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Initial Public Offerings and Underwriter Reputation

RICHARD CARTER and STEVEN MANASTER*

ABSTRACT

This paper examined the returns earned by subscribing to initial public offerings of equity (IPOs). Rock (1986) suggests that IPO returns are required by uninformed investors as compensation for the risk of trading against superior information. We show that IPOs with more informed investor capital require higher returns. The marketing underwriter's reputation reveals the expected level of "informed" activity. Prestigious underwriters are associated with lower risk offerings. With less risk there is less incentive to acquire information and fewer informed investors. Consequently, prestigious underwriters are associated with IPOs that have lower returns.

AN INITIAL PUBLIC OFFERING (IPO) is the first effort by private firms to raise capital in a public equity market. Previous research shows that, on average, the difference between the IPO subscription price and the first secondary market price is greater than a "reasonable" risk premium would require. Thus, it appears that issuing firms and underwriters are deliberately underpricing their IPOs.

Several papers have documented the empirical regularity of IPO underpricing, including Logue (1973), Ibbotson (1975), and Miller and Reilly (1987), among others.¹ More recently, attempts have been made to explain underpricing as an equilibrium phenomenon (Allen and Faulhaber (1989), Barry, Muscarella, Peavy, and Vetsuypens (1988), Beatty and Ritter (1986), Booth and Smith (1986), Chalk and Peavy (1989), Grinblatt and Hwang (1989), Hwang (1986), Nanda (1987), Rock (1986), Tinic (1988), and Welch (1989)). Some of these models suggest that the role of the underwriter may be important (Allen and Faulhaber (1989), Barry, Muscarella, Peavy, and Vetsuypens (1988), and Nanda (1987)). For others, an explicit role for the underwriter is provided (Booth and Smith (1986), Beatty and

* College of Business Administration, Iowa State University and the Commodity Futures Trading Commission, Division of Economic Analysis, respectively. Dr. Manaster was at the University of Utah during the conduct of most of this research. The views expressed are solely those of the authors and do not purport to represent those of the Commodity Futures Trading Commission or its staff. We would like to acknowledge the useful comments of our colleagues Sanjai Bhagat, Jeff Coles, Dick Jefferis, Uri Lowenstein, and Jay Ritter. Our interactions with Dick Jefferis in particular helped to identify and clarify several critical issues. We would also like to thank Jay Ritter for the provision of data. Support from the University of Utah Graduate School of Business, the Garn Institute of Finance, and Iowa State University is gratefully acknowledged. Substantial technical assistance was provided by Denise Woodbury. We would also like to thank the staff at the Chicago Library of Arthur Andersen and Company for their assistance. We alone are responsible for any errors or omissions.

¹ For a review of empirical research as well as an overview of the IPO process, see Smith (1986) and Ibbotson, Sindelar, and Ritter (1988).

Ritter (1986), Chalk and Peavy (1989), Hughes (1986), Tinic (1988), and Titman and Trueman (1986)).²

Though our model has been influenced by all of this antecedent literature, it is most similar to the model of Rock (1986) and its extension by Beatty and Ritter (1986) (see especially the appendix to their paper). Rock (1986) argues that IPO underpricing compensates uninformed investors for the risk of trading against superior information. In our model, consistent with Rock, the greater the proportion of informed investor capital participating in an IPO, the greater is the equilibrium underpricing. If investors have scarce resources to invest in information acquisition, they specialize in acquiring information for the most uncertain investments. Since informed investor capital migrates to the highly uncertain IPOs, the underpricing and subsequent price run-up for these firms are greater.

Underpricing is costly to the issuing firm. Therefore, low risk firms attempt to reveal their low risk characteristic to the market. One way they can do this is by selecting underwriters with high prestige. In this paper, we provide empirical evidence that supports our theoretical result that underwriter prestige is associated with the marketing of low risk IPOs. The empirical analysis is facilitated by our development of an observable underwriter reputation variable. This variable gives empirical content to models of IPO pricing that was not available to previous authors.

The paper is organized as follows. In Section I an equilibrium model of IPO underpricing is developed. Sections II and III present empirical tests of the model. In general, the results of these tests are consistent with the model. Section IV provides a summary and conclusion.

I. The Model

The model uses the following assumptions:

A.1: There are three time periods:

<u>Time Period</u>	<u>Event</u>
0	Issuing firms contract with marketing underwriters to sell their IPO on a "firm commitment" basis in the primary market. ³
1	The underwriter sells the IPO in the primary market.
2	The shares of the IPO trade in the secondary market.

A.2: There are two markets, a primary market and a secondary market. The primary market is characterized by asymmetric information. The secondary market is characterized by perfect information available to all

² The models of Hughes (1986) and Titman and Trueman (1986) address the determination of asset value rather than explicit underpricing.

³ In a "firm commitment" contract, the underwriter purchases the entire IPO issue from the firm with the intention of selling it to investors.

participants. The price of assets traded in the secondary market reflects their full information equilibrium value.⁴

- A.3: Differences in issuing firms are characterized at time zero by differences in σ , the dispersion of their possible secondary market values.
- A.4: Investors are risk neutral. The risk-free rate is zero.
- A.5: Informed investors, collectively, do not have sufficient wealth or sufficient access to capital markets to be allocated 100 percent of any IPO offering.⁵
- A.6: All IPOs are oversubscribed.⁶ Shares are allocated to all purchasers on a pro-rata basis. For larger dollar volume IPOs, this assumption is consistent with market experience. (In our sample we consider only IPOs larger than \$2,000,000 in offer size.)
- A.7: Critical to the model's development is the nature of the asymmetric information in the primary market. Define V as the random variable that represents the aftermarket equilibrium price of an IPO. The information structure is given below:

Investors:

At time zero every investor knows the probability density function of V conditioned on σ , $f(V|\sigma)$. At time one investor i can pay C_i to learn in advance the realization of the random variable V at time two. Each informed investor has $W_i - C_i$ dollars available to invest in each IPO. Each investor knows his or her own C_i and W_i and the joint cross-sectional distribution of all the C_i s and W_i s. K_u is the total capital contribution to each IPO by the uninformed investors. The value of K_u is known to all investors and referred to as "uninformed capital". Each investor knows the reputation of every investment banker.

Issuing Firms:

Issuing firms know the value of their σ and can successfully communicate it to underwriters.

⁴ Our assumption of perfect information in the secondary markets differs from the analyses of Allen and Faulhaber (1989), Grinblatt and Hwang (1989), and Welch (1989). In their models, underpricing the IPO serves the purpose of reducing information asymmetries of subsequent seasoned offerings. In our model, underpricing the IPO has no impact on the pricing of subsequent offerings of equity.

