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# Underpricing of IPOs of U.S. Family Controlled Businesses

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## Abstract

This paper evaluates the initial public offering to determine if there is any significant difference in the underpricing between Family Controlled Businesses (FCBs) and Non-Family Controlled Businesses (NFCBs), which in turn can shed light into the control and operational differences between the two groups. This study evaluates first day underpricing of IPOs in FCB versus NFCB during the 1996-2004 period and finds that FCBs experienced less underpricing on the first day of trading versus NFCBs. The FCBs paid higher underwriting fees for a less prestigious Investment Banker but experienced less underpricing.

**Keywords:** IPOs, Family business

**JEL Classification Codes:** G24 and G32

## 1. Introduction

Raising external equity financing using an Initial Public Offering (IPO) is an important milestone in the history of any firm. Going public allows a firm to raise new capital, enlarge the shareholder base and establishes a value for the firm in the secondary stock market. One of the drawbacks of going public is that the shares sold in the IPO may be underpriced resulting in fewer proceeds raised for the firm and selling shareholders. Another drawback is the potential loss of control for the selling family. Prior research has identified important differences between family businesses and non-family businesses in various areas of performance. This study looks to a specific event, the initial public offering (IPO), to evaluate whether there is any significant difference in the underpricing between the Family Controlled Businesses (FCBs) and Non-Family Controlled Businesses (NFCBs), which in turn can shed light into the control and operational differences between the two groups.

Persistence of underpricing of Initial Public Offerings (IPOs) in the U.S. and other countries is well documented in the academic research. According to Ljungqvist (2007) theories explaining IPO

underpricing can be broadly classified into four different groups: asymmetric information, institutional reasons, ownership and control considerations, and behavioral approaches. In the following sections we discuss the theoretical models of underpricing and the results of empirical studies using these models.

## **2. IPO Underpricing Literature**

The best established theoretical models on IPO underpricing are based on asymmetry in information between the key parties to an IPO transaction – the issuing firm, the investment bank underwriting and marketing the issue, and the investors who participate in the IPO. Rock (1986) divides the investors into two categories – informed and uninformed. Informed investors have a better knowledge of the true value of a firm's shares and will bid for attractively priced IPOs and will not bid for the unattractive ones, while the uninformed investors bid for IPOs in a more random fashion. This in turn will result in the informed investors receiving most of the attractive IPOs, while the uninformed investors will end up getting predominantly the unattractive IPOs. Uninformed investors are aware of this problem and will not participate in the IPO process unless they have a net positive expected return from the IPO. It is assumed in this model that the total demand for new IPOs by the informed investors are not sufficiently large and to be successful an IPO must also attract uninformed investors. In this case the issuing firms underprice the IPO to attract the uninformed investors.

Information asymmetry between the issuing firm and the investors also can lead to underpricing of the IPO. Ritter (1984) pointed out that investors in firms with a high degree of uncertainty about the 'true' price of the IPO will have higher underpricing. Uncertainty about the true price will increase the cost of information gathering for the informed investors and hence they need a higher discount on the issue price to cover the cost of information gathering. This hypothesis has been tested in several studies using proxies for uncertainty such as age of the firm (Ljungqvist and Wilhelm, 2003), log sales (Ritter, 1987), industry (Benveniste, Ljungqvist, Wilhelm and Yu, 2003), use of issue proceeds (Beatty and Ritter, 1986) and trading volume (Miller and Riley, 1987). Issuing firms reduce the information asymmetry by lowering the issue price, i.e. increasing the underpricing, as suggested by Ibbotson and Jaffe (1975).

Agency conflicts between the issuing firm and the underwriters can also lead to underpricing of IPOs. As agents of the issuing firm, underwriters should try to maximize the issue proceeds, yet this might be a suboptimal solution for the underwriter if the issue is undersubscribed. To explain agency conflicts Biais, Bossaerts and Rochet (2002) developed a model in which the investment bankers who are also the underwriters collude with the informed investors to withhold the pricing information about the issuing firm with the intent of increasing underpricing. Ljungqvist and Wilhelm (2003) introduced another explanation in defining the realignment of incentives hypothesis, stated the possible reasons for management accepting underpricing relates to a decrease in top management ownership including more owner fragmentation and increased use of 'friends and family' share allocations. Both of these studies explain how underpricing can exist in light of agency theory. An issuing firm can reduce this agency cost by monitoring the investment bank's selling effort or linking their compensation with issue proceeds. Ljungqvist and Wilhelm (2003) find that linking the underwriting commission with issue proceeds has resulted in lower underpricing.

