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Investment Banker Prestige
&
Underpricing Of Reverse LBOs

Susan M. Stewart

A Thesis

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ABSTRACT

Investment Banker Prestige
& Underpricing of Reverse LBOs

Susan M. Stewart

The underpricing of initial public offerings, (IPO) has been widely documented by the finance literature. This phenomenon has been linked to problems with asymmetric information, and with estimating the riskiness of the new issues. Reverse Leveraged Buyouts (LBOs) are firms that went private through an LBO and which then returned to public trading by issuing equity. Most studies report that reverse LBOs experience far less underpricing than typical IPOs. This is generally attributed to lower asymmetric information problems due to the reverse LBOs' previous status as a publicly owned firm.

For IPOs in general, there is some controversy over the role the investment banker plays in reducing the degree of underpricing. Most studies report that issues of high prestige bankers are associated with less underpricing. The usual explanation is that higher prestige bankers are better at evaluating the riskiness of the IPOs and in communicating this to the market. Although these studies have attributed investment banker prestige, and bankers' analytical expertise, with the bankers' ability to price IPOs closer to their true market value, none have convincingly isolated the effect of investment banker prestige from unseasoned issues' asymmetric information problems. However, because reverse LBOs presumably suffer less from asymmetric information problems, this should allow us to strengthen previous inferences made regarding the relationship between investment banker prestige and new issue underpricing.

We use cross-sectional regressions to examine the relationship between the degree

of underpricing of reverse LBOs and the prestige of the investment banker. We study the relationship between initial returns, investment banker prestige, size of the gross proceeds of the issue, riskiness of the issue, and the exchange on which the reverse LBO trades. Consistent with the literature, we find reverse LBOs to be underpriced. We also find the prestige of the investment banker to be a contributing factor in reducing reverse LBO underpricing. Our analyses show that riskiness of the issue is a determining factor in explaining the reverse LBO underpricing: the greater the risk, the greater the underpricing; and that the prestige of the investment banker helps to reduce this underpricing.

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1. INTRODUCTION

Privately owned corporations may decide to raise needed capital through issuing equity to the public in what is referred to as an Initial Public Offering (IPO), or an unseasoned issue. When bringing an issue to market, an investment banker is generally employed to assist in setting the offering price, and to help sell the new issue. Underpricing of a new issue occurs when the offering price is set below the stock's true market value. This phenomenon has been extensively documented in the finance literature. For instance, Ritter (1984, 1991) finds underpricing of 18.8% for firms that went public over the period 1960 to 1982, 14.3% over the period 1975 to 1984, and an enormous 48.4 percent during a "hot issue" market (1984). Thus underpricing represents a significant cost to first time public equity issuers.

Underpricing has been linked to two factors, asymmetric information problems, and difficulties with estimating the riskiness of the new issue. Under private ownership, managers are customarily owners, and this helps to minimize any informational asymmetries. However, the firm's limited operating history, and its avoidance of market discipline, combined with management's motives for going public, may make the issue more difficult to evaluate, and may augment investor uncertainty about the validity of the firm's earning forecasts.

One proposed means of reducing investor uncertainty and IPO underpricing is for firms to engage the services of an investment banker. Through bankers' superior ability to estimate risk, and certify value and forecasts, researchers (see for example, Carter and

Manaster, 1990, Johnson and Miller, 1988) claim that high prestige bankers can convincingly signal firm values and riskiness to the market. Consequently, this reduces investor uncertainty and lowers the required underpricing. Although these studies have attributed investment banker prestige, and bankers' analytical expertise, with the bankers' ability to price IPOs closer to their true market value, none have convincingly isolated the effect of investment banker prestige from unseasoned issues' asymmetric information problems.

Previous research on leveraged buyouts (LBOs), has revealed that LBOs tend to stay private for approximately 3 to 5 years before resuming a public status. (See Muscarella and Vetsuypens, 1990, Mian and Rosenfeld, 1993, Kaplan 1991). When LBOs return to public ownership, these special IPOs are referred to as reverse LBOs. Although the LBO's concentrated ownership and high leverage are designed with the intent of negating a firm's agency problems, issuing equity may reduce some, but not all of the asymmetric information problems. (See Kaplan, 1991, McConnell and Servaes, 1990). However, the fact that reverse LBOs have a previous public trading history, and the possibility of high insider retention levels aligning manager and shareholder interests, may help to further minimize the asymmetric information problem. This may also justify recent findings of reverse LBOs being significantly less underpriced than the average IPO. (See Muscarella and Vetsuypens, 1989). The fact that reverse LBOs in general, suffer less from asymmetric information than IPOs, implies that an investigation of the relationship between reverse LBO underpricing and investment banker prestige should strengthen earlier studies' conclusions regarding this relationship.

We use cross sectional regressions to examine the relationship between reverse LBO underpricing and the prestige of the investment banker. An important feature of this analysis is that we incorporate three different classification schemes to estimate the prestige of investment bankers. In addition, we also examine the relationship between investment banker prestige with both the riskiness of the issue and the size of the issue.

Our results show that reverse LBOs are underpriced and that a significant difference in underpricing is found between high and low prestige investment bankers. We interpret these results as evidence that investment banker prestige is relevant in reducing the degree of underpricing. Consistent with the results of earlier studies, we also find that the greater the risk of the issue, or the larger the size of the issue, the greater the underpricing.

The remainder of this study is organized as follow. Section 2 discusses the background surrounding leveraged buyouts and the factors affecting underpricing. Section 3 presents the 4 hypotheses to be tested. Section 4 outlines the data collection and empirical methods. Section 5 discusses the empirical models. Section 6 presents the results, and Section 7 provides a brief summary of the thesis.

2. BACKGROUND

2.1. Underpricing in Reverse LBOs

Mergers and acquisitions including LBOs have become a growing force in the economy. Kaplan (1991) notes that from 1979 to 1988, LBO activity increased from

$1.4 billion to $77 billion. He reports that 45 percent of large LBOs returned to public ownership between 1979 and 1986. (See also Rappaport, 1990). However, when LBOs return to public ownership, reverse LBOs face the same problems as IPOs in bringing new issues to market. As a consequence, these new issues will often be underpriced at the commencement of trading. Two primary causes accounting for this are asymmetric information and risk.

2.1.1. Asymmetric Information

The implications of Rock's (1986) "winner's curse" hypothesis and the degree of insider retention are consistent with the idea that some parties have an informational advantage over others. Three possible combinations of asymmetric information can exist: one between the issuer and the investors, a second between "informed" and "uninformed" investors, and a third between the issuer and the underwriter.

First, it is frequently assumed that managers are more informed than outside investors about an issue's potential performance, and may exploit this knowledge at the expense of the less informed outside investors. (See Jensen, 1986 and Stulz, 1990). On the other hand, LBO theories hypothesize that leverage and concentrated ownership resolve these problems.[1] Investors realize that managers have incentives to maximize the offer price and, in return for their participation in the offering, require underpricing as compensation for this knowledge gap. Accordingly, Leland and Pyle (1977) find that

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[1] See Kaplan (1989), Lehn and Poulsen (1989), Palepu (1990), Morck, Shleifer and Vishny (1988) and Smith (1990).

the higher the insider shareholders' retention level, the more credible the signal of a lack of informational asymmetries and the lower the risk premium required by investors. Similarly, McConnell and Servaes (1990) find higher insider ownership percentages for LBOs that return public than for ordinary IPOs.[2] This supports the absence of informational asymmetries between managers and outside investors in reverse LBOs and may reduce the need to significantly underprice the issue.

Secondly, Rock (1986) contends that the market consists of both "informed" and "uninformed" investors. Informed investors, knowing which issues are correctly priced, will buy shares accordingly, limiting purchases to correctly priced issues, whereas uninformed investors will buy both. The result is an oversubscription of underpriced issues and a subsequent rationing of issues among the various investors. In Rock's model (1986), this adverse selection problem, or "winner's curse", leaves the uninformed investors with a disproportionate share of the overpriced issues. Therefore in order to maintain uninformed investors' involvement in the market, compensation is made in the form of underpricing IPOs, on average.

A third explanation for underpricing is the existence of informational asymmetries between underwriters and issuing firms. Ross et al. (1993) claim that issuing securities is not a task normally undertaken by firms on a daily basis, but that it is a specialized activity performed by investment bankers. Some studies (Baron and Holmstrom, 1980; Baron, 1982) have suggested that underpricing is a consequence of compensating these investment bankers for their superior knowledge of the markets and the capital raising

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[2] Comparable results are documented by DeGeorge and Zeckhauser (1993).

process. Therefore, if investment bankers do have superior knowledge, then when marketing their own IPOs, these IPOs should not be underpriced. However, Muscarella and Vetsuypens (1989) find that for investment bankers marketing their own IPOs, underwriters face the same level of underpricing as experienced by similar sized IPOs. Hence, the evidence rejects the theory that underpricing results from informational asymmetries between issuers and bankers.

2.1.2. Riskiness of the Offering

Beatty and Ritter (1986) document that, the greater the uncertainty surrounding a new issue, the greater the degree of underpricing experienced. For example, Ritter (1987), and Miller and Reilly (1987) report a positive correlation between the level of discounting and the ex-ante uncertainty about the issue's value. Mauer and Senbet (1992) contend that primary market firms lack an operating history, and unlike secondary market firms, have relatively few comparable firms with which to evaluate the issue, thereby making these firms more risky. For instance, Stoll and Curley's (1970) study of "small business" IPOs exhibited average underpricing of 61 percent. However, the previous operating history of the LBO, combined with the likelihood of other comparable firms trading in the market, should allow reverse LBOs to avoid underpricing of this magnitude.

Ritter, (1991) and Muscarella and Vetsuypens, (1989) have also found that more established firms experience less underpricing. Ritter (1987) finds that more established firms utilize the relatively inexpensive firm commitment contracts, while more

speculative firms undertake the more costly best efforts contracts. Ritter explains that the best efforts offering's inherent minimum sales contract acts as a form of insurance to the "uninformed" investor, thereby reducing the required underpricing. Bower (1989) suggests that firm commitment offers signal a higher quality issue which thereby reduces the required amount of underpricing.

2.2. Role of the Investment Banker

One major source of income for the investment banking industry is generated from facilitating the issuance of securities.[3] Investment bankers have two responsibilities for new equity issues: they certify the value of the issue, and they assess its riskiness. Researchers have proposed that utilization of an underwriter allows an issuer to "certify" the value of the firm by confirming that insiders' forecasted growth is consistent with the offering price. (Smith, 1986).

If markets are efficient, then basing an IPO investment decision on the prestige of an investment banker should not produce abnormal returns, especially if investment bankers accurately price the riskiness of the IPO. In fact, investment bankers may contribute to market efficiency by substantiating a firm's riskiness from the information contained in an issuing firm's prospectus. (See for example, Carter and Manaster, 1990). They also hypothesize that more reputable investment bankers are better evaluators who can set offering prices closer to actual market prices, thereby translating

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[3] Smith (1986) identifies that over 80% of equity offers engage the services of an underwriter.

into significantly less underpricing.