⁵ Too great a proportion of informed investors participating makes a firm commitment offering inefficient. This problem has been considered by Ritter (1987). He provides an analysis that makes the type of offering, "best efforts" or "firm commitment", endogenous. In Ritter's context, as in our model, the greater the uncertainty regarding the firm commitment IPO the greater the proportion of informed investors participating. After a point, however, the uncertainty becomes so high that the proportion of informed investors is too large for a firm commitment offering to be efficient. For these highly uncertain IPOs, a best efforts offering is attempted. In view of Ritter's analysis, by limiting our analysis to firm commitment offerings, assumption A.5 is made more plausible.

⁶ This is an assumption of the model, not a legal requirement. Koh and Walter (1989) examine oversubscription for initial public offerings in the Singapore new issues market, where public disclosure of subscription and allocation information is required. They find a significant, positive correlation between oversubscription levels and underpricing. Additionally, they find that small investors (a proxy for the uninformed) are less responsive to underpricing than larger investors (a proxy for the informed).

Underwriters:

Underwriters are identified by their reputations.⁷ Reputation is measured by the types of issuing firms each underwriter brings to the IPO market. The distribution of IPOs brought to market by underwriter k is written as $g_k(\sigma)$. The more highly reputed firms tend to offer IPOs with lower values of σ than their low prestige rivals.

A. The Investor's Choice

Consider the choice of a single investor regarding the purchase of an IPO. Will the investor pay to acquire information regarding the equilibrium value of the issuing firm's equity?

Let P be the subscription price of the IPO. Let C_i be the cost to the investor at time one to know with certainty the realization of the random variable, V , at time two. Let $f(V|\sigma)$ be the probability density function (PDF) of V conditional on σ , a measure of dispersion.

Assume for a moment that the value of σ is known to all participants. Then each investor knows the PDF $f(V|\sigma)$, the subscription price P , and the cost of obtaining information, C_i . Any individual, i , invests in information acquisition whenever the following condition is satisfied:

$$\gamma_i \int_P^\infty (V - P)f(V|\sigma) dV - C_i \geq 0, \quad (1)$$

where γ_i is the proportion of a profitable IPO ($V \geq P$) allocated to informed investor i . (If $V < P$, informed investors invest nothing.)

$$\gamma_i = \{(W_i - C_i)\delta_i / \left\{ \sum_{i=1}^n [(W_i - C_i)\delta_i] + K_u \right\}, \quad (2)$$

where δ_i is unity if investor i chooses to become informed and zero otherwise, and n is the number of potentially informed investors.

$$\delta_i = \begin{cases} 1 & \text{if condition (1) is satisfied for investor } i, \\ 0 & \text{otherwise.} \end{cases} \quad (3)$$

Since $f(V|\sigma)$, the value of K_u , and the joint cross-sectional distribution of the C_i s and W_i s are common knowledge, γ_i is known to individual i at the time of the offering.⁸

Define $K_I = \sum_{i=1}^n (W_i - C_i)\delta_i$ as informed capital. Informed capital is the total dollars that informed investors would commit to the IPO if their information were favorable ($V \geq P$).⁹

⁷ In this paper underwriter reputation is taken to be exogenous. Implicitly we are assuming that a reputation equilibrium similar to the one described by Shapiro (1983, p. 665) holds.

⁸ In their special case, Beatty and Ritter (1986) assume no cross-sectional variation in the C_i s or W_i s.

⁹ If the information is unfavorable ($V < P$), informed investors will not commit any wealth to the IPO. K_I represents the total available "smart money" whether it is actually invested in the IPO or not.

Let α be the proportion of informed capital to the total capital involved in the IPO [$\alpha = K_I / (K_I + K_u) = \sum_{i=1}^n \gamma_i$]. A fundamental requirement of our model is that α increases with increases in σ .

Consider the role of σ in expression (1) above. The value of the integral in condition (1) is the value of a call option on an asset with distribution $f(V|\sigma)$ and exercise price P . The decision of investor i to acquire information at a cost of C_i is therefore equivalent to the decision to purchase γ_i call options on the asset. Under the risk neutrality assumption, the value of a call option is increasing in σ , the risk of the underlying asset (Merton (1973)).¹⁰ Therefore, the greater the risk of the IPO, the greater the propensity for investors to become informed. The expanded propensity for information acquisition can result in an increase in K_I and α . The foregoing intuition regarding the relation between σ and α is made more formal in Appendix I.

The value of α is important to the uninformed investors. They will receive 100 percent of the IPO whenever the realized value of V is less than P .¹¹ Due to rationing (assumption A.6), however, they will receive $(1 - \alpha)$ 100% of the issue whenever it is profitable for one or more investors to become informed ($V \geq P$).

What determines the equilibrium offer price P and the proportion of investment by informed investors, α ? By assumption A.5, uninformed investors are necessary to complete the subscription of each IPO. The uninformed investors will only participate, however, if the expected value of participation is greater than or equal to zero. Issuing firms and underwriters know this. Therefore, they will set the offer price such that the expected return to the uninformed investors is exactly zero. The choice of the offering price simultaneously determines the proportion of investment by informed investors (α). For any offering price, this proportion depends on the joint cross-sectional distribution of the C_i s, W_i s, and K_u . (See expression (1) and Appendix I.) Since the joint distribution of the C_i s, W_i s, and K_u are known to all participants, the issuing firm maximizes the offer price subject to the constraint that the uninformed investors earn an expected return of at least zero. This constraint is provided in equation (4):

$$\int_0^P (V - P)f(V|\sigma) dV + (1 - \alpha) \int_P^\infty (V - P)f(V|\sigma) dV = 0. \quad (4)$$

Equation (4) represents the expected return to uninformed investors which in equilibrium must equal zero. The first integral in equation (4) represents the expected loss to uninformed investors from purchasing IPOs for more than their secondary market equilibrium price. The second integral represents the expected profits to the uninformed investors from purchasing IPOs when the subscription price is less than the secondary market equilibrium price. The term $(1 - \alpha)$ is the proportion of the offering available to the uninformed investors when the offering price is below the aftermarket price. The expected dollar return to the

¹⁰ The risk neutrality assumption is stronger than generally necessary. The conditions under which option values increase with the risk of the underlying asset are discussed in Jagannathan (1984) and Merton (1973).

