

THE DETERMINANTS OF UNDERWRITER REPUTATION

by

Eyyub Yunus Kibis, B.S. M.A.

THESIS

**Presented to the Faculty of
The University of Houston-Clear Lake
In Partial Fulfillment
of the Requirements
for the Degree**

MASTER OF SCIENCE

THE UNIVERSITY OF HOUSTON-CLEAR LAKE

May, 2013

THE DETERMINANTS OF UNDERWRITER REPUTATION

by

Eyyub Yunus Kibis

APPROVED BY


[Redacted Signature]
Timothy B. Michael, Ph.D., Chair


[Redacted Signature]
Melissa A. Williams, Ph.D., Committee Member


[Redacted Signature]
Joseph P. McCormack, Ph.D., Committee Member


[Redacted Signature]
Edward R. Waller, Ph.D., Associate Dean


[Redacted Signature]
Wm. Theodore Cummings, Ph.D., Dean

ABSTRACT

THE DETERMINANTS OF UNDERWRITER REPUTATION

**Eyyub Yunus Kibis, M.S.
The University of Houston-Clear Lake, 2013**

Thesis Chair: Timothy B. Michael

This paper examines the effect of several factors on the reputations of lead underwriters in a sample of initial public offerings (IPO) issued between 1993 and 2006. One-, three- and five-year buy-and-hold average returns, first day initial returns, investment bank compensation, venture capital and offer size have a significant effect on investment bank reputation. The coefficient for long-run returns decreases for the third year following the IPO but becomes more positive for five-year returns. In addition, first day initial returns were expected to be negatively correlated with investment bank reputation, but I find that first day returns have a significantly positive effect instead. This result is inconsistent with banks losing reputation if they leave too much money “on the table.” I also find that any industry effects disappear when both industry specialization and venture capital support are controlled for, which echoes the finding of Yip, et al (2009). Overall, my results indicate that an IPO firm’s short-run and long-run performance, underwriter fees, analyst coverage, venture capital and size of the offer have an important role in creating and maintaining an investment bank’s reputation.

TABLE OF CONTENTS

I.	INTRODUCTION	1
II.	LITERATURE REVIEW	
	1. Reputation acquisition and its importance	3
	2. Investment bank reputation and initial underpricing	5
	3. Investment bank reputation and long-run IPO performance.....	9
	4. Relation between reputation and after-market price support.....	18
	5. Venture capital	23
	6. Drawbacks of IPOs	25
	a. "winner's curse" and lemons problems.....	25
	b. money left "on the table"	26
	c. spinning and flipping.....	27
III.	RESEARCH METHOD AND DATA.....	33
	1. Reputation measures	35
	2. Initial IPO sample	36
	3. Long-run returns	37
	4. Initial returns	38
	5. Analyst reputation	39
	6. Investment bank compensation.....	40
	7. Price support activities.....	41
	8. Size of the issue and age of the firm	42
	9. Indicator variables.....	43
	a. venture capital	43
	b. time period	44
	c. industry dummy	45
IV.	FINAL DATA AND RESULTS	
	1. Attrition and descriptive statistics.....	46
	2. Empirical results	53
	3. Conclusion	57
	REFERENCES	58

LIST OF TABLES

Table I:	Initial IPO data set	28
Table II:	Summary of losses	48
Table III:	Sample summary statistics	50
Table IV:	Frequency table for indicator variables.....	51
Table V:	Correlation coefficients.....	52
Table VI:	Regression of investment bank reputation on offering characteristics	55

LIST OF FIGURES

Figure 1: IPOs by year	29
Figure 2: Mean first-day returns and money left on the table, 1980-2010	30
Figure 3: Money left on the table over \$100 million.....	31

I. INTRODUCTION

Conventional literature about initial public offerings (IPO) of common stock typically examines the effect of investment bank reputation on initial or long-run IPO returns. Most studies that examine this relation base their theoretical background on Beatty and Ritter (1986), Johnson and Miller (1988) and Carter and Manaster (1990). Carter and Manaster (1990) define underwriters as information-producing intermediaries. Investment banks mitigate the asymmetric information problem between investors and issuing firms, and may gain or lose reputation based on the accuracy of the information they provide to investors. Because reputation is the most important capital for investment banks (Diamond, 1989), prestigious investment banks therefore are associated with lower risk offerings in order to protect their reputation (Beatty and Ritter, 1986; Carter and Manaster, 1990; Chemmanur and Fulghieri, 1994). In the light of this theory Carter and Manaster (1990) and Johnson and Miller (1988) find a negative relation between underwriter reputation and initial IPO returns. On the other hand, Beatty and Welch (1996) show a positive relation in the period after the 1990s. Carter et al. (1998) find a positive relation between underwriter reputation and long-term returns, while Logue et al. (2002) find no relationship. Carter et al. (2010) report a changing relation depending on the timespan that is examined. In all of these studies, the association between issuers and investment banks is represented as a one-sided relation in which an investment bank's reputation affects either initial or long-run returns without a subsequent feedback to reputation from post-IPO returns.

In this study I begin with underwriter reputation and attempt to find the relation between subsequent IPO returns and the investment bank's reputation and standing.

I expect that as the IPO firm's long-run return increases, the reputation of the investment bank also increases in the subsequent years. As the reputation of the investment bank rises, the underwriter will gain better prospects for its services, and its return over time will increase along with reputation. This study will help us better understand investment bank behavior in choosing issuing firms and will show that there is a feedback effect concerning reputation.

As outlined below, the initial model can be expressed as

Underwriter Reputation =

$$f \left(\begin{array}{l} \text{Long-run IPO returns, initial IPO returns, size of the IPO, age of the firm,} \\ \text{Analyst Reputation, venture capital effect, time effect} \end{array} \right)$$

II. LITERATURE REVIEW

One fundamental question that has always been asked is why and how firms choose an investment bank at the time of the IPO. The answer is easy and complicated at the same time. Firms sell their shares in the market either directly or by using an investment bank as an underwriter. The main purpose for utilizing the services of an investment bank is that issuers could be unable to use their own reputations in the market to sell their stocks efficiently. Therefore, firms use an investment bank's reputation to market their issues. Although firms assume that an investment bank's reputation can increase short and long-run IPO performance, literature pertaining to the relationship between investment bank reputation and IPO performance documents various results.

1. Reputation acquisition and its importance

An investment bank or underwriter is a financial institution that provides advising, pricing, share placement, trading support and research coverage services to IPO firms in raising capital by underwriting their issues. They take part both in the pre-market and after-market and have a great deal of importance in marketing the issues. Since investment banks are involved in every step of underwriting process, they have the incentive to represent the IPO firm as worthy of investment. Since IPO firms have perfect information regarding their own value, reputable and high value firms would prefer to choose reputable underwriters because it is the investment bank who can signal the value of the issue and the firm to the market with its own reputation. Besides, since

reputation is the most important capital of an investment bank, they too would prefer to associate with low-risk IPOs in order to protect their reputation (Beatty and Ritter, 1986; Carter and Manaster, 1990; Chemmanur and Fulghieri, 1994). Although investment banks do not have perfect information regarding the value of the IPO firm, they can best evaluate the potential risk associated with the issue due to their experience and market presence. Size of the issue and age of the firm are regarded as risk indicators of the issuing firm most of the time (Beatty and Ritter, 1986; Doukas and Gonenc, 2005; Michel, 2011). Smaller-sized and younger firms are perceived as riskier issues and therefore, investment banks do not disregard these indicators. Thus, IPO firms who think that they are less risky and have high capital would choose prestigious investment banks in order to signal their low risk and investment banks also involve in less risky IPOs in order not to destroy their reputation (Doukas and Gonenc, 2005).

The IPO valuation process is vital for the investment bank because there is a risk of loss for both the firm and investment bank if an inaccurate valuation is conducted. Beatty and Ritter (1986) state that if an underwriter does not price a new issue correctly and competitively investors will be subjected to a “winner’s curse” problem and will not be likely to do business with that underwriter again in the future. On the other hand, if an underwriter underprices too much, IPO firms will leave too much money “on the table” and the underwriter will lose them as customers in the future. Thus, underwriters who underprice more than the equilibrium price will lose either potential investors or issuers, and thus lose their market share (Beatty and Ritter, 1986). Chemmanur and Fulghieri (1994) indicate that underpricing is a decreasing function of the reputation of the

investment bank underwriting the IPO. Dunbar (2000) shows that excessive underpricing damages the market share and reputation of the investment bank.

2. Investment bank reputation and initial underpricing

In general, the literature has examined the relation between investment bank reputation and IPO underpricing. Beatty and Ritter (1986) is one of the first studies to test the relation between underpricing and market share changes, and the relation between ex-ante uncertainty and underpricing. They use IPO data between 1977 and 1982. They split the data into two parts in which periods include 483 and 545 firms that went public between 1977 and the first quarter of 1981, and then those that issued between the second quarter of 1981 to 1982 respectively. They split the time period into two sub-periods to test the changing market share and control for the 'industry effect' that was expressed for natural resource issues from January 1980 to March 1981.

They argue that an investor making a purchase order cannot be certain about the value of the offering until the issue starts publicly trading. They call it 'ex ante uncertainty'. As the uncertainty increases, the likelihood of a 'winner's curse' problem increases since the probability of losing money increases for investors. The investor wants more money to be left "on the table" in order to gain more. Therefore, the authors hypothesize that there is a significant relation between the expected underpricing of an IPO and the uncertainty attributed to its value. They relate the distribution of initial returns to ex ante uncertainty to test their hypothesis. The inverse of the gross proceeds raised in an offering is used to measure the ex-ante uncertainty of the issue. This proxy shows that smaller offerings are more speculative than larger offerings. The other proxy for ex ante uncertainty is the

“log of one plus the number of uses of proceeds listed in the prospectus.” (page 7) The SEC requires more detailed information of the uses of proceeds for speculative issues and does not require that for non-speculative issues. As a result of that regulation, as the number of uses of proceeds increase, ex ante uncertainty increases. The authors regress initial returns on the two uncertainty proxies to test their first hypothesis.

Their results suggest how the underpricing equilibrium is enforced. If an underwriter does not underprice enough, investors will subject to a “winner’s curse” problem and will not do business with that underwriter. On the other hand, if the underwriter underprices too much, firms will leave too much money “on the table” and the underwriter will lose sell-side customers in the future. Thus, underwriters who underprice more than the equilibrium price will lose either potential investors or issuers, and thus lose their market share. In order to test the relation between market share changes and mispricing, the authors chose to use absolute standardized average residuals as a proxy for mispricing. They also use the market shares of 49 underwriters that conduct 4 or more IPOs in the first sub period. They find that underwriters who underprice below the underpricing equilibrium in the first sub period lose market share in the second period.