Institutional reasons for underpricing of IPOs revolve around the litigation risk faced by the underwriters on misstatements and omissions in the IPO prospectus. If the price of an IPO drops substantially in the after market, investors can sue the underwriters for misrepresentation. Hughes and Thakor (1992) suggest that underwriters deliberately underprice the issue as insurance against such litigations. The empirical support for litigation and underpricing is inconclusive. Controlling for matched IPO year, size and underwriter prestige Drake and Vetsuypens (1993) find that underpriced firms are sued more often than the overpriced firm. Using a two-stage least squares approach Lowry and Shu (2002) find results that are supportive of the litigation theory.

When a firm goes public it typically results in the separation between ownership and control. Mikkelson, Partch and Shah (1997) found evidence of higher control turnover among IPO firms as well as significant reduction in management ownership. If the IPO eventually leads to complete separation of ownership and control, it can lead to the agency conflict between the managers and shareholders. Non-owner managers may use the firm's assets for their own benefits at the expense of shareholders (Jensen and Meckling, 1976). This in turn will result in greater monitoring by shareholders who hold large blocks of shares. Shareholders holding large blocks of shares in a firm have greater incentive to monitor the activities of the managers. According to Brennan and Franks (1997) managers have an incentive to reduce the number of block shareholders by dispersing the shares among a large number of shareholders. Underpricing will bring in larger interest in the IPO and managers can reduce block shareholding by rationing the issue. On the contrary, Stoughton and Zechner (1998) argue that managers as part owners may actually prefer outside monitoring, which will reduce the agency costs.

The last group of theoretical models on IPO underpricing involves behavioral explanations. In behavioral models if there are 'irrational' or 'sentiment' investors in a market, they will bid up the price of IPOs when they start trading in the secondary market. Managers of IPO firms are aware of this and they will initially restrict the number of shares that are offered at the IPO. If there is a run up in prices after the initial issue, managers will sell further shares at the higher price. The increase in IPO underpricing during the 'dot-com' bubble period can be explained using this model.

### **3. Difference between FCBs and NFCBs and Hypothesis Development**

Based on the above mentioned theoretical models of IPO underpricing it is possible to identify several areas where there may be significant differences between the FCBs and NFCBs at the time of their initial public offering. We use these differences to develop several hypotheses that are empirically tested in this paper. Prior to the development of these hypotheses it is necessary to have a working definition of 'family controlled business.' What is essential in any definition of family business is the fact that, due to their ownership, family members enjoy certain control rights over the firm's assets and use these rights to exert influence over decision-making processes in the business (Carney, 2005). For purposes of the current study family business is defined as any firm where at the time of the initial public offering the family influences decision-making through at least two board seats and stock ownership. This definition is consistent with the view that to be classified as a family business the family must exert influence on the business by ownership and board membership.

Information asymmetry between the issuing firm and the investors about the 'true' value of the firm can lead to underpricing. The information asymmetry is greater for younger firms than older, more seasoned firms. A study by Poutziouris, Chittenden and Michaelas (1998) indicates that family owned Small and Medium-sized Enterprises (SMEs) in the United Kingdom have a pecking order in financing whereby external equity is the least preferred source of capital. If this is indeed the case, FCBs will wait longer to use external equity than similar NFCBs.

***H1: At the time of IPO the average age of FCBs will be greater than that of NFCBs.***

If the above hypothesis is true, then it will reduce information asymmetry and hence the FCBs will exhibit lower underpricing of their IPOs.

Empirical studies have indicated that FCBs tend to use less venture capital for their financing needs as compared to similar NFCBs (Poutziouris, 2001). The effect of venture capital financing on the IPO underpricing is not conclusive. It can be argued that venture capitalists bring professionalism to the management and hence act as a certification of quality of the issue. Venture backed firms are likely to be priced higher than the offering range indicating less underpricing whether or not they are closely held (Astrachan and McConaughy, 2001). Megginson and Weiss (1991) compare venture capital backed IPOs to non-venture capital backed IPOs matched by industry and offering size between January 1983 and September 1987 and find that the venture capital backed IPOs had significantly less underpricing. On the other hand, Lee and Wahal (2004) find that venture capital backed IPOs have

higher underpricing during the period from 1980 to 2000. Part of this can be attributed to the 'grandstanding' hypothesis put forward by Gompers (1996). Gompers argues that venture capital funds are in constant need for raising additional capital and a successful IPO (as measured by the first day return) will attract additional capital.

**H2:** *At the time of the IPO, FCBs will have lower venture capital participation as compared to NFCBs.*

Since the empirical evidence of underpricing and presence of venture capital are mixed, the effect of venture capital on underpricing of IPOs of FCBs may be mixed.

The above two hypothesis are based on attributes of FCBs; they tend to be older firms and use less venture capital, which may impact underpricing. In the following section we try to establish specific actions of FCBs associated with the IPO process that will have an impact on the underpricing of the IPO.

