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3 **FAMILY FIRM IPO PERFORMANCE  
AND MARKET SIGNALS**

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17 Recently, the interests in the performance of family firms in the capital market are  
on the rise. However studies on long-term performance give us little information  
19 about the performance of family firms in the initial public offering (IPO) markets.  
Building on agency theory, we investigated the effect of three IPO signals in family  
21 firm IPOs. Practices such as the appointment of outside non-family directors and  
waiting longer before going public significantly reduce underpricing. In addition,  
23 family owners' intent to retain large percentage of share in the long run is an indi-  
cation of original shareholders' level of confidence in their own companies. Such  
25 confidence helps reduce after market investors' uncertainty and thus underpricing.  
On the other hand, family ownership at the IPO positively moderates the impact  
27 of non-family directors on underpricing.

**INTRODUCTION**

29 Recently, the interests in the performance of family firms in the capital  
market are on the rise (Anderson and Reeb, 2004; Villalonga and Amit,  
31 2006; Chemmanur, He and Nandy, 2006; Pagano, Panetta and Zingales,  
1998; Jaskiewicz, Gonzalez, Menendez and Schiereck, 2005). An increasing

*Hung-Bin Ding and Kuntara Pukthuanthong-Le*

1 number of family firm owners have come to realize that going public is  
2 essential for long-term growth and to survive (Chemmanur, He and Nandy,  
3 2006; Pagano, Panetta and Zingales, 1998). However, despite the recent  
4 progresses and growing interests, studies on long-term performance give us  
5 little information about the performance of family firms in the initial public  
6 offering (IPO) markets.

7 IPO underpricing is a common measure of IPO performance in the finance  
8 literature. It is generally viewed as the difference between the offer price  
9 and the market price. Information asymmetry between investors and issuers  
10 is a key factor contributing to IPO underpricing (Ljungqvist, 2006). The  
11 extent of underpricing represents the level of uncertainty associated with  
12 the equity (Ritter, 1984; Beatty and Ritter, 1986). In the United States, IPO  
13 underpricing is measured as the difference between the offer price and the  
14 closing price on the IPO day. For IPO research on capital markets with  
15 daily price fluctuation limits (e.g. China, Japan, Taiwan, Thailand, etc.),  
16 researchers need to go beyond the first day of trading to identify the fair  
17 market price for each IPO deal (Chen, Fok and Wang, 2006). This price  
18 difference is viewed a “money left on the table” since the original equity  
19 owners have sold their shares to institutional or individual investors at a  
20 pre-market price through underwriters before the IPO shares can be traded  
21 in the market. However, pre-market investors are likely to pay more for the  
22 issuing equities if there are little unknown factors or hidden issues in the  
23 IPO firms. Signaling allows investors to learn more about their potential  
24 investment target and thus reduces the underpricing of IPO. In other words,  
25 signaling provides a much needed means of communication to narrow the  
26 gap of information asymmetry between family firms and IPO investors.

27 In this research, we study the impact of select organizational attributes  
28 on the underpricing of family firm IPOs. Family firms are business organi-  
29 zations managed or controlled by one or more families. We focus on family  
30 firms for two reasons. First, family-owned and family-controlled firms rep-  
31 resent a unique context of IPO as these organizations have systematically  
32 demonstrated behaviors different from non-family firm (Ram and Holliday,  
33 1993; Tsui-Auch and Lee, 2003). Such behavioral differences between fam-  
34 ily and non-family firms further complicate the investors’ efforts to evaluate  
35 the quality of family firm IPOs. Second, consultants have long been working  
36 with their family business clients to seek means to best preserve the value  
37 of stocks and assets of companies. The discussions of shareholder rights are  
38 closely associated with the extensive studies on family business succession  
39 (Davis and Harveston, 1998; Lee, Lim and Lim, 2003; Chrisman, Chua and  
40 Sharma, 1998; Sharma and Rao, 2000; Sharma and Irving, 2005). As more

*Family Firm IPO Performance and Market Signals*

1 researchers turn to the capital market performances of family firms in recent  
2 years, our analysis provides a timely observation to this emerging topic of  
3 discussion.

4 Previous studies on agency theory have suggested that family firms are  
5 less likely to suffer from managerial opportunism due to its long-term ori-  
6 entation (Le Breton-Miller and Miller, 2006). However, family firms are  
7 more susceptible to the problem of control premium (Barclay and Holder-  
8 ness, 1989). Building on these studies, our research examine the impacts of  
9 three signals on the performances of family firm IPOs: Age of firms, the  
10 appointment of outside directors, and the percentage of family ownership.  
11 The findings of our investigation extend current literature in two ways. First,  
12 it highlights the strategic significance of three unique attributes of family  
13 firms. Second, we test our hypotheses using data collected from Taiwan  
14 Stock Exchange. Our data provides an opportunity to observe family firm  
15 IPO in an emerging market. This article is structured as follows. We will  
16 review the theories of IPO underpricing and present our hypothesis devel-  
17 opment in the next two sections. The fourth section offers a description of  
18 data collection and methodology. The results of our analysis are presented  
19 in the fifth section, followed by discussion and conclusion.

**INFORMATION ASYMMETRY AND UNDERPRICING**

21 The IPO stocks are priced and introduced to the market through investment  
22 bankers. These banks, or underwriters, help IPO issuers to determine an offer  
23 price and sell the stocks to institutional investors or individual investors  
24 before the stock being listed and traded in a public market. This process  
25 ensures the issuing company to raise enough capital from the market since  
26 all of the offering equities are sold at an acceptable price (Sherman, 2005).  
27 Underpricing occurs when investors from the public market are willing to  
28 pay more, sometimes much more, than the initial offer price to purchase the  
29 issuers' stock after the stock is being listed and traded in a stock exchange.  
30 The issuers would be able to completely retain the wealth created from  
31 IPO if investors believe the offer price reflects the fair value of the stocks.  
32 However, results of two multinational surveys show that the offer prices are  
33 usually set below the fair market price (Loughran, Ritter and Rydqvist, 1994;  
34 Ljungqvist, 2006: 9-10).