¹¹ No single investor will receive 100% of his or her requested amount. Only uninformed investors would purchase the IPO. Nonetheless, by assumption A.6 the offering will still be oversubscribed.

informed investors is

$$[\alpha \int_P^\infty (V - P)f(V|\sigma) dV]. \quad (5)$$

From equation (4) we know that as the proportion of informed investors (α) rises the offer price P must fall to maintain the equilibrium. From condition (1) and Appendix I we know that as the dispersion (σ) in aftermarket prices increases so does the proportion of informed investor capital participating. As the proportion of informed investor capital increases, the offer price must decrease to guarantee the participation of the uninformed.

B. Uncertain σ and Underwriter Reputation

The foregoing argument has assumed that the value of σ is known. If σ is unknown, but subject to a probability density function, $g(\sigma)$, condition (1) must be modified. With uncertain σ , expression (1') given below must be satisfied before investor i invests C_i in information acquisition.

$$\gamma_i \int_0^\infty \int_P^\infty (V - P)f(V|\sigma)g(\sigma) dV d\sigma - C_i \geq 0. \quad (1')$$

When σ is known, condition (1') collapses into expression (1). Condition (1') shows that the density function, $g(\sigma)$, and the cost of becoming informed, C_i , influence whether an investor chooses to become informed. Other things equal, there is a greater propensity to become informed the greater the risk (σ) of the IPO.

If the issuing firm is a low dispersion firm, it would benefit by making that fact available to the market. This is because low dispersion firms will not attract as much informed capital as high dispersion firms, the uninformed investors will not require as much protection, a higher offering price P can be obtained, and the price run-up will be reduced.

To communicate low dispersion, issuing firms contract with underwriters with a reputation for marketing the IPOs of low dispersion firms. We will refer to these underwriters as "prestigious". The greater the underwriter's reputation, the lower the probability that the associated IPO has a high σ . The reputation of the underwriter is known to all market participants and determines the $g(\sigma)$ function employed in expression (1').

Define $g_m(\sigma)$ as the density function of σ associated with underwriter m . Underwriter k is said to be more prestigious than underwriter j if the following condition is satisfied:

$$\int_0^a [g_k(\sigma) - g_j(\sigma)] d\sigma \geq 0 \text{ for all values of } a$$

and

$$\int_0^a [g_k(\sigma) - g_j(\sigma)] d\sigma > 0 \text{ for at least one value of } a. \quad (6)$$

Condition (6) is analogous to first-order stochastic dominance. Interpreting reputation in this way means that underwriters that bring to market IPOs with lower σ s are defined to have “better” reputations. This definition produces a weak ordering of all underwriters.

For completeness, we define the equilibrium offer price P as the maximum value of P , given that underwriter k brings the issue to market, that is consistent with the constraint given by equation (4') below.¹²

$$\int_0^\infty \int_0^P (V - P)f(V|\sigma)g_k(\sigma) dV d\sigma + (1 - \alpha) \int_0^\infty \int_P^\infty (V - P)f(V|\sigma)g_k(\sigma) dV d\sigma = 0. \quad (4')$$

Note that equation (4) is a special case of (4') for known values of σ .

Using condition (6), expression (1'), and equation (4'), several conclusions follow. First, there will be less investment in information for IPOs brought out by highly reputed underwriters. Second, lower investment in information will mean less informed capital committed to the IPO; thus, α will be reduced. Finally, with a reduced α , other things being equal, an increased offering price, P , can be supported and the price run-up reduced.

Larger values of α are associated with lower offering prices. Lower offering prices increase the probability of purchases. Therefore, we expect that as the proportion of informed capital increases a greater fraction of the IPO will be allocated to informed capital.

*C. The Matching of Underwriters and Issuing Firms*¹³

The foregoing model predicts that the price run-up for issuing firms will be less for underwriters with greater prestige. Implicit in the model is the supposition that investment banking firms choose to develop reputations and that issuing firms will employ underwriters with a reputation appropriate for the σ level of their IPO. Reputation development and maintenance are exogenous to our model. (See footnote 7.) In this section, we provide an intuitive explanation of the role played by reputation in the matching of investment bankers and issuing firms.

One economic environment that supports the specialization of underwriters with respect to σ levels is similar to, and motivated by, the Titman and Trueman

¹² Our equilibrating condition differs from that in Beatty and Ritter's example. In their example, equilibrium is obtained by requiring zero expected profits for informed and uninformed investors. Our model is more general and allows for positive expected profits for some informed investors. Also, our explicit consideration of underwriter reputations extends the work of Beatty and Ritter. Beatty and Ritter provide intuition which suggests that, because investment bankers, unlike issuing firms, participate in many IPOs over time, they will develop reputations that will help to enforce their IPO equilibrium. (See Beatty and Ritter (1986, pp. 214, 216, and 217 and footnotes 2 and 7).) Further, Beatty and Ritter suggest that underwriters will specialize in a “quality class” of IPOs. (See Beatty and Ritter (1986, p. 224 and footnote 16).) Beatty and Ritter's analysis, however, is limited because they do not have an explicit measure of reputation available to include in their model or empirical analysis.

¹³ In preparing this subsection, we have benefited from discussions with Richard Jefferis.

(1986) analysis.¹⁴ In this environment, informational asymmetries play a major role. The σ value of the issuing firm is private information to the firm, and the ability of underwriters to estimate the values of σ and communicate this information via the issue prospectus varies with their skill endowment.

Prestigious underwriters are adept at identifying σ . They avoid high σ firms in order to increase the precision of estimates of issuing firm particulars, to minimize participation of informed investors, and to maintain their reputation. As a result, they charge higher fees but are able to offer their low risk corporate clients relatively less underpricing. Additionally, the maintenance of relations with low σ firms increases the expected present value of future offerings.¹⁵ Prestigious underwriters earn economic rents in equilibrium. Nonprestigious underwriters undertake the IPOs of those issuing firms that are unsuitable for their prestigious counterparts.

As in Titman and Trueman, investors are provided information about σ and, therefore, the level of informed investors, through the issue prospectus and the reputation of the marketing underwriter. Public information about the firm and its σ level is more precise for issues marketed by prestigious underwriters. Because more prestigious underwriters charge higher fees while more precisely revealing σ , only low σ firms find it worthwhile to use their services. Even in the presence of higher fees, the increase in the relative offering price (a decrease in underpricing) makes the choice of a prestigious underwriter worthwhile for low σ firms. This generates a signal regarding the issuing firm's σ value.¹⁶ As in the Titman and Trueman analysis, attempts by high σ firms to falsely signal by employing prestigious underwriters are not beneficial. The prestigious underwriter will identify the firm's σ level, assess the appropriate level of underpricing, and charge a higher underwriting fee than if the firm had gone to a nonprestigious underwriter. Conversely, low σ firms cannot be lured to the lower fee structures of nonprestigious underwriters. In order to preserve their investor base, nonprestigious underwriters must maintain their usual levels of underpricing. The lower fees are not enough to offset the increased costs of underpricing.