During the late 1990's Ljungqvist and Wilhelm (2003) observed that insider ownership stakes, in particular the CEO's ownership position, became smaller and more fragmented. As a result, each owner's stake in the IPO transaction became smaller, reducing the incentive for the issuing agent, i.e. the investment banker, to minimize underpricing. FCBs, on the other hand, may exhibit a desire to continue to exert ownership control and continuation of family involvement in the firm. If that is the case a FCB will maintain a large concentration of family ownership at the time of the IPO. We assume that family controlled businesses which intend to stay family controlled will try to avoid serious underpricing. Family members want maximum possible value for the shares sold. Family owners want the business to retain as much proceeds from the sale as possible while retaining, not diluting, the family ownership. There is an assumption that agency costs are minimized in a family firm. Although agency theory research has questioned the validity of that assumption in long standing family firms (Schulze, Lubatkin and Dino, 2002) there is some agreement that formal governance structures in family firms creates consistency with standard principal-agent theory. All of the family firms in this study exhibited formal governance procedures that included formal boards and by-laws that govern ownership.

**H3a:** *FCBs will have higher management ownership compared to the NFCBs at the time of the IPO and this will reduce the underpricing as suggested by agency theory.*

If this hypothesis is true, then management's participation in the pricing of the IPO with the investment banker remains high suggesting that the FCBs will have lower underpricing.

Aggarwal, Krigman and Womack (2003) argue that managers will systematically underprice the IPOs to maximize their personal wealth in the long term. Since managers are limited in selling their shares in an IPO, they have an incentive to see that the post IPO stock price increases due to additional attention generated by the substantial price appreciation after the issue goes public. This in turn will allow them to sell their shares at a higher price than the issue price once the vesting period is over. In the case of FCBs, it is observed that the families generally have a strong presence in the management and those managers plan to continue to hold shares and maintain the family control position. There is no incentive for them to systematically underprice the issue. It may be possible that the NFCBs will have management that plans to sell after the vesting period and hence their IPOs may have a greater degree of underpricing.

**H3b:** *Family businesses will try to maintain control of the firm after the IPO and hence FCBs will have higher management ownership after the IPO compared to NFCBs.*

Since the insider ownership signals the quality of the issue (McBane and Krause, 1989 among others), firms with higher insider ownership after the IPO will have lower IPO underpricing.

#### 4. Data

The sample consists of 118 FCBs and 118 Non-FCBs which completed an initial public offering between January 1996 and September 2004 in the United States<sup>1</sup>. The list of all IPOs during this period is gathered using the initial filings with the Securities and Exchange Commission (SEC). In the next stage of data analysis, SEC's Electronic Data Gathering, Analysis and Retrieval (EDGAR) service is used to gather the Final Prospectus of all the IPOs in the sample. Each prospectus is reviewed to identify a sample of family controlled businesses<sup>2</sup>. For purposes of this study family controlled business is defined as any company where at the time of the initial public offering the family influenced decision making through at least two board seats and stock ownership<sup>3</sup>. This definition of family business is consistent with the power dimension of the F-PEC scale of family influence (Astrachan, Klein, and Smyrnios, 2002).

Once the FCBs were identified the entire list of IPOs is reviewed to identify companies that are not family controlled to provide a control sample. To meet the matching criteria, the firms in the control sample should meet all of the following requirements: 1) the IPO should be within one calendar year of the corresponding FCB issue, 2) the Total Assets should be between 0.25 to 4 times that of the corresponding FCB and 3) the NFCB should be in the same industry as the FCB. For this criterion the 4-digit SIC code of both firms at the time of issue is used as the perfect match. In cases where an exact SIC code match is unavailable a 3-digit and 2-digit SIC code match is used. With these strict matching criteria 118 FCBs are matched with 118 NFCB. Hence, these two sets together form the sample of 236 firms.

The average issue dates of the NFCBs are within 126 days of the FCBs. The average total assets of the NFCBs are \$71.711 million and that of FCBs were \$70.640 million. Even though it was not one of the matching criteria, the average issue size also is very close between the two data sets. The average issue size of NFCBs is \$69.832 million and that of FCBs was \$61.181 million. In the sample 49.15% of the firms match 4-digit SIC codes, while 22.88% match at the 3-digit level. The rest of the matching is at 2-digit level.

The first day closing price and trading volume are obtained from Bloomberg. The issue details, the name of the lead underwriter, the balance sheet and income statements prior to the issue, use of proceeds, shareholding by major shareholders, and the management structure are gathered from the SEC filings. For the purpose of calculating the financial ratios, the last full year data was used. But if the firm was in existence for a period less than one year, the data for the partial year is used. One area of difficulty is estimating the age of the firm. In the case of FCBs, there is more information available on the age of the firm, while such details are less frequent among the NFCBs. If a specific age is given in the filings that age is used, and if not the date of incorporation is used as the age of the firm.

