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Abstract

This study investigates a sample of self-underwritten IPOs - a new pricing and distribution mechanism for firms going public through an initial public offering that attracted 41 firms over 1996 to 2000. We focus our analysis on three important issues: initial underpricing, stock market performance over the first three months of trading, and market liquidity of self-underwritten IPOs as compared with the traditional investment banker-underwritten IPOs during the same period. Our main findings are as follows. First, self-underwritten IPOs are underpriced significantly less than the investment banker-underwritten (conventional) IPOs, despite the formers' smaller market capitalization and smaller offer size. Second, over the following 59 days of trading we find little difference in the mean and median stock returns between the self-underwritten and conventional IPOs. Finally, self-underwritten IPOs suffer from significantly higher bid-ask spread, lower trading frequency, lower trading volume and higher adverse selection component of the spread.

1. Introduction

We study a unique set of firms that choose to go public by self-underwriting their new issues (hereafter, SUIs), instead of employing the services of investment bankers. This is in sharp contrast to the typical method of going public by employing an investment banking syndicate that helps the firm sell shares to the public (hereafter, IUIs). The main question of interest is why do firms choose self-underwriting over traditional underwriting by an investment banker (IB)? There are perhaps multiple reasons why some firms decide to forgo the services offered by investment banks such as risk bearing, distribution of shares, advice and counsel. If there exist net benefits to self-underwriting, then we posit that this may become an increasingly popular trend in future years, even though we found only 41 firms doing so in the past from 1996-2000. As the financial market for IPOs continuously evolves over time, advancements in technology, information dissemination, and trading could be expected to yield more competitive and efficient pricing and distribution systems for firms wanting to tap into capital markets. This trend may be comparable to consumers bypassing realtors to escape paying steep commissions (see [24]), or shopping online to avoid retail margins, or going through internet based mortgage lenders to get more competitive rates and lower closing costs.

A firm may be too risky to persuade an IB to offer underwriting services. Or the firm may be less risky and confident of public demand for its shares. It may find the typical 7% underwriting fee too costly given the risk involved (from its private information-based perspective). Another motive may be that the firm uses a two-stage (or sequential) going public strategy: first make a small issue on its own to test waters (public demand for its shares) and follow it up with a larger secondary issue, self-underwitten or traditional. It may also be that the firm wants to control how the shares being sold are dispersed, either widely to retail investors or selectively to large investors, such as institutions and blockholders, so as to minimize price bargaining by institutions and control threats to founders' hold on the firm. Yet another possibility is that self-underwriting is a 'hot IPO market' phenomenon so that the firm believes it needs little help in going public from an IB.

Let us look more closely at these motives for SUIs by drawing from the current literature on IUIs. First, by forgoing IB services, are SUI firms incurring the risk of low analyst coverage (fewer number of analysts following the SUI and fewer buy and larger sell recommendations for SUI) relative to IUI? Krigman, Shaw, and Womack [18] report survey evidence that analyst coverage is an important reason why issuers pay for underwriter services.

Second, do SUIs incur higher initial underpricing by trying to save on investment banking fees?
Loughran and Ritter (LR) [24] report that during 1990-1998, 3025 companies going public in the U.S. left more than $27 billion on the table, where the money left on the table is the excess of the first day closing market price over the

offer price multiplied by the number of shares offered. The average underpricing, measured as the % difference between the first-day closing market price and the offer price, is 14% for their sample. This amounts to an average of $9.1 million per IPO and is twice as large as the average investment banker fees paid by the issuing firms. This suggests that sum of initial underpricing and gross IB fees are about 21% on average in their sample. It provides an estimate of the cost of going public to the issuers. They propose a prospect theory-based explanation for this apparently puzzling behavior. This theory assumes that entrepreneurs care more about the change in their wealth rather than the level of wealth. It predicts that in most IPOs the wealth loss from initial underpricing will be less than the gain on shares retained by the preissue shareholders from the jump in the market price of the IPO. While the average IPO leaves $9.1 million on the table over 1990-1998, most IPOs leave relatively little money on the table. For the subset of IPOs that leave money on the table through underpricing, the offer price and first-day market price are higher than had been originally anticipated by the preissue shareholders. Thus those leaving money on the table are simultaneously discovering that they are wealthier than they expected at the time of filing the offer price range. The loss of wealth from underpricing is lower than the unexpected gain in wealth resulting from their retained holdings. This net gain in wealth leaves the preissue shareholders happy. One wonders if SUIs expose themselves to greater underpricing risk by trying to save on the underwriting fees.