Both the Johnson and Miller (1988) and Carter and Manaster (1990) investigations base their hypotheses on the same theories and demonstrate similar results. They both argue that less risky firms reveal their low-risk characteristics by selecting reputable investment banks. Reputable investment banks also market less risky firms to protect their reputation. Therefore, investment bank reputation is associated with low risk IPOs where standard deviation of returns is a proxy for risk. Although they have similar results, different methods and time ranges are used in the studies. Johnson and Miller (1988) use

a data that consists of 502 IPOs of common stock issued during the 1981-1983 period. They are inspired by the theory proposed by Carter and Manaster (1987).¹ Carter and Manaster contend that investment bank reputation determines the expected level of informed investor activity and thus the degree of underpricing. Reputable investment bank are associated with less risky issues. If there is less risk, investors have less incentive to acquire information. If less information is acquired, then fewer informed investors will be involved in the IPO. As a result, reputable investment banks are associated with IPOs that have lower returns (less underpricing).

Johnson and Miller (1988) run a simple OLS regression of initial returns on the investment bank reputation and find a significant relationship.² However, when initial returns are regressed on standard deviation (as a proxy for ex ante uncertainty), investment bank reputation, and the products of reputation and uncertainty variables, they show that initial returns are positively related to uncertainty but independent of investment bank reputation. The authors attribute this result to the proposition stated by Beatty and Ritter (1986) that the greater the ex-ante uncertainty, the greater the expected underpricing. They believe that once uncertainty is taken into account, an investment bank's reputation does not explain the level of underpricing.

Finally, these authors test the hypothesis that reputable underwriters are associated with less risky issues more often than their non-reputable counterparts. They document that reputable underwriters are indeed associated with less risky issues in all cases.

¹ Working paper of Carter and Manaster (1990)

² Johnson and Miller (1988) use a binary measure and a four-point ranking scale to describe an investment bank's reputation. Explanation is provided in the data section.

Johnson and Miller (1988) use a binary measure and a four-point ranking scale; Carter and Manaster (1990) use “tombstone” rankings as a proxy for reputation. They find similar results regarding the relation between underpricing and investment bank reputation. They show that reputable underwriters are associated with less underpricing which results in an increase in their reputation.

In contrast to the studies examining IPOs from the 1980s, Beatty and Welch (1996) show a reversal in the relation in the 1990s. They document that reputable investment banks with the highest market shares are associated with the riskiest and most underpriced IPOs. They attribute these results to differences in the economic conditions in the 1980s and 1990s.

Cooney et al. (2001) also document a reversal in this relation after the 1990s. They find that the relation between underwriter reputation and initial IPO returns depends on where the IPO is priced with respect to the filing price range. An inverse relation is found between underwriter reputation and initial returns if the IPO is priced within the filing range both in the 1980s and the 1990s. They find no relation between initial returns and underwriter reputation if the price of the IPO is below the filing range in both sub-periods and for IPOs priced above the filing range in the 1980s. However, a positive relation is found if the price of the IPO is above the filing range in 1990s. They attribute the difference results in the sub-periods to a significant increase in the number of high demand IPOs in the 1990s.

In a related study, Nanda and Yun (1997) report that overpricing and more than optimum underpricing lead to a loss in the investment bank’s market value which is greater than

estimated direct losses such as cost of price stabilization. They predict this substantial overpricing and underpricing as an unintentional behavior of investment bank which arises due to bad timing of the investment bank in adjusting IPO prices in response to new information in the days before the offering.

Logue et al. (2002) and Loughran and Ritter (2004) find no direct relationship between investment bank reputation and underpricing of IPOs. Instead, Logue et al. (2002) report an indirect effect of investment bank reputation on initial returns through their conduct of premarket underwriting activities. They show that higher-quality investment banks have more informed investors. This enables high-quality investment banks to investigate the premarket activities in the market better than their low-quality competitors. Thus, this allows these underwriters to better adjust the prices of issues before an IPO. Since the conduct of premarket activities is well-managed by high-quality investment banks, issuers should choose reputable underwriters during the IPO process. Therefore, underwriters indirectly affect the issue date returns through their conduct of price adjustments and there is no significant relation between reputation and initial returns.

3. Investment bank reputation and long-run IPO performance

Another group of studies has been devoted to assessing the performance of IPO returns over longer periods as well. Ritter (1991) and Loughran and Ritter (1995) are among the first to analyze the long-run underperformance of IPOs. Using non-issuing matching firms as a control group, Ritter (1991) selects matching firms from the same industry of the IPO firms based on their market values - the firm with the closest market value is chosen as a matching firm. If a matching firm is not available in the same industry,

another firm is chosen from a different but preferably similar industry. He compares the long-run performance of IPO firms with non-issuing matching firms by dividing the sample into segments based on their industry, offer size and age separately. Smaller offers underperform more than larger offers relative to their non-issuing matching firms and all issues display long-run underperformance. Additionally, he examines mean and median annual sales, gross proceeds, and age of issuing firms categorized by industries. Long-run underperformance is observed in all industries except financial institutions, drugs and airline industries. Moreover, he shows that younger IPO firms have higher initial returns relative to older IPO firms, consistent with Beatty and Ritter's (1986) conclusions that younger firms tend to be more risky, thus they require higher initial returns. Similar results are obtained when Ritter regresses the raw 3-year IPO returns on the market-adjusted initial return, the 3-year total return on the market, the logarithm of one plus IPO firm age, the volume of IPOs and dummy variables for oil (worst performing) and financial institutions (best performing) industries in order to disentangle the effects. He attributes underperformance to the over optimism due to the peak of industry-specific fads.

Loughran and Ritter (1995) also use non-issuing firms as matching firms to show the underperformance of IPO firms between 1970 and 1990. However, instead of industry-matched non-issuing firms, size-matched non-issuing firms are used as a benchmark. For each issuing firm, non-issuing firms that have not issued stock within the last five years are ranked according to their market capitalization. The firm having the higher and the closest market capitalization is chosen as a matching firm. Two reasons are documented for why matching-by-industry is not being used in the study: First, if all the firms in an

industry take advantage of industry-wide misevaluation, controlling for an industry effect will lead to biased results. Second, there are few publicly traded companies in the same industry with the same market capitalization as the issuing firm which leads to the use of the same non-issuing firm as a matching firm for several issuers.

Loughran and Ritter (1995) perform both cross sectional analysis and three-factor time series regression by controlling book-to-market and size effects to evaluate whether size-matched firms are appropriate benchmarks for measuring long-term performance. They report that when holding both control variables constant, IPO firms underperform non-issuing firms of the same size by 7.4 and by 7 % over three- and five-year periods, respectively.³ Book-to-market ratio accounts for only a very small portion of the low returns. The authors note that underperformance arises in the long-term because firms take the advantage of transitory upward bursts by issuing equity when they are substantially overvalued.

Some other studies examine the long run performance of IPO firms by documenting additional patterns. For example, Brav and Gompers (1997), different from Ritter (1991) and Loughran and Ritter (1995), compare performance of IPO firms using equal- and value-weighted industry portfolios, and size- and book-to-market matched portfolios. They note that using only size-matched firm as a benchmark omits the Fama and French (1992) result that book-to-market ratio is significantly related to returns. Additionally,

³The choice of a long-term interval has a trade-off. Loughran and Ritter (1995) report that the longer the interval, the greater is the total underperformance but the greater is the variability of returns. They balance these features by choosing a three-year (756 trading days) and a five-year (1260 trading days) period. The three-year period enables comparisons with other studies and a five-year period facilitates to capture almost the entire period of underperformance in which Loughran (1993) reports that stocks underperform for about five years.

they argue that a similar sized non-issuing firm that has not issued equity in the previous five years is not a reliable benchmark for comparison because it is not a good match based on the risk it bears. These firms may have higher returns because they are simply financially risky firms. They also use Fama-French (1992) three factor regression on IPO portfolios for the whole sample (for venture-backed and non-venture-backed IPOs) and sort on the basis of size and book-to-market ratio separately to test the robustness of their results.⁴ They show that while non-venture backed IPOs underperform venture-backed IPOs over a five-year period when the returns are equally weighted, value-weighted returns relatively reduces underperformance. Besides, it is documented that underperformance is a characteristic of small and low book-to-market firms regardless of whether they are IPO firms or not (Loughran and Ritter, 1995)

Moreover, Michel (2011) argues that the relation between return on recent investment and long-run IPO performance is not only driven by known determinants of IPO long-run stock returns (age of the firm, underwriter reputation, VC valuation, book value of the IPO at the year of issue, etc.) but also driven by factors such as changes in the market conditions, firm's venture capitalists, investor optimism and managerial optimism as well. He examines the relation between long-run market performance and return on recent investments (RRI) by using both style-adjusted buy-and-hold returns and calendar-time factor-adjusted returns for 593 venture backed IPOs between 1987 and 2005.^{5 6} He

⁴ All IPOs from 1975 through 1992

⁵ "The log-return between the firm valuation at the file date and the most recent venture capitalist valuation given within the three years prior to the offer" (Michel, 2011, page 2)

$$RRI_ \ln [File\ Value/VC\ Value] = \ln [P_{file} \times N_{file} / VVC]$$
where P_{file} is the middle point of the file price range, N_{file} is the number of shares outstanding prior to the offer plus the number of share filed and VVC is the venture capitalist valuation.

reports that high RRI portfolios underperform low RRI portfolios on both equal and value-weighted style-adjusted basis by 81.26% (47.10%) and by 60.14% (46.54%) respectively in the 3 years (5 years) after the offer. Similar results are obtained from calendar-time portfolios when equal and value-weighted monthly calendar-time performance of low, medium and high portfolios as well as high minus low RRI portfolios and all IPOs are used in five-factor regression. Results show that firms with higher RRI underperform the firms with lower RRI by 72% on an equal-weighted basis and by 67% on a value-weighted basis.

Secondly, RRI is regressed on changes in the market conditions between the venture capital valuation date and filing date (model 1), VC and VC deal characteristics (2), investor optimism (3), managerial characteristics(4),and known determinants of IPO long-run performance (5) separately where each model has several explanatory variables. He obtains predicted values from models 1-5, as well as the residual values from model 6 which reports the impact of all explanations together in the same regression. He uses the predicted values and the residual value in cross-sectional analysis in order to explore the potential explanations behind the underperformance of high RRI portfolios in the 3 and 5 years after the offer. He finds that none of the models explain the underperformance of firms with higher return on recent investment. On the other hand, he shows that venture capital has a significant positive impact on long-run market performance by lowering the underpricing in the IPO through providing pre-market support such as early and late round financing.

^a SBHR is the difference between the IPO firm's BHR and the BHR from an equal weighted portfolio matched on size and book-to-market.

Prior studies have shown that stocks of IPO firms have underperformed (Ritter, 1991; Loughran and Ritter, 1995). However the association between the long-run performance of IPOs and the different measures of investment bank reputation appears mixed. Carter, Dark and Singh (1998) examine the relation between long run performance of IPOs and investment bank reputation by using Carter and Manaster (CM), Johnson and Miller (JM) and Megginson and Weiss (MW) proxies as an underwriter prestige. They use cross-sectional regression analysis for 2,292 firms that make an IPO between January 1, 1979 and December 31, 1991 to analyze the impact of investment bank reputation on market-adjusted three year post-IPO returns by employing the three different reputation proxies where the logarithm of gross proceeds (size), the logarithm of age of the firm, the percentage of the total issue offered by current shareholders and the standard deviation of raw returns are control variables. They report that IPOs underwritten by more prestigious investment banks have less negative performance over a three-year period. Besides, they also find that Carter-Manaster ranking system is statistically significant when the proxies are examined simultaneously.