There are other scenarios that could motivate the development of underwriter reputations. Investment bankers typically engage in many activities, not merely the underwriting of IPOs. It is possible that the development of reputation may be to protect the value of other non-IPO activities.¹⁷ Without a comprehensive analysis of the investment banking industry, it is not possible to identify the motivation for reputation development.

¹⁴ In Titman and Trueman (1986), the choice of underwriter communicates information about the value of the issuing firm; in our analysis, the underwriter communicates information regarding σ .

¹⁵ Hayes (1971) suggests that an investment banker's ability to generate business from high-quality corporate clients is one way of improving and maintaining reputation.

¹⁶ Titman and Trueman show that, given the previously described relation between underwriter prestige, fee structures, and the preciseness of information, a strictly increasing signaling function exists that suggests that the quality of the investment banker chosen reveals the private information of the issuing firm. In the Titman and Trueman analysis, the signal reveals information about the value of the firm. In our model, the signal reveals information about σ and underpricing.

¹⁷ We thank René Stulz for bringing this to our attention.

Fortunately, from the point of view of IPO underpricing, all scenarios that result in underwriter reputations being correlated with σ are observationally equivalent. Moreover, since we have no formal reputation model and we cannot observe reputation costs, our assertion that a reputation-signaling equilibrium is maintained must be inferential. The model as we have presented it, however, allows for empirical verification with the following hypotheses:

1. On average, prelitigious underwriters are associated with IPOs of low dispersion of possible firm values.
2. On average, prestigious underwriters are associated with IPOs that experience less price run-up.

In the following section, we develop a measure of underwriter prestige and employ it to test the hypotheses listed above.

II. Data

A. Data Description

The tests of the model were conducted on a sample of initial public offerings of equity. These IPOs were issued between January 1, 1979 and August 17, 1983. The sample consists of 501 issues.¹⁸

The mean size of the 501 offerings was \$17,444,324. The largest of these was \$177,584,000, and the smallest was \$2,000,000. Of the 501 issues, 217 represented sales of shares exclusively by the firm itself. The other 284 were offerings that also included shares sold by one or more of the firm's officers and private shareholders.¹⁹ Identification of the issuing firms for the data base was made through use of reports published by Drexel, Burnham and Lambert, Inc. (DBL). These reports included the issuing firm name, offering date, offering and secondary market prices, share volume, and the firm's past performance data.

The IPO price run-up is calculated as the rate of price appreciation between the offering price and a secondary market trading price two weeks later.²⁰ The age of the issuing firm and its industry were obtained from *Moody's OTC Industrial Manuals*.

The managing underwriter and co-managing underwriter(s), if any, for each issue were identified through announcements taken from the *Investment Dealer's Digest*. Verification of the type of contract between firm and underwriter, that is, firm commitment, best efforts, etc., was also obtained from these publications. All 501 IPOs were sold on a firm commitment basis.

¹⁸ The sample consists of "firm commitment" IPOs issued between 1979 and 1983, listed in the reports of Drexel, Burnham and Lambert, Inc. and announced in the *Investment Dealers Digest*.

¹⁹ The size of the issue does not include shares designated for possible over-allotment ("Green Shoe" option). Because there is no certainty that over-allotment shares will be used, they were ignored. We were able to confirm over-allotment options for 420 issues.

²⁰ The results of Chalk and Peavy (1989), among others, suggest that most of the abnormal return found in IPOs occurs on the first day. The use of two-week returns will cause the measured correspondence between run-up and the explanatory variables to be reduced, relative to what one should expect with the one-day run-up.

One hundred seventeen different underwriters served as lead or co-lead for the 501 offerings. There were 352 IPOs handled by a single lead, with 128 using two lead underwriters and the remaining 21 using three lead underwriters. The investment banking firm of L. F. Rothchild, Unterberg and Towbin was represented most often, acting as lead for 34 of the 501 issues. The next most active underwriter was Alex Brown and Sons with 22.

B. The Underwriter Reputation Variable

An underwriter reputation measure is motivated by the work of Hayes (1971).²¹ He suggested that the investment banking industry is subject to a rigid hierarchy. Those in the upper bracket of this hierarchy (e.g., Salomon Brothers, Inc.; Morgan Stanley & Co.; Merrill Lynch White Weld; First Boston Corp.; and Goldman, Sachs & Co.) enjoy a more prestigious and more lucrative position than lower bracket counterparts (e.g., Quinn & Co.). This hierarchy is reflected in "tombstone announcements". Underwriters aggressively defend their place in the hierarchy, even to the point of pulling out of profitable deals (see *The Wall Street Journal* January 15, 1986, p. 1). A copy of a typical tombstone announcement is provided in Exhibit I.

A tombstone announcement is a listing of a pending public security offering. Exhibit I is the tombstone announcement for a new issue of 650,000 shares by Cook Data Services, Inc. As part of the announcement, the investment bankers in the underwriting syndicate are listed. This includes the lead and co-lead, if any. They are listed first. The lead is to the left and co-leads to the right. In the exhibit, the Section A contains the name of the lead underwriter in the Cook Data Services, Inc. offering.

Below the lead underwriters the remaining firms in the syndicate are found. An underwriter's reputation is reflected by its position in these announcements (Lewis (1984) and Monroe (1986)). Those at the very top, but below the lead and co-leading underwriter(s), are the most prestigious and are listed in alphabetical order. In Exhibit I, Section B contains the most prestigious underwriters in the syndicate. The next most prestigious underwriters are listed in Section C and Section D, and, finally, the least prestigious underwriters are listed in Section E.

A ranking scale is established by comparing tombstone announcements listed in the *Investment Dealer's Digest* from January 1979 to December 1983. These are supplemented by announcements from *The Wall Street Journal* during the same period.

The rankings are determined by examining the tombstone announcements, one at a time, and assigning an integer rank, zero to nine, for each underwriter in the announcement according to its position. For example, suppose that the announcement in Exhibit I is the first one examined. Ignoring the lead and co-lead section, those underwriters in Section B are initially assigned the rank of nine (for the most prestigious), those in Section C the rank of eight, etc.