Certification signifies that an issuer's information has been validated, and that no pertinent details affecting value have been omitted or withheld. Carter and Manaster (1990) propose that the reputation of the underwriter lends credence to the value of the offering, thereby procuring a closer estimate to the secondary market price. Research has found that the inclusion of a certifying party (auditor, venture capitalist, investment banker, credit agreements) reduces the underpricing experienced by IPOs.[4] These studies suggest that investors are more inclined to believe that the stock is correctly priced when an certifying party is involved in bringing the issue to market.

Studies have also found that issues brought to market by prestigious investment bankers exhibit less underpricing than those brought to market by non-prestigious underwriters[5]. Bankers whose performance is consistently superior, will, over time, build up a reputation for selling good advice. This "goodwill" or "reputational capital" allows underwriters to charge higher fees. If bankers falsify evaluations, or promote questionable issues, these actions could reduce performance and tarnish its reputation.[6]

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[4] See Beatty and Ritter, 1986; Balvers, McDonald and Miller, 1988; Beatty, 1989; Barry, Muscarella, Peavy and Vetsuypens, 1990; Slovin and Young, 1990; Megginson and Weiss, 1991; and Kumar and Tsetsekos, 1993.

[5] See McDonald and Fisher, 1972; Logue, 1973; Neuberger and Hammond, 1974; Block and Stanley, 1980; Neuberger and LaChapelle, 1983; Johnson and Miller, 1988; Carter and Manaster, 1990.

[6] For instance, Shiller's (1990) survey reveals that of the IPO investors who responded to their questionnaire, most indicated a serious interest in the reputation of the underwriter or stockbroker of an IPO. Logue (1973) has also advanced that prestigious underwriters only market low risk, high quality issues as a means of decreasing the possibility of an IPO having an adverse effect on their reputational capital. Beatty and Ritter (1986) hypothesize that underwriters who "cheat" by mispricing issues, risk losing business from investors, as well as

According to Carter (1992), prestigious underwriters attract low risk issuers since they may be more adept at assessing a firm's riskiness and revealing this risk to the market. Similarly, Titman and Trueman (1986) explain that it is not beneficial for high risk firms to employ the more expensive services of prestigious underwriters. In addition to the higher fees, the prestigious underwriter's ability to assess the firm's risk level implies that an appropriate degree of underpricing will be set, thereby defeating attempts to falsely signal lower risk.

Using different prestige rankings, botn Carter and Manaster (1990), and Johnson and Miller (1988) find that prestigious bankers are associated with lower degrees of underpricing than non-prestigious bankers. However, Johnson and Miller (1988) assert that it is risk differences, and not banker prestige, that accounts for these lower initial returns. They claim that the significance of a banker's prestige in explaining underpricing disappears when initial returns are adjusted for risk. Conversely, Carter and Dark (1992) dispute this claim, and find that even when initial returns are risk adjusted, reputation still provides additional explanatory power with respect to underpricing.

Carter and Manaster (1990), and Johnson and Miller (1988), predict that reputation and underpricing should be negatively related: the higher the prestige, the lower the underpricing. Additionally, they argue that investment banker reputation is positively related to the banker's ability to identify low-risk IPOs. They claim that

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issuers' initial and subsequent offerings, and increase the risk of facing legal action for issues that perform poorly.

employment of a prestigious underwriter, who restricts itself to issues with low levels of ex-ante uncertainty, quells the participation of informed investors by limiting informed investors' opportunity to earn abnormal returns on these new issues. As a consequence, prestigious underwriters can price their IPOs closer to the true market value, thereby reducing the level of underpricing experienced.

2.3. The Asymmetric Information Problem

Lower underpricing and lower volatility of returns are two characteristics that distinguish reverse LBOs from typical IPOs. One reason proposed for the significantly lower underpricing and volatility of returns experienced by reverse LBOs is that these firms possess less asymmetric problems compared to typical IPOs (Muscarella and Vetsuypens, 1989). First, the fact that these firms possess an earlier public operating history helps reduce the uncertainty surrounding the new issue. The availability of past financial performance records provides investors with more information with which to evaluate the reverse LBO. Secondly, publicity surrounding the LBOs withdrawal and re-entry into the public domain may shed insight into the management and strategic direction of the reverse LBO. Subsequently, investors in LBO-IPOs have more information available to them than if they were to invest in a typical IPO. Third, the motives for undertaking the LBO should ensure future investors that problems which previously hampered the performance and operations of the pre-LBO firm have been resolved.

The increased leverage and concentrated ownership typical of LBOs serves as a

disciplinary force inducing management to pursue value maximizing investments. Informational asymmetries between management and owners is reduced, thereby decreasing the likelihood of agency problems. Coincidentally, the higher insider ownership ratio of reverse LBOs at the time of the offering helps to negate outside investors' fears of management selling overpriced stock. Consequently, the effect of this is to increase investors' confidence in the issue, thereby decreasing the volatility of LBO-IPO returns and lowering the associated underpricing required.

Studies show that reverse LBOs tend to be significantly less underpriced than similar sized IPOs. Muscarella and Vetsuypens (1989) find excess returns for reverse LBOs of 2.04 percent, Ainina and Mohan (1991), 2.43 percent, and DeGeorge and Zeckhauser (1993), 2.60 percent. Ainina and Mohan (1991) cite 6 to 10 percent as the norm for IPOs of large firms. Ainina and Mohan also find that the variance on the first day returns is smaller for LBO-IPOs than for IPOs. Muscarella and Vetsuypens (1989) claim that compared to IPOs, reverse LBOs suffer less from asymmetric information. They hypothesize that this subsequently produces less uncertainty regarding firm values, which thereby translates into the lower underpricing.

As previously discussed, the role of the underwriter is to certify the value of the new issue and, the higher the prestige of the banker, the more adept the banker is presumed to be at certifying this value. Realizing that higher prestige bankers have more reputational capital at risk, they should be more concerned over the details presented in the IPO's prospectuses. Since their creditability is exposed should the issue falter, higher prestige bankers are likely to be more diligent in ascertaining and ensuring that pertinent

details are not omitted from the prospectus, or that other relevant facts are not misleading and subject to misinterpretation. The consequence of this is that issues promoted by higher prestige bankers are likely to exhibit less asymmetric information problems than those marketed by lower prestige bankers. Accordingly, this should translate into lower underpricing for issues managed by high prestige bankers. Although reverse LBOs are presumed to suffer less problems from asymmetric information than IPOs, it is expected that reverse LBOs managed by high prestige investment bankers will also experience less underpricing than reverse LBO issues managed by lower prestige bankers. This suggests several testable hypotheses which are discussed below.

3. HYPOTHESES

Hypothesis 1: Underpricing is Negatively Related to Underwriter Prestige

If as theorized, reverse LBOs and issues promoted by high prestige bankers suffer less from the problem of asymmetric information, we expect that both will be less underpriced than a typical IPO. Assuming that this is true, then we would expect that reverse LBOs marketed by high prestige bankers should also be less underpriced than is normally observed for reverse LBOs in general. However, if investment banker prestige certifies issue value and does procure an offer price closer to the market price, then we should observe even less underpricing for reverse LBOs of high prestige bankers.

Hypothesis 2: Risk Adjusted Underpricing is Unrelated to Underwriter Prestige

If issues are adjusted for risk, investment banker prestige should not explain any differences in underpricing observed. Assuming this is true, then we expect the coefficient on underwriter prestige to be insignificant with regard to risk adjusted returns. However, since reverse LBOs may control for informational asymmetries. a significant coefficient for investment banker prestige may indicate that bankers' ability to assess risk is a determinant of the degree of underpricing.

Hypothesis 3: Issue Size is Positively Related to Underwriter Prestige

It has been suggested that the larger the size of the issue, the more likely the services of a well known and prestigious underwriter will be employed. (Johnson and

Miller, 1988). In order to solicit the demand required to fully subscribe a large issue, only the highest quality bankers are thought to possess the expertise and distribution networks able to handle large issues. Also, since there is a tendency for smaller offerings to exhibit worse aftermarket performance than larger issues, prestigious underwriters would be placing their reputational capital at greater risk than had they limited their services to the larger and "more stable" issues. Therefore, we expect to find a positive relationship between prestige of the investment banker, and the gross proceeds or size of the issue.

Hypothesis 4: Issue Risk is Negatively Related to Underwriter Prestige

If high prestige bankers are better at assessing risk, then we expect to find a negative relationship between risk and investment banker prestige. Similarly, if prestigious underwriters are indeed more concerned about preserving their reputational capital, this would imply an aversion to accepting high risk issuers as clients. Even if high prestige bankers are more adept at evaluating issuer uncertainty, prestigious bankers' preferences would favour the less risky issues as there would be a greater likelihood of these firms returning to the market for a subsequent security offering. Consequently, this may contribute to the augmentation of their reputational capital and corresponding prestige. Similarly, low risk issuers wishing to convey their lower risk to the market and avoid severe price appreciation, would be attracted to the higher prestige bankers. Hence underwriter reputation and prestige may act as a proxy for the riskiness of the issue. The greater the prestige of the investment banker, the lower the

riskiness of the issue and consequently, the lower the underpricing.

4. DATA AND EMPIRICAL METHODS

4.1. Data Sources

A number of sources were employed in compiling the dataset on American reverse LBOs. The initial sample identified 256 reverse LBOs executed between 1981 and August 31, 1992. The following sources were used to identify these companies:

1. 75 Reverse LBOs were collected from *Mergers and Acquisitions*' (M&A) from 1987 to 1991. The 1990 and 1991 issues also identify the lead underwriters.

2. 7 additional reverse LBOs were identified from *Forbes*, March 20, 1989 edition. *The New York Times*, April 23, 1987 edition, provided 1 additional reverse LBO, and named the underwriter. The *Wall Street Journal*'s August 5, 1983 issue identified one reverse LBO.

3. 90 reverse LBOs were employed from the Muscarella and Vetsuypens sample (1989, 1990) covering the period January, 1983 until June 30, 1988.

4. 44 reverse LBOs completed in 1987, were identified in *Investment Dealer's Digest's* (IDD). 56 reverse LBOs for 1991 were identified in *IDD's Going Public: The IPO Reporter's*. Both sources listed the names of the lead underwriters.

5. 94 reverse LBOs were obtained from the sample used by Ainina and Mohan (1991) and covers the period from 1983 and 1987.

There was some duplication across the sources, with 91 of the reverse LBOs identified

by more than one source. When these sources provided parallel information, these were compared tc ensure consistency. Announcement dates were verified by searching the *Wall Street Journal.* Information on dates, number of shares to be issued, offering prices, and intended use of the proceeds, was obtained from the *Wall Street Journal* as well as from the sources listed above. Daily information on prices and market returns (both equally and value weighted) were collect from the CRSP tapes (Center for Research in Security Prices) for 22 days following the firm's introduction to the market.

Firms were deleted from the sample if they were later identified as not being reverse LBOs, or if trouble was experienced with confirming offering dates and/or exchange listings. Firms were also deleted from the sample if offering price, and number of shares in the offering were unavailable, if issues did not have at least 15 days of returns, or were identified as outliers (5 firms). This left a sample of 204 reverse LBOs from 1981 through to August 31, 1992. Forty one underwriters were identified for all but 8 of the 204 reverse LBOs by examining *Mergers & Acquisition* and *Investment Dealer's Digest.* (See Appendix 1 for a list of the underwriters from the initial sample, and the volume of reverse LBOs marketed by these investment bankers). Consequently, this left a sample of 196 reverse LBOs for which the investment banker was identified.