35 There are extensive discussions about the sources of IPO underpricing in  
the finance literature (see Ljungqvist, 2006 for a comprehensive review). One  
of the arguments is information asymmetry between issuing companies and

*Hung-Bin Ding and Kuntara Pukthuanthong-Le*

1 pre-market investors (Higgins and Gulati, 2006). An issuing company may  
2 be over-optimistic when presenting its operation data and financial outlook  
3 to its underwriter hoping to set a high subscription price for their equities.  
4 Prospective pre-market investors will perform the due diligence to verify the  
5 accuracy of information provided by the issuers and their underwriters. The  
6 more transparent the issuers' operation is, the more investors trust the reports  
7 and assessments from the issuer. When information asymmetry is not a major  
8 concern, the investors are likely to price the equity offering close to the  
9 expected market value. Nonetheless, pre-market investors are less likely to  
10 trust the self-evaluation provided by the issuers if the business operation and  
11 financial reporting of the latter are not transparent. Although the underwriter  
12 of an IPO deal can elect to ignore the information asymmetry problem and  
13 set a high pre-market subscription price, investor may not be willing to pay  
14 the price asked by the underwriters and issuers for the IPO equities.

15 In addition, most IPO firms are new and difficult to value. Unlike trading  
16 existing stocks in the market, investors face a great uncertainty to determine  
17 the fair price of the stocks. Investors can become informed by obtaining  
18 information about the issuing companies. The information gathering efforts  
19 reduce the uncertainty of IPO valuation. However, overcoming information  
20 asymmetry is costly. Informed investors would not buy the IPO stock in the  
21 aftermarket if the difference between the fair price and offer price is not big  
22 enough to compensate the information gathering cost. Underpricing thus  
23 is a justified compensation to attract informed investors before the equity  
24 is traded in the stock markets (Ritter, 1984; Beatty and Ritter, 1986). On  
25 the other hand, when the stock is traded in the market, the winner's curse  
26 theory (Rock, 1986) asserts that uninformed investors are likely to inflate  
27 underpricing by overpaying for a stock. Because uninformed investors are  
28 not able to assess the value of a stock, their bidding in the public market may  
29 be above or below the fair price. When their bidding prices fall below the  
30 fair price, they will be outbid by informed investors who offers a fair price  
31 to purchase the IPO equity. However, uninformed investors whose bidding  
32 prices exceed the fair price will outbid informed investors by over paying  
33 for the stock, thus increases the differences between IPO offer price and the  
34 fair market price.

35 Investors' ability to evaluate the quality of IPO strongly influences the  
36 extent of IPO underpricing. As underpricing transfers issuers' wealth to  
37 pre-market institutional and retail investors, issuers are motivated to reduce  
38 the cost of information gathering for investors by reducing the information  
39 asymmetry. Therefore signaling becomes an important measure to close the  
40 information gap between issuers and investors (Beatty and Ritter, 1986;  
41 Filatochev and Bishop, 2002).

**SIGNALING, AGENCY PROBLEM, AND FAMILY FIRM IPO PERFORMANCE**

1  
3 Signaling is a widely adopted practice by the publically trading firms to  
5 communicate with investors in the capital market. Effective and appropriate  
7 signals enable public firms to improve their performances in the capital  
9 market (Shapiro, 1983). Capital market signals include a broad range of  
11 organizational attributes, decisions, and even symbolic moves accessible to  
13 the investors. Examples of positive signals include the composition of the  
15 corporate boards (Filatotchev and Bishop, 2002) and top management teams  
(Higgins and Gulati, 2006), the renaming of the organization (Lee, 2001), and  
the appointment of key personnel (Lee and James, 2007). Signaling is most  
effective when the market signal itself is reinforced by other organizational  
decisions. For instance, investors are most likely to respond to a firm's name  
change if the focal organization implements supporting policies after making  
a name-changing announcement (Lee, 2001).

17 Positive and effective signaling is particularly important to family firms.  
19 Because of the coupling of ownership and management, family firms posse  
21 unique organizational attributes and demonstrate unique behavioral patterns  
(Litz, 1995; Chrisman, Chua and Sharma, 1998). The uniqueness of fam-  
23 ily firms result in additional sources of uncertainties when investors evalu-  
25 ate the qualities of family firm stocks. The generally low prices of family  
27 firms stocks in the United States may be a reflection of higher investment  
uncertainty compared to non-family firms (Astrachan and McConaughy,  
2001). Despite the tendency to suppress the stock prices of family firms,  
investors also reward family firms when these organizations demonstrate  
attributes reinforcing the positive characteristics of family firms. For exam-  
ple, founders of successful family firms are usually highly competent  
entrepreneurs and managers. It is therefore not surprising that stock prices  
of first generation family firms tend to outperform second generation family  
firms or non-family firms (Villalonga and Amit, 2006).