²¹ Logue (1973) separated a sample of 250 IPOs into those brought forth by prestigious and nonprestigious underwriters. The variable dichotomized the sample. No attempt was made to further quantify the reputation characteristic. Similar techniques are employed by Tinic (1988) and Johnson and Miller (1988) using underwriter "brackets" to identify prestige.

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	L. F. Rothschild, Unterberg, Towbin		Wertheim & Co., Inc.	Dean Witter Reynolds Inc.
C	Advest, Inc.	Allen & Company Incorporated	Alex. Brown & Sons	Landenburg, Thalmann & Co., Inc.
	Moseley, Hallgarten, Estabrook & Wceden Inc.		Oppenheimer & Co., Inc.	Rothschild Inc.
D	Thomson McKinnson Securities, Inc.			Arnhold and S. Bleichroeder, Inc.
	Interstate Securities Corporation			Janney Montgomery Scott Inc.
	Johnson, Lane, Space, Smith & Co., Inc.		Legg Mason Wood Walker Incorporated	Neuberger & Berman
	Robinson Humphrey/American Express Inc.			Wheat, First Securities, Inc.
E	Johnston, Lemon & Co. Incorporated			Nippon Kangyo Kakumaru International, Inc.

Exhibit I. A tombstone announcement. This is a reproduction of an announcement that appeared in *The Wall Street Journal* on February 3, 1983. Syndicate underwriters are displayed in Sections A-E. The issue's lead underwriter appears in Section A.

A second announcement is then examined. The underwriters found in the first announcement are used as a point of reference. If any of the underwriters in the second announcement are listed above any of those in Section B from the first tombstone announcement, these new underwriters are assigned the top rank of

nine and the original group reassigned the rank of eight. Those from Sections C and D are reassigned the next lower rank as well.

As each new announcement is examined, any new underwriters are assigned ranks. If new ranks emerge between underwriters already assigned ranks, any deposited underwriters move down the scale accordingly. This is done until the announcements are exhausted.

The result is a measure of underwriter prestige on a scale from zero (least prestigious) to nine (most prestigious). Firms with the rank of nine were not dominated in the tombstone announcements; no firms were ever found to rank above them. Firms with a rank of zero never ranked above any other firm. Therefore, the reputation variable, based on the tombstone announcements, provides a prestige ranking system that can be used to empirically examine our model.²²

Generally, the rankings were transitive. Conflicting ranks between tombstone announcements are rare. In these cases an average of the conflicting ranks was taken.²³ The underwriters in the sample and their assigned ranks can be found in Appendix II.²⁴

III. Methods and Results

A. Hypothesis Tests: The Variance of Possible Firm Values

In this section, a linear regression is used to test the hypothesis that prestigious underwriters bring to the market IPOs that are associated with low dispersion in possible firm values. Price run-up is calculated for each IPO as the relative difference between the offering price and the closing bid price two weeks thereafter. The dependent variable in the regression is the standard deviation of this price run-up for the IPOs of each of 25 underwriters in our sample. These 25 firms were lead underwriter for at least seven IPOs. The explanatory variable is the tombstone reputation variable.

²² In a separate analysis, Carter and Dark (1989) examine the explanatory power of the reputation measure created for this research (CM) and the four-tier system suggested by Johnson and Miller (1988) (MCM). Carter and Dark use each measure as independent variables in IPO empirical models. In every case, the CM measure outperforms the MCM measure. The CM measure is significant and of the predicted sign in all tests, whereas the MCM measure is not significant in two of the three multivariate models examined and only marginally significant (at the 10 percent level) in the third. These results suggest that there is additional value in the construction of a reputation measure with a finer grid.

²³ For 11 underwriters (involving 11 IPOs), an insufficient number of tombstone advertisements were found. In these cases the ranks were assigned by examining the average size of the offerings handled by these underwriters, as lead underwriter, in the previous year. According to Hayes (1971), the size of an underwriter's security offerings is partially determined by its prestige. Consequently, in the absence of tombstone advertisements for these 11 underwriters, their prestige or rank was determined by the size of their average offerings compared to the other 106 underwriters in the sample.

²⁴ Barry, Muscarella, Peavy, and Vetsuypens (1988) have used the rankings provided in Appendix II to help explain the role of venture capitalists in IPO issues. Their results show that our reputation rankings provide more information regarding price run-up for IPOs than does the presence or absence of venture capitalist participation in the issue.

The model suggests that the reputation variable provides incremental information about the dispersion of possible firm values. As an examination of its contribution, the reputation variable is included in a multiple regression with additional control variables:

1. Insider shares: This is the average fraction of the total dollar offering that is represented by shares being sold by the issuing firm's officers and other private shareholders for each underwriter's IPOs. The mean and range of this variable are 0.20 and 0.49, respectively. Examples of models in which the level of insider participation conveys information include Grinblatt and Hwang (1989) and Leland and Pyle (1977). Logue (1973) suggests that the insider shares variable controls for the power of secondary sellers in price negotiations with underwriters.
2. Offering size: This is the natural logarithm of average gross proceeds, in billions of dollars, of an underwriter's issues. The mean and range of gross proceeds are 0.019 billion dollars and 0.064 billion dollars, respectively. It has been suggested that more prestigious underwriters are able to market larger offerings of equity (Hayes (1971)). Additionally, Barry and Brown (1984) suggest a relation between firm-specific information and firm size.
3. Average age: This is the average of the years of existence of the firms marketed by the underwriter. The mean and range of this variable are 11 years and 26 years, respectively. A firm's age has been suggested to be a proxy for the difficulty of valuing a firm. (See Ritter (1984).)²⁵

The results of the regressions are reported in Table I.

As predicted, the coefficient of reputation is negative and significant. This indicates that the standard deviations of price run-up were higher for IPOs handled by less prestigious underwriters.

The reputation variable provides more explanatory power than any other variable in the univariate regressions. Nonetheless, insider shares, firm age, and offering size also produce significant results. In the multivariate regression, none of the individual coefficients is statistically distinguishable from zero. However, the hypothesis that all coefficients are jointly zero is rejected at the 10 percent level. Evidently mutual correlation among the independent variables makes interpretation of the individual coefficients in regression 5 in Table I difficult.²⁶ The evidence from Table I supports the hypothesis that the price run-up variance is inversely related to reputation. The univariate regression (number 1 in Table I) strongly supports the negative relations.²⁷

The ability to make reliable inferences from the information in Table I is limited due to the small sample size (25 observations). To more fully exploit the

²⁵ Because of an apparent skewness in ages for firms marketed by many of the underwriters, the median of the years of existence was also tested. The results were qualitatively similar.