4.2. Sample Statistics

Table 1 shows the distribution of issues according to the year the IPO was executed.

Table 1

Table 1 includes the number of reverse LBOs, listed by year, from the initial sample of 204 companies. Firms included in the sample are those where the offering price, and the number of shares in the offering were available.

Year	Number of Issues	Percentage of Sample
1981	2	1.0
1983	8	3.9
1984	2	1.0
1985	7	3.4
1986	35	17.2
1987	48	23.5
1988	0	n/a
1989	1	0.5
1990	9	4.4
1991	44	21.6
1992	48	23.5
Total	204	100.0%

The average offering price for the sample was $13.49, with a minimum price of $5.00 and a maximum of $27.50. The average number of shares sold in an offering was 5,710,350 shares. The lowest and highest number of shares were respectively, 382,600 and 71,400,000. The most frequently offered number of shares was 2,500,000. For issues where both an offering price and the number of shares to be sold were available, the average proceeds of the IPO were $83.6 million. The size of the proceeds ranged from a low of $4.17 million to a high of $1,178 million. Table 1 also highlights two "hot issue" markets, which account for roughly 86% of the sample. (See 1986-1987, and 1991-1992). Although offering prices and number of shares in the offering were roughly the same over the years, there was a tendency for higher prestige bankers to be associated with higher priced issues and with issues having a greater number of shares.

4.3. Variables in Cross Sectional Regressions

4.3.1. Underpricing (IRETURN)

The dependent variable in our cross-sectional regressions is the initial return (IRETURN) from a sample of reverse LBOs. To measure the degree of underpricing, the relative price change from the initial offering price to the closing price on each of the twenty days after the security first trades on the exchange is calculated. This is consistent with Johnson and Miller (1988) and Miller and Reilly (1987) who calculate the price appreciation between the offering price and the closing bid price on the first day of trading. The initial return[7] (IRETURN) is defined as the relative price change from the offering price to the closing price at the end of the first day of trading:

$$r_{jt} = \frac{B_{j1} - OP_j}{OP_j}$$

Where r_{jt} = Degree of Initial Underpricing for Security j on day t
B_{j1} = Closing Bid Price on Day t = 1 of Trading
OP_j = Offering Price for Security j

From this, average underpricing is then calculated for each of the twenty one days in the sample period. This follows the work of Muscarella and Vetsuypens' (1989) study

[7] Also, because market movements are often thought to influence the initial return, a market-adjusted return is calculated to control for the possibility of any observed effects being simply the result of market-wide stock price movements. The market-adjusted return, R_{adj}, is found by subtracting the return on the NYSE or NASDAQ Index, R_m, from the raw return, r_{jt} to produce the market-adjusted return: $R_{adj} = r_{jt} - R_m$. (Beatty and Ritter, 1986).

of reverse LBO underpricing. The average underpricing across all firms on a given day is:

$$\bar{R}_t = \frac{\Sigma_j r_{jt}}{n}$$

Where $\bar{R}_t$ = Average Underpricing
r_{jt} = Return for Security j
n = Number of Firms in The Sample
t = Number of Days Since The Issue First Traded

We also use a holding period return to measure underpricing. This follows Carter and Manaster's (1990) use of a two week holding period, and Neuberger and Hammond's (1974) review of a one week and one month holding period return. A twenty one day holding period return is calculated for this study. The difference between the price at the end of the 21st day of trading following the issue's introduction to the market, and the initial offering price, was used to calculate this return.

$$R_{j(21)} = \frac{B_{j(21)} - OP_j}{OP_j}$$

Where $R_{j(21)}$ = Degree of Underpricing for 21 Day Holding Period
B_{jt} = Closing Bid Price on the 21st Day of Trading
OP_j = Offering Price for Security j

4.3.2. Investment Banker Prestige (PRESTIGE)

The independent variable of primary interest is the proxy for the prestige of the investment banker (PRESTIGE). Underwriter rankings are established from three

primary sources. First we use the Carter and Manaster classification scheme (1990) which provides a ranking scheme based on a banker's position in the tombstone announcements. Second, we use the Johnson and Miller classification scheme (1988) which lists the names of underwriters based on the ranking schedule proposed by Hayes (1971), i.e. underwriter "brackets". The latter also propose a modified version of Carter and Manaster's ranking schedule. Third, we use annual evaluations from *Investment Dealer's Digest* to rank underwriters prestige. These classification schemes are discussed below.

The Prestige Classification Schemes

The first proxy for PRESTIGE is based on the rankings from Carter and Manaster's (1990) classification scheme. Reverse LBOs underwriters were compared to those listed in Carter and Manaster's study, matched, and assigned the rank developed by Carter and Manaster. Carter and Manaster developed their ordinal ranking by comparing the underwriter's placement within the tombstone announcements for a large number of public offerings over the period January 1979 to December 1983 with that of their peers. (See Appendix 2 for a list of reverse LBO underwriters based on Carter and Manaster's ranking scheme). Underwriters who were assigned a top rank of 9 were always found in the upper tier[8] of the tombstone announcements and were thus viewed as the most prestigious. Conversely, underwriters with the lowest rank of 0 were viewed as the least prestigious, and assumed a lower placement in the tombstones.

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[8] A tier refers underwriters groupings, where one's position in the tombstone is thought to convey the hierarchy of the prestige of the investment bankin$_g$ industry. (See Lewis 1984, Monroe 1986, and *The Wall Street Journal*, Jan. 15, 1986, p.1).

The second proxy for PRESTIGE is based on the ranks of the Johnson and Miller (1988) classification scheme. As was the case for the Carter and Manaster prestige ranking, reverse LBO underwriters are matched and are assigned the rank specified by Johnson and Miller. (See Appendix 2 for a list of reverse LBO underwriters based on Johnson and Miller's ranking scheme). Johnson and Miller establish a binary ranking schedule based on three tiers to classify prestigious bankers. (See Hayes, 1971) The first definition of prestige is based on first tier bankers, the second as first and second tier bankers and the third adds all three tiers to the prestige definition. Johnson and Miller also use a four tier ranking scale based on a modified version of Carter and Manaster (MCM) ranking schedule. Top tier bankers are assigned a 3, second tier bankers a 2, third tier bankers a 1, with all others assigned a 0.

The third proxy for PRESTIGE is based on Investment Dealers' Digest annual ranking of investment dealers according to various measures. (See Appendix 2 for a list of reverse LBO underwriters based on the IDD ranking scheme). Not only does IDD review an underwriter's handling of new issues, (IPOs), but it also reviews a bankers' performance in such fields as mergers and acquisitions.[9] In its annual review of underwriters, IDD compares the current year's rank with that of the previous year, sometimes leading to revisions. When available, underwriters are assigned a prestige level based on their position in these IDD rankings for the year in which they marketed

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[9] For new issues, IDD's rates managers according to the dollar amount managed. Common stock issues, all domestic issues, and financial advisor of merger and acquisitions are other categories that IDD's ranks. These categories were also used as proxies for prestige, but they did not change the results, and are thus not reported.

the reverse LBO and not on any subsequent revisions.[10] If the underwriter of the reverse LBO fell into the top 5 positions of IDD's rankings for the year the IPO was executed, then the banker was assigned a rank of 1. If the banker fell into positions 6 through to 10, then the banker was assigned a rank of 2, positions 11 through to 15 were assigned a rank of 3. If IDD rated a banker as 16 or greater, or if IDD did not rank the banker, the banker was then awarded a rank of 4. For years in which IDD ratings were not available, the banker's rank was left blank.

Since the Carter and Manaster and Johnson and Miller prestige classification schemes are based on IPOs executed prior to the reverse LBO sample period, one may question the validity of using these classifications to rank reverse LBO underwriters from a later sample period. It is possible that investment bankers' reputations may have changed over this time period, making these studies' underwriter rankings outdated. However, a comparison of the more recent IDD rankings, where investment bankers are ranked according to the year the LBO was returned to the market, showed that these rankings are very similar to those of the two earlier prestige classification schemes. Thus, we believe the classification schemes used here are an appropriate proxy for prestige.

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[10] One reason for matching the year of the IPO with the IDD ratings is that an underwriter's relative prestige can vary depending on its recent (and past) performance in the financial community. (See IDD's *Market Leaders Come and Go*, Jan. 8, 1990, p.22). One advantage of doing this is that it avoids the static nature of previous studies' underwriter prestige ratings. IDD's annual measures should capture any shifting investor preferences among various underwriters, and should also reflect any corresponding changes in underwriters' relative gains or losses in "reputational capital" over the years.

Segregating High from Low Prestige

In order to segregate high and low prestige bankers, issues were categorized using two different dummy variables to proxy prestige. First, we assigned a value of 1 for high prestige bankers, zero otherwise. Initially all 3 classifications' top rank was assigned an one, and all other rankings were assigned a zero. Top ranks were respectively, 9 for Carter and Manaster, 3 for Johnson and Miller, 1 for IDD's IPO. Subsequent top ranks were then added to the high prestige dummy variable, such that high prestige was assigned one, and low prestige zero. High prestige was then defined as 8.0 or higher for Carter and Manaster, 1 or 2 for Johnson and Miller, and 1 or 2 for IDD. This subsequent ranking classification which includes lower prestige rankings weakens the definition of the top rank, and consequently should bias the results against finding prestige significant.

Secondly, to control for the possibility of average ranked bankers influencing the results, only those firms in the highest and lowest prestige rankings were included in the sample. This segregation was executed such that approximately all firms in the second and third quartile of the prestige rankings were deleted from the sample. Those in the top quartile were assigned a value of one (high prestige) and those in the bottom quartile were assigned a value of zero (low prestige).

Prestige Ranking Statistics

These three main classification schemes were used to rank the prestige of investment bankers. For the sample of reverse LBOs where an investment banker was identified, Table 2 summarizes the prestige rankings based on these three classifications.

Table 2

Table 2 summarizes the prestige rankings for reverse LBOs where an investment banker was identified. Ranks are based on the classification schemes established by Carter and Manaster, Johnson and Miller, and Investment Dealer's Digest's.

Ranking Scheme	Carter & Manaster	Johnson & Miller	Investment Dealer's Digest*
# Issues Ranked	196	176	186
Mean Rank	7.8	2.4	2
Median Rank	8.0	2.0	2
Mean Standard Deviation	1.45	0.64	1.1

* IDD's ratings were able to rank 186 issues for IPOs, Common Stock, and Domestic Issues, and 149 issues for Financial Advisors.

4.3.3. Standard Deviation (STD)

Uncertainty over firm value is one of the factors that determines the level of underpricing observed in new issues (Ritter, 1987). In order to gain "uninformed" investors' participation in the issuing process, the greater the riskiness of the issue, the higher the required compensation (in the form of underpricing) demanded. Standard deviation of returns (STD) is argued to be a reasonable proxy for the uncertainty of an IPO.[11] Ritter (1987) asserts that issuing firms with higher market value uncertainty, are also likely to exhibit higher price volatility in the aftermarket trading.[12] Therefore, one

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[11] Although systematic (or beta risk) and total risk may be considered viable measures of uncertainty, Johnson and Miller (1988) explain how both are rejected based on the "winner's curse problem". Any attempts uninformed investors make to diversify among new issues will ensure their acquisition of a disproportionate share of the overpriced and/or oversubscribed issues.