On the other hand, Logue et al. (2002) find no relation between underwriter reputation and long run IPO returns. Instead, they concentrate more on the effects of premarket and aftermarket activities of investment banks on long run IPO returns. 1,475 IPOs from January 1988 through December 1995 are examined by using path analysis method. As in standard regression analysis, standardized coefficients are used to show the direct effect of explanatory variables on dependent variables. On the other hand, path analysis enables to observe the indirect effects of independent variables on dependent variables in a multistage regression model. Their model includes three exogenous and five endogenous

variables. Exogenous variables are 'natural logarithm of expected issue proceeds' (product of expected offer size and expected offer price as indicated in the preliminary prospectus) to control for the offer size, 'natural log of issuer's revenue in the fiscal year prior to the IPO' (they think that revenue is the most reliable operating performance metric in the valuation process) and 'offer price range' which is the difference between highest and lowest expected values of the offer price indicated in the preliminary offer prospectus, divided by the lowest offer price as a proxy for ex ante risk. The five endogenous variables provide performance measures of various activities. The first one is the partial price adjustment measuring the revisions in the offer price calculated as difference between the actual offer price and expected offer price, divided by the expected offer price. The second is issue date underpricing calculated as the difference between offer date closing price and the offer price, divided by the offer price. An over-allotment option (OAO) is used by the underwriter to cover the short position at a price equal to the offer price to support demand for an issue without excessive exposure to risk. These authors measure OAO exercise as the number of additional shares purchased by the investment bank, divided by the number of registered shares. The fourth factor is price stabilization. They determine number of days between the offer date and the first date price drops below the offer price. Issuers whose market value declines below the offer price within two days are assigned a value of 1; within the 28 days are assigned a value of 2; and within the first 30 days are assigned a value of 3. Finally they examine the relation between premarket and aftermarket underwriter activities and long run investor returns.

Initially, the relationship between premarket and aftermarket activities are examined without consideration of investment bank reputation. Then, they extend the base case by adding Carter-Manaster rankings as an exogenous variable to examine the relationship between premarket and aftermarket investment bank activities and long-run IPO returns.

Their result on the impact of investment bank reputation and investment bank activities on IPO returns over the long-run horizon suggest that investment bank reputation has very little direct effect on the long run IPO returns. Instead, they find that underwriter reputation appears to have a significant effect on the long-run returns through the conduct of pre- and after-market activities. Carter and Manaster rankings are positive but insignificant at explaining the relation between reputation and long-run returns at 3-, 6-, 12- and 36-month periods.

Although Carter et al. (1998) find a positive relation between investment bank reputation and long-run IPO returns in 80s, Carter, Dark and Sapp (2010) find that the relation changes in 1990s and early 2000s. Carter, Dark and Sapp (2010) investigate the relationship between underwriter reputation and the characteristics of the IPO firms that went to public from 1981 to 2005 and their long-run market performance. They split the sample into two sub-periods for comparison purposes and call them EARLY (1981-1990) and LATE (1991-2005). They use both a t-test of the difference in means and a median test to compare the long run performance of IPO firms in EARLY and LATE periods. They show that raw 5-year returns have declined from 59.3% to 42.3% from the EARLY to LATE period. In order to eliminate the problems arising from non-normality of the distributions of the variables, median tests are conducted for firm characteristic variables (underwriter reputation, initial IPO returns, percentage of technology firms, the

percentage of OTC (unlisted firms) firms in the sample, age of the IPO, market value at day 1, gross IPO proceeds, owners shares in the IPO, net income/total assets, revenues/total assets, standard deviation of after-market return, and IPOs backed by venture capital) for firms that have failed or were failing within the five years of IPO versus firms that survived.⁷ They show that failed or failing firms have more reputable underwriters, are more likely to be a technology firm, have higher market value and revenue, are riskier and are more likely to be venture-backed than in the EARLY period.

Additionally, they investigate whether the firms chosen by more reputable investment banks have different characteristics than the firms chosen by less reputable underwriters. They show that raw 5-year buy-and-hold return is 53.5% for the IPOs that are associated with high reputation underwriters (HIGHREP IPOs) and 30.2% for IPOs that are associated with low reputation underwriters (LOWREP IPOs). On the other hand, while HIGHREP IPOs' 36-month match adjusted returns are increasing and LOWREP IPOs' adjusted returns are declining in the EARLY period, both groups' returns are falling in the LATE period. It is also shown that HIGHREP IPOs are less likely to be failing or failed firms in the EARLY period, but the difference is not clear in the LATE period.

In order to identify changes in underwriter reputation and IPO long-term performance, a Cox proportional hazard model regression for survival data is used in order to control the failure rates that may arise due to the unpredictable changes in the economy and financial markets that are beyond the control of the underwriters. The dependent variable is zero if the firm does not delist. If the firm is delisted, the dependent variable is the difference

⁷They define failure as any firm unlisted from CRSP within five years of the offer.

between 60 and the number of months to delisting. The main item of interest is the underwriter reputation. The authors regress the dependent variable on underwriter reputation with and without the control variables. Control variables include the average 5-year Treasury note yield, a NASDAQ equally-weighted buy-and-hold return, annual average underwriter reputation, and categorical variables for 'dotcom,' technology firms and unlisted firms. They then use multivariate regression in order to examine the effects of the above variables on firm-adjusted cumulative 36-month IPO return in order to support their results. Moreover, they use a 2-stage least squares (2SLS) method to correct an underwriter selection bias if exists. They use the percentage of shares retained by the insider, the initial stock exchange listing, and the geographic proximity to investment bank centers as instrumental variables.

Their results show that there is a distinct relationship between better performing firms and underwriters in the EARLY period but this relation is not shown in the LATE period. Although their results show that prestigious investment banks market low risk and better performing IPO issues, they also find that long-term IPO returns have significantly declined from 1980 to 2005. Besides, the coefficients and statistical significance of independent variables in the 2SLS regression remain similar to the multivariate regression results.

4. Relation between reputation and after-market price support

One of the important factors that affect reputation acquisition of investment banks is their price support to IPOs in the days or weeks immediately following the issue. Aggarwal (2000) is one of the first to discuss and empirically analyze effects of pure stabilization,

after-market short covering and use of the overallotment option, and penalty bids on the performance of issues in the after-market. Although she documents results pertaining to IPO performance in the after-market, her explanations about price support activities lead later authors to extend the price support literature.

Because this study will use exercise of overallotment options (OAO) almost exclusively as a proxy for after-market support activities, it is helpful to elaborate on their characteristics at this point. An OAO (also called a “greenshoe” option) works as a price stabilizer and allows investment banks to issue as much as 15% more shares than originally planned within the first 30 days of offering. Exercising OAOs helps investment banks supply additional shares when demand for shares is high. Moreover, investment banks generally buy back some shares when the price of the issue goes below the offer price in order to decrease the supply and increase the price of the issue. When issue price increases, the overallotment agreement allows the investment bank to purchase issue at offer price so that the investment bank does not lose money.

In the light of Aggarwal (2000), Logue, et al (2002) examines the relation between underwriter reputation and market activities during IPO process. Using path analysis, Logue, et al (2002) show that there is a change in the conduct of premarket underwriting activities in the 1990s and document an indirect effect of investment bank reputation on IPO returns through their management of premarket underwriting activities. Additionally, they find that underwriter reputation is modestly related to aftermarket underwriter activities (overallotment option exercise). Although they do not find a direct relation between underwriter reputation and IPO returns, they show that underwriter reputation is indirectly related to IPO returns by affecting the conduct of price stabilization activities.

Fang (2005) sheds light on the intermediary role played by investment banks in solving the asymmetric information problem between security issuers and investors in capital markets. He specifically investigates the relation between investment bank reputation and the price and quality of their services in the bond IPO market. Using data on corporate nonconvertible bonds, he finds that bonds issued by underwriters with high reputation have lower yields, namely higher prices for the issuers. He measures reputation with the market share of the underwriter. He documents that reputable underwriters charge higher fees as a compensation for their reputable services, which also gives them an incentive to maintain their reputation. At the same time the issuers are still willing to pay these higher service fees as they are outweighed by the gain from higher security prices (lower yields). All these benefits, the author claims, help the reputable underwriters keep their positions in the capital markets.

Lewellen (2006) also analyzes the relation between reputation and price support activities by examining the price effects and determinants of price stabilization during IPOs. Factors that affect the underwriters' decisions to stabilize an IPO are analyzed by gathering proprietary transaction data for 1,422 IPOs issued on Nasdaq for the period between 1996 and 1999. Using this data, she creates a measurement which is based on the underwriter's inventory accumulation. Her results show that underwriters collect large amounts of IPOs inventories in the first day, which is consistent with the idea of price support. She suggests that a stock's price rigidity below and at the offer price makes underwriters repurchase IPOs at inflated prices. Moreover, she analyzes the hypothesis suggested by the previous literature that stronger price support is provided to the stocks that have higher asymmetric information problems. She finds a contrary result to this

hypothesis and shows that IPOs that are less risky and issued by reputable underwriters receive more price support. She suggests that reputable underwriters absorb risk better and stabilize more.

By taking a different perspective Jenkinson and Jones (2007) examine how the conflicts within underwriter syndicates (lead and co-underwriters in an IPO issue) help to align interests of lead underwriters and issuing firm in a theoretical set up. The paper also explains why naked short positions are mostly created by underwriters during the allocation of IPOs. The study documents an alternative explanation to the puzzle of why a naked short position is established although there is a risk that the share price will rise in the aftermarket and it has costs to underwriters. The model shows that lead underwriter creates a naked short position by exposing the co-underwriters to greater risk.

The effect of stabilization, with and without naked short positions, on issuers' performance is also discussed in the paper. It is shown that exercising an overallotment option in the absence of naked short position leads to more underpricing and more profits for underwriters. Compensation of overpricing by short covering below the offer price also helps underwriters profit from overpricing (Jenkinson and Jones, 2007). However, they show that profiting more from underpricing and overpricing may have negative reputational effects for underwriters as well, consistent with the results of Nanda and Yun (1997). On the other hand, it is also shown that short covering in the presence of naked short position gives a positive signal to the issuing firm regarding the accuracy of pricing of the issue which has positive reputational effects for underwriters.