#### 5. Empirical Model

Following the vast literature on the variables that have an effect on IPO underpricing, a set of variables is selected for analysis. These variables are ROA (Demers and Lewellen, 2003), venture capital backing (Barry, Muscarella, Peavy and Vetsuypens, 1990; Loughran and Ritter, 2004), technology dummy (Loughran and Ritter, 2004; Lowry and Shu, 2002), retention of ownership by the management (Benveniste and Spindt, 1989; Beatty and Welch, 1996), underwriter reputation (Beatty and Ritter, 1986; Tinic, 1988; Carter and Manaster, 1990, Jones and Swaleheen, 2010), secondary issue (Ljungqvist and Wilhelm, 2003), use of proceeds (Leone, Rock and Willenborg, 2003), overhang (Bradley and Jordan, 2002; Ofek and Richardson, 2003), age (Ibbotson, Sindelar and Ritter, 1988),

<sup>1</sup> During this period there were over 230 FCBs that went public out of which only 118 have matching samples of NFCBs.

<sup>2</sup> The following relationships were considered family relationships:

Father, mother, father-in-law, mother-in-law, son, daughter, stepson, stepsister, brother, sister, son-in-law, daughter-in-law, stepbrother, stepsister, husband, wife, first-cousin, uncle and aunt.

<sup>3</sup> The average family ownership in the sample at the time of the IPO is 57.86%.

ratio of assets to issue proceeds (Leone, Rock and Willenborg, 2003), and size (Ibbotson, Sindelar and Ritter, 1988).

The following is a description of the variables used in this analysis:

*Underpricing*: The first day return calculated as the difference between the first day closing price and the issue price divided by the issue price.

*First day volume*: Total number of shares traded on the first day of trading as a fraction of the shares issued in the IPO.

*Underwriting fee*: Underwriting fee as a fraction of total issue proceeds.

*U-reputation*: This is the ranking of underwriters as per Carter and Manaster (1990), updated by Loughran and Ritter (2004).

*Secondary*: Fraction of secondary issues in the total issue.

*Ln-asset*: Natural logarithm of total assets as per the latest balance sheet prior to the IPO.

*Overhang*: The ratio of total number of shares after the issue divided by the number of new shares issued.

*DSP*: Percentage of the total proceeds that is used in paying off debt, S-corporation payments, and redemption of preferred stocks.

*Capital expenditure*: Fraction of the total issue proceeds designated for capital expenditures in the prospectus.

*Unspecified*: Fraction of the total issue proceeds designated for general use by the firm.

*ROA*: Return on assets calculated using the last full year balance sheet and income statement prior to the IPO. If the firm has less than one year of history then the latest balance sheet and income statement are used in calculating this ratio.

*DE-ratio*: Debt equity ratio using the same set of statements used for calculating the return on assets.

*V-before*: The percentage of total capital of the firm prior to the issue held by investment bankers/venture capitalists.

*V-after*: The percentage of total capital of the firm after the issue held by investment bankers/venture capitalists.

*M-before*: The percentage of total capital of the firm prior to the issue held by board of directors (including the beneficial ownership by the directors).

*M-after*: The percentage of total capital of the firm after the issue held by board of directors (including the beneficial ownership by the directors).

*Ln-age*: Log (1+age of the firm at the time of IPO).

*Tech. Dummy*: This variable is 1 for firms that are considered technology firms in Loughran and Ritter (2004) and 0 otherwise.

*Family*: This variable is 1 if the firm is family controlled and 0 otherwise.

*Ln-size*: Natural logarithm of the dollar value of the total issue proceeds.

As pointed out by Habib and Ljungqvist (2001), if the above mentioned variables are used in an ordinary regression analysis, there is the potential problem of endogeneity of some of the variables. Following their example we use the following three-stage least square estimation model to overcome the problem of endogeneity.

$$\begin{aligned} \text{Overhang}_i = & \theta_0 + \theta_1 U\_reputation_i + \theta_2 \text{Tech.Dummy}_i + \theta_3 M\_after_i \\ & + \theta_4 \text{Unspecified}_i + \vartheta_i \end{aligned} \quad (1)$$

$$U\_reputation_i = \kappa_0 + \kappa_1 \text{Overhang}_i + \kappa_2 \text{Family}_i + \kappa_3 \ln\_asset + \kappa_4 \ln\_size + \zeta_i \quad (2)$$

$$\begin{aligned} \text{Underpricing}_i = & \gamma_0 + \gamma_1 \text{Overhang}_i + \gamma_2 \text{ROA}_i + \gamma_3 \text{Family}_i + \gamma_4 \ln\_asset_i \\ & + \gamma_5 \ln\_size_i + \xi_i \end{aligned} \quad (3)$$

The OLS estimates will be efficient only if the errors in the above regressions are uncorrelated. Using the residuals from the above regressions we could reject that the errors are uncorrelated. We use

seemingly unrelated regression to estimate the above system of regression equations with the variables that were not included<sup>4</sup> in the regression equations as instruments.