31 In addition to the visionary founder, family firms are known for their  
33 long-term orientation (Bertrand and Schoar, 2006) because of the founders'  
35 intention to pass the business to their heirs. Family firms are less likely to  
37 trade long-term objectives to increase short-term performance. The busi-  
ness owners' long-term commitments to their businesses are exemplified in  
some of the century-old family businesses. When a family firm is governed  
and managed by family members, the interests of owners and managers are  
aligned. The long-term orientation of owners should be reflected in family  
managers' business decisions. Although non-family managers may be more  
likely to pursue managerial opportunism than family managers in family

*Hung-Bin Ding and Kuntara Pukthuanthong-Le*

1 governed firms, according to Block and Thams (2007), the short-term ori-  
2 ented managerial opportunism is more likely to occur in non-family firms  
3 than in family governed firms with non-family managers for two reasons.  
4 First, family firm owners know their business. The narrow gap of information  
5 between family firm owners and non-family managers reduces the likelihood  
6 of managerial opportunism. Second, as the wealth of family is tied to the  
7 performances of family firms, family owners are motivated to closely moni-  
8 tor the non-family managers. Therefore, when an old family firm goes to the  
9 public for capital, the age of the focal firm reinforces investors' perception  
10 about family firms and their long-term orientation. This reinforced signal  
11 reduces the investors' uncertainty. We hypothesize:

### **Hypothesis 1**

13 Older family firms have lower underpricing.

14 Early family business research has argued that the integration of family  
15 and business organization makes family firms vulnerable to actions aimed to  
16 utilize organizational resource for family gains (Barnett, 1960). More recent  
17 studies on the governance of family business have also suggested an agency  
18 problem between family shareholders and other shareholders in family firms  
19 (Morck and Yeung 2003). In a family firm, family owners, including original  
20 founders, their families, and decedents, usually have enough votes to control  
21 the corporate board. The non-family shareholders are unable to obtain major-  
22 ity votes in the board meetings. When the interests of family and non-family  
23 shareholders are at odds, the corporate directors are likely to make favorable  
24 decisions to family shareholders. The appointment of independent directors  
25 helps to safeguard the interests of non-family shareholders in the board and  
26 thus reduces the uncertainty associated with the investment of family firm  
27 equities (Anderson and Reeb, 2004). Managerial entrenchment is less likely  
28 to occur with the presence of outside directors. In the context of IPO, the  
29 inclusion of non-affiliated outside directors also assures that the voices of  
30 investors are going to be represented in the board thus reduces IPO under-  
31 pricing (Certo, Covin, Daily and Dalton 2001). As increasing the influence  
32 of non-family directors on the board reduces the uncertainty associated with  
33 investing family IPO, we hypothesize:

### **Hypothesis 2**

35 Giving non-family directors more seats on the corporate board reduces  
36 underpricing of a family firm IPO.

37 Although outside directors may not seem to side with the interest of family  
38 owners, the appointment of non-family directors offers two advantages to the  
39 controlling family. First, the outsiders may bring expertise to complement

*Family Firm IPO Performance and Market Signals*

1 the abilities of incumbent board members (Filatochev and Bishop, 2002).  
2 Second, the board composition of an IPO company is under the scrutiny  
3 of investors. As the quality of directors is an important quality indication  
4 of the issuing firm (Higgins and Gulati, 2006), the owners are motivated  
5 to place highly competent individuals on the corporate board as a positive  
6 market signal. In addition, empirical evidences supporting the entrenchment  
7 hypothesis suggest that family shareholders are likely to increase their own  
8 private benefits when they control large percentage of shares (Shleifer and  
9 Vishny, 1997). Appointing professionals who are loyal and friendly to the  
10 family on the board allows the family owners to retain control of the com-  
11 pany without putting under qualified family members on the board. When  
12 the controlling family owns large percentage of shares, the family can easily  
13 influence the election of board members and appoint their friends or loyal  
14 long-time employees to safeguard family interests in the board meetings.  
15 Without a large percentage of ownership, the family owners have less influ-  
16 ence to the election of directions and are less likely to fill the board with  
17 friendly directors. Since non-family directors elected in the presence of high  
18 family share ownership are more likely to side with the controlling family  
19 than those elected without the presence of high family share ownership, we  
20 hypothesize a moderation effect:

**Hypothesis 3**

21 The relationship stated in H2 will be positively moderated by the percentage  
22 of shares owned by the family at IPO.  
23

**RESEARCH DESIGN AND VARIABLE DEFINITION****Sample Selection**

25 *Business Groups in Taiwan*, published annually by China Credit Information  
26 Service, profiles the largest 250 Taiwan-based business groups in terms of  
27 total assets. This guide identifies family-owned firms and publishes the fam-  
28 ily trees of the controlling families in the corporate profiles. We identify 98  
29 family firms whose profiles have constantly appeared on *Business Groups in*  
30 *Taiwan* from 1997 to 2004. In this research, a family firm is defined as a firm  
31 that has at least two family members sitting on the board or the management  
32 team. This definition is consistent with the definitions adopted by previous  
33 finance research (Villalonga and Amit, 2006; Anderson and Reeb, 2003).  
34 Among these firms, we select IPO firms issued between 1987 and 2004 that  
35 have been constantly named as top 250 largest corporations in Taiwan. We

*Hung-Bin Ding and Kuntara Pukthuanthong-Le*

1 are able to obtain the IPO performance data of these 98 family firms from the  
 2 Securities Data Corporation's (SDC) Global New Issues database. Post-IPO  
 3 stock prices are collected from the Datastream and we compare them with  
 4 those provided in the SDC. Cash and equivalents are incompletely avail-  
 5 able in the SDC; as a result, we collect it from the Worldscope. Firm age is  
 6 the difference between founded and IPO dates, which we collect from the  
 7 SDC and company website. The corporate governance data is obtained from  
 8 Taiwan Economic Journal (TEJ).