²⁶ The correlations between each pair of independent variables are significant at the five percent level or less.

²⁷ In a sensitivity analysis, the standard deviation of price run-up was calculated for all underwriters with five or more offerings. This increased the sample size from 25 to 33. In the multiple regression, the coefficient for the reputation variable was negative and significant.

Table I
Regressions of the Standard Deviations of IPO Returns on Selected Explanatory Variables^a

The 25 observations for the dependent variable are the standard deviations of the raw returns across the initial public offerings (IPOs) of each of the most active, lead underwriters. Raw returns are the relative differences between the offering prices and the closing bid prices two weeks thereafter. The sample consists of 501 IPOs issued between January 1, 1979 and August 17, 1983. Reputation is a discrete rank assigned to each investment banker according to his or her relative placement in tombstone announcements. The ranks range from zero to nine, where nine is a more prestigious underwriter. The other independent variables are the means of the observations for the IPOs of each of the 25 underwriters. Insiders is the fraction of total shares offered represented by private stockholders' shares. Offer size is the gross proceeds (in billions of dollars) for the issue. Age is the number of years since firm inception.

(1) No.	Coefficients					(7) Ad R^2	(8) F	(9) N
	(2) Intercept	(3) Reputation	(4) Insiders	(5) Log Offer Size	(6) Age			
1.	0.455	-0.025 (-3.09)***				0.262	9.53***	25
2.	0.376		-0.339 (-2.47)**			0.175	6.10**	25
3.	-0.045			-0.077 (-3.39)***		0.245	8.79***	25
4.	0.399				-0.009 (-2.60)**	0.194	6.77**	25
5.	0.152	-0.004 (-0.15)	0.028 (0.13)	-0.051 (-0.80)	-0.006 (-1.23)	0.226	2.75*	25

^a The t -statistics are in parentheses. Significance at a 10%, 5%, and 1% level is indicated by one, two, and three asterisks, respectively.

information contained in the complete sample of 501 IPOs, the sample is divided into two groups, those IPOs associated with prestigious underwriters and those associated with nonprestigious underwriters. The subsamples of price run-up are divided according to the median of the reputation variable. Those underwriters with a reputation equal to the median are included in the prestigious group. There is a subsample of returns for the 262 IPOs marketed by prestigious underwriters and a subsample of 239 returns marketed by nonprestigious underwriters. The hypothesis that the price run-up variances for the prestigious and nonprestigious groups are equal is tested with an F -statistic.

The price run-up variance of the "prestigious" observations is 0.1109, and the variance of the "nonprestigious" observations is 0.1424. The F -statistic for the difference in rate of return variance is 1.29, with 261 and 238 degrees of freedom. As predicted, this indicates that the price run-up variance of the nonprestigious group is greater than that of the prestigious group at a five percent level of significance.²⁸

Finally, the Spearman rank correlation coefficient between the reputation variable and the price run-up variance is calculated. The value of this correlation coefficient is -0.5608 . The t -statistic for this correlation is -3.249 , which is significant at a one percent level. This result provides additional support for the parametric findings.²⁹

B. Hypothesis Tests: Price Run-Up

To test the proposition that the price run-up is negatively related to reputation, the sample is again divided into two groups, prestigious and nonprestigious. A difference-in-means test for IPO price run-up for each group is conducted on the sample.

The variable chosen to represent the expected price run-up is a two-week market adjusted return. Table II, Panel A provides descriptive statistics for raw returns and market adjusted returns for 501 IPOs in the sample.³⁰ Table II, Panel B provides a frequency distribution of underwriter reputation.

For the difference-in-means test, the model predicts that the mean returns for the nonprestigious underwriters' IPOs should be significantly greater than those of the prestigious underwriter. The price run-up should be greater for the nonprestigious underwriters' IPOs.

The mean return for the prestigious underwriter group was 0.1316. For the nonprestigious underwriter group, the mean was 0.1950. As predicted, the means

²⁸ The test is not sensitive to placement of the median group. The F -statistic is significant at a five percent level whether the price run-up median group is included in the prestigious or nonprestigious subsample.

²⁹ As an additional test, the standard deviation was estimated for 50 daily returns at the first IPO anniversary for 497 firms in the sample. (Security prices were unavailable at the anniversary for four firms.) This variable was then regressed on the explanatory variables displayed in Table I. The univariate regressions were similar, with the exception of size, which was not significant. In the multivariate regression the reputation variable was negative and was the only variable that was significant ($p = 0.0742$).

³⁰ Market adjusted returns are raw returns less the contemporaneous equally weighted market return from the Center for Research in Security Prices.

Table II
Summary Statistics for the Returns of 501 IPOs

Panel A provides statistics for raw returns (the relative differences between offering prices and closing bid prices two weeks thereafter) and market adjusted returns (raw returns less the contemporaneous, equally weighted market returns) for a sample of initial public offerings (IPOs). The IPOs were issued between January 1, 1979 and August 17, 1983. Panel B provides the number, mean, and standard deviation (SD) of returns for ranges of reputation for the IPOs' lead underwriters. Reputation is the discrete rank assigned to investment bankers according to their relative placement in tombstone announcements. The ranks range from zero to nine, where nine is a more prestigious underwriter.

Panel A: Raw Returns and Market Adjusted Returns						
		Raw Returns		Market Adjusted Returns		
	Median	0.0760		0.0634		
	Mean	0.1679		0.1618		
	Standard Deviation	0.3537		0.3600		
	Minimum Value	−0.6079		−0.6874		
	Maximum Value	3.870		3.872		
	Returns < Zero	156		175		
	Returns ≥ Zero	345		326		
Panel B: Reputation Levels and Raw Returns (RR) and Market Adjusted Returns (MAR)						
Reputation Level		RR Mean	RR SD	MAR Mean	MAR SD	N
0 to <2		0.242	0.479	0.233	0.483	24
2 to <4		0.196	0.331	0.188	0.329	81
4 to <6		0.196	0.386	0.193	0.388	134
6 to <8		0.183	0.387	0.183	0.386	152
8 through 9		0.068	0.224	0.060	0.225	110

are significantly different at a five percent level. (The *t*-statistic for the difference in means is 1.98 using the test for unequal variances.)