Carvalho and Pinheiro (2008) examine the determinants of stabilization activities in the Brazilian IPO market. The authors hypothesize that stabilization activities are related to ex-ante uncertainty about the issue, the reputation of the underwriter and demand for the issue. Size, spreads (gross spreads), price (offer price) and price range are used as proxies for risk, and the number of foreign, domestic institutional and retail investors, average allotment to foreign, institutional domestic and retail investors, and price revision are used as proxies for demand. Carter and Manaster rankings are used as proxy for reputation, and a probit regression model is used to analyze the determinants of the overallotment option and the occurrence of stabilization. An analysis on intensity of stabilization is done by regressing the ratio of the number of shares repurchased during the stabilization on the above explanatory variables.

Carvalho and Pinheiro (2008) show that size, spread, price, price range and reputation of the underwriter do not have a significant effect on overallotment decision. Instead, demand variables have statistically significant effect on the exercise of allotment. Moreover, it is documented that reputation, risk and demand have significant effects on occurrence of stabilization. Lastly, it is shown that all variables except reputation have a significant relation with intensity of stabilization. They suggest that reputation is important in explaining the stabilization decision but not its intensity.

Mazouz et al. (2012) analyze the determinants of price stabilization activities and their impact on the aftermarket IPO prices in the Hong Kong IPO market. It is required by law for underwriters to disclose all of their stabilization activities in the Hong Kong IPO market (which is not required for underwriters in the U.S.) and this allows authors to easily analyze the stabilization activities and examine the determinants of it by using a

data set that consists of 115 stabilized and 240 non-stabilized IPOs issued on the HKEx from April 2003 through June 2010. Their results show that stabilized IPOs are underpriced less than non-stabilized IPOs. Additionally, stabilized IPOs are offered at higher prices. In the light of these results, the authors suggest that stabilization activities make issuing firms better off by reducing the money left “on the table.” Their results also show that reputable underwriters engage more in stabilization activities. The authors suggest that stabilization is more common amongst reputable underwriters because underwriters protect their reputation by conducting stabilization activities.

5. Venture capital

Venture capital (VC) is funding which is provided by venture capitalists to firms that are young and in need of financial resources. VC holds significance for new companies because new companies lack the financial history needed for raising capital in public markets and they are not often able to secure bank loans on their own. Venture capitalists provide financial resources to firms that are going public and make money by owning and then selling the equity of the firm. In exchange for the high risk that new firms hold, venture capitalists generally keep some control over company decisions and stay on the board of the directors long after the IPO in addition to holding a significant portion of the company. Moreover, venture capitalists may assist firms in organizing management structures that help the issuing firm perform better in the long-run. Although venture capital support is apparently important for firms, many theories have been proposed and several results have been found attempting to clarify the role played by venture capitalists.

It is well-known that venture capitalists have contacts with top-tier investment banks. Consistent with Megginson and Weiss (1991), Brav and Gompers (1997) argue that “venture capitalists may be able to entice more and higher quality analysts to follow their firms, thus lowering potential asymmetric information between firm and investors (page 1793)”. As a result, venture capital backed companies’ issue prices may be perceived more reliable and VC-backed companies may have superior long-term performance (Brav and Gompers, 1997) and less initial underpricing (Michel, 2011). Similar to Brav and Gompers (1997), Yip et al. (2009) also find that venture-backed IPOs perform better than non-venture-backed IPOs.

On the other hand, reputable underwriters may also tend to underwrite firms with venture capital involvement. Doukas and Gonenc (2005) argue that underwriters appraise venture capital involvement as a credible signal regarding the value of the firm. Since reputable underwriters will behave selectively to protect their reputation, it is reasonable to assume that they will choose less risky IPOs, which may be the VC-backed ones. Consistent with their argument they find that venture capital has a major effect on the long-run performance of IPOs when both venture capital and underwriter reputation are taken into account.

While Doukas and Gonenc (2005) support the importance of the VC effect on IPO valuation and long-run performance, Pollock et al (2009) show that venture capital support does not have a significant effect on IPO valuation when director and executive determinants are controlled for. Their results suggest that underwriter reputation and venture capital support only mediate directors and executives. They claim that prestigious underwriters have stronger effects on IPOs than venture capitalists, at

variance with the finding of Yip et al (2009) that the underwriter reputation effect dominates the venture capital effect.

6. Drawbacks of IPOs

In contrast to advantages such as raising equity capital for the firm and increasing the publicity of the firm, the IPO market may also have drawbacks for investors that arise from the necessary asymmetric information situation surrounding the IPO. This asymmetric information may lead to a 'lemons problem' as described by Akerlof (1970) as "The Market for Lemons". In this situation, there may be such a disparity between the information of the investor and the issuer that no transactions take place.

a. "winner's curse" and lemons problems

Rock (1986) states that investors put their money on issues based on the information they have about the value of the offering. While uninformed investors may submit purchase orders for all offerings, informed investors only subscribe to issues which have offer prices below the fair (subjective) value. When both uninformed investors and informed investors such as banks and big corporations subscribe an issue given an offering price, any excess demand creates quantity rationing in which investors will only be able to purchase some fraction of their purchase orders (Beatty and Ritter, 1986). This could be perceived as a positive signal for both informed and uninformed investors, because excess demand occurs generally for underpriced issues. On the other hand, when uninformed investors submit purchase orders for issues that have offer prices below their fair values, these investors will face a "winner's curse" problem. In this case uninformed investor will receive requested number of shares and it is expected that the initial return

will be less than average initial returns (Beatty and Ritter, 1986). A few problems arise in this situation: First, shares must be undervalued in order to hold uninformed investors in the market. Undervaluing below an optimum amount⁸ causes issuing firm to leave too much money “on the table” and makes the issuing firm earn less than expected (raising the cost of the issue to the firm). Overvaluing an issue also engenders reputation loss for the investment bank. The investment bank that is associated with the issue loses reputation and also loses potential customers in either case. If we look at the problem from an uninformed investor’s point of view, he will either earn less than expected amount of profit or lose money. Therefore, it is an undeniable fact that a “winner’s curse” problem can have costs for all agents in the market.

b. money left “on the table”

In the equity market, especially for ‘newborn’ stocks, investors generally cannot be as certain of the value of an issue. If the issue is overpriced, this will tilt the scales in favor of the lemon issuer, and make the investors worse off. The lemons issue also puts the issuer of a good IPO at a disadvantage in the absence of an intermediary due to the loss of confidence regarding the equity market and new issues in general. Traditionally there is a way around this impasse - the use of investment banks as an intermediary who can distinguish lemons from cherries. The use of investment banks signals to the investors that the issue is reliable. However, there is still risk involved in working together with an investment bank. Since investment banks determine the price of the issue during the book-building process, they can over-allocate issues by taking a short position (Bartling

⁸ Nanda and Yun (1997) mentions ‘optimum amount’ concept

and Park, 2004) and set a price at a level where demand exceeds supply. If investment banks do not exercise an overallotment option, this may lead to a price- spike in the after-market in the short-term where we end-up with an underpriced issue. This makes issuing firms leave money “on the table” which may cost either minor or major financial losses to the issuing firms.

As shown in Table I, the average money left “on the table” is generally above \$150M when we consider the money left “on the table” at or above \$100M.⁹ As of 2008, average underpricing was more than \$2B which is at least seven times more than averages in the other years. This can be best explained by Griffin et al. (2012). They state that investment banks continue to issue securities in bad states of the world even though they know that the crisis is expected. It is well-known by investment banks that stock prices will fall in any case once a downturn occurs. Thus they may underprice more in order to not risk overvaluing the issue in the bad state as a way to (proactively) protect their reputation.

c. Spinning and flipping

Aside from the economic problems such as “winner’s curse” and lemons problem that are important to IPOs, there are also some unethical practices associated with IPOs such as ‘IPO spinning’ which is “the allocation by underwriters of the shares of hot initial public offerings (IPOs) to company executives in order to influence their decisions in the hiring of investment bankers and/or the pricing of their own company’s initial public offering.”

⁹ Calculations are based on the first day initial underpricing

Table I
Initial IPO Data Set*

Year	Number of IPOs	Median age	VC-backed		Technology IPOs		Proceeds in \$billions	
			No.	% VC-backed	No.	% VC-backed	VC-backed	Technology
1980	73	6	24	33%	23	61%	395	383
1981	197	8	56	28%	74	39%	691	852
1982	80	5	21	26%	42	36%	490	648
1983	449	7	115	26%	173	38%	2,77	3,271
1984	177	8	45	25%	51	51%	614	556
1985	183	8	38	21%	35	46%	642	349
1986	395	7	78	20%	74	42%	1,554	1,169
1987	283	7	69	24%	59	66%	1,347	1,325
1988	102	7	33	32%	27	59%	688	873
1989	113	7	40	35%	34	65%	987	737
1990	110	8	44	40%	30	77%	1,171	707
1991	287	9	111	39%	70	63%	3,691	2,738
1992	411	9	139	34%	110	60%	4,896	5,736
1993	509	8	172	34%	123	70%	5,849	5,412
1994	403	8	132	33%	114	56%	3,688	3,588
1995	457	7	183	40%	195	57%	6,858	9,015
1996	675	7	257	38%	264	56%	11,209	15,707
1997	473	9	125	26%	169	42%	4,459	7,321
1998	283	7	73	26%	111	48%	3,503	8,045
1999	476	4	268	56%	368	65%	20,763	33,526
2000	381	6	239	63%	260	68%	22,704	42,157
2001	79	12	28	35%	23	65%	2,311	5,773
2002	66	12	19	29%	20	55%	1,527	2,587
2003	62	11	23	37%	17	59%	1,738	2,162
2004	174	8	79	45%	62	66%	7,126	9,191
2005	160	12	45	28%	45	49%	3,458	7,014
2006	157	13	53	34%	46	52%	4,527	4,678
2007	160	9	65	41%	72	61%	8,381	10,914
2008	21	14	9	43%	5	80%	863	1,075
2009	41	15	12	29%	12	50%	1,697	3,655
2010	92	10	40	43%	29	72%	3,873	3,789