9 We then match these 98 IPO firms against DataStream by requiring them  
 10 to have closing stock prices available in DataStream on the fifteenth and thirti-  
 11 eth calendar day after the IPO. Our close examination of the SDC database  
 12 reveals several data problems. We find errors in IPO issue dates for the  
 13 majority of our sample. For example, the SDC often mistakenly provides  
 14 announcement or subscription dates as issue dates. Over 50 percent of IPOs  
 15 in Taiwan have this problem. To overcome this data problem, we manually  
 16 cross-reference each of our sample IPOs with Bloomberg to identify and  
 17 correct the erroneous issue dates. Our final sample consists of 84 family  
 18 IPOs and 84 non-family firms.<sup>1</sup>

## 19 Empirical Models and Key Variables

20 We examine the association of underpricing with various family owner-  
 21 ship and IPO variables using the following regression model (time subscript  
 22 omitted):

23 
$$\text{Underpricing}_k = B_0 + B_1 (\text{firm age}) + B_2 (\% \text{ of non-family directors})$$
  
 24 
$$+ B_3 (\% \text{ of non-family directors}) * (\% \text{ of family ownership at the IPO}) + B_4$$
  
 25 
$$(\% \text{ of family ownership at the IPO}) + B_5 (\text{underwriter ranking}) + B_6 (\text{IPO}$$
  
 26 
$$\text{volume}) + B_7 (\text{high-mid tech dummy}) + B_8 (\log \text{ of proceeds}) + B_9 (\text{before}$$
  
 27 
$$1995 \text{ dummy}) + B_{10} (\text{cash per sales}) + E.$$

28 where *Underpricing*<sub>k</sub> is the extent of IPO underpricing for firm *k*, measured  
 29 as the percentage return from the offer price to the closing price on the  
 30 *fifteenth* calendar day after the IPO.

31 Note that our definition of underpricing is consistent with existing interna-  
 32 tional IPO studies that generally measure IPO initial returns over a period of  
 33 several weeks (e.g., Loughran, Ritter and Rydqvist, 1994; Ljungqvist, Jenk-  
 34 inson and Wilhelm, 2003; Ritter, 2003). The reason for the use of longer  
 35 return windows is twofold. The price movements in the Taiwanese mar-  
 36 ket during the initial days of trading are restricted by exchange regulation,  
 37 delaying the emergence of an equilibrium price.<sup>2</sup> Hsu and Hung (2005)

*Family Firm IPO Performance and Market Signals*

1 report a daily price limit of  $\pm 7\%$  is imposed on securities traded in Tai-  
 3 wan's stock markets; therefore, a stock price could continue to hit the limit  
 several days after the IPO date. Lin, Lee and Liu (2003) measure initial  
 5 return using the closing price on the 20<sup>th</sup> trading date. They argue that  
 the first closing market price or the "non-hit" price in the post-IPO market  
 7 does not hit either the upper or lower price limit. To compute IPO under-  
 pricing using the first closing price ignores any adjustments in the market  
 9 value of the IPO shares after the "non-hit" price is observed. We estimate  
 equation (1) on sample of 84 family IPOs and on sample of 84 non-family  
 firms.

**11 Independent variables**

The first independent variable is the *firm age* (Firm age). We calculate a  
 13 company's age as the difference in years between its founding date and its  
 IPO date. We hand-fill gaps in SDC's coverage of company founding dates,  
 15 and manually check all firms that according to SDC were zero to three years  
 old at the time of their IPO, because Loughran and Ritter (2004) note that  
 17 SDC frequently reports the most recent incorporation date rather than the  
 founding date.<sup>3</sup>

19 The second independent variable is the *percentage of non-family direc-*  
*tors* (% of non-family directors), which is defined as number of directors  
 21 who are not members of controlling family per total number of directors.  
 The third independent variable is *the percentage of family ownership at the*  
 23 *IPO* (% of family ownership at the IPO). It is measured as the percentage  
 of shares owned by original family business owner before the first trading  
 25 date.

**Control Variables**

27 We derive the other control variables from the extant IPO literature. These  
 variables reflect the extent of information asymmetries in the IPO process  
 29 and the degree of uncertainty over issue value. Specifically, we include three  
 firm-level underpricing determinants, which we discuss below.

31 First, we control for *underwriter ranking* (Underwriter ranking). The  
 extant literature shows that higher ranked underwriters are able to help IPOs  
 33 reach the better IPO valuation (Carter and Manaster, 1990; Carter, Dark and  
 Singh, 1998); as a result, underpricing of IPOs associated with high-ranked  
 35 underwriters is low. Moreover, higher ranked investment bankers underwrite  
 good quality IPOs. Being associated with high-ranked underwriters provides  
 37 certification and should reduce litigation risk. On the other hand, more recent

*Hung-Bin Ding and Kuntara Pukthuanthong-Le*

1 studies such as Cliff and Denis (2004) show that analyst coverage provided  
by high-ranked underwriters is positively related underpricing.

3 The second IPO control variable is *IPO volume* (IPO volume). The extant  
IPO literature has long recognized that cycles exist in both the volume and  
5 the average initial returns of IPOs.<sup>4</sup> For example, Ibbotson and Jaffe (1975)  
and Lowry and Schwert (2002) find a strong pattern of negative associations  
7 between current IPO underpricing and prior IPO volume. To control for  
cyclical patterns in the IPO market, we construct an IPO volume variable  
9 for every IPO, which is defined as the total number of domestic IPOs issued  
over the 12-month period ending in the month in which the IPO was issued.

11 Third, we control for *industry effect* by assigning dummy variable equal  
to one for IPO that is in high- mid tech industry. We apply the Organization  
13 for Economic Co-operation and Development (OECD)'s four-group classi-  
fication according to their Research and Development intensity (Cuccelelli  
15 and Micucci, 2008). A large body of literature shows high-tech firms have  
higher information asymmetry than non high-tech firms.

17 The fourth IPO control variable is the *natural logarithm of issue proceeds*  
(Log of proceeds), one of the most commonly used for underpricing deter-  
19 minants. Larger firms are generally considered less risky than smaller firms.  
Hence, the size of the issue (in U.S. dollars) is expected to be negatively  
21 correlated with underpricing (Beatty and Ritter, 1986).