The second test involves the estimation of least squares regressions. The dependent variable is the market adjusted returns for the 501 IPOs, and the independent variable is reputation. To examine the incremental contribution of the reputation variable, the independent variables previously described (insider shares, the natural logarithm of gross proceeds, and firm age) are also employed.³¹ The results of the regressions are reported in Table III.

As predicted, the reputation variable's coefficient is negative and significant. As evidenced by the R^2 , *F*-statistics, and *t*-statistics, reputation performs well in both the univariate and multivariate regressions.³² This indicates that the IPOs

³¹ A number of additional independent variables were tested to examine the explanatory robustness of the underwriter reputation variable. These independent variables were chosen because they are likely to reflect the strength of the firm and its industry at the time of the offering. Among these variables were the following: 1) industry dummies—electronics, construction and transportation, merchandizing, and special services, 2) earnings per share for the firm over the 12 months prior to issue (this was examined alone and as a fraction of book value), 3) the book value at the time of the offering, 4) industry profit margins, and 5) industry PE ratios. In each case the underwriter reputation variable outperformed all other independent variables.

³² The regressions in Table III were repeated using raw returns as the dependent variable. The regressions were also repeated adjusting gross proceeds for inflation. The results in each of these tests were qualitatively similar to those reported in Table III.

Table III
Regressions of Market Adjusted Returns on Selected Explanatory Variables^a

Market adjusted returns are the raw returns (the relative differences between the offering prices and the closing bid prices two weeks thereafter) less the contemporaneous, equally weighted market returns. The sample consists of 501 initial public offerings issued between January 1, 1979 and August 17, 1983. Reputation is the average of the assigned ranks for the issue's lead underwriters. The reputation variable is developed by assigning discrete ranks to investment bankers according to their relative placement in tombstone announcements. The variable ranges from zero to nine, where nine is a more prestigious underwriter. Insiders is the fraction of total shares offered represented by private stockholders' shares. Log offer size is the natural logarithm of gross proceeds (in billions of dollars) for the issue. Age is the number of years since firm inception.

(1) No.	Coefficients					(7) Adj R^2	(8) F	(9) N
	(2) Intercept	(3) Reputation	(4) Insiders	(5) Log Offer Size	(6) Age			
1.	0.271	-0.019 (-2.62)***				0.012	6.86***	501
2.	0.191		-0.134 (-2.26)**			0.008	5.10**	501
3.	0.095			-0.015 (-0.85)		0.000	0.72	501
4.	0.187				-0.002 (-1.95)**	0.001	3.80**	501
5.	0.420	-0.020 (-2.05)**	-0.080 (-1.21)	0.025 (1.12)	-0.002 (-1.20)	0.015	2.85**	501

^a The t -statistics are in parentheses. Significance at the ten and five percent levels is indicated by two and three asterisks, respectively.

handled by nonprestigious underwriters have more price run-up than those of the prestigious underwriters. Consistent with our model, the reputation variable provides more explanatory power than any other variable in the regressions.³³

The Spearman rank correlation coefficient between the price run-up and underwriter reputation is -0.1187 , with a t -statistic of -2.669 . This is significant at the one percent level and, as before, lends support to the parametric results.

IV. Summary and Conclusions

We have presented an empirically testable model of initial public offerings of equity. Our model is consistent with the work of Rock (1986). He argued that IPO price run-up compensates uninformed investors for the risk of trading against superior information. We extend this theory to suggest that the greater the proportion of informed capital participating in an IPO, the greater the equilibrium price run-up. Because investors have scarce resources to invest in information acquisition, they will specialize in acquiring information for the most risky investments. With a migration of informed capital to the IPOs with the largest dispersion in possible secondary market values, these will experience the greatest price run-up.

As the price run-up is injurious to the issuing firm, low dispersion firms will attempt to reveal their low risk characteristics to the market. They do this by selecting prestigious underwriters. Prestigious underwriters, to maintain their reputation, only market IPOs of low dispersion firms. As a result, a signal, in the form of underwriter reputation, is provided to the market. In general, the empirical tests support our model. Specifically, a significant negative relation is found between underwriter prestige and the price run-up variance for the IPOs they market. A significant negative relation is also found between prestige and the magnitude of the IPO price run-up.

The model is consistent with, and extends, past empirical results. Moreover, the measure of underwriter prestige developed in this paper can be applied to other models involving investment bankers, reputation, and the underwriting process.

Appendix I

Our purpose is to show that an equilibrium exists such that α is an increasing function of σ . Equilibrium obtains if two requirements are satisfied:

1. All investors who choose to become informed expect to profit by doing so.
2. No uninformed investors could expect to profit by becoming informed.

Simply stated, condition (1), in the text, must hold for all investors.

³³ An examination of residuals from the regressions in Table III revealed an increase in error variance at lower levels of the reputation variable. A weighted least squares regression procedure only strengthened the results displayed in Table III, however, and is not reported.

Assume that each investor believes that all other investors behave in conformity with expressions (1), (2), and (3). To show that, in equilibrium, α is (weakly) increasing in σ , order all investors by the ratio $(W_i - C_i)/C_i$, in decreasing order. Assume that investor j is informed, and then condition (1) is satisfied for j and $\delta_j = 1$. For investor j , substitute equation (2) into expression (1), and after some simple algebra obtain expression (A1) below:

$$(W_j - C_j)/C_j \geq \{\sum_{i=1}^n [(W_i - C_i)\delta_i] + K_u\} / \int_P^\infty (V - P)f(V|\sigma) dV. \quad (A1)$$

It is profitable for investor j to become informed if and only if expression (A1) is satisfied. If it is profitable for j to be informed, it is also profitable for all investors k , such that $k < j$, to become informed. With k less than j , the ratio $(W_k - C_k)/C_k$ is greater than $(W_j - C_j)/C_j$. Consequently, whenever (A1) holds for investor j it also holds for all investors with lower index numbers.

We can use expression (A1) to show that K_I and α are (weakly) increasing functions of σ . Let investor m be the marginal investor for information acquisition. For investor m conditions (1) and (A1) hold as equalities and $\delta_i = 1$ for $i \leq m$, but $\delta_i = 0$ for $i > m$.

As σ increases, the integral on the right-hand sides of (1) and (A1) increases in value. Suppose that this increase causes the $m + 1$ st investor to become informed. If the $m + 1$ st investor expects to make a profit by being informed, the original informed (index numbers 1 through m) investors will also continue to expect profits. As previously demonstrated, if condition (1) and expression (A1) are satisfied for investor $m + 1$, they are necessarily satisfied for investor m . Consequently, as σ increases, additional investors may choose to become informed, but none of the original informed investors will change their minds and now choose to be uninformed.