Source: <http://bear.warrington.ufl.edu/ritter/ipodata.htm>

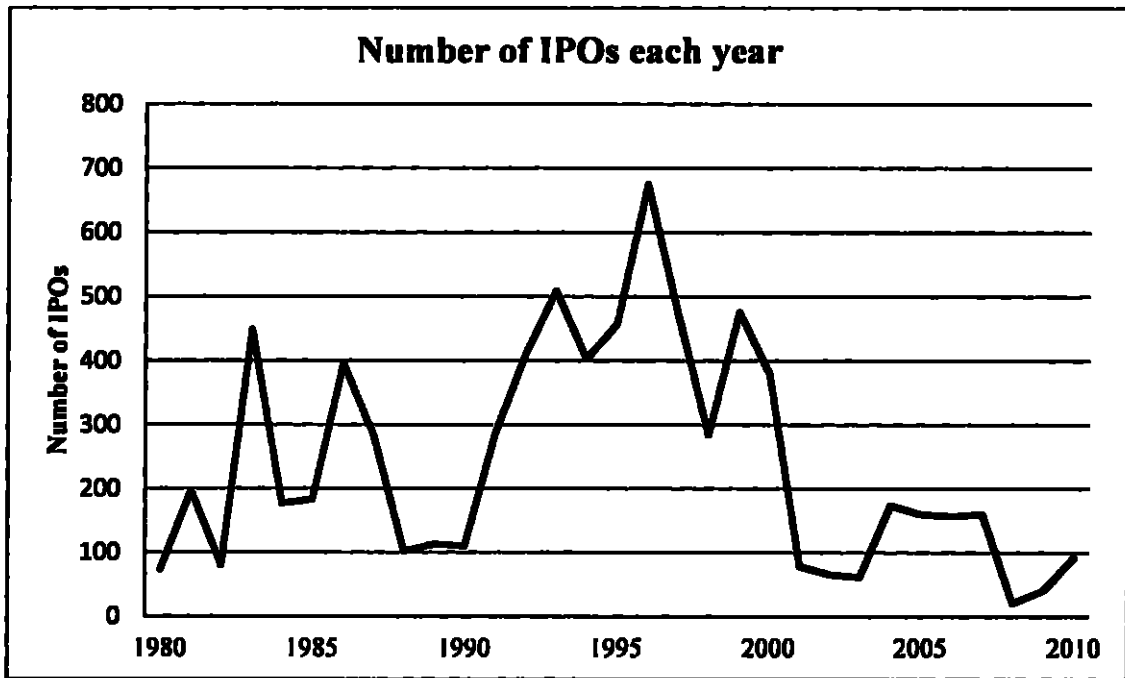
Figure 1: IPOs by year

Figure 2: Mean first-day returns and money left on the table, 1980-2010

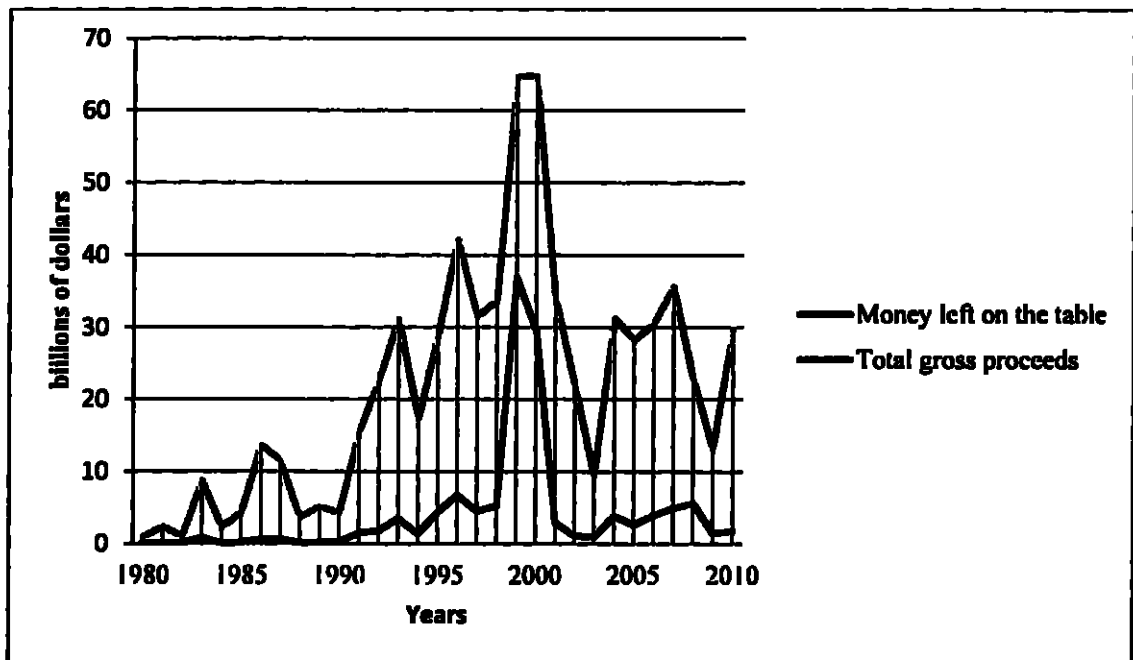
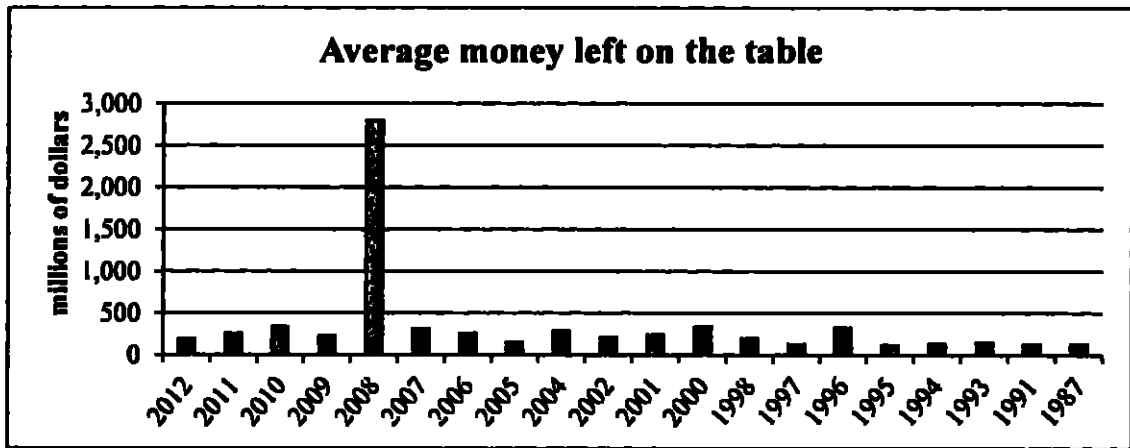


Figure 3: Money left on the table over \$100 million



(Liu and Ritter (2010). p. 2024) As a result, excessive underpricing arises due to this dynamic cooperation. Loughran and Ritter (2004) argues that although firm leaves money “on the table” as a result of underpricing, executives of the firm gain on personal account when other hot IPOs are allocated to them.

Flipping is another issue pertaining to IPOs. Flipping is when an initial IPO buyer almost immediately sells the IPO shares after the issue. Although Aggrawal (2000) states that restricting flipping by using penalty bids is an efficient method for IPO price stabilization, buyers of IPO stocks may still sell their shares on the first day and then give part of their returns as a form of profit-sharing.

III. RESEARCH METHOD AND DATA

In this study, I will use an ordered probit regression model. An ordered probit model is just a generalization of the binary response model in which a range of ordinal numbers are used as dependent variables. The important point is that the range of numbers means nothing in terms of their value; they are just values showing us a ranking from lowest to highest. The central idea is that there is a latent continuous metric underlying the ordinal observations. It is assumed that the observed y_i is generated by a latent variable y_i^* where

$$y_i^* = x_i B + e_i, \quad (1)$$

and y_i is the observed variable, takes values 0 to m where

$y_i=j$ if and only if $\mu_{j-1} < y_i^* \leq \mu_j$ where $j=0 \dots m$ and $\mu_{-1} = -\infty$ and $\mu_m = +\infty$. The μ terms are called thresholds or cutpoints. They come from the data and help to match probabilities associated with each discrete outcome. The statistical program STATA will not only estimate the β 's but also the thresholds if that is desirable.¹⁰

I will regress a reputation proxy, Carter and Manaster reputation rankings, on long-run returns, first week returns, analyst's reputation, size of the IPO, age of the issuing firm, percentage of overallotment option exercised, percentage of underwriter fee and the aforementioned indicator variables. There are 9 possible choices for each underwriter where 1 is the lowest and 9 is the highest ranking.

¹⁰In this case, I will not need to estimate the thresholds because they are determined by the categories of the Carter-Manaster rankings (0 through 9).

It could be argued that investment banks might engage in marketing of several IPOs in a given year and each IPO might have different sizes. Therefore, it would seem reasonable to average IPO returns in a given year that are associated with each investment bank in order to examine its effect on the investment bank reputation. However, averaging IPO returns and analyzing their effects on investment bank reputation is a totally different topic and research design. In this study I am analyzing each IPO's effect on the investment bank's reputation separately; this is done on an IPO basis, not year by year for the entire sample. The unit of analysis is the IPO, therefore it is not necessary to take averages or aggregate across IPOs in any way. Using this method allows us to analyze how changes in the predictor variables translate into the probability of observing a particular ordinal outcome.

This study will examine the effects of long-run IPO returns (one-, two-, three- and five-year returns after going to market) on the reputation of investment banks between 1980 and 2010.¹¹ Griffin, et al (2012) show that high-reputation investment banks sold poorly performing complex securities such as mortgage-backed securities, collateralized debt obligations, collateralized loan obligations and asset-backed securities. Their results show that high-reputation underwriters produce securities that has good returns in the good state and bad returns in the bad state because reputable underwriters know that their good perceived reputation will be lost when the downturn occurs. They also generalize their results and assume that their results would also be applied to IPOs that are issued in the bad state. However, this will not limit the time span for this study because it is simple

¹¹ The time interval is restricted between 1980 and 2010 because Carter and Manaster reputation rankings are only available for this time interval on Dr. Jay Ritter's Web site.

to can control for the bad states by using indicator variables to examine the time effects on investment bank reputation.

1. Reputation measures

One of the measures of underwriter reputation is the Carter and Manaster (CM) ranking system which is based on the underwriter's relative position in the IPO tombstone announcements. This measure is developed by Carter and Manaster (1990) and extended by Carter et al (1998) and Loughran and Ritter (2004). CM ranking is zero for the lowest reputation underwriter and nine for the highest reputation underwriter. Reputation rankings will be obtained from Professor Jay Ritter's Web site.

The reputation of the investment banks will also be measured using relative market shares of the investment banks. (Megginson and Weiss, 1991) The relative market share for each bank in a given year is defined as the sum of gross proceeds raised in associated offerings divided by the sum of the gross proceeds raised in all offerings in that year. These are calculated each year using the SDC *New Issues* database.

Another proxy/measure was created by Johnson and Miller (1988). They are inspired by the classification system offered by Hayes (1971) in which investment banks are grouped into several groups such as bulge group, major bracket group, sub-major bracket group and so forth. Based on this classification, Johnson and Miller (1988) use three different cut-off points to divide their sample into prestigious and non-prestigious subgroups in order to check the robustness of their results. In the first case, bulge group investment banks are classified as prestigious and remaining sample is classified as non-prestigious. In the second case, both bulge and major bracket group investment banks are classified as

prestigious, and in the third case sub-major bracket investment banks are joined to prestigious group as well. Therefore, binary prestigious measure is used in three different formats.

Johnson and Miller (1988) suggests that Carter and Manaster reputation ranking system “cannot be productively defined along a continuum (page 22)” Besides, they assert that reputation differences in the lower reputation levels are difficult to discern than in the upper level. Therefore they propose a different reputation ranking system where investment banks in the bulge bracket are ranked 3, investment banks in the major bracket are ranked 2, investment banks in the sub-major bracket are ranked 1, and remaining is ranked 0.