## 6. Results

Table 1 contains the correlations between the variables. As indicated in the literature, there is significant correlation between some of the variables. For example, first day return is positively correlated with the overhang, underwriter's reputation, technology dummy, unspecified use of proceeds and size of the issue. Overhang is also positively correlated with underwriter's reputation, technology dummy, management holding after the IPO and unspecified use of proceeds. The presence of statistically significant correlations between the independent variables justifies the use of the three-stage least square estimation used in this study.

**Table 1:** Correlation Matrix

	Return	Overhang	U-reput	Tech	M-after	Unspecified	Ln-asset	Ln-size
Overhang	0.4438 (7.2805) <sup>a</sup>							
U-reputation	0.2258 (3.5063) <sup>a</sup>	0.3002 (4.7284) <sup>a</sup>						
Tech	0.3207 (5.0748) <sup>a</sup>	0.3415 (5.4302) <sup>a</sup>	0.2397 (3.7319) <sup>a</sup>					
M-after	0.1319 (2.0250)	0.2472 (3.8528) <sup>a</sup>	0.1914 (2.9573) <sup>a</sup>	0.0721 (1.1028)				
Unspecified	0.3550 (5.6658) <sup>a</sup>	0.4117 (6.6798) <sup>a</sup>	0.0063 (0.0964)	0.4091 (6.6324) <sup>a</sup>	-0.0475 (0.7259)			
Ln-asset	-0.0410 (-0.6260)	0.0289 (0.4412)	0.5921 (10.3932) <sup>a</sup>	-0.0197 (0.3015)	0.2159 (3.3476) <sup>a</sup>	-0.3487 (5.5557) <sup>a</sup>		
Ln-size	0.1823 (2.8148) <sup>a</sup>	0.1675 (2.5807)	0.7453 (14.6901) <sup>a</sup>	0.2420 (3.7689) <sup>a</sup>	0.1410 (2.1673)	-0.0223 (0.3409)	0.7444 (14.6581) <sup>a</sup>	
ROA	-0.1543 (2.3740)	-0.1074 (1.6452)	0.0896 (1.3713)	-0.1259 (1.9316)	0.1504 (2.3129)	-0.1823 (2.8143) <sup>a</sup>	0.3561 (5.6844) <sup>a</sup>	0.1465 (2.2521)

<sup>a</sup> significant @1%

Table 2 provides the paired *t*-test of the above mentioned variables for FCBs and NFCBs. The paired *t*-test is used to find if any significant difference exists between the two groups. The results indicate that FCBs and NFCBs do respond differently to some of the traditional variables related to IPO pricing. Age of the firm at the time of IPO is a variable with a significant (1% level) difference between the two samples. FCBs tend to be older given the bias of many family businesses to retain control for as long as possible. The median age of firms going public since 1980 is approximately 7 years old (Loughran and Ritter, 2004) yet in our study the average age of the family business is 14.85 years and the NFCB was 8.5 years. This supports the hypothesis *H1*.

**Table 2:** Results of Paired t-test and Wilcoxon Matched-pairs Test of Family Business Variables with Non-family Business Variables

Variable	Family Business Mean (Std. deviation)	Non-Family Business Mean (Std. deviation)	t-statistic (significance)	Wilcoxon W (significance)
First Day Return	0.2003 (0.03641)	0.2961 (0.5074)	2.1799 (0.0313) <sup>b</sup>	2862.5 (0.100) <sup>c</sup>

<sup>4</sup> Underwriting fee, capital expenditure, DE-ratio, V-before, V-after, M-before, Secondary, and DSP.



**Table 2:** Results of Paired t-test and Wilcoxon Matched-pairs Test of Family Business Variables with Non-family Business Variables - continued