[12] Although Carter and Dark (1992) contend that standard deviation reflects the arrival of new information, and not the ex-ante uncertainty of the issue, they accept Ritter's claim of firms with higher ex-ante uncertainty also having higher ex-post uncertainty.

would expect to find a positive relationship between the ex-ante standard deviation of returns, and IPO underpricing. Standard deviation (STD) is calculated:

$$\sigma_j = \frac{1}{(n-1)} \left[\sum_{t=1}^{21} [r_{jt} - \bar{r}]^2\right]^{\frac{1}{2}}$$

where σ_j = Daily standard deviation of returns calculated over day one, the offering day, through to day 21, and is a proxy for the ex-ante uncertainty of the issue

r_{jt} = Return on the t th Day of Trading

$\bar{r}$ = Average Return calculated from day one, the opening day of trading, through to day 21

t = t th Day of Trading

4.3.4. Interaction Term (INTERACT)

In their examination of underpricing using risk-adjusted returns, Johnson and Miller (1988) include an interaction term (INTERACT) equal to the product of the standard deviation of returns and the prestige of the investment banker. This variable is included in case either prestige or risk alone is insufficient in explaining underpricing. Subsequently it may only be the combined interplay of prestige and risk that is significant.[13]

$$\text{Interact} = \text{Prestige} * \sigma_j$$

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[13] However, when Carter and Dark (1992) repeated Johnson and Miller's study of risk adjusted returns and the relationship of investment banker prestige, this interaction term was not included in their models.

4.3.5. Size of The Issue (INVSIZE)

Ritter (1984) and Carter and Manaster (1990) have documented a significantly negative relationship between underpricing and size of the offering. The usual explanation for this is that very large issues receive more publicity than small issues, so that investors are better informed. Beatty and Ritter (1986) and Miller and Reilly (1987), include the inverse of the size of the offering (INVSIZE) as one of their control variables. We employ the inverse of the gross proceeds, in millions of dollars, of an investment banker's issues:

$$\text{INVSIZE} = \frac{1}{\text{Size}}$$

Where Size = Gross Proceeds of the Issue expressed in millions of dollars

The coefficient of the inverse size variable (INVSIZE) is expected to be positive, implying that larger sized issues (smaller inverse sizes) are associated with lower levels of underpricing. Other studies include the natural log of the average amount offered as a control variable.[14] The natural log of size was also tested, and did not affect the results.

4.3.6. Exchange Listing of Issue (EXCHANGE)

We also control for the EXCHANGE on which the reverse LBOs trade because the trading system appears to affect the degree of underpricing. Affleck-Graves, Hedge,

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[14] See Carter, 1992; Carter and Dark, 1992, 1993; Carter and Manaster, 1990; Tinic, 1988; Megginson and Weiss, 1991.

Miller and Reilly (1993) attribute these discrepancies to the degree of certification each system requires as listing standards. (ie. a means of assessing an issue's level of asymmetric information). For instance, they document an average underpricing of 2.16%, 4.82%, 5.56% and a 10.41% for the AMEX, NYSE, NASDAQ/NMS and NASDAQ/non-NMS IPOs, with the later market imposing the least comprehensive listing requirements. Subsequently, a dummy variable to indicate which exchange the issue traded on, and a proxy for the ex ante uncertainty of the issue, is added to the multivariate model. For the exchange variable, if the issue traded on either the NYSE or the AMEX, a dummy variable was set equal to one, zero otherwise.

5. EMPIRICAL MODELS

Our basic regression equation establishes the relationship between underpricing and prestige. The model is given by:

$$UNDERPRICE_j = \alpha + \beta_1 PRESTIGE_j + \beta_2 STD_j + \beta_3 INTERACT_j + \beta_4 INVSIZE_j + \beta_5 EXCHANGE_j + \epsilon_j$$

Where:

STD = σ_j, the daily standard deviation of returns calculated over day one, the offering day, through to day 21, and is a proxy for the ex-ante uncertainty of the issue

INTERACT = Prestige * STD

INVSIZE = Inverse of Gross Proceeds of the Issue expressed in millions of dollars

EXCHANGE = Dummy Variable Indicating Exchange Listing

The dependent variables include initial return, mean return, and holding period return as the measure of underpricing. Initial returns follow from Johnson and Miller (1988), mean returns from Muscarella and Vetsuypens (1989) and holding period returns from Carter and Manaster (1990). In conducting these regressions, the various underwriter ranking measurements (Carter and Manaster, Johnson and Miller, and IDD classifications) will be used as proxies for prestige. The coefficient on prestige is expected to be negative, implying an inverse relationship between the degree of underpricing and the reputation of the investment banker. If all prestige classifications yield similar results, this will increase the reliability of any conclusions we reach.

Johnson and Miller (1988) and Carter and Dark (1992) use the daily standard deviation of returns across all firms for the first 21 days of trading (excluding the initial return) as a proxy for the riskiness of the offering. Ritter (1987) reinforces the use of this proxy, arguing that there is a strong likelihood that issues with high standard deviation of returns also have high levels of uncertainty in relation to the issue's market value prior to trading. To test whether prestige is significant when initial returns are adjusted for risk, the standard deviation of returns (including the initial return) is added to the our basic model.

According to previous studies, other control variables have been shown to affect the degree of underpricing. Unlike Carter and Dark (1992), Johnson and Miller (1988) also include an interaction term equal to the product of the prestige ranking and the standard deviation of returns in their risk-adjusted regression models. Size of the issue,

and fraction of shares sold by the original owners,[15] and the exchange on which the reverse LBO is listed are the other variables that will be incorporated into the model.

A subsequent test is also carried out to assess the relationship between the riskiness of the issue and the prestige of the investment banker. The model used to test this relationship is given as follows:

$$\sigma_j = \alpha + \beta_1 PRESTIGE_j + \beta_2 INVSIZE_j + \beta_3 EXCHANGE_j + \epsilon_j$$

Where:

σ_j = Daily Standard Deviation of Returns, a proxy for the Ex-Ante Uncertainty of the issue

INVSIZE = Inverse of Gross Proceeds of the Issue expressed in millions of dollars

EXCHANGE = Dummy Variable Indicating Exchange Listing

Using standard deviation of returns as the dependent variable, and prestige as the independent variable, it is expected that higher prestige bankers will be associated with lower risk IPOs (Johnson and Miller, 1988). Therefore the coefficient on the prestige variable is expected to be negative. As a final test of the differential risk of issues marketed by prestigious and non-prestigious bankers, the control variables are added to

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[15] Size of the issue is slightly different from previous studies in that the gross proceeds has not been present valued and specified in terms of a previous year's purchasing power. Also, another proxy for risk, the fraction of shares sold by insiders was considered, (see Leland and Pyle, 1978) but since it substantially reduced the number of observations in the models, and was insignificant under all combinations of returns, this variable was dropped from the analysis.

the model. This will help control for the possibility of differential risk in the issues underwritten by prestigious and non-prestigious investment bankers.

We also investigate the relationship between the size of the issue and the prestige of the investment banker. The model used to test this relationship is given by:

$$INVSIZE = \alpha + \beta_1 PRESTIGE_j + \beta_2 EXCHANGE_j + \epsilon_j$$

Where:

INVSIZE = Inverse of the size of a banker's issues, where size is the gross proceeds expressed in millions of dollars

EXCHANGE = Dummy Variable Indicating Exchange Listing

Prestigious bankers are hypothesized to handle much larger sized issues than non-prestigious bankers (Johnson and Miller, 1988). As such, the inverse of the average gross proceeds of a banker's issues is used as the dependent variable. A positive relationship is expected between prestige and the size of the IPO, as measured by the average gross proceeds.[16] Realizing that the larger the issue, the smaller the value for inverse size, we expect the coefficient of prestige to be negative. The higher the prestige, the smaller the inverse size, and consequently, the larger the issue. The exchange dummy variable is also included in the model as an additional control.

[16] The model was also ran using the mean of gross proceeds to test the relationship between size and prestige. No significant differences from the inverse size model are found, and thus the results from these models are not reported.

6. RESULTS

6.1 Initial Underpricing

To determine whether the sample of reverse LBOs displays the same underpricing tendency as IPOs, returns are calculated over a 21 day period and include the initial day's trading. The returns are then averaged across all firms for each of the 21 days. Finally cumulative average returns are calculated. This follows that of Muscarella and Vetsuypens (1989) and Ritter (1991).

A summary of the average returns (ARs) and Cumulative Average Returns (CARs) for each of the 21 days in the sample is found in Table 3. As Table 3 shows, the first day's return is significant, with an initial average return of 3.31%. This is somewhat higher than Muscarella and Vetsuypens (1989) findings of excess returns of 2.04%, Ainina and Mohan's 2.43%, and DeGeorge and Zeckhauser's 2.60% for reverse LBOs. Our results are consistent with these studies in finding that reverse LBOs do experience significant underpricing on the opening day of trading. The underpricing of reverse LBOs is significantly less than Ibbotson, Sindelar, and Ritter's (1988) average IPO underpricing of 16.4% and Ritter's (1984, 1991) 18.8% and 14.3%. This is consistent with the idea that reverse LBOs may suffer less problems from asymmetric information than IPOs.

Table 3

Table 3 lists the average underpricing across all firms for a given day and is calculated according to the formula $R_t = \Sigma_j r_{jt} / n$ where R_t denotes average underpricing, r_{jt} the return for Security j, n number of firms in sample, and t the number of days since the issue first traded. The sample consists of 204 reverse LBOs, with Cumulative Average Returns calculated over a 21 day trading period.

Day	Mean Returns	t value	t > 0	CARs	Num ^= 0 : > 0
1	.033108	6.57166	0.0001 ***	0.033108	146:108***
2	.003947	1.75870	0.0801 $	0.037058	154: 78
3	-.000161	-0.09020	0.9282	0.036897	149: 67
4	-.000626	-0.32693	0.7441	0.036271	144: 71
5	-.000741	-0.41018	0.6821	0.035531	142: 70
6	-.003369	-1.99725	0.0471 *	0.032161	138: 61$
7	-.003304	1.76779	0.0786 $	0.028857	135: 59$
8	.000406	0.23445	0.8149	0.029263	144: 68
9	-.003515	-2.06005	0.0407 *	0.025748	142: 57$
10	-.000319	-0.16161	0.8718	0.025429	148: 76
11	-.001043	-0.60669	0.5447	0.024386	141: 59
12	.001071	0.53235	0.5951	0.025457	152: 75
13	-.001322	-0.77838	0.4373	0.024135	149: 72
14	.000290	0.15061	0.8804	0.024424	157: 67
15	-.000185	-0.08715	0.9306	0.024240	149: 71
16	.003968	1.98199	0.0488 *	0.028207	146: 77
17	-.002645	-1.50572	0.1337	0.025562	149: 64
18	.001799	0.98357	0.3265	0.027360	143: 64
19	-.001263	-0.58496	0.5592	0.026097	150: 73
20	.002768	1.14426	0.2539	0.028865	148: 75
21	.003084	1.61451	0.1080	0.031949	147: 77

*** Significant at a level of 0.1%
** Significant at a level of 1.0%
* Significant at a level of 5.0%
$ Significant at a level of 10.0%.