According to Carter et al. (1998), the Carter-Manaster reputation ranking system is the most costly to construct in terms of time and effort. However, they believe that it serves best as a reputation proxy.

2. Initial IPO sample

In this study I examine the effect of long-run buy-and-hold adjusted returns on investment bank reputation over the 1980-2010 period. The initial IPO data is obtained from different sources such as the IDD Review of Investment Banking published by Investment Dealers’ Digest (Doukas and Gonenc, 2005) and from Securities Data Corporation’s (SDC) *New Issues* database. Financial companies whose two-digit SIC codes are between 60 and 67 (including banks, credit agencies, savings and loans, closed-end funds and real estate investment trusts, partnership and unit offerings) will be excluded from the data sample.

3. Long-run returns

Chemmanur and Fulghieri (1994) suggest that accurate screening has a positive effect on the reputation of investment banks. Thus, if positive long run returns are appraised as accurate screening, investment banks which are associated with good offerings (high long-run returns) will earn positive returns on their reputations and investment banks which are associated with poor offerings will earn negative returns on their reputation. Ritter (1995) suggests that offerings are not priced correctly in the early-after market. Dunbar (2000) also suggests that an IPO might have positive long run performance if it is initially underpriced and might have negative long run returns if it is initially overpriced. Therefore, long-run returns might behave as initial returns and can have similar effects on market share of investment banks according to Dunbar (2000).

The long-term performance of IPOs is evaluated using buy-and-hold adjusted returns (BHAR). The BHAR is the IPO 12-, 36- and 60-month calendar-time BHR raw returns less contemporaneous Center for Research in Security Prices' (CRSP) equally-weighted market return. BHAR_{*i,t*} on IPO *i* is introduced by Loughran and Ritter (1995) as:

$$BHAR_{i,t} = \left[\prod_{t=1}^T (1 + R_{i,t}) - 1 \right] - \left[\prod_{t=1}^T (1 + R_{m,t}) - 1 \right] \quad (2)$$

where $R_{i,t}$ and $R_{m,t}$ are daily returns on IPO *i* and the corresponding market benchmark, respectively, and *t* is the event day following listing.

4. Initial returns

Hiring an investment bank to control and market the offering works as a certification mechanism (Chemmanur and Fulghieri, 2004). This certification mechanism is vital for both investors, issuers and investment banks because Beatty and Ritter (1986) report that investment banks lose potential investors if the issue is not optimally underpriced or if it is overpriced (as mentioned above). Beatty and Ritter also document that investment banks lose issuers if stock is underpriced too much which means issuers leave too much money “on the table.” Since the system depends mostly on the incentives of investment banks, this mechanism is credible if investment banks lose or gain reputation depending on the level of underpricing or overpricing of the issue (Dunbar, 2000).

Although most of the studies (Beatty and Ritter, 1986; Carter and Manaster, 1990; Carter et al. 1998; Cooney et al. 2001; Carter et al, 2010) use first day initial returns as a proxy for underpricing, Nanda and Yun (1997) suggest that first day initial returns may not be a complete measure of mispricing. They show that using 1-week initial returns following the offering date may provide a more reliable measure of IPO price performance. However, this study uses first day returns instead of first-week initial returns as an independent variable. I expect a negative relation between these two variables in which the more the issue is underpriced, the lower will be the reputation after the first year. I expect that first day IPO returns will lose their impact on investment bank reputation after several years.

Data: Aftermarket prices and return data will be obtained from the Center for Research in Security Prices (CRSP). For those offerings by firms with CRSP data, the first week initial return is calculated as:

$$\text{First day initial returns} = \frac{100[P_1 - P]}{P} \quad (3)$$

where P_1 is the closing price at the end of the first trading day of the offering and P is the offering price.

5. Analyst reputation

Most of the issuers are not well known by investors in the market when they first go public and it is believed that issuing firm's values increase if professional marketing is conducted and investors hear about them. This marketing activity is provided by analysts in the investment banks. This is one of the main reasons why analyst reputation plays an important role in the selection of IPO underwriters-the coverage provided by more reputable analysts gives confidence to issuing firm regarding the valuation of the IPO (Dunbar, 2000). Krigman et al. (2001) show that one of the reasons behind switching lead investment bank is to benefit from more reputable analyst coverage because high-ranked analysts provide more accurate information about the industries and have better information about the firms they are following (Li and Zao, 2008). They also report that dealers with affiliated star analysts have larger market shares than dealers with affiliated non-star analysts due to difference in their quote aggressiveness. In addition, Dunbar (2000) also finds a positive relation between analyst reputation and investment bank market change. On the other hand, Michaely and Womack (1999) document a negative relation between investment bank reputation and analyst reputation. They suggest that

reputable analysts are more likely to make biased recommendations about the firms they are associated with because reputable analysts believe that their IPOs always perform better despite the external statistical evidence.

In the light of Dunbar (2000), I expect to find a positive relation between analyst's reputation and investment bank reputation. I expect that as an analyst's reputation grows, an investment bank's reputation increases as well.

Data: Analyst reputations will be obtained from All-American Research Team listings.

6. Investment bank compensation

Chemmanur and Fulghieri (1994) show that reputable underwriters are more effective at reducing the effects of the information asymmetry in the equity market. The main reason behind underwriter success in reducing the impact of information asymmetry is reputable underwriters' considerable amount of investment to mitigate the problems that may arise from information asymmetries in order to ensure the information's reliability. Charging higher fees may convey the signal to investors and issuing firms that the investment banks might have put both too much effort and money to provide accurate information for the issuance of the IPO. Thus, investors may put more money on the issue written by reputable underwriters and issuing firms will be willing to work with reputable underwriters as well, which in turn increases the profitability of the investment bank.

Alternatively, Booth and Smith (1986) suggests that less reputable underwriters are willing to impose lower fees in order to work with more issuing firms and increase their reputation. Fang (2005) also suggests that high-reputation underwriters charge higher fees as a compensation for their reputable services, which also gives them an incentive to

maintain their reputation. At the same time issuers are still willing to pay these higher service fees as they are outweighed by the gain from higher security prices. Dunbar (2000) also argues that reputable investment banks put more at risk in order to earn higher returns and compensate the risk by charging higher fees.

Therefore, in the light of the previous articles, I consider underwriter compensation as an indicator for reputation and contend that higher (lower) fees imply higher (lower) reputation for investment banks.

7. Price support activities

Price support activities are also among the important factors that impact investment bank reputation. Lewellen (2006) and Mazouz et al (2012) find a strong relation between price support and underwriter size. Lewellen (2006) suggests that while overpricing can damage an underwriter's reputation, price support can repair the reputation. Moreover, she also suggests that since price support is a discretionary activity, as the reputation of the underwriter increases, the probability of engaging in price stabilization activity also increases. Moreover, Mazouz et al (2012) suggests that price stabilization is regarded as a positive signal by issuing firms and makes issuing firms better off by reducing the money left "on the table." They both suggest that stabilization is more common amongst reputable underwriters because underwriters protect their reputation by conducting stabilization activities. Consistent with Lewellen (2006), Carvalho et al (2008) suggest that reputable underwriters engage more in price support activities and act in the favor of issuing firms in order to protect their reputation.

Given this prior work, it is reasonable to expect IPO price support by investment banks in the early after-market helps their reputation acquisition. Although pure stabilization, aftermarket short covering and use of overallotment option and penalty bids are used as price support activities, only overallotment activities are publicly available information in the U.S. equity markets. Thus, I will use overallotment option exercise as a proxy for price support activity and show that the more an investment bank exercises overallotment options, the more it is perceived as reputable.

8. Size of the issue and age of the firm

Offer size is one of the factors that affect the investment bank activity (Logue et al, 2002). As the offer size increases, investment banks pay more attention to the marketing of the issue because larger IPOs are often interpreted as less risky and more attractive in the marketplace (Beatty and Ritter, 1986). Besides, Ritter (1991) reports that smaller issues have the worst aftermarket performance.

The age of the issuing firm is also used to reflect the issuing firm's potential risk (Ritter, 1991). Carter et al. (2010) show that younger firms are riskier in terms of the standard deviation of after-market returns. They also report that the percentage of younger firms is higher among failed or failing firms.

Investment banks are risk averse in terms of choosing IPO firms, and they do not want to impair their reputation and credibility by marketing risky issues. Conducting risky IPOs could be interpreted as a negative signal by investors and this damages reputation of the investment bank (Chemmanur and Fulghieri, 1994)

I will use the natural logarithm of expected issue proceeds to control for the systematic influence of offer size. Expected issue proceeds is calculated as the product of expected offer size and expected offer price as indicated in the preliminary prospectus. I expect that both age of the IPO firm and the size of the issue will be positively related to investment bank reputation. Offer size, offer price and age of the firms will be obtained from CRSP database.

9. Indicator variables

a. venture capital

Venture capitalists specialize in financing startup companies and bringing them public.¹² They provide access to investment banks and overcome information asymmetries between investors and IPO firms. In order to support this view, Doukas and Gonenc (2005) show that IPOs that are underwritten by reputable investment banks outperform those underwritten by low-reputable underwriters when they are not backed by venture capital. However, when venture capitalists are involved, IPOs are associated with significant long-run returns regardless of the reputation of the investment bank. Yip et al (2009) find results consistent those of with Doukas and Gonenc (2005) and report that underwriter reputation is insignificantly related to long-run returns of issuing firm when controlling for a venture capital effect.

Venture capital is private equity and usually gets significant control over company decisions in exchange for the high risk they bear. Even though firms issue stocks, venture

¹²Yip et al. (2009) show that industry effect disappears when venture capital effects are controlled.

capitalists may still provide capital or access to capital. It could be perceived by investors that a venture capitalist, who always wants to protect its investment, trusts the marketing strategy conducted by investment banks which enhances reputation of the investment bank among the prospective issuers.

Data on venture capital-backed IPOs will be obtained from SDC's *Venture Expert* database. I will use an indicator variable with a value of "1" if the IPO is backed by venture capital and "0" otherwise. I expect to find a positive relation between investment bank reputation and venture capital backing status.

b. time period

There are three important events that we need to control for over the 30-year period that may have affected the IPO markets: The first one was the 1987 stock market crash, in which stock prices dropped by 22% within a day (as measured by the Dow Jones Industrial Average or DJIA). Screening with the stock market by the intermediaries became more of an issue after this worldwide crash (Khanna et al, 2005). The second event was the 'dotcom bubble' (1997-2000), which was a period of price increases for the stocks of Internet and related firms. The bubble reached its climax in March, 2001, peaking with a NASDAQ Composite Index value of 5132.52, followed by a sharp fall in the stock prices that lasted until September of 2002¹³. The last period of concern is the 2007-2008 global financial crisis, which resulted in bankruptcies of several financial institutions, bailouts and a general downturn in global stock markets. The 1987 stock market crash was relatively short-lived – the DJIA returned to pre-event levels within six

¹³ NASDAQ Composite Index Data

months. Thus, I will not control for 1987 stock market crash. On the other hand, I will use indicator variables for both the dotcom bubble and the 2007-2008 financial crisis.

c. industry dummy

Investment banks might market different firms from different industries in order to forestall industry specific risks and to ensure a more stable market presence. While one industry has a higher market share and issuing firms have higher returns in that industry, other industries may constitute lower shares of the market and issuing firms in these industries can have lower returns. Thus, returns of the firm might depend on the industry it is affiliated with. In this study I will control for technology firms by using an indicator variable because technology firms constitute 64% of IPOs that are marketed during the Internet bubble period and 36% of all IPOs between 1980 and 2010. Therefore, I expect that investment banks that are associated with technology firms will more likely have a higher reputation during the Internet bubble period and will have lower reputation a few years after this period.