First Day Volume	0.9149 (0.8493)	0.9292 (0.7755)	0.1861 (0.8527)	3249 (0.423)
Underwriting Fee	0.0735 (0.0097)	0.0713 (0.0083)	2.2601 (0.0100) <sup>a</sup>	333.5 (0.023) <sup>b</sup>
Underwriter's Reputation	6.7771 (2.4287)	7.6000 (2.0370)	3.7759 (0.0003) <sup>a</sup>	716.5 (0.001) <sup>a</sup>
Secondary Issue	0.0722 (0.1596)	0.0553 (0.1230)	1.1198 (0.2651)	450 (0.200)
Assets	\$70,640,000 (\$165,881,000)	\$71,711,000 (\$126,653,000)	0.1054 (0.9163)	3218 (0.432)
Total Issue Proceeds	\$61,181,300 (\$72,733,202)	\$69,832,876 (\$97,813,794)	1.0761 (0.2841)	1766 (0.162)
Total Assets/Total Proceeds	1.3400 (1.4495)	1.1964 (1.1793)	1.1699 (0.2444)	3411 (0.789)
Overhang	2.9172 (1.7680)	3.0221 (1.8996)	0.5046 (0.6177)	3365 (0.696)
Debt Repayment + S-corp Payments + Redemption of Preferred Stocks	0.3367 (0.2384)	0.3526 (0.3806)	0.4407 (0.6603)	2519 (0.848)
Capital Expenditure	0.1838 (0.2662)	0.2010 (0.2812)	0.5518 (0.6098)	1385 (0.200)
General Use of Proceeds	0.4795 (0.3442)	0.4464 (0.3850)	0.9951 (0.3217)	2975 (0.482)
ROA	-0.1678 (0.9415)	-0.2104 (0.4649)	0.4636 (0.6438)	2613 (0.016) <sup>b</sup>
Debt/Equity Ratio	1.0115 (0.9768)	2.2934 (28.2678)	0.4920 (0.6238)	3336 (0.639)
Venture Capital Before IPO	0.1562 (0.2295)	0.4421 (0.3328)	8.2742 (0.0000) <sup>a</sup>	550 (0.001) <sup>a</sup>
Venture Capital After IPO	0.1087 (0.1696)	0.3139 (0.2484)	8.0645 (0.0000) <sup>a</sup>	547 (0.001) <sup>a</sup>
Management Holding Before IPO	0.7421 (0.2393)	0.6436 (0.2775)	3.2313 (0.0016) <sup>a</sup>	2292 (0.008) <sup>a</sup>
Management Holding After IPO	0.5304 (0.2033)	0.4534 (0.2037)	3.3762 (0.0010) <sup>a</sup>	2226 (0.001) <sup>a</sup>
Age of the Firm	14.8469 (16.0861)	8.5008 (12.6860)	3.3283 (0.0012) <sup>a</sup>	1857 (0.001) <sup>a</sup>

<sup>a</sup> Significant at 1%<sup>b</sup> Significant at 5%<sup>c</sup> Significant at 10%

Venture capital participation both before and after the IPO is significantly less for FCBs, which supports the hypothesis *H2*. Many family businesses resist raising capital if it means losing some control as suggested by the private-benefits of control theory (Holmen and Hogfeldt, 2004; Ehrhardt and Nowak, 2003). As a result, FCBs are much less likely to raise funds using venture capital. Related to this issue it is found that FCBs use less highly ranked underwriters and paid more in underwriting fees. It is more difficult for underwriters to properly value firms that are not previously vetted by venture capital, which is similar to the problem that underwriters have pricing unfamiliar firms in new industries (Pukthuanthong, 2006). Without the influence of venture capitalists, who may have more contacts with investment bankers, FCBs may evaluate and hire underwriters using a more evaluative process.

There is more management owning stock in the FCBs both before and after the IPO again reflecting the ownership control bias in family business (Hypothesis *H3a* and *H3b*). Although the FCBs retain more ownership after the IPO these companies have more selling shareholders with smaller average total proceeds. The FCBs are likely to minimize the amount of capital raised, hence control potentially lost, while at the same time the IPO provides a channel for family members to liquidate part of their holdings for personal needs.

Among the other variables tested there is no statistically significant difference between the two groups. The results do indicate that there is a statistically significant difference between the first day return of the groups. The first day returns of the FCBs are lower than those of NFCBs indicating that they have a lower level of underpricing. The relationship between the underpricing and other variables are further tested using the three-stage least square estimation.

The results of the three-stage least square estimation are given in Table 3. The OLS estimates show that the coefficients of all four variables (*Tech. Dummy*, *M-after*, *U-reputation*, *unspecified*) are positive and significant in equation (1). If the issuing company is more likely to be classified as a technology company then it is more likely to have a greater degree of overhang. Another way to view this is that growth firms, such as technology firms, offer fewer shares in the market versus existing shares. One plausible explanation is that existing shareholders hang on to the stock for future growth potential. During the 1996 – 2000 time period there was a sharp decline in the frequency of insider sales (Ljungvist and Wilhelm, 2003). Another likely explanation is that valuations increased over the 1990s; high overhang firms have a much higher valuation so they are able to sell a smaller fraction of the firm to raise the same proceeds (Loughran and Ritter, 2004). This relationship also holds true for firms where management holds more stock after the issue. This relationship is even more statistically significant as it explains why the overhang tends to exist in the first place.