6.2. Sample Statistics By Prestige Classification

Similar sample statistics are exhibited across all classification schemes. Table 4 provides a comparison of sample statistics by prestige classification for the initial 204 firms identified as reverse LBOs. First, the Johnson and Miller and the Carter and Manaster classifications have approximately the same number of issues falling into their highest and lowest rankings. Second, both display analogous results in the number of shares, the offering size, and the percentage of the offering being sold by insiders, especially for those in the top rank. All ranking classifications have average offering prices of approximately $13.50. For the highest ranked issues, average offering prices were around $15.00. By comparison, unranked ratings for Carter and Manaster, and Johnson and Miller, and IDD ranks of 4, all displayed slightly lower offering prices ranging between $11.00 and $12.00. Finally a review of all the classification schemes' highest rank showed very little difference in the statistics for the highest prestige ranking.

Table 4

Table 3 lists sample statistics for 204 reverse LBOs categorized according to the various investment banker prestige classifications. All figures represent means by rank.

Sample Statistics Using Johnson and Miller's Classification

Rank	# With A Price	Offering Price	Number of Shares	Offering Size	Percentage of Offering Sold by Insiders
Unranked	30	$11.41	5,599,516	$ 82.93 Million	28.5 %
1	16	12.44	2,207,813	27.20	34.4
2	79	13.03	4,534,153	59.58	42.4
3	79	14.97	7,629,051	119.53	32.6

Sample Statistics Using Carter and Manaster's Classification

Rank	# With A Price	Offering Price	Number of Shares	Offering Size	Percentage of Offering Sold by Insiders
Unranked to 5.0	30	$11.29	4,306,110	$ 61.31 Million	20.49%
5.5 to 7.0	29	12.74	4,776,626	60.83	46.17
7.5	18	11.25	3,331,019	38.45	35.6
8.0	47	13.66	4,172,715	57.54	39.7
9.0	80	15.00	7,554,938	118.40	32.6

Sample Statistics Using IPO Rankings from IDD

Rank	# With A Price	Offering Price	Number of Shares	Offering Size	Percentage of Offering Sold by Insiders
Unranked	20	$13.90	2,745,833	$ 41.60 Million	61.0 %
4	28	11.23	5,026,784	70.72	25.9
3	28	13.21	3,317,321	47.87	33.7
2	44	12.33	4,933,546	62.90	40.9
1	84	14.82	7,561,592	116.78	35.4

6.3. Results of Cross-Sectional Regressions

6.3.1. Prestige and the Degree of Underpricing

Tables 5A-6C summarize the results of regressing the initial return, (IRETURN) against each of the investment banker prestige variables, (PRESTIGE). Using IRETURN as the measure of underpricing, the univariate results find that the coefficient on PRESTIGE is not significant. (See Model 1 in Tables 5A-6C) This holds regardless of the prestige classification scheme employed. This is also true when mean returns or holding period returns are used as the measure of underpricing. The model also shows a lack of significance, as can be seen in the F statistics and the R^2.[17] The F statistics ranged from a high of 2.227 to a low of 0.536, and R^2 from 0.129 to 0.003.

The coefficients on EXCHANGE are consistent with the findings of Affleck-Graves, Hedge, Miller and Reilly (1993) in finding NASDAQ issues more underpriced than AMEX/NYSE issues. (See Models 4 and 6 for Tables 5B, 6A, 6B as well as Model 3 for Table 6B). NASDAQ, having the least stringent listing requirements, exhibits a higher initial return than that of the AMEX/NYSE exchange variable, 4.06% versus 2.83% respectively. However a t test for the differences in the initial returns between the two exchanges finds that the returns are not significantly different. Although the coefficient on EXCHANGE is positive, it is not significant. Therefore, EXCHANGE does not appear to be influencing the significance of underwriter prestige, nor does it

[17] A t test for the difference in mean initial returns was also run for each of the prestige classification schemes and prestige definitions without finding any significant differences.

significantly explain the observed underpricing. (Model 2 in Tables 5A-6C shows that the coefficient on EXCHANGE is never significant).

The inverse of the gross proceeds of the offering (INVSIZE) is the only control variable which has a significant coefficient. The coefficient on INVSIZE is negative and in most models is significant at a level of 5%. (See Tables 5A, 5C, 6A and 6C). Even when PRESTIGE and the other independent variables are added to the model, the coefficient on INVSIZE remains both negative and significant at a level of 1%. (See Models 3, 4 and 6). This implies that the greater the underpricing, the smaller the inverse of the gross proceeds, and subsequently the greater the size of the issue. This finding is contrary to previous studies (Carter, 1992, Carter and Dark, 1992, 1993, Carter and Manaster, 1990) which have all found an inverse relationship between underpricing and size of the issue.[18] This also contradicts Ritter's (1984) hypothesis of larger issues being associated with lower underpricing.

Nevertheless, the fact we find the size coefficient to be positive and significant may not be so unexpected if Michael Madden's[19] view of reverse LBOs is correct; that these are one of the most risky investments. IDD continues by saying that investors' suspicion of reverse LBOs during 1992 was fuelled by the fact that close to a third of 1992's reverse LBOs had lost at least 20% of their value, and underperformed the

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[18] However, both Carter and Manaster, (1990) and Carter and Dark (1992) find that when the logarithm of size is included in multivariate regressions, it is no longer significant, while Carter and Dark also show that the sign of the coefficient depends upon on the classification scheme employed.

[19] Michael Madden, co-head of investment banking at Lehman Brothers was quoted in IDD's "*A Gimlet Eye on Reverse LBOs*", July, 27, 1994.

NASDAQ by approximately 14%. Subsequently, if Madden is correct, and reverse LBOs are a riskier investment than IPOs, this study's findings of an positive relationship between issue size and underpricing would support this. Therefore the larger the reverse LBO, the greater the risk, and consequently the greater the compensation required in the form of underpricing in order to entice investors into purchasing a part of the offering.

The multivariate regressions also show that the coefficient on INVSIZE is consistently negative regardless of the prestige classification scheme used as the proxy for PRESTIGE, and that it is significantly negative for the Carter and Manaster and the IDD classification schemes. The subsequent addition of the other variables, (STD, INTERACT, EXCHANGE) also does not change this finding. Even when the other proxy for uncertainty, STD, is included in the models, the coefficient on INVSIZE remains significantly negative. As previously discussed, this may be consistent with the view that as a proxy for risk, the negative coefficient on INVSIZE reinforces the idea that the larger the reverse LBO, the greater the risk and therefore the greater the underpricing.

When the other variables, STD, INTERACT, INVSIZE, and EXCHANGE are added to the models, the coefficient on PRESTIGE becomes significant. (See Model 6 in Tables 5A, 5C, 6A where the coefficient on PRESTIGE is significant at a level of 10% or better). For Carter and Manaster's prestige classification scheme, the coefficient on PRESTIGE is significantly negative regardless of whether PRESTIGE is defined as bankers in the top rank, (See Model 6 Table 5A where $t = -1.856$) or as bankers ranked in the top quartile with non-prestigious bankers defined as those in the bottom quartile.

(See Model 6 Table 6A where t = -2.073). In the case of Johnson and Miller's classification scheme, neither prestige definition shows the coefficient on PRESTIGE to be significant. (See Model 6 in Tables 5B and 6B where t = -0.548 and -1.121 respectively).

The fact that one classification scheme finds the coefficient on PRESTIGE significant while the other does not is consistent with Carter and Dark's (1992) comparative study of reputation measures. It may also be consistent with their argument that, even on a risk adjusted basis, the full Carter and Manaster measure provides considerably more explanatory power than Johnson and Miller's modified measure. Thus this might explain the absence of a significant relationship between underwriter prestige and initial reverse LBO underpricing using the Johnson and Miller classification scheme. In terms of the IDD classification scheme, both definitions of prestige display a negative coefficient on PRESTIGE, and are significant, (See Model 6 for Table 5C where the coefficient on PRESTIGE is significant at 5%, t = - 2.073, and Table 6C where it is significant at 10%, t = -2.324). Although the inclusion of the subsequently lower ranked bankers into the definition of prestige should have biased the results against finding the coefficient on PRESTIGE significant, the results still find the coefficient on PRESTIGE significant for the Carter and Manaster and the IDD measures. (See Tables 5A and 5C). We interpret these results as evidence that the Carter and Manaster and IDD measures are better proxies for investment banker prestige than the Johnson and Miller measure. These results are comparable to previous studies of investment banker prestige in finding a significantly negative relationship between prestige and underpricing on a

risk adjusted basis for IPOs. (Johnson and Miller, 1988; Carter and Dark, 1992). Presumably, the unseasoned issues' problem of asymmetric information is less pronounced in reverse LBOs. Therefore, our findings provide stronger evidence that investment banker prestige is related to the degree of underpricing associated with unseasoned issues initially brought to market. Thus the significance of the coefficients for INVSIZE and PRESTIGE implies that riskiness of the issue, and the reputation of the underwriters are associated with the level of underpricing.

6.3.2. Prestige and Differential Risk Adjusted Returns

When IRETURN is regressed against PRESTIGE, STD, and INTERACT, only the coefficient on STD is consistently significant and positive. (See models 4 and 5 in Tables 5A-6C for a summary of the regression parameters). Although negative, the coefficient on Johnson and Miller's and IDD's prestige definitions are never significant. This is consistent with the evidence from Johnson and Miller's (1988) study. However, Carter and Manaster's PRESTIGE coefficient is both negative and significant, and is consistent with Carter and Dark's (1992) evidence. This may support our earlier inference that the Carter and Manaster classification scheme is a better proxy for investment banker prestige than that of Johnson and Miller. Overal. our results provide some evidence that investment banker prestige is significant in explaining underpricing even when returns are compared on a risk adjusted basis.

When IRETURN is adjusted for risk by including STD and INTERACT in the models, neither the Carter and Manaster, nor the IDD prestige classification schemes

show the coefficient on EXCHANGE to be significant. (See Models 4 and 6 in Tables 6A and 6C). While Johnson and Miller's classification scheme finds the coefficient on EXCHANGE to be significant, as was mentioned earlier, Carter and Manaster's classification scheme may be a better proxy for PRESTIGE. Therefore, these findings would suggest that EXCHANGE does not appear to be influencing the level of underpricing in the multivariate regressions.

The fact that the coefficient on STD is consistently significant and positive, regardless of the model, reinforces the idea that the riskiness and uncertainty of the issue are important factors in determining the level of underpricing.[20] (See Models 4, 5 and 6). The greater the riskiness of the issue, the greater the compensation required by investors. This is consistent with the explanation of a positive relationship between size and underpricing. As a proxy for risk, the greater the size of the reverse LBO, the greater the ex-ante uncertainty surrounding the issue and consequently the greater the underpricing experienced.

Although not reported, when returns are regressed against only PRESTIGE and INTERACT, the coefficient on PRESTIGE is significant. These results hold for all return variables, and across all prestige classification schemes. The coefficient of PRESTIGE is significantly negative, while the coefficient on INTERACT is significantly positive. The addition of the control variables, (INVSIZE, EXCHANGE) does not change the results. These results indicate that higher prestige bankers are associated with

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[20] Using mean return or holding period return as the dependent variable in multivariate regressions also finds the coefficient on STD to be significantly negative, but only for the Carter and Manaster classification schemes.

lower underpricing.