IV. FINAL DATA AND RESULTS

1. Attrition and descriptive statistics

After collecting some preliminary data, it became evident that I would need to examine the impact of long-term IPO performance on the reputation of investment bank that is associated with a given IPO over the 1993-2006 period. Originally this study was intended to analyze the periods between 1980 and 2010. However, due to the limitations in obtaining All-Star Analyst Reputation data, I used analyst coverage data from Prof. Jay Ritter's website which is only available for the period 1993-2009.¹⁴ Although the time range could be extended until 2007, my dependent variable, Carter and Manaster investment bank reputation data is only available until 2011. Since the impact of five-year returns on investment bank reputation is examined in the study as well as the impact of one- and three-year returns, the time range must be limited to the January 1993-December 2006 period.

As shown in Table II, during the 13-year period a total of 4,847 common share IPOs were marketed in the U.S public market. In several studies IPOs that have an offer price above \$5 are used in order to get more accurate results. Therefore, offers below \$5 are excluded from the sample. My initial sample is therefore composed of 4,677 IPOs of U.S.-based companies with an offer price of at least \$5.00 and listed on the U.S. stock exchanges. I have excluded ADRs, unit offers, closed-end funds, REITs, partnerships, banks and

¹⁴ <http://bear.warrington.ufl.edu/ritter/>

S&Ls. For the firms issued IPOs in this period, I must have daily data in order to calculate the buy and hold market adjusted returns. The daily returns are collected from CRSP database, which only includes Amex, NYSE and NASDAQ stocks. Hence, our data sample is reduced to 3,970 IPOs that are listed on NASDAQ, NYSE or Amex. The largest loss occurs due to the lack of venture capital data. The venture-backed IPOs are obtained from the SDC's database. However, the venture-backed flags for 1,216 of 3,970 IPOs are missing in the database; leaving 2,754 IPOs. 623 more IPOs are missing due to the mismatch between analyst coverage data and our main data source; and 3 IPOs are missing because of the data unavailability about the investment banks that are associated with the IPOs. Therefore, I am left with 2,120 IPOs in the final sample.

Table II
Summary of Losses

Initial data (Total IPOs)	4,847
Losses occurred due to:	
IPOs that has offer price below \$5	178
Missing data on CRSP (OTC, Chicago Stock Exc, Boston stock Exc, etc.)	707
Missing venture-backed capital data	1,216
Mismatch between analyst coverage data and main source of data	623
Unknown investment bank	3
Total IPOs in the sample 2,120	

Table III provides descriptive statistics on IPOs for each year between 1993 and 2006. The table reports the characteristics of each offering, including number of shares offered by the firm, offering price, fee percentage, venture capital dummy, age of the firm, and long-term returns. There are a few points worth mentioning. First of all, the number of offerings ranges from 181 in 1994 to 377 in 1996. On the other hand, not surprisingly, the number of offerings drops dramatically after 2000 due to the dotcom bubble. Secondly, number of observations decrease substantially for three- and five-year returns. The explanation is that some of the firms either went bankrupt, or have been privatized or have been delisted from the market for some other reasons. Thus, 894 IPOs in the sample continue trading on their stock exchange for five years after the offering dates.

Furthermore, 53% of the IPOs are backed by venture capitalists and 39% of the IPOs went to market during the dotcom bubble period. Finally only 22% of the IPOs are technology firms.

Table IV shows the distribution of indicator variables for analyst coverage data, venture capital, time and industry dummies, and Table V shows the correlations between the variables used in my analysis.

Table III
Sample Summary Statistics

This table presents the frequency distribution and characteristics of the IPO sample. IPOs with at least \$5 offer price has been included in the sample. Offer size is the product of shares offered and offer price. Initial return is the difference between first day closing price and offer price divided by the offer price. Age is the age of the issuing firm at the time of the offer. One, three and five year return is each IPO's one, three and five-year raw buy-and-hold return less the contemporaneous CRSP NASDAQ, NYSE and Amex value weighted composite index return calculated using the offer date +5 through offer date +255, +755 and +1255 respectively.

Panel A: Number of issues per year

Year	Number of Issues	Year	Number of Issues
1993	241	2001	36
1994	181	2002	37
1995	232	2003	22
1996	377	2004	85
1997	251	2005	43
1998	132	2006	22
1999	260	Total	2120
2000	201		

Panel B: Characteristics of IPO sample

Descriptive measure	Observations	Mean	Std. Dev.	Minimum	Maximum
Offer size (\$ million)	2,120	62.90	116.80	4.4	2,745.5
Offer price	2,120	12.80	4.40	5	48
Initial return	2,120	0.28	0.76	-1	22.47
Fee percentage	2,120	0.02	0.01	0.000675	0.07
Age	2,120	12.79	16.71	0	145
One-year return	2,117	-0.11	0.74	-1.227	5.45
Three-year return	1,444	-0.47	1.10	-1.971	11.90
Five-year return	894	-0.65	1.42	-2.787	14.59

Table IV
Frequency Table for Indicator Variables

Analyst coverage	Frequency	Percentage
0	1,717	80.99
1	327	15.42
3	2	0.09
4	74	3.49
Total	2,120	100

Venture capital dummy	Frequency	Percentage
0	989	46.65
1	1,131	53.35
Total	2,120	100

Time dummy	Frequency	Percentage
0	1,276	60.19
1	844	39.81
Total	2,120	100

Industry dummy	Frequency	Percentage
0	1,652	77.92
1	468	22.08
Total	2,120	100

Table V
Correlation Coefficients

1st rep, *3rd rep* and *5th rep* are the investment bank reputations one, three and five years after the offer date of the IPO that they are associated with. *Age* is the age of the issuing firm at the time of the offer. *Initial ret* is the initial return which is the difference between first day closing price and offer price divided by the offer price. *Logoffer*, product of shares offered and offer price expressed as a natural log. *1-year ret*, *3-year ret* and *5-year ret* is each IPO's one, three and five-year raw buy-and-hold return less the contemporaneous CRSP NASDAQ, NYSE and Amex value weighted composite index return calculated using the offer date +5 through offer date +255, +755 and +1255 respectively. *VB*, venture capital dummy equals 1 if the IPO firm is backed by a venture capitalist; and 0 otherwise. *Time*, time dummy equals 1 if the firm goes to public between 1997 and 2000; and 0 otherwise. *Industry*, industry dummy equals to 1 if the firm is a technology firm; and 0 otherwise

	1st rep	1year ret	Age	Initial ret	Logoffer	Fee	Analyst	VB	Time	Industry
1st rep	1.000									
1year ret	0.076	1.000								
Age	0.048	0.070	1.000							
Initial ret	0.142	-0.098	-0.117	1.000						
Logoffer	0.563	-0.014	0.147	0.134	1.000					
Fee	-0.345	-0.008	-0.091	-0.183	-0.471	1.000				
Analyst	0.217	0.037	0.165	0.035	0.271	-0.196	1.000			
VB	0.216	0.000	-0.258	0.123	0.007	-0.036	-0.016	1.000		
Time	0.059	-0.105	-0.089	0.203	0.137	-0.180	-0.015	0.025	1.000	
Industry	0.049	-0.005	-0.139	0.107	-0.038	0.029	-0.046	0.225	0.080	1.000
	3rd rep	3year ret	Age	Initial ret	Logoffer	Fee	Analyst	VB	Time	Industry
3rd rep	1.000									
3year ret	0.072	1.000								
Age	0.028	0.032	1.000							
Initial ret	0.137	-0.025	-0.122	1.000						
Logoffer	0.536	0.056	0.151	0.134	1.000					
Fee	-0.298	-0.011	-0.092	-0.182	-0.459	1.000				
Analyst	0.189	0.043	0.163	0.038	0.272	-0.191	1.000			
VB	0.194	0.012	-0.255	0.127	0.010	-0.044	-0.016	1.000		
Time	0.157	0.086	-0.089	0.210	0.130	-0.167	-0.018	0.032	1.000	
Industry	0.057	0.007	-0.139	0.113	-0.036	0.024	-0.052	0.227	0.079	1.000
	5th rep	5year ret	Age	Initial ret	Logoffer	Fee	Analyst	VB	Time	Industry
5th rep	1.000									
5year ret	0.157	1.000								
Age	0.010	-0.001	1.000							
Initial ret	0.094	-0.006	-0.121	1.000						
Logoffer	0.372	0.085	0.151	0.133	1.000					
Fee	-0.205	-0.053	-0.092	-0.180	-0.459	1.000				
Analyst	0.123	0.024	0.158	0.036	0.275	-0.190	1.000			
VB	0.134	0.044	-0.256	0.123	0.010	-0.042	-0.015	1.000		
Time	0.210	0.148	-0.088	0.206	0.127	-0.167	-0.019	0.031	1.000	

2. Empirical results

The dependent variable (1st, 3rd and 5th year reputation) is Carter and Manaster (1990) underwriter reputation variable (ranks 0-9). The variable has been updated to 5-year groups (81-85, 86-90, 91-95, 96-00, 01-05 and 06-10). One-, three- and five-year return is each IPO's one-, three- and five-year raw buy-and-hold return less the contemporaneous CRSP NASDAQ, NYSE or Amex value-weighted composite index return calculated using the offer date +5 through offer date +255, +755 and +1255 respectively. Age is the age of the issuing firm at the time of the offer. Initial return is the difference between first day closing price and offer price divided by the offer price. Log offer size is the natural logarithm of gross proceeds in millions of dollars. The fee percentage is the investment bank fee that is assessed on the IPO firm.

From Jay Ritter's Web site:

"Analyst coverage variable equals to 1 if the IPO is covered by an Institutional Investor all-star analyst (either number 1 or one of the top 3) from the underwriter within one year of the IPO; equals 2 if the IPO is covered by an Institutional Investor all-star analyst (number 2) from the underwriter within one year of the IPO; equals 3 if the IPO is covered by an Institutional Investor all-star analyst (number 3) from the underwriter within one year of the IPO; equals 4 if the IPO is covered by an Institutional Investor runner-up analyst (number 4) from the underwriter within one year of the IPO; equals zero if the IPO is covered by an analyst from the underwriter, who is not ranked by institutional investor; and

equals 5 if the IPO is covered by an analyst from the underwriter, but the analyst's all-star status cannot be determined.”¹⁵

The venture capital variable equals 1 if the IPO firm is backed by a venture capitalist, and 0 otherwise. The time variable equals to 1 if the firm goes public between 1997 and 2000; and 0 otherwise. Finally, the industry variable equals to 1 if the firm is a technology firm; and 0 otherwise. 1st year reputation is the investment bank's ranking one year after each IPO. For example, if an IPO is offered to the public by Investment Bank X, then the investment bank's reputation one year after the IPO date is used as its 1st year reputation. 1st year, 3rd year and 5th year reputations are regressed on one-, three- and five-year returns along with the IPO characteristics.