Chen and Ritter (CR) [6] find (a) evidence of clustering of IB gross spreads on IPOs at 7%, especially for moderate size IPOs with proceeds of $20 to 80 million (in dollars of 1997 purchasing power) (for this group more than 90% of IPOs over 1995 to 1998 had exactly 7% spread), (b) the concentration of 7% spreads has increased during the 1990s, (c) the average spread has remained virtually constant during the 1985 to 1998 period, in contrast to declining fees for auditing and mergers and acquisitions, and (d) spreads on U.S. IPOs is roughly twice as high as in other countries. This raises the question whether self underwriting is a competitive response by the issuers to the noncompetitive gross spread. Specifically, have the number of SUIs and their dollar proceeds increased over time? CR argue that underwriters do not compete on price and gross spreads for most deals above $30 million are above competitive levels (see figure 3 on p. 1113 in their paper). They observe that one reason for the high spread is to induce underwriters to do a credible job certifying the quality of an offering. Does this suggest that SUIs are likely to be more common in the moderate to large offer size range ($ 30 + million) where the IB fees are clustered and most non-competitive? Do SUI firms dispense with IB because they are so good they do not need IB certification, or because certification is not worth the cost/high spreads?

Hansen [12] tests two theories for the convergence of gross underwriting spread at a fixed rate of 7% across IPOs of different sizes and risk levels. The collusion (cartel) theory alleges that investment banks collude either explicitly or implicitly (as claimed by Chen and Ritter [6]), to profit from underwriting services. In contrast, the efficient contract theory asserts that the 7% contract is an efficient innovation that suits the initial pricing and marketing of IPOs. Hansen finds that the IPO market is unconcentrated, entry into the market has been strong, and 7% spread does not contain abnormal profits relative to non-7% IPOs. He concludes his tests do not reveal evidence of collusion. Thus, his findings cast doubt on the non-competitive underwriter gross spreads being a motive for SUIs.

Another question of interest is the partial adjustment of offer price to market-wide information. For IUI, LR [24] (as well as many others) report that market returns (MR) over three weeks prior to the offer date are able to predict the first day returns (IR) - if the prior MR is lower the IR is lower and if the MR is higher so is the IR. This means that underwriters do not fully adjust the offer price with respect to public information. “Following market rises, issuers leave more than twice as much money on the table as following market declines ($12.7 million versus $5.6 million),” (see Table 3 on page 426 in their paper). LR offer a prospect theory explanation for the partial adjustment phenomenon – why underwriters do not fully adjust the offer price to information about the state of demand. Underwriters, as agents of issuers, may be less willing to adjust the offer price to public information, especially if the prior MR increases. This hesitancy increases IR and thereby increases the indirect compensation for underwriters, (see p. 424 in their paper). They argue that issuers acquiesce in partial adjustment because “Investment bankers can selectively underprice some IPOs by combining the bad news that there has been excessive dilution with the good news that they are wealthier than expected,” (p. 429). “…issuers let down their guard when there is good news and do not bargain aggressively for a higher offer price, whether this is due to public info or not,” (p. 430). Their empirical analysis shows that only one-third of the public information about market returns during the book-building period is incorporated into the offer price, p.436. Thus partial adjustment of offer price to market-wide movements is a moral hazard problem that conventional IPO issuers (IUI) face. We ask the question: do SUIs exhibit similar partial price adjustment phenomenon? We should expect this partial adjustment problem to be less severe for SUIs than IUIs.