However, when STD is added to the models with PRESTIGE and INTERACT, (See Model 5) both the coefficient on PRESTIGE and the coefficient on INTERACT remain significant with the Carter and Manaster prestige classification scheme only. The coefficient on IDD's INTERACT is slightly significant at 10% when PRESTIGE is defined as those bankers in the top quartile. (See Model 5 for Table 6C). The inclusion of the other variables, (INVSIZE, EXCHANGE) does not change these findings except that IDD's coefficient on PRESTIGE is now significant for both definitions of prestige. (See for example, Model 6 for Table 5C where t = -2.073 for bankers defined as those in the top rank). Nevertheless, the coefficient of STD remains significant for all models employing IRETURN as the dependent variable.[21]

The fact that the coefficient on STD is positive and significant, while the coefficient on PRESTIGE is sometimes significant, reinforces the signalling hypothesis. The fact that the coefficient of INVSIZE remains negative and significant on a risk adjusted basis provides additional evidence that risk is an important factor in determining the degree of underpricing. Again, the greater the size of the LBO issue, the higher the risk, and the higher the required return, ie. the greater the "underpricing". The significance of the Carter and Manaster prestige classification scheme suggests that investment bankers are relevant in decreasing underpricing. The fact that higher prestige

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[21] For the multivariate models with mean return and holding period return as the dependent variable, the coefficient on STD is only significant with the Carter and Manaster prestige classification. It is possible however that the lack of a significant coefficient on STD is due to the inclusion of INTERACT. This interaction term may capture most of the risk associated with the issue.

bankers are associated with less underpriced issues suggests that prestigious bankers are better evaluators and more liable to price issues correctly. Therefore, even on a risk adjusted basis, it appears that underwriter prestige is associated with the level of underpricing.

Table 5A

OLS Regressions: Initial Returns on Reputation and Control Variables
Reputation Based on Carter and Manaster's Classification
Where Bankers in the Top Ranks are Classified as Prestigious

Reputation is based Carter and Manaster's ranking classification such that all bankers ranked 8.0 or higher are classified as prestigious and are assigned an 1. Bankers falling in all other ranks are classified as non-prestigious and are assigned a rank of 0. Underpricing is estimated by the initial returns (price appreciation of the closing price on the first day of trading over the initial offering price). The *t* statistics are in parentheses. The interaction term is calculated by multiplying the prestige dummy variable by the standard deviation. The standard deviation of returns is computed over a 21 day period, and includes in its calculation, the initial first day return. Inverse Size represents the inverse of gross proceeds, where gross proceeds are expressed in millions of dollars. Exchange is equal to 1 if listed on the AMEX or NYSE, and equal to 0 if on the NASDAQ.[22]

$$IRETURN_j = \alpha + \beta_1 PRESTIGE_j + \beta_2 STD_j + \beta_3 INTERACT_j + \beta_4 INVSIZE_j + \beta_5 EXCHANGE_j + \epsilon_j$$

Model	1	2	3	4	5	6
Intercept	0.0257 (2.888)**	0.0447 (4.388)***	0.0436 (3.205)**	-0.0479 (-3.657)***	-0.0238 (-1.242)	-0.0190 (-0.926)
Prestige	0.0108 (0.983)		-0.0014 (-0.123)		-0.0406 (-1.755)$	-0.0417 (-1.856)*
STD				3.0898 (9.265)***	1.6951 (2.812)**	2.0941 (3.513)***
Interaction					1.7976 (2.468)**	1.4354 (2.012)**
Inverse Size		-0.3985 (-2.304)*	-0.3922 (-2.171)**	-0.4390 (-3.054)**		-0.4178 (-2.795)***
Exchange		0.0031 (0.271)	0.0030 (0.263)	0.0136 (1.410)		0.0121 (1.261)
F Stat	0.967	3.553*	2.361*	32.048***	27.429***	20.249***
R^2	0.0051	0.0362	0.0363	0.3384	0.3044	0.3525
N	191	191	191	191	191	191

*** Significant at a level of 0.1%
** Significant at a level of 1.0%
* Significant at a level of 5.0%
$ Significant at a level of 10.0%

[22] Using the White's Test, the models were also tested and accepted the hypothesis for homoscedasticity.

Table 5B

OLS Regressions: Initial Returns on Reputation and Control Variables
Reputation Based on Johnson and Miller's Classification
Where Bankers in the Top Ranks are Classified as Prestigious

Reputation is based Johnson and Miller's ranking classification such that all bankers ranked 2 or 3 are classified as prestigious are assigned a 1. All other bankers ranked 1 are classified as non-prestigious and are assigned an 0. Underpricing is estimated by the initial returns (price appreciation of the closing price on the first day of trading over the initial offering price). The *t* statistics are in parentheses. The interaction term is calculated by multiplying the prestige dummy variable by the standard deviation. The standard deviation of returns is computed over a 21 day period, and includes in its calculation, the initial first day return. Inverse Size represents the inverse of gross proceeds, where gross proceeds are expressed in millions of dollars. Exchange is set equal to 1 if listed on the AMEX or NYSE, and equal to 0 if on the NASDAQ.[23]

$$IRETURN_j = \alpha + \beta_1 PRESTIGE_j + \beta_2 STD_j + \beta_3 INTERACT_j + \beta_4 INVSIZE_j + \beta_5 EXCHANGE_j + \epsilon_j$$

Model	1	2	3	4	5	6
Intercept	0.0590	0.0332	0.0674	-0.0688	-0.0449	-0.0466
	(3.402)***	(3.002)**	(3.193)**	(-5.256)***	(-1.192)	(-1.144)
Prestige	-0.0272		-0.0358		-0.0134	-0.0218
	(-1.492)		(-1.899)$		(-0.341)	(-0.548)
STD				3.3216	3.1241	3.2359
				(10.379)***	(2.970)**	(3.069)**
Interaction					0.0698	0.0455
					(0.063)	(0.041)
Inverse Size		-0.1203	-0.2064	-0.0717		-0.1225
		(-0.568)	(-0.960)	(-0.431)		(-0.706)
Exchange		0.0106	0.0121	0.0223		0.0230
		(0.903)	(1.042)	(2.415)*		(2.463)**
F Stat	2.227	0.939	1.838	36.927***	32.867***	22.501***
R^2	0.0129	0.0109	0.0316	0.3960	0.3685	0.4025
N	172	172	172	172	172	172

*** Significant at a level of 0.1%
** Significant at a level of 1.0%
* Significant at a level of 5.0%
$ Significant at a level of 10.0%

[23] Using the White's Test, the models were also tested and accepted the hypothesis for homoscedasticity.

Table 5C

OLS Regressions: Initial Returns on Reputation and Control Variables
Reputation Based on IDD's IPO Classification
Where Bankers in the Top Ranks are Classified as Prestigious

Reputation is based IDD's IPO classification such that all bankers ranked 1 or 2 are classified as prestigious and are assigned a 1. All bankers ranked 3 or higher are classified as non-prestigious are assigned an 0. Underpricing is estimated by the initial returns which are calculated as the price appreciation of the closing price on the first day of trading and the initial offering price. The *t* statistics are in parentheses. The interaction term is calculated by multiplying the prestige dummy variable by the standard deviation. The standard deviation of returns is computed over a 21 day period, and includes in its calculation, the initial first day return. Inverse Size represents the inverse of gross proceeds, where gross proceeds are expressed in millions of dollars. For the exchange variable, exchange was set equal to one if listed on the AMEX or NYSE, and equal to 0 if traded on the NASDAQ system.[24]

$$IRETURN_j = \alpha + \beta_1 PRESTIGE_j + \beta_2 STD_j + \beta_3 INTERACT_j + \beta_4 INVSIZE_j + \beta_5 EXCHANGE_j + \epsilon_j$$

Model	1	2	3	4	5	6
Intercept	0.0290	0.0487	0.0542	-0.0473	-0.0345	-0.0084
	(2.941)***	(4.637)***	(3.500)***	(-3.499)***	(-1.730)$	(-0.365)
Prestige	0.0086		-0.0062		-0.0254	-0.0499
	(0.732)		(-0.483)		(-1.059)	(-2.073)*
STD				3.1055	2.2522	2.2555
				(9.251)***	(3.498)***	(3.585)***
Interaction					1.0420	1.2322
					(1.367)	(1.660)$
Inverse Size		-0.4061	-0.4406	-0.3885		-0.5017
		(-2.443)*	(-2.431)*	(-2.836)**		(-3.353)***
Exchange		0.0005	0.0006	0.0119		0.0100
		(0.041)	(0.051)	(1.203)		(1.006)
F Stat	0.536	3.681*	2.521$	32.141***	26.011***	20.458***
R^2	0.0030	0.0395	0.0408	0.3514	0.3048	0.3676
N	181	181	181	181	181	181

*** Significant at a level of 0.1%
** Significant at a level of 1.0%
* Significant at a level of 5.0%
$ Significant at a level of 10.0%

[24] Using the White's Test, the models were also tested and accepted the hypothesis for homoscedasticity.

Table 6A

OLS Regressions: Initial Returns on Reputation and Control Variables Reputation is Based on Carter and Manaster's Investment Banker Classification With Bankers in the Outer Extremities of the Rankings

Reputation is based Carter and Manaster's ranking classification such that bankers in between the highest and lowest ranks are dropped from the comparison. Ranks of 9.0 are classified as prestigious and are assigned a 1. All bankers ranked 7.5 or lower are classified as non-prestigious and are assigned an 0. Underpricing is estimated by initial returns (price appreciation of the closing price on the first day of trading over the initial offering price). The *t* statistics are in parentheses. The interaction term is calculated by multiplying the prestige dummy variable by the standard deviation. The standard deviation of returns is computed over a 21 day period, and includes in its calculation, the initial first day return. Inverse Size represents the inverse of gross proceeds, where gross proceeds are expressed in millions of dollars. Exchange is equal to 1 if listed on the AMEX or NYSE, and equal to 0 if on the NASDAQ.[25]

$$IRETURN_j = \alpha + \beta_1 PRESTIGE_j + \beta_2 STD_j + \beta_3 INTERACT_j + \beta_4 INVSIZE_j + \beta_5 EXCHANGE_j + \epsilon_j$$

Model	1	2	3	4	5	6
Intercept	0.0256	0.0389	0.0407	-0.0528	-0.0222	-0.0162
	(2.824)**	3.190**	(2.712)**	(-3.349)***	(-1.138)	(-0.748)
Prestige	0.0134		-0.0029		-0.0493	-0.0616
	(1.085)		(-0.213)		(-1.874)$	(-2.431)*
STD				3.0434	1.659	2.0505
				(7.678)***	(2.666)**	(3.403)***
Interaction					2.0644	1.7747
					(2.504)**	(2.244)*
Inverse Size		-0.3710	-0.3854	-0.4059		-0.4644
		(-1.964)*	(-1.915)$	(-2.544)**		(-2.774)**
Exchange		0.0151	0.0155	0.0235		0.0219
		(1.115)	(1.130)	(2.046)*		(1.893)$
F Stat	1.177	4.366**	2.906**	23.730***	18.685***	15.815***
R^2	0.0081	0.0572	0.0575	0.3324	0.2816	0.3593
N	146	146	146	146	146	146

*** Significant at a level of 0.1%
** Significant at a level of 1.0%
* Significant at a level of 5.0%
$ Significant at a level of 10.0%

[25] Using the White's Test, the models were also tested and accepted the hypothesis for homoscedasticity.