The results of the ordered probit regression on investment rank reputation are presented in Table IV. The principal variables of interest are one-, three- and five-year stock returns. As anticipated, the coefficients for one-, three- and five-year returns are positive and significantly different from zero at the 1 percent level for the three ordered probit regressions. The results show that long-term returns, offer size and venture capital have significant effects in explaining the investment banks' reputation. The results also suggest that the age of the firm and the industry are not determinants of investment bank reputation. Initial returns are positively related to investment bank reputation one and three years after the offer. However, initial return loses its power in explaining the investment bank reputation five years after the offer. Although the coefficient is positive, indicating a reputation effect, it is not different from zero. Analyst coverage is positively related to investment bank reputation. The overall explanatory power of the regression

¹⁵ <http://bear.warrington.ufl.edu/ritter/>

one year after the offer is higher, with an adjusted R^2 of 0.18, than that for the reputation three years after the offer (0.15) and five years after the offer (0.13).

Table VI
Regression of Investment Bank Reputation on Offering Characteristics

	1 st year reputation	3 rd year reputation	5 th year reputation
One-year return	0.147*** (0.035)		
Three-year return		0.073*** (0.027)	
Five-year return			0.108*** (0.030)
Age	0.001 (0.002)	0.000 (0.002)	-0.003 (0.002)
Initial return	0.185*** (0.056)	0.170** (0.078)	0.188 (0.124)
Log offer size	0.875*** (0.042)	0.788*** (0.050)	0.624*** (0.061)
Fee percentage	-62.610*** (6.729)	-38.375*** (8.349)	-16.955 (10.324)
Analyst coverage	0.283*** (0.041)	0.220*** (0.048)	0.036 (0.055)
Venture capital dummy	0.432*** (0.053)	0.369*** (0.064)	0.241*** (0.085)
Time dummy	-0.059 (0.054)	0.380*** (0.068)	0.715*** (0.101)
Industry dummy	0.098 (0.062)	0.074 (0.077)	0.241** (0.105)
N	2,065	1,444	894
Pseudo R ²	0.18	0.15	0.13

Standard errors are in parentheses.

*p<0.10; **p<0.05; ***p<0.01

3. Conclusion

This paper examines the effect of one-, three- and five-year IPO performance, fees, industry specialization, analyst coverage, age, offer size and venture capital on investment bank reputation. I reject the null hypothesis that long-run IPO returns are not important to an investment bank's reputation. Although I was expecting a decreasing relation between investment bank reputation and long-run returns, the coefficient becomes more positive for the five-year returns. This result likely occurs either due to the loss of data during the screening process or due to a failure to control for delisted firms. First day returns have an effect on investment bank reputation that is positive and different from zero. This finding is inconsistent with banks losing reputation if they leave too much money "on the table." The industry effect also disappears when both industry specialization and venture capital support are controlled for, which echoes the finding of Yip, et al (2009). Yip et al (2009) suggest that industry effect is implicitly a venture capital effect. Overall, my results indicate that an IPO firm's short-run and long-run performance, underwriter fees, analyst coverage, venture capital and size of the offer have an important role in creating and maintaining an investment bank's reputation.

REFERENCES

- Akerlof, G. A. (1970). The market for "lemons": Quality uncertainty and the market mechanism. *Quarterly Journal of Economics* 84(3), 488-500.
- Aggarwal, R. (2000). Stabilization activities by underwriters after initial public offerings. *Journal of Finance* 55(3), 1075-1104.
- Bartling, B., and Park, A. (2004). IPO pricing and informational efficiency: The role of aftermarket short covering. Working Paper, University of Munich.
- Beatty, R. P. and Ritter, J. R. (1985). Investment banking reputation and the underpricing of initial public offerings. *Journal of Financial Economics* 15(1), 213-232
- Booth, J. R., and Smith, R. L. (1986). Capital raising, underwriting and the certification hypothesis. *Journal of Financial Economics* 15(1-2), 261-281.
- Bradley, D., Jordan, B. and Ritter, J. (2008). Analyst behavior following the IPO: The 'bubble period' evidence. *Review of Financial Studies* 21, 101-133.
- Brav, A., & Gompers, P. A. (1997). Myth or reality? The long-run underperformance of initial public offerings: Evidence from venture and non-venture capital-backed companies. *Journal of Finance* 52(5), 1791-1821.
- Beatty, R. P., and Welch, I. (1996). Issuer expenses and legal liability in initial public offerings. *Journal of Law and Economics* 39(2), 545-602.

- Carter, R. and Manaster, S. (1990). Initial public offerings and underwriter reputation. *Journal of Finance* 45(4), 1045-1067.
- Carter, R. B., Dark, F. H., and Singh, A. K. (1998). Underwriter reputation, initial returns, and the long-run performance of IPO stocks. *Journal of Finance* 53(1), 285–311.
- Carter, R., Dark, F. H., and Sapp, T. R. A. (2010). Underwriter reputation and IPO issuer alignment 1981–2005. *Quarterly Review of Economics and Finance* 50(4), 443–455.
- Carvalho, A., and Pinheiro, D. (2008). Determinants of stabilization in initial public offerings. Working paper, Fundacao Getulio Vargas School of Business at Sao Paulo.
- Chemmanur, T. J., and Fulghieri, P. (1994). Investment bank reputation, information production, and financial intermediation. *Journal of Finance* 49(1), 57-79.
- Cliff, M., and Denis, D. (2004). Do IPO firms purchase analyst coverage with underpricing? *Journal of Finance* 59(6), 2871-2901.
- Cooney, J.W., Singh, A.K., Carter, R.B., and Dark, F.H. (2001). IPO initial returns and underwriter reputation: Has the inverse relation flipped in the 1990s? Working paper, Gatton School of Business and Economics.
- Diamond, D. W. (1989). Reputation acquisition in debt market. *Journal of Political Economy* 97(4), 828-862.
- Doukas, J. A., & Gonenc, H. (2005). Long-term performance of new equity issuers, venture capital and reputation of investment bankers. *Economic Notes* 34(1), 1-34.

- Dunbar, C. G. (2000). Factors affecting investment bank initial public offering market share. *Journal of Financial Economics* 55(1), 3–41.
- Fama, E. F. and French, K. R. (1992), The cross-section of expected stock returns. *Journal of Finance* 47(2), 427–465.
- Fang, L.H. (2005). Investment bank reputation and the price and quality of underwriting services. *Journal of Finance* 60(6), 2729–2761.
- Fang, L.H., and Yasuda, A. (2009). The effectiveness of reputation as a disciplinary mechanism in sell-side research. *Review of Financial Studies* 22(9), 3735–3777.
- Fernando, C. S., Gatchev, V. A., May, A. D., and Megginson, W. L. (2012). Underwriter compensation and the returns to reputation. Working paper, University of Oklahoma.
- Fernando, C. S., Gatchev, V. A., and Spindt, P. A. (2005). Wanna dance? How firms and underwriters choose each other. *Journal of Finance* 60(5), 2437–2469.
- Griffin, J.M., Lowery, R. and Saretto, A. (2012). Complex securities and underwriter reputation: Do reputable underwriters produce better securities? Working paper, University of Texas at Austin.
- Hayes, S. L. (1971). Investment banking: Power structure in flux. *Harvard Business Review* 49(2), 136–152.
- Jenkinson, T., and Jones, H. (2007). The economics of stabilization, syndicates and naked shorts. *European Financial Management* 13(4), 616–642.

Johnson, J., and Miller, R. (1988). Investment banker prestige and the underpricing of initial public offerings. *Financial Management* 17(2), 19-22.

Kennedy, P. (2003). A guide to econometrics. (5th ed., pp. 278-279). The MIT Press.

Khanna, N., Noe, T., and Sonti, R. (2005). Good IPOs drive in bad: Inelastic banking capacity and persistently large underpricing in hot IPO markets. Working paper, Michigan State University.

Krigman, L., Shaw, W. H., and Womack, K. L. (2001). Why do firms switch underwriters? *Journal of Financial Economics* 60 (2-3), 245-284.

Lewellen, K. (2006). Risk, reputation, and IPO price support. *Journal of Finance* 61(2), 613-653.

Liu, X., and Ritter, J. R. (2010). The economic consequences of IPO spinning. *Review of Financial Studies* 23(5), 2024-2059.

Liu, X., Ritter, J., 2011. Local underwriter oligopolies and IPO underpricing. *Journal of Financial Economics*, forthcoming.

Li, M., and Zhao, X. (2008). Analyst reputation, dealer affiliation, and market making. *Journal of Financial Research* 31(4), 301-332.

Loguc, D. E., Rogalski, R. J., Seward, J. K., and Foster-Johnson, L. (2002). What is special about the roles of underwriter reputation and market activities in initial public offerings? *Journal of Business* 75(2), 213-243.

Loughran, T. (1993). NYSE vs. NASDAQ returns: Market microstructure or the poor performance of Initial Public Offerings? *Journal of Financial Economics* 33(2), 241-260.

Loughran, T., and Ritter, J.R. (1995). The new issues puzzle. *Journal of Finance* 50(1), 23-51.

Loughran, T., and Ritter, J. R. (2004). Why has IPO underpricing changed over time? *Financial Management* 33(3), 5-37.

Mazouz, K., Ampomah, S. A., Saadouni, B., and Yin, S. (2012) Stabilization and the aftermarket prices of initial public offerings. *Review of Quantitative Finance and Accounting*, forthcoming.

Meggison, W. L., and Weiss, K. A. (1991). Venture capitalist certification in initial public offerings. *Journal of Finance* 46(3), 879-903

Michaely, R., and Womack, K. L. (1999). Conflict of interest and the credibility of underwriter analyst's reputation. *Review of Financial Studies* 12(4), 653-686.

Michel, J. (2011). Return on recent investment and long-run IPO returns. *Entrepreneurship Theory and Practice*, forthcoming.

Nanda, V., and Yun, Y. (1997). Reputation and financial intermediation: An empirical investigation of the impact of IPO mispricing on underwriter market value. *Journal of Financial Intermediation* 6(1), 39-63.

Ritter, J. R. (1991). The long-run performance of initial public offerings. *Journal of Finance* 46(1), 3-27

Rock, K. (1986). Why new issues are underpriced. *Journal of Financial Economics* 15(1-2), 187–212.

Yip, Y., Su, Y., and Ang, J.B. (2009). Effects of underwriters, venture capital and industry on long-term initial public offering performance. *Managerial Finance* 35(8), 700 – 715.