23 Fifth, we control for *the impact of the regulatory change on the equity*  
*market* (Before 1995 dummy). The Taiwan Stock Exchange introduced a  
25 regulatory change in 1995 to allow up to 50% of IPO equity being sold to  
pre-market investors through discretionary auction. Before 1995 dummy is  
27 a dummy variable equal to 1 if IPOs went public before 1995 and zero if  
otherwise.

29 Finally, we also control for financial performance of each firm using *cash*  
*and equivalent per sales* (Cash per sales). The high level of cash per sales  
implies the high level of liquidity and strong financial performance. We use  
31 this variable to control the corporate reputation of individual firms as good  
financial performances are highly correlated with the corporate reputations  
33 (Roberts and Dowling, 2002).

### Descriptive Statistics

35 Table 1 provides mean and median of underpricing, independent variables,  
and control variables for family IPOs. On average, they had been founded for  
37 28 years before going public. The median age is 27 years, which is close to  
the average. The average 15-day return is 22% whereas the median is lower,

*Family Firm IPO Performance and Market Signals*

Table 1. Descriptive Statistics of IPO Underpricing.

Variables	Family-Controlled IPOs	
	Mean	Median
15-day Underpricing (%)	22.00	12.92
Firm age (years)	28.29	27.00
% of non-family directors	74.22	77.78
% of family ownership at IPO	17.86	17.43
Underwriter ranking	3.51	4.00
Log of proceeds	16.67	16.61
IPO volume	40.70	40.00
Before 1995 dummy (%)	26.19	0.00
High-mid tech dummy (%)	38.10	0.00
Number of IPOs	84	

There are 84 family Taiwanese IPOs that went public from January 1, 1987 through December 31, 2004. All variables are described in the Appendix.

1 12.92% implying some IPOs in our sample have large 15-day returns tilting  
 2 the mean to be higher than the median. For ownership variables, on average  
 3 most family IPOs have 74.22% of non-family directors on the board, which  
 4 is close to the median of 77.78%. The average (median) of family ownership  
 5 is 17.86% (17.43%).

6 In term of IPO aspects, the underwriters associated with family IPOs have  
 7 the mean (median) rank of 3.51 (4.0), which is lower than the average as the  
 8 rank scale is from 0–9.1. In term of offering size, family IPOs have logged  
 9 proceeds of 16.67 or USD 17.37 million in proceeds. The median of logged  
 10 proceeds is 16.61 or USD 16.35 millions in proceeds, which is close to the  
 11 average number. Taiwanese family IPOs in our sample seem to have roughly  
 12 the same size. In term of decision to go public, most family IPOs decide  
 13 to go public when other 41 IPOs went public during one year before the  
 14 issuing time. Regarding to the regulatory impact, on average only 26% of  
 15 family IPOs in our sample went public before 1995. As shown in footnote  
 16 1, years 1995 and 1996 are the hot IPO period among 14 years of our study  
 17 and 12% and 13%, of our family IPOs went public in these two consecutive  
 18 years. Moreover, 38% of family IPOs are in high-mid tech industry. Lastly,  
 19 family IPOs, have the average cash and equivalents per sales of 15.68% and  
 20 the median of only 2.45% implying that the high mean of cash per sales is  
 21 driven by only a few firms.

Hung-Bin Ding and Kuntara Pukthuanthong-Le

Table 2. Correlation Coefficients of Family and Non-Family Controlled IPOs.

Variables	Firm Age	% of Non-Family Directors	% of Family Ownership at IPO	Underwriter Ranking	IPO Volume	High-Mid Tech Dummy	Log of Proceeds	Before 1995 Dummy	Cash Per Sales
15-day Underpricing	-0.066 (0.553)	-0.368 (0.000)	-0.088 (0.428)	-0.032 (0.771)	-0.182 (0.097)	0.562 (0.000)	0.033 (0.765)	0.787 (0.000)	0.022 (0.844)
Firm age		0.079 (0.573)	-0.031 (0.777)	0.147 (0.181)	-0.041 (0.708)	0.324 (0.000)	0.170 (0.121)	-0.681 (0.000)	-0.100 (0.368)
% of non-family directors			0.571 (0.000)	0.048 (0.456)	-0.042 (0.705)	0.248 (0.393)	-0.008 (0.941)	-0.149 (0.000)	-0.040 (0.720)
% of family ownership at IPO				-0.110 (0.318)	0.182 (0.098)	0.688 (0.000)	0.071 (0.522)	-0.569 (0.000)	-0.065 (0.555)
Underwriter ranking					0.055 (0.619)	0.724 (0.000)	-0.119 (0.281)	-0.703 (0.000)	-0.079 (0.434)
IPO Volume						0.260 (0.017)	-0.063 (0.566)	0.034 (0.755)	-0.046 (0.676)
High- mid tech dummy							0.001 (1.000)	-0.467 (0.000)	-0.090 (0.415)
Log of proceeds								-0.022 (0.841)	0.112 (0.310)
Before 1995 dummy									-0.059 (0.591)

There are 84 family IPOs that went public during January 1, 1987 and December 31, 2004. Descriptions of all variables are in the Appendix. Pearson correlation coefficients for family IPOs are reported. P-value for t-test significance of each correlation coefficient is reported under each correlation coefficient.

*Family Firm IPO Performance and Market Signals*

1 Table 2 provides correlation coefficients of all variables. 15-day returns  
2 have significant negative correlation with % of non-family directors;  
3 whereas, it has significant positive correlation with high-mid tech dummy  
4 and before 1995 dummy. There was no obvious reason to suspect that our  
5 results might be affected by linear dependencies across the independent vari-  
6 ables; nevertheless, we computed the variance inflation factor (VIF) statistics  
7 for each independent variable, which is slightly above 1.0 (Neter, Wasser-  
8 man and Kutner, 1985) and for the overall, which never exceeds 2.50. We  
9 use rule-of-thumb cutoffs of 10 for the overall model and 30 for individual  
10 variables (the 2003 Stata 8.0 Manual) and conclude that no variable causes  
11 undue influence on the results because of multicollinearity.