Table 6B

OLS Regressions: Initial Returns on Reputation and Control Variables
Reputation is Based on Johnson and Miller's Investment Banker Classification
With Bankers in the Outer Extremities of the Rankings

Reputation is based Johnson and Miller's ranking classification such that bankers ranked 3 are classified as prestigious and are assigned a 1. All bankers ranked 1 are classified as non-prestigious and are assigned an 0. Those with a rank of 2 are dropped from the comparison. Underpricing is estimated by initial returns (price appreciation of the closing price on the first day of trading over the initial offering price). The *t* statistics are in parentheses. The interaction term is calculated by multiplying the prestige dummy variable by the standard deviation. The standard deviation of returns is computed over a 21 day period, and includes in its calculation, the initial first day return. Inverse Size represents the inverse of gross proceeds, where gross proceeds are expressed in millions of dollars. Exchange is set equal to 1 if listed on the AMEX or NYSE, and equal to 0 if on the NASDAQ.[26]

$$IRETURN_j = \alpha + \beta_1 PRESTIGE_j + \beta_2 STD_j + \beta_3 INTERACT_j + \beta_4 INVSIZE_j + \beta_5 EXCHANGE_j + \epsilon_j$$

Model	1	2	3	4	5	6
Intercept	0.0590	0.0298	0.0712	-0.0903	-0.0449	-0.0395
	(3.081)**	(1.723)$	(2.517)**	(-4.795)***	(-1.117)	(-0.828)
Prestige	-0.0196		-0.0434		-0.0262	-0.0512
	(-0.934)		(-1.835)$		(-0.604)	(-1.121)
STD				3.7794	3.1241	3.2171
				(8.712)***	(2.784)**	(2.877)***
Interaction					0.5951	0.5954
					(0.484)	(0.485)
Inverse Size		-0.0645	-0.3502	-0.0540		-0.3057
		(-0.182)	(-0.914)	(-0.206)		(-1.010)
Exchange		0.0279	0.0316	0.0380		0.0391
		(1.598)	(1.189)$	(2.927)**		(2.941)***
F Stat	0.872	1.762	2.328$	27.442***	21.256***	17.354***
R^2	0.0094	0.0373	0.0720	0.4777	0.4147	0.4965
N	93	93	93	93	93	93

*** Significant at a level of 0.1%
** Significant at a level of 1.0%
* Significant at a level of 5.0%
$ Significant at a level of 10.0%

[26] Using the White's Test, the models were also tested and accepted the hypothesis for homoscedasticity.

Table 6C
OLS Regressions: Initial Returns on Reputation and Control Variables
Reputation is Based on IDD's IPO Investment Banker Classification
With Bankers in the Outer Extremities of the Rankings

Reputation is based IDD's IPO ranking classification such that bankers ranked 1 are classified as prestigious and are assigned a 1. Bankers ranked 3 or 4 are classified as non-prestigious and are assigned an 0. Those with a rank of 2 are dropped from the comparison. Underpricing is estimated by the initial returns which are calculated as the price appreciation of the closing price on the first day of trading and the initial offering price. The *t* statistics are in parentheses. The interaction term is calculated by multiplying the prestige dummy variable by the standard deviation. The standard deviation of returns is computed over a 21 day period, and includes in its calculation, the initial first day return. Inverse Size represents the inverse of gross proceeds, where gross proceeds are expressed in millions of dollars. For the exchange variable, exchange was set equal to one if listed on the AMEX or NYSE, and equal to 0 if traded on the NASDAQ system.[27]

$$IRETURN_j = \alpha + \beta_1 PRESTIGE_j + \beta_2 STD_j + \beta_3 INTERACT_j + \beta_4 INVSIZE_j + \beta_5 EXCHANGE_j + \epsilon_j$$

Model	1	2	3	4	5	6
Intercept	0.0290 (2.890)**	0.0561 (4.718)***	0.0600 (3.676)***	-0.0437 (-2.781)**	-0.0344 (-1.719)$	-0.0023 (-0.099)
Prestige	0.0134 (1.036)		-0.0051 (-0.350)		-0.0328 (-1.253)	-0.0611 (-2.324)$
STD				3.2216 (8.106)***	2.2522 (3.477)***	2.1895 (3.453)***
Interaction					1.4984 (1.799)$	1.7198 (2.1??)$
Inverse Size		-0.4899 (-2.767)**	-0.5192 (-2.644)***	-0.4384 (-3.009)**		-0.5495 (-3.425)***
Exchange		-0.0045 (-0.327)	-0.0040 (-0.293)	0.0075 (0.659)		0.0047 (0.410)
F Stat	1.074	4.200*	2.823**	26.042***	21.648***	17.106***
R^2	0.0078	0.0586	0.0594	0.3683	0.3264	0.3932
N	137	137	137	137	137	137

*** Significant at a level of 0.1%
** Significant at a level of 1.0%
* Significant at a level of 5.0%
$ Significant at a level of 10.0%

[27] Using the White's Test, the models were also tested and accepted the hypothesis for homoscedasticity.

6.3.3. Differential Risk: High Prestige - Low Risk

When STD is regressed against the investment banker prestige variables, none of the coefficients on PRESTIGE are found to be significant. (See Table 7 for a summary of the regression results). This holds regardless of whether control variables are included or excluded from the model.[28] This is contrary to the findings of Johnson and Miller (1988) whose evidence showed that low risk issues were associated with high prestige bankers.

Although the coefficient on the independent variable, INVSIZE, is not significant when regressed against STD, its coefficient is positive and has the expected sign. Only the EXCHANGE variable has a significant coefficient. For both the univariate model and in the multivariate model with PRESTIGE and INVSIZE, the coefficient on EXCHANGE is significantly negative at 5% and 10% respectively. This inverse relationship between exchange and risk implies that the issues listed on the NASDAQ exchange have a higher risk than those listed on the AMEX/NYSE exchange. This is consistent with the evidence of Affleck-Graves et al (1993) in finding that the exchange with the less stringent listing requirements exhibits the greater price appreciation.

Regardless of the prestige definition or the prestige classification scheme used, the coefficient on PRESTIGE is insignificant (See Model 1 and 5). Carter and Dark (1992) note that the relationship between underpricing and prestige may be a function of the reputation measure. They also note that, as a proxy for ex-ante uncertainty, standard

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[28] A t test is also calculated to test the hypothesis that the means of high and low prestige bankers are the same. The results of this test confirm the acceptance of the null hypothesis, that the riskiness of the bankers' issues is not significantly different.

deviation of returns may only be able to explain a portion of this uncertainty and, consequently, a portion of the underpricing. This may account for the lack of a significant coefficient on PRESTIGE. It may be that the prestige classifications used are inappropriate proxies of prestige.

Table 7

OLS Regressions: Standard Deviation of Returns on Reputation and Control Variables Reputation Based on Carter and Manaster's Classification Where Bankers in the Top Ranks are Classified as Prestigious

Reputation is based Carter and Manaster's ranking classification such that bankers ranked in the highest ranks of 8.0 or higher are classified as prestigious and are assigned a 1. Bankers falling in all other ranks are classified as non-prestigious and are assigned an 0. The standard deviation of returns is computed over a 21 day period, and includes in its calculation, the initial first day return. The *t* statistics are in parentheses. Inverse size represents the inverse of gross proceeds, where gross proceeds are expressed in millions of dollars. Exchange is equal to 1 if listed on the AMEX or NYSE, and equal to 0 if on the NASDAQ.[29]

$$STD_j = \alpha + \beta_1 PRESTIGE_j + \beta_2 + \beta_3 INVSIZE_j + \beta_4 EXCHANGE_j + \epsilon_j$$

Model	1	2	3	4	5
Intercept	0.0292	0.0279	0.0306	0.0300	0.0294
	(18.176)***	(20.931)***	(25.125)***	(16.234)***	(11.938)***
Prestige	-0.0003				0.0007
	(-0.155)				(0.335)
Invsize		0.0341		0.0131	0.0162
		(1.188)		(0.418)	(0.494)
Exchange			-0.0037	-0.0034	-0.0034
			(-1.975)*	(-1.624)	(-1.636)$
F Stat	0.024	1.412	3.902*	2.030	1.384
R^2	0.0001	0.0074	0.0201	0.0210	0.0216
N	191	191	191	191	191

*** Significant at a level of 0.1%
** Significant at a level of 1.0%
* Significant at a level of 5.0%
$ Significant at a level of 10.0%

[29] Regardless of the prestige definition or prestige classification scheme used, prestige is never significant. Also, the results of the regressions using mean size as the dependent variable are not significantly different from the models presented in the table. However, the sign on the coefficient of prestige is influenced by the prestige definition and prestige classification schemes used. Johnson and Miller's classification scheme yields a negative coefficient on prestige, while IDD's classification scheme produces positive coefficients (regardless of whether exchange or inverse size are included in the models). Carter and Manaster's coefficients are all positive except for where subsequent ranks are added to the definition of prestige and prestige is the only independent variable in the model.

6.3.4. Differential Size: High Prestige - Large Issues

When the inverse size of the gross proceeds expressed in millions of dollars, INVSIZE, is regressed against the investment banker prestige variables, the coefficient on PRESTIGE is always negative and significant. This is true regardless of the prestige classification or the prestige definition employed. (See Table 8 for a summary of the regression results and which shows the coefficient on PRESTIGE to be significant at a level of 0.1%). Also, when the mean size of the gross proceeds is regressed against prestige, PRESTIGE is again significant, but the coefficient is positive. Thus both of these regressions support the hypothesis that higher prestige bankers are associated with larger issues. The negative PRESTIGE coefficient associated with the first regression, implies that, the higher the prestige, the smaller the inverse size of the issue, which translates into larger gross proceeds. The positive PRESTIGE coefficient from the second regression reinforces the above. This is consistent with the positive relationship between size and banker prestige documented by Johnson and Miller (1988).

Table 8 also shows the coefficient on EXCHANGE to be significantly negative at a level of 0.1%. This holds for both the univariate model, and for the model with both PRESTIGE and EXCHANGE. The negative relationship between EXCHANGE and INVSIZE indicates that larger sized issues (smaller inverse sizes) are associated with the higher exchange dummy variable, ie. the AMEX/NYSE exchanges.

Beatty and Ritter (1986) suggest that size may be a better proxy for the ex ante uncertainty of an issue's value than standard deviation. This may explain why PRESTIGE is not significant when regressed against the dependent variable, STD. A

comparison of Tables 7 and 8 will show that, when size is used as the dependent variable, the coefficient on PRESTIGE is significant, whereas when STD is the dependent variable, the coefficient on PRESTIGE is not significant. This reinforces the idea that size may be a better proxy than standard deviation for the ex ante uncertainty of an issue's value.

As a proxy for risk, the greater the size of the issue, the greater the ex ante uncertainty, and consequently, the greater the observed underpricing. Therefore if size is an accurate proxy for risk, higher prestige bankers would tend to be associated with higher, not lower, risk issues. This would contradict Johnson and Miller's (1988) claim of high prestige bankers favouring lower volatility issues. However, a t test against the standard deviation of returns between the high and low prestige definitions for each classification scheme cannot reject the hypothesis that there is no significant difference in the volatilities and mean sizes of issues marketed by these two groups of underwriters.