**Table 3:** Ordinary Least Square Regression

$$\text{Overhang}_i = \theta_0 + \theta_1 U\_reputation_i + \theta_2 \text{Tech.Dummy}_i + \theta_3 M\_after_i + \theta_4 \text{Unspecified}_i + \vartheta_i \quad (1)$$

$$U\_reputation_i = \kappa_0 + \kappa_1 \text{Overhang}_i + \kappa_2 \text{Family}_i + \kappa_3 \ln\_asset + \kappa_4 \ln\_size + \zeta_i \quad (2)$$

$$\text{Underpricing}_i = \gamma_0 + \gamma_1 \text{Overhang}_i + \gamma_2 \text{ROA}_i + \gamma_3 \text{Family}_i + \gamma_4 \ln\_asset + \gamma_5 \ln\_size + \xi_i \quad (3)$$

Dependent Independent	Overhang (t-stat)		U_reputation (t-stat)		Underpricing (t-stat)	
	OLS	Three-stage	OLS	Three-stage	OLS	Three-stage
Constant	-0.02867 (0.6997)	-0.0112 (0.0238)	-19.8520 (10.3953) <sup>a</sup>	-19.0531 (9.9284)	-1.6605 (3.2476) <sup>a</sup>	
Overhang			0.2386 (4.5406) <sup>a</sup>	0.3355 (3.3537) <sup>a</sup>	0.0942 (6.6656) <sup>a</sup>	0.1700 (6.0354) <sup>a</sup>
U-reputation	0.1841 (3.9925) <sup>a</sup>	0.1380 (2.2645)				
Tech. dummy	0.4958 (1.9285) <sup>c</sup>	0.6277 (2.6224)				
M-after	1.8830 (3.8192) <sup>a</sup>	2.0291 (4.3589) <sup>a</sup>				
Unspecified	1.8926 (6.1765) <sup>a</sup>	1.7844 (6.1475) <sup>a</sup>				
Family dummy			-0.5043 (2.6740) <sup>b</sup>	-0.5517 (3.0221) <sup>a</sup>	-0.0658 (1.3031)	-0.0850 (1.7270) <sup>c</sup>
Ln-asset			0.2160 (2.1312) <sup>b</sup>	0.2568 (2.5402)	-0.0864 (2.9709) <sup>a</sup>	-0.0580 (2.0085) <sup>b</sup>

**Table 3:** Ordinary Least Square Regression - continued

Ln-size			1.3905 (9.4661) <sup>a</sup>	1.3060 (8.5918) <sup>a</sup>	0.1449 (3.6349) <sup>a</sup>	0.0871 (2.0961) <sup>b</sup>
ROA					-0.0359 (0.9681)	-0.0409 (1.1210)
Adjusted R <sup>2</sup>	0.2482	0.3026	0.5994	0.5951	0.2440	0.1508
F-Statistics	26.5364 <sup>a</sup>	34.9826 <sup>a</sup>	88.8928 <sup>a</sup>	116.1136 <sup>a</sup>	16.1660 <sup>a</sup>	11.4352 <sup>a</sup>

<sup>a</sup> Significant at 1%

<sup>b</sup> Significant at 5%

<sup>c</sup> Significant at 10%

The higher the underwriter's reputation, the more overhang there is in the issue. Technology companies tend to have high overhang and the most reputable underwriters were aggressive in getting those deals to market during the time of this study. During the late 1990s the mean underwriting ranking increased suggesting that the more reputable underwriters captured more and more of the underwriting business (Ljungvist and Wilhelm, 2003).

The variable relating to general use of proceeds (unspecified) to the degree of overhang was positively statistically significant at the 1% level. The less specific the issuing firm was regarding use of proceeds, the greater the overhang, i.e. the smaller the offer size as a fraction of shares outstanding. As previously mentioned a greater percentage of IPOs were brought public by prestigious underwriters during the time frame of this study. IPOs underwritten by prestigious investment banks typically provide less detailed disclosure on the use of proceeds (Leone, Rock and Willenborg, 2003). In addition, during this same time period share overhang has also increased (Loughran and Ritter, 2004). It appears that during the time frame of this study the more prestigious underwriters captured a greater share of the underwriting business. These same underwriters tended to provide less detail on intended use of proceeds and the increasing valuations increased the amount of overhang for a given amount of proceeds.

The results of the second regression equation shows that three variables (*Overhang*, *Ln-asset*, *Ln-size*) positively relate to the degree of underwriter's reputation. And, again most interesting, is that the FCB (measured by the family dummy) is significantly inversely related to reputation. Holding all other variables constant the FCB tend to hire underwriters that are less well known in the business. These four variables explain almost 60% of the variation in the underwriter's reputation.