**Results of Analysis**

13 Table 3 presents the multivariate regression of 15-day underpricing. The  
14 results show that firms that are older have lower underpricing. The coefficient  
15 is  $-6.96$ , which is highly and negatively significant implying that underpric-  
16 ing of IPO that is one year older is  $-6.96\%$  less underpriced. The evidence  
17 strongly support hypothesis 1. The coefficient of % non-family directors is  
18  $-6.14$ , which is negatively and highly significant implying that a percent  
19 increase in non-family directors per total directors decreases underpricing  
20 by  $-6.14\%$ . The coefficient of % of non-family directors is highly signifi-  
21 cant with t-statistics of  $-18.94$  strongly supporting hypothesis 2. Finally, the  
22 interaction term of % outside non-family directors and % family ownership at  
23 the IPO is highly and positively significant with t-statistics of 2.25. Our anal-  
24 ysis suggests that the relationship between the appointment of non-family  
25 directors and IPO underpricing is positively moderated by the % of family  
26 ownership. That is, the appointment of non-family increases underpricing  
27 in the presence of high family ownership. On the other hand, non-family  
28 director appointment reduces underpricing when the family ownership is  
29 low. This result supports our third hypothesis.

31 Evidently, an increase in % of family ownership, *ceteris paribus*,  
32 decreases underpricing by  $-7.97\%$ . We suspect that a family will have a  
33 stronger sense of commitment once its ownership is higher; as a result,  
34 it will try to reach the accurate IPO price, leave less money on the table,  
35 and thus underprice less. When both non-family directors *and* family  
36 owner increase their ownership by 1% each, underpricing decreases 12.93%  
37 ( $-6.14 + 1.17 - 7.97$ ). Although an increase in family ownership decreases  
the impact of non-family directors on underpricing, having high % of family  
ownership reduces overall underpricing.

Hung-Bin Ding and Kuntara Pukthuanthong-Le

Table 3. Determinants of IPO Underpricing.

Explanatory Variables	15-day Underpricing
Constant	163.08*** (10.371)
Firm age	-6.956*** (-2.939)
% of non-family directors	-6.138*** (-18.943)
(% of non-family directors)* (% of family ownership at the IPO)	1.174** (2.254)
% of family ownership at the IPO	-7.967** (-2.193)
Underwriter ranking	-3.845** (-2.526)
IPO volume	0.180** (2.235)
High-mid tech dummy	0.913** (3.215)
Log of proceeds	0.099 (0.132)
Before 1995 dummy	0.046 (1.443)
Cash per sales	-0.344 (-0.811)
Adjusted R-squared	98.25%

This table presents regressions of 15-day underpricing of 84 family IPOs that went public from January 1, 1987 to December 31, 2004. Descriptions of all variables are in the Appendix. White's heteroscedasticity-adjusted t-statistic is shown under each coefficient.

\*\*\*Indicates statistical significance at the 1% level.

\*\*Indicates statistical significance at the 5% level.

\*Indicates statistical significance at the 10% level.

- 1 For the effect of other control variables, being associated with high-ranked  
 2 underwriters benefits the IPO as they help IPO firms decrease underpricing.  
 3 They seem to help the issuing firm accurately price as explained by Carter  
 4 and Manaster (1990)'s and Carter *et al.* (1998). Furthermore, high-mid tech  
 5 IPOs and those deciding to go public during the hot market i.e., when other  
 IPOs decide to go public during 12 months before the issuing time have high

*Family Firm IPO Performance and Market Signals*

1 underpricing. Controlling for other factors, IPO size measured by logged  
proceeds, before 1995 dummy and liquidity captured by cash per sales cannot  
3 explain the variation in IPO underpricing

**ROBUSTNESS TESTS**

5 First, we apply the strictest definition of family firms by including those that  
not only have at least two family members on boards or management team but  
7 also have family ownership at the IPO at least 17%, which is about the same  
as the average (17.86%) and median (17.83%) of the sample. The mean of  
9 family ownership reported in Villalonga and Amit (2008) is 16.1%, which is  
close to that of our sample. We perform a robustness test on the strict sample  
11 and report the results in column 2, Table 4. Overall, the results remain intact  
with those in Table 3. For control variables, underwriter ranking remains  
13 negatively significant but high-mid tech dummy is no longer significant.

Second, we examine whether our results are robust to size effect by seg-  
15 menting the sample into thirds according to their log of proceeds. In the  
extant finance literature, log of proceed measures IPO offering size and thus  
17 captures firm size. We have tested whether there are any size effects between  
the top and bottom third groups and shown the results in columns 3 and 4  
19 of Table 4. The essence of the results still holds. That is, we cannot reject  
hypotheses 1, 2, and 3. For the control variables, surprisingly underwriter  
21 ranking is insignificant for both large and small size firms. High-mid tech  
dummy is positively significant only for small size firms. Interestingly, the  
23 coefficient of IPO volume for large firms is negative; although, it is insignif-  
icant. In the main results, it is positive as we expect implying firms that went  
25 public during hot period or high IPO volume should have high underpricing.

Third, although non-family directors are measured as a percentage of  
27 total board seats, it may be meaningless when board size is very small.  
As a consequence, we include board size as another control variable. The  
29 results in column 5, Table 4 are not much different from those in the main  
regression. That is, we cannot reject hypotheses 1, 2, and 3. The coefficients  
31 of board size and underpricing ranking are not significant; while, high-mid  
tech dummy remains significant. The significance of before 1995 dummy  
33 emerges in this regression. Firms that went public before 1995 have higher  
underpricing.

35 Finally, we perform a robustness test on 7-day and 21-day underpricing  
controlling shorter and longer windows than 15-day underpricing. Although  
37 the magnitudes of the key variables coefficients are slightly different, we

Hung-Bin Ding and Kuntara Pukthuanthong-Le

Table 4. Robustness Tests of IPO Underpricing Determinants.