Table 8

OLS Regressions: Inverse Size on Reputation and Control Variables
Reputation Based on Johnson and Miller's Classification
With Bankers in the Outer Extremities of the Rankings

Reputation is based Johnson and Miller's ranking classification such that bankers in between the highest and lowest ranks are dropped from the comparison. Ranks of 1 are assigned a 1, and ranks of 3 or lower are assigned an 0. Inverse Size represents the inverse of gross proceeds, where gross proceeds are expressed in millions of dollars. The *t* statistics are in parentheses. Exchange is equal to 1 if listed on the AMEX or NYSE, and equal to 0 if on the NASDAQ.[30]

$$INVSIZE_j = \alpha + \beta_1 PRESTIGE_j + \beta_2 EXCHANGE_j + \epsilon_j$$

Model	1	2	3
Intercept	0.0518 (9.495)***	0.3694 (11.096***	0.0548 (10.537)***
Prestige	-0.0315 (-5.261)***		-0.0251 (-4.242)***
Exchange		-0.0217 (-4.703)***	-0.0160 (-3.595)***
F Stat	27.680***	22.117***	22.096***
R^2	0.2313	0.1938	0.3269
N	93	93	93

*** Significant at a level of 0.1%

[30] The results from regressions using mean size as the dependent variable were not significantly different from those presented. The results were also neither influenced by the prestige definitions nor by the prestige classification schemes used as the independent variable for prestige. All prestige classification schemes, including IDD rankings based on common stock issues, domestic issues, and financial advisor ratings, all produced similar findings. Similarly, the inclusion of lower prestige rankings into the definition of high prestige did not affect the results.

7. SUMMARY AND CONCLUSIONS

Underpricing has been linked to two factors; asymmetric information problems, and difficulties with estimating the riskiness of unseasoned issues. One proposed means of reducing investor uncertainty and IPO underpricing is for firms to employ the services of an underwriter. Although studies (Carter and Manaster, 1990, Johnson and Miller, 1988) have attributed underwriter prestige, and bankers' analytical expertise, with the bankers' ability to price IPOs closer to their true market value, none have convincingly isolated the effect of investment banker prestige from unseasoned issues' asymmetric information problems. However, since reverse LBOs are presumed to suffer less from these problems than IPOs, an investigation of the relationship between reverse LBO underpricing and investment banker prestige should strengthen the results of earlier studies regarding this relationship.

We find evidence of significant underpricing for our sample of reverse LBOs. Furthermore, we document that the degree of underpricing is associated with the prestige of the investment banker who brings the new issue to market. Since prestigious investment bankers' issues display significant differences in underpricing, investors may be able to earn abnormal returns by basing their IPO investment decisions on the prestige of the leading underwriter. By restricting their purchases to reverse LBOs of low prestige bankers, investors are more likely to experience significantly greater underpricing, even on a risk adjusted basis. Similarly, "prestigious" investment bankers can substantiate their higher underwriting fees with the claim that their services will reduce the level of underpricing for reverse LBOs. Consequently, even if informational asymmetries are not

a concern for a new issue, this would still suggest that issuers should attach some weight to prestige and cost.

The results support earlier evidence by Carter and Dark that the Carter and Manaster classification scheme may be a better proxy for prestige than the Johnson and Miller and Investment Dealer's Digest's IPO classification schemes. Furthermore, whether underpricing is measured using initial return, mean return, or holding period return does not influence these findings.

We also find that the risk of an issue is a relevant variable in determining the level of underpricing. Although we do not find a relationship between the standard deviation of returns and the prestige of the investment banker, we do find that the standard deviation of returns is significant in explaining underpricing. The higher the volatility of the issue price in the after market trading, the greater the underpricing observed. This finding is consistent with that of previous studies. (Ainina and Mohan, 1991). We find similar evidence when we use size of the issue as a proxy for risk. Furthermore, we document a significantly positive relationship between this measure of risk, and the prestige of the investment banker. In terms of the relationship between reverse LBO size and underpricing, this is consistent with the idea that reverse LBOs are a relatively risky investment. It also supports the idea that investors in these high risk issues require greater compensation in the form of underpricing.

We find that underpricing is related to two main factors: risk and information asymmetries. We believe our results provide additional evidence about the role of the investment bankers in the underpricing of unseasoned equity issues. We find that reverse

LBOs may employ an underwriter to certify the value and riskiness of the issue. When the reverse LBO issue is brought to market by a prestigious investment banker, we find significantly lower levels of underpricing. In addition we find that underpricing is related to the riskiness of the issue itself and that prestigious bankers' certification of this risk helps to reduce the level of underpricing. Therefore, these results help strengthen previous findings concerning the role prestigious investment bankers play in reducing the degree of underpricing in unseasoned issues.

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Appendix 1

Underwriters of Reverse LBOs
for the Period 1981 to August 31, 1992.

Underwriter	Number of Offerings
Merrill Lynch	24
First Boston	18
Goldman Sachs	17
Drexel Burnham Lambert	16
Morgan Stanley	16
Shearson Lehman	15
Alex Brown	9
Kidder Peabody	8
Paine Webber	8
Smith Barney	7
Donaldson Lufkin & Jenrette	6
Prudential-Bache	6*
Salomon Brothers	4
William Blair	4
Dean Witter	3
Dillon Read	3
Montgomery Securities	3
E.F. Hutton	2
Hambrecht & Quist	2
J.C. Bradford	2
Lehman Brothers, Kuhn, Loeb	2
Wheat First Securities	2
Allen and Co.	1
Bear Stearns	1
Blunt Ellis	1
Eppler, Guerin and Turner	1
First Albany	1
First Michigan	1
Furman Selz Mager Dietz and Birney	1
Ingham Becker	1
Janney Montgomery	1
Lazard Freres	1

Appendix 1 (Continued)

Underwriters of Reverse LBOs
for the Period 1981 to August 31, 1992.

Underwriter	Number of Offerings
Morgan Keegan	1
Milwaukee Company	1
Pipper Jaffray	1
Robinson Humphrey	1
Robertson Stephens	1
Stephens	1
Thompson McKinnon	1
Wedbush Noble Cooke	1
Wertheim Schroder	1
Unknown	8
Total	204

From the sample of reverse LBOs, 41 underwriters were identified for 204 of the offerings. The final sample consists of all offerings where both the offering price and the number of shares in the offering were available.

* For Prudential-Bache, all 6 issues had offering prices available, but for 1 of these issues, the number of shares in the offering was unavailable.

Appendix 2

Ranking of Underwriters From The Sample of Reverse LBOs.
Underwriter Classification based on Carter and Manaster (1990)

Rank	Underwriter
9.0	The First Boston Corporation
9.0	Goldman, Sachs & Company
9.0	Merrill Lynch White Weld
9.0	Morgan Stanley & Company, Inc.
9.0	Salomon Brothers
8.0	Bache Hasley Stuart and Shields, Inc.
8.0	Bear, Stearns and Company.
8.0	Blyth Eastman Dillon and Co.
8.0	E.F. Hutton & Company, Inc.
8.0	Kidder, Peabody & Company, Inc.
8.0	Lazard Freres & Company
8.0	Lehman Brothers, Kuhn, Loeb, Inc.
8.0	Smith Barney, Harris Upham & Company
8.0	Wertheim & Company, Inc.
8.0	Dean Witter Reynolds, Inc.
7.5	Alex Brown & Sons, Inc.
7.5	Paine, Webber, Jackson Curtis, Inc.
7.5	Warburg Paribus Becker, Inc.
7.0	Donaldson, Lufkin & Jenrette Securities Corporation
7.0	Drexel, Burnham, Lambert Inc.
6.5	Thompson McKinnon Securities, Inc.
6.0	Hambrecht & Quist, Inc.
6.0	Robertson, Coleman, Stephens and Woodman
5.5	Montgomery Securities
5.0	Allen and Company
5.0	William Blair and Company
5.0	Blunt Ellis & Loewi, Inc.
5.0	J.C. Bradford and Company, Inc.
5.0	Janney Montgomery Scott
5.0	Ladenburg, Thalmann & Company
5.0	Pipper, Jaffray and Hopwood, Inc.
5.0	Robinson-Humphrey Company, Inc.
5.0	Wheat, First Securities, Inc.
3.5	Wedbush, Noble, Cooke, Inc.
2.0	Stephens, Inc.
0.0	Furman Selz Mager Dietz and Birney

Appendix 2 (Continued)

Ranking of Underwriters From The Sample of Reverse LBOs.
Underwriter Classification based on Johnson and Miller (1988)

First Tier

The First Boston Corporation
Goldman, Sachs & Company
Merrill Lynch, Pierce, Fenner & Smith, Inc.
Morgan Stanley & Company, Inc.
Salomon Brothers

Second Tier

Bear, Stearns & Company, Inc.
A.G. Becker, Paribas
Blyth Eastman Paine Webber, Inc.
Dean Witter Reynolds, Inc.
Dillon, Read & Company, Inc.
Donaldson, Lufkin & Jenrette Securities Corporation
Drexel, Burnham, Lambert Inc.
E.F. Hutton & Company, Inc.
Kidder, Peabody & Company, Inc.
Lazard Freres & Company
Lehman Brothers, Kuhn, Loeb, Inc.
Prudential-Bache Securities, Inc.
Smith Barney, Harris Upham & Company
Wertheim & Company, Inc.

Third Tier

Blunt Ellis & Loewi, Inc.
Alex Brown & Sons, Inc.
Hambrecht & Quist, Inc.
Ladenburg, Thalmarin & Company, Inc.
Robinson-Humphrey/American Express, Inc.
Thompson McKinnon Securities, Inc.
Wheat, First Securities, Inc.

Appendix 2

Ranking of Underwriters From The Sample of Reverse LBOs.
Underwriter Classification based on Investment Dealer's Digest

IPO Rankings (Full Credit Given To Lead Manager)								
Investment Banker	1985	1986	1987	1988	1989	1990	1991	1992
Bear Stearns	1	4	4	4	4			
Prudential Bache	3	1	2	1	1	2	1	5
Smith Barney	3	3	4	3	2	2	3	2
Dean Witter	2	3	2	2	2	1		2
E.F. Hutton	3	4						
Alex Brown	4	4	1	2	1	1	1	2
Dillon Read		4	4					
Donaldson Lufkin			4	3	4	4	3	3
Wheat First		4	1	1	2			
Drexel Burnham	2	1	2	2				
Merrill Lynch	1	1	1	1	1	1	1	1
Goldman Sachs	1	1	1	2	1	1	1	1
Shearson Lehman	1	1	1	1	1	2	2	1
Kidder Peabody	1	3	3	3	3	3	3	
Paine Webber	3	2	2	1	2	1	2	2
Salomon Brothers	1	2	2	2	2	2	2	3
First Boston	3	2	2	2	2	2	1	2
Morgan Stanley	2	2	3	4	3	2	2	1
Lazard Freres	2	2			3			
Allen and Co.	4	2						
Wertheim Schroder		3						
Pipper Jaffray				3	3	3	2	3
Robertson Stephens						4	3	3
Montgomery Sec.							3	3

Where a rank of:
1 refers to an IDD ranking of 1 to 5 for that year.
2 refers to an IDD ranking of 6 to 10 for that year.
3 refers to an IDD ranking of 11 to 15 for that year.
4 refers to an IDD ranking of 16+ or unranked.