The fewer the shares issued in the marketplace (*Overhang*) the more likely the business is to hire a more established investment banker. The explanation for this may be twofold: one possibility is that this study was conducted during the internet boom and many of the stocks that went public were technology companies with significant stock options for their employees. Secondly, the fewer shares trading the more important the pricing support after the issue. Larger, better-established investment bankers have the ability to support the price and develop support for the stock through their extensive marketing network.

The larger the asset base of the issuing company the more reputable the underwriting firm hired for the IPO. A company with a solid asset base is a more attractive client for an investment bank. And a more reputable banker is more valuable to the issuer so it is not surprising that this variable is positively related. This is the same reason that the larger the issue the more reputable the investment bank used for the issue. This relationship was statistically significant at the 1% level for the entire sample and both subsets.

The results of regressing underpricing as the dependent variable are consistent with the results found by other studies on IPO underpricing. Overhang creates a scarcity that is related positively to underpricing. The fewer the shares in the market the more underpricing is evident the first day of the issue. This relationship was statistically significant for both family and non-family businesses. These results confirm the asymmetric information theory of underpricing. In this case it suggests that the original owners know more than the underwriter and investor regarding the issue. The insiders

maintain significant ownership even after the issue by raising less new capital than they have of current equity capital.

Size of the issue is positively related to underpricing, the larger the issue the more the underpricing. The size relationship to underpricing held true for both family and non-family businesses but was more significant for non-family businesses. A plausible reason for this relationship is that non-family businesses tend to have larger issues, tend to hire more reputable underwriters and therefore, tend to be underpriced more in the marketplace due to agency issues between the underwriter and the issuer.

The one statistically significant variable inversely related to underpricing is total asset size. The larger the asset base the less underpricing. This suggests that issuers, underwriters, and investors are better able to evaluate the ex ante uncertainty of the issue when the issuer holds more assets. Assets create value and therefore allow all parties to evaluate the future prospects of the company with more certainty. In an efficient market this should cause less underpricing. Similarly larger issues had lower underpricing.

One of the most interesting results of this regression is the effect of family dummy. In the total sample this variable had a negative sign indicating that the underpricing was lower for FCBs. This is consistent with the *t-test* of means in Table 2, where it is shown that the average underpricing for FCBs were 20.03% as compared to 29.61% for the NFCBs. With this result it is possible to conclude that FCBs had differences compared with the NFCBs and this resulted in the FCBs having less underpricing in their IPOs.

## **7. Conclusion**

This study validates that FCBs have higher management ownership both before and immediately after the IPO and exhibit lower underpricing measured by first day returns. This result is consistent with agency theory and demonstrates the effectiveness of managers in a FCB to raise maximum proceeds in the sale of stock. This study suggests that FCBs structure their IPO's differently compared to NFCB. The results show that FCB tend to have less presence by venture capital before the issue, are older firms and hire less prestigious underwriters for the IPO.

Family businesses that are considering a public offering benefit from knowing how other family businesses have structured the IPO. The IPO process will require a well educated shareholder base. The shareholders, whether remaining shareholders or selling all or part of their family holdings, must understand the ramifications of a potential public offering. Underpricing, as one part of the equation, could easily become a point of contention.

The results of this current study indicate that family businesses do not benefit from associations with venture capitalists, at least in regard to first day underpricing. Family businesses appear to have suffered less underpricing by ignoring the venture capital financing route. However, this study does not address the value added that venture capital may bring to management well before the IPO that may enhance the value of the firm prior to the public offering. This value added in the process of helping management prepare for sale could be justified by a higher IPO price overall even considering underpricing at the offering. Yet companies that go directly to the public market bypass the liquidity premium paid to the venture capital companies. Trying to ascertain whether a family controlled business benefits from bypassing the venture capital route in the short term (IPO pricing) and long term would be an important advance to the literature.

It is generally understood that FCBs are resistant to venture capital due to the corresponding decrease in control. The IPO literature has assumed that family owners use the venture capital and subsequent IPO process as an orderly liquidation process for the family. This seems to conflict with the data from non Anglo Saxon countries where public companies are often privately controlled for decades by the founding family, even considering not all of these countries allow dual class shares (Holmen and Hogfeldt, 2004). The private-benefits-of-control theory assumes that families with

preference to maintain family ownership will design the security structure at the IPO to protect their control rights. These same families may purposely avoid using venture capital because their long-term goal is to maintain effective ownership of the company even after entering the public market. Another area of further research is to evaluate whether family control is maintained or decreases over an extended time period after the IPO. This may be important information for a family which considers family control to be a significant issue in their decision to go public.

And finally, another interesting result would be to determine if family businesses perform better as measured by positive risk adjusted return versus industry peers for any significant time period after the IPO. The data on this is compelling in the S&P 500 and could have ramifications for investors and family business owners.

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