Explanatory Variables	15-day Underpricing					The Whole Sample Including Board Size as Another Control Variable	7-Day Underpricing	21-Day Underpricing
	Family Ownership at the IPO Greater than 17%	Large Size Firms	Small Size Firms					
Constant	-59.636*** (-2.681)	230.116*** (8.366)	126.902** (2.274)	155.752*** (10.425)	140.943*** (7.409)	110.703*** (6.703)		
Firm age	-6.711** (-2.733)	-4.017** (-2.069)	-8.025*** (-3.958)	-7.362** (-2.157)	-6.084** (-2.211)	-5.073*** (-3.209)		
% of non-family directors	-1.275*** (-4.001)	-2.976*** (-11.091)	-1.903*** (-3.242)	-2.132*** (-17.950)	-1.686*** (-11.147)	-1.466*** (-11.162)		
(% of non-family directors)*	1.175*** (4.901)	1.052** (2.078)	1.115** (2.453)	1.084** (2.632)	1.052** (2.278)	1.126*** (3.556)		
(% of family ownership at the IPO)								
% of family ownership at the IPO	-8.948*** (-4.869)	-4.236** (-2.035)	-9.328*** (-4.379)	-7.024** (-2.563)	-4.196*** (-3.202)	-10.402*** (-3.433)		
Underwriter ranking	-4.167*** (-3.158)	(0.838) (0.525)	-0.803 (-0.355)	-1.656 (-1.590)	-2.660** (-2.006)	-2.574** (-2.235)		
IPO volume	0.080 (1.129)	-0.188 (-1.735)	0.166 (0.677)	0.169** (2.247)	0.228** (2.377)	0.176** (2.108)		
High-mid tech dummy	0.013 (0.643)	0.059 (1.377)	(0.138)** (2.258)	0.114*** (3.933)	0.100** (2.724)	0.138*** (4.304)		

Family Firm IPO Performance and Market Signals

Table 4. (Continued)

Explanatory Variables	15-Day Underpricing						21-Day Underpricing
	Family Ownership at the IPO Greater than 17%	Large Size Firms	Small size Firms	The Whole Sample Including Board Size as Another Control Variable	7-Day Underpricing		
Log of proceeds	-0.283 (0.475)	-0.660 (-0.564)	1.913 (0.471)	0.330 (0.453)	-0.221 (-0.239)	0.734 (0.912)	
Before 1995 dummy		0.043 (1.188)	0.054 (0.453)	0.055* (1.795)	0.049 (1.260)	0.031 (0.919)	
Cash per sales	0.013** (2.442)	-0.002 (-0.457)	-0.003 (-0.051)	-0.004 (-0.342)	-0.005 (-0.360)	-0.024** (-2.003)	
Board size				0.176 (1.543)	0.180 (1.238)	0.335** (2.650)	
Adjusted R-squared	94.91%	97.64%	94.45%	97.67%	94.97%	95.76%	

This table presents regressions of 15-day underpricing (columns 2 to 5), 7-day underpricing (column 6), and 21-day underpricing (column 7) of 84 family IPOs that went public from January 1, 1987 to December 31, 2004. Descriptions of all variables are in the Appendix. White's heteroscedasticity-adjusted t-statistic is shown under each coefficient.

\*\*\* Indicates statistical significance at the 1% level.

\*\* Indicates statistical significance at the 5% level.

\* Indicates statistical significance at the 10% level.

*Hung-Bin Ding and Kuntara Pukthuanthong-Le*

1 cannot reject hypotheses 1, 2, and 3 in both 7-day and 21-day underpricing.  
2 The results show IPOs that are associated with high ranked underwriters, that  
3 are not issued during high IPO volume, and that are not high-mid tech have  
4 lower 7-day underpricing. On the other hand, IPOs that have high liquidity  
5 and small board size are less underpriced at 21<sup>st</sup> day. In the longer term (in  
6 this case 3 weeks), liquidity and board size play a vital role of determining  
7 underpricing degree.

## DISCUSSION AND CONCLUSION

9 IPO is an important mechanism to raise capital and to create new wealth for  
10 owners of a firm. However, there has been little research on family firm IPOs.  
11 As low managerial opportunism and high control premium are two widely  
12 observed traits of principal-agent relationships in family firms, we tested the  
13 effects of age of IPO firms and the appointment of non-family directors in  
14 underpricing reduction using data from Taiwan Stock Exchange. The results  
15 of analyses support both hypotheses. We also tested the moderation effect of  
16 family ownership in the relationship between non-family director appoint-  
17 ment and IPO underpricing. This hypothesis is also supported. The central  
18 message of our research is that market signals stressing the unique strength  
19 of family firms and low managerial opportunism, improve the performance  
20 of family firm IPOs. In addition, market signals also effectively improve  
21 IPO performances when they address the corporate governance concerns  
22 associated with family businesses.

23 When we specifically test the impact of non-family director appointment  
24 on family firm IPO performance, the results suggest that the appointment  
25 of non-family directors, not necessarily non-employee, significantly reduce  
26 underpricing in family IPOs. Our findings are in agreement with recent  
27 studies on the positive impact of corporate governance practices on fam-  
28 ily business performances (Schulze, Lubatkin, Dino and Buchholtz, 2001;  
29 Anderson and Reeb, 2004; Anderson, Mansi and Reeb, 2004). However,  
30 this research also departs from the current literature in two areas. First, our  
31 analysis supports a broader definition of outside directors in the context of  
32 family business. From the family's point of view, non-family members are  
33 outsiders. The significant negative correlation between the appointment of  
34 these outside directors and IPO underpricing suggests that investors may be  
35 in agreement with family business owners about the broader view of outside  
36 directors and their contribution to reduce uncertainty. This result implies  
37 that family firms may avoid engaging in time consuming search process to

*Family Firm IPO Performance and Market Signals*

1 find and hire independent directors. Second, this research also shows that  
2 the effect of outside director appointment is contingent to the influence of  
3 family owners. The level of family ownership concentration affects invest-  
4 ment uncertainty as owners are able to exert strong influence to the business  
5 decision-makings when family controls a large percentage of the shares. In  
6 the presence of highly influential family owners, investors are more skeptical  
7 to the corporate governance practices. Although family ownership reduces  
8 the impact of outside directors on underpricing, the issuing firms gain the  
9 maximum benefit of reducing underpricing from having an increase in both  
10 outside directors and family ownership.