Whenever the $m + 1$ st investor becomes informed, all of the original investors (1 through m) will remain informed, the value K_I will increase by $W_{m+1} - C_{m+1}$, and α will increase as desired.

Appendix II

Assigned Rankings of 117 Underwriters

Underwriter's Name ^a	Assigned Rank ^b
First Boston Corp.	9.0
Goldman, Sachs and Co.	9.0
Merrill Lynch White Weld	9.0
Morgan Stanley and Co.	9.0
Salomon Brothers, Inc.	9.0
Bache Halsey Stuart and Shields, Inc.	8.0
Bear, Stearns and Co.	8.0
Blyth Eastman Dillon and Co.	8.0
E. F. Hutton and Co., Inc.	8.0
Kidder Peabody and Co., Inc.	8.0

Appendix II—Continued

Underwriter's Name ^a	Assigned Rank ^b
Lazard Freres and Co.	8.0
Lehman Brothers Kuhn Loeb, Inc.	8.0
McDonald and Co., Inc.	8.0
L. F. Rothschild Unterberg and Towbin	8.0
Smith Barney, Harris Upham and Co., Inc.	8.0
Wertheim and Co., Inc.	8.0
Dean Witter Reynolds, Inc.	8.0
Alex Brown and Sons	7.5
Paine, Webber, Jackson Curtis, Inc.	7.5
Warburg Paribus Becker, Inc.	7.5
N. Donald and Co.	7.0
Donaldson, Lufkin and Jenrette Securities Corp.	7.0
Drexel Burnham Lambert, Inc.	7.0
Loeb Rhoades Shearson	7.0
Tucker, Anthony and R. L. Day	7.0
Robert W. Baird and Co.	6.5
A. G. Edwards and Sons, Inc.	6.5
Thomson Mckinnon Securities, Inc.	6.5
Hambrecht and Quist	6.0
Robertson, Coleman, Stephens and Woodman	6.0
Shearson, Hayden and Stone	6.0
Advest, Inc.	5.5
Montgomery Securities	5.5
Allen and Co.	5.0
Bateman Eichler, Hill Richards, Inc.	5.0
William Blair and Co.	5.0
Blair Kerr and Bell, Inc.	5.0
Blunt, Ellis and Loewi	5.0
Boettcher and Co.	5.0
J. C. Bradford and Co., Inc.	5.0
Butcher and Singer, Inc.	5.0
Dain Bosworth, Inc.	5.0
F. Eberstadt and Co.	5.0
Eppler, Guerin and Turner, Inc.	5.0
First Michigan Corp.	5.0
Foster and Marshall	5.0
Howard, Weil, Labouisse, Friedrichs	5.0
Janney Montgomery Scott	5.0
Johnson, Lane, Space, Smith and Co.	5.0
Ladenburg, Thalmann and Co.	5.0
Legg Mason Wood Walker, Inc.	5.0
Moseley, Hallgarten, Estabrook and Weeden, Inc.	5.0
Ohio Co.	5.0
Piper, Jaffray and Hopwood, Inc.	5.0
Prescott, Ball and Turben	5.0
Robinson-Humphrey Co., Inc.	5.0
Rotan Mosle, Inc.	5.0
Rothschild, Inc.	5.0
Schneider, Bernet and Hickman, Inc.	5.0

Appendix II—Continued

Underwriter's Name ^a	Assigned Rank ^b
Sutro and Co., Inc.	5.0
Underwood Neuhaus and Co.	5.0
Wheat, First Securities, Inc.	5.0
Wood Gundy, Inc.	5.0
Brean Murray Foster Securities, Inc.	4.5
Cable, Howse, Ragen	4.0
Craig-Hallum, Inc.	4.0
First Albany Corp.	4.0
First Equity Corp.	4.0
Henifen, Imhoff and Samford, Inc.	4.0
Interstate Securities Corp.	4.0
Laidlaw Adams and Peck, Inc.	4.0
New Court Securities Corp.	4.0
Newhard, Cook and Co.	4.0
Paulson Investment Co.	4.0
Raymond, James and Associates, Inc.	4.0
Woodman, Kirkpatrick, Gilbreath	4.0
R. G. Dickinson and Co.	3.5
Wedbush, Noble, Cooke, Inc.	3.5
Baker, Watts and Co.	3.0
Chicago Corp.	3.0
Gintel and Co.	3.0
John Muir and Co.	3.0
Raucher Pierce Refsnes, Inc.	3.0
Rooney Pace, Inc.	3.0
Stifel, Nicolaus and Co., Inc.	3.0
Weber, Hall, Sale and Associates, Inc.	3.0
Adams, Jones, Foor and Co., Inc.	2.5
C. L. Dickter, Inc.	2.5
D. H. Blair and Co., Inc.	2.0
James J. Duane and Co., Inc.	2.0
Stephens, Inc.	2.0
M. S. Wien and Co.	2.0
Carolina Securities Corp.	1.5
Faherty and Faherty, Inc.	1.5
First Jersey Securities	1.5
Fitzgerald, DeArman and Roberts	1.5
Johnston, Lemon and Co.	1.5
Montana Securities	1.5
OTC Net, Inc.	1.5
Swartwood, Hesse and Levine, Inc.	1.5
Weinrich Zitzmann Whitehead, Inc.	1.5
Werbelt-Roth Securities, Inc.	1.5
Brodis Galant Securities	1.0
Evan Lewellyn Securities, Inc.	1.0
Emmett A. Larkin and Co., Inc.	1.0
Muller and Co.	1.0
Petersen, Diehl and Co.	1.0

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Underwriter's Name ^a	Assigned Rank ^b
E. J. Pittock and Co., Inc.	1.0
J. E. Sheehan	1.0
Akroyd and Smithers, Inc.	0.5
Donald and Co. Securities	0.5
Equity Securities Trading Co., Inc.	0.0
First Colorado Investments and Securities Corp.	0.0
Furman Selz Mager Dietz and Birney	0.0
Powell and Associates, Inc.	0.0
Quinn and Co.	0.0
Wall Street West, Inc.	0.0

^a The underwriters listed are the 117 firms marketing 501 initial public offerings of equity (IPOs) between January 1, 1979 and August 17, 1983.

^b The rank is assigned by comparing the underwriters' position in tombstone announcements from *Investment Dealer's Digest* and *The Wall Street Journal* during the same period that the 501 IPOs were drawn. A rank of 9.0 represents the most prestigious underwriters in the sample.

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