman, 2005; Venkatraman and Ramanujam, 1986).

10. The results, supporting both the interest alignment and entrenchment hypotheses of family shareholders, are consistent with the findings of Andres (2011). Therefore, they are pronounced not only in Thailand, but also in other countries, such as Germany. However, I use the linear, quadratic and cubic terms of family ownership to investigate the *S*-shaped relation, while Andres (2011) only applies the linear and quadratic terms to the investment-cash flow specification. The *S*-shaped relation between ownership percentage and investment-cash flow sensitivity in this study is also consistent with the results of Pawlina and Renneboog (2005), which examine the effect of insider ownership on investment-cash flow sensitivity in the UK.

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About the author
Thitima Sitthipongpanich, PhD, is an Assistant Professor at Dhurakij Pundit University. She received her BA degree in Business Administration (Finance and Banking) from Thammasat University, her MBA from the Asian University of Science and Technology, her Master of Research (Finance) from Lancaster University and her PhD (Finance) from the University of Manchester. Her research interests include corporate finance and corporate governance. Her research has been published in academic journals such as the *Journal of Banking and Finance*, *Journal of Family Business Strategy*, the *International Research Journal of Finance and Economics*, the *Journal of Applied Business Research*, etc. She also wrote a book, entitled *Financial Management Techniques in Excel*, and book chapters in *Business Finance* and *Corporate Governance* textbooks. Thitima Sitthipongpanich can be contacted at: thitima.sih@dpu.ac.th