11 This paper has two major limitations. First, Taiwan has very few long-  
12 lasting family firms. Most of the organizations include in this study are first  
13 generation family firms. None of our sample companies has gone beyond  
14 the third generation ownership. Although this is not uncommon in emerging  
15 economies, the implications of our findings to developed economies such  
16 as the United States may be weaker. Second, IPO underpricing can be an  
17 intended effort to boost post IPO stock price by the family business owners.  
18 Because investors incline to pursue underpriced stocks, intentionally under-  
19 priced IPOs create an impression of high demand in the eyes of investors.  
20 Family owners who fail to retain wealth created from IPO can make up  
21 their “money left on the table” and gain new wealth by selling their stocks  
22 in the market or by issuing a second public offering at much higher prices  
23 (Ljungqvist, 2006). Since the objective of this research is to examine the  
24 relationship between the performance of family firm IPOs and signaling,  
25 not the creation of wealth by family firm owners, our limited scope is jus-  
26 tified. However, future exploration on the owners’ intention to gain wealth  
27 from trading and second offering may enhance our understandings on the  
28 role of signaling in the capital market performance of family firms.

29 The outcome of our analyses also has implications to the practitioners.  
30 Signaling plays a critical role in the success of family firm IPO. In addition  
31 to common IPO signals such as the composition of top management team  
32 and corporate governance performance, family firm IPOs are also responsive  
33 to issues unique to family firm including the age of firms, the non-family  
34 directors, and the percentage of shares owned by the family. Family own-  
35 ers can improve the IPO performance by appointing non-family directors  
36 and increasing shares controlled by the family.<sup>5</sup> Although family business  
37 owners cannot change the age of the IPO firms, the knowledge of age effect  
38 can motivate seek young family firms to put more efforts in areas such as  
39 corporate governance practices to produce positive signals to neutralize the  
40 liability of young age.

*Hung-Bin Ding and Kuntara Pukthuanthong-Le*

## 1      **ENDNOTES**

- 3      <sup>1</sup> Among 84 family IPOs, one of them went public in 1987, 8 in 1991, 9 in 1992, 6 in 1993, 8 in 1994, 10 in 1995, 11 in 1996, 4 in 1997, 6 in 1998, 7 in 1999, 5 in 2000, 4 in 2001, 4 in 2002, and 1 IPO in 2004.
- 5      <sup>2</sup> This argument also applies to France and Japan where “circuit breakers” are installed to limit post-IPO daily price fluctuations within a certain preset limit.
- 7      <sup>3</sup> A detailed discussion of some of the errors in the SDC database can be found on Alexander Ljungqvist’s website at <http://pages.stern.nyu.edu/~aljungqvist.htm>.
- 9      <sup>4</sup> Periods of high average initial returns and rising volume are commonly referred to as “hot issues” markets.
- 11     <sup>5</sup> It can be shown easily that underpricing decreases by 12.93% when both family ownership and non-family directors increase by 1 %, denoted by (1,1), ceteris paribus, by 7.97% when (1,0), by 3% when (1,-1), and by 6.14% when (0,1). On the other hand, underpricing increases by 15.28% when (-1,-1), by 7.97% when (-1,0), 0.66% when (-1,1) and 6.14% when (0,-1). The first number in blankets denotes a percentage change in family ownership and the latter number denotes a percentage change in non-family directors.
- 13
- 15
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*Family Firm IPO Performance and Market Signals*1 **Appendix: Definitions of Pre-IPO Variables**

Variables	Source	Definition
<i>Panel A: Dependent and Independent Variables</i>		
15-day Underpricing (%)	SDC and Datastream	Market adjusted 15 day return, which is [(closing price 15 days after the IPO date - offer price)/offer price] – (15-day Taiwanese market return.)
Firm age	SDC and company's website	Number of years the firm was founded before the IPO
% of non-family directors	TEJ	Percentage of non-family directors by total number of board directors
% of family ownership at IPO	TEJ	Percentage of total shares owned by members of a family before the first trading day
<i>Panel B: Control Variables</i>		
Underwriter ranking	SDC	Loughran and Ritter (2004)'s adjusted Carter-Manaster underwriter reputation ranking; the scale is 0-9.1
IPO volume	SDC	The total number of domestic IPOs issued over the 12-month period ending in the month in which the IPO was issued
High-mid tech dummy	SDC	It is equal to one if the company belongs to the high and medium-high technology sectors, and zero if it was in the medium-low and low technology group. Sectors were grouped according to the OECD classification of three-digit SIC code according to their R&D intensity (Cucceilli and Micucci, 2008)
Log of proceeds	SDC	Natural logarithms of the money raised, after fees and expenses or natural log of shares offered in IPO multiplied by offer price after fees and expenses
Before 1995 dummy	SDC	A dummy variable equal to one if the IPO went public before 1995 and zero for otherwise
Cash per sales	SDC and Worldscope	The fiscal amount of cash and equivalents divided by sales in the most recent fiscal year before firm going public

3 Note: TEJ stands for Taiwan Economic Journal. SDC stands for Securities Data Corporations.