Lowry and Schwert [25] examine the underwriters' treatment of public information through the IPO pricing process. Using a sample of IPOs from 1985 to 1999, they find that public information is not fully incorporated into the initial price range as well as the final offer price. They find much more of a downward adjustment in offer price following market declines than upward following market increases, similar to LR [24]. When the market drops over the 15 trading days prior to the offer date, the issuers bear a reduction in the proceeds as offer price is adjusted downwards. But when the market goes up during the road show period, initial investors reap a windfall because of the partial upward adjustment of offer price. However, this omission is not sufficient to allow for profitable trading opportunities. This leads them to conclude that vast majority of public information is in fact incorporated and the IPO pricing process is *almost* efficient. We plan to examine if SUIs adjust the offer price more efficiently in response to market-wide movements in the pressure period than do IUIs. How many SUIs are priced (i.e., have offer prices) below, within, and outside the file price range? How are the number of shares offered revised from the initial filing to the final offer in response to market movements?

Another question of interest is the split between primary and secondary shares in an SUI. Models of LR [24] and Habib and Ljungqvist (HL) [9] predict that IPOs selling a larger percentage of the firm, and with more secondary shares, should have less underpricing. HL present supporting empirical evidence. We will examine the relation between underpricing and the composition of the SUI offer size - primary (i.e., new shares) shares and shares issued by the insiders (secondary shares), and compare this with those of IUIs.

By choosing self-underwriting, a firm forgoes the security distribution services offered by underwriters. Making a reasonable assumption that this puts the SUI firm at a disadvantage in distribution of shares, we ask if SUIs are distributed primarily to retail or institutional investors? Is there a significant difference in the individual-institutional ownership structure of SUIs relative to IUSs?

Finally, our investigation turns to market quality. LR [24] report that 16% of IPOs in their sample close the first day at the offer price, which is widely attributed to underwriter price stabilization. Do SUIs exhibit (a) lower market liquidity; and (b) more short-run price volatility, because there is no underwriter price stabilization? Further, conventional underwriting is coupled with lockup period expiration effects (LPE), and SUIs are free from LPE. We plan to compare the abnormal return and market liquidity (bid-ask spread, trading volume, etc.) evidence on SUIs and IUIs at the lockup period expiration for IUIs.

We examine a sample of 41 self-underwritten IPOs (of which 21 are taken from the NYSE and the rest from the Nasdaq market) and 968 IPOs (141 NYSE and 827 Nasdaq) underwritten by investment bankers over the 1996 – 2000 period. The self-underwritten IPOs raised over 15 billion dollars as compared with over 171 billion dollars raised by investment banker-underwritten IPOs over this five-year window. Our main findings are as follows. First, self-underwritten IPOs are underpriced significantly less than the investment banker-underwritten (conventional) IPOs, despite the formers' smaller market capitalization and smaller offer size. Second, over the following 59 days of trading we find little difference in the mean and median stock returns between the self-underwritten and conventional IPOs. Finally, self-underwritten IPOs suffer from significantly higher bid-ask spread, lower trading frequency, lower trading volume and higher adverse selection component of the spread.

2. Main Research Questions

In this preliminary draft, we focus our analysis of SUIs on their initial underpricing and the quality of their immediate aftermarket liquidity. Previous IPO research has primarily focused on underpricing and the long run performance of IPOs.[1] For example, Ibbotson [15], Ibbotson and Jaffe [16], Ritter [27] and others document that U. S. IPOs experience underpricing of approximately 15%, but that the amount of underpricing varies substantially over time and across industries. Furthermore, studies examining the long-run performance of IPOs ([1] [15] [23] [27] [32]) find evidence of negative stock price performance. Jain and Kini [17] document significant declines in operating performance during the three years following the IPO (relative to an industry-matched sample of seasoned firms). Moreover, Loughran, Ritter, and Rydqvist [22] summarize studies of IPOs in several countries other than the U.S. where a similar phenomenon is generally observed.

[1] See Smith [30] and Hanley and Ritter [11] for a review of the literature on IPOs.

Extant theoretical and empirical studies point out that investment bankers play an important role in the going-public process. In Booth and Smith [3], underwriters stake their reputation to certify that insiders fully disclose their private information regarding the value of the new issue to the market. Benveniste and Spindt [2] model the premarket as an auction in which the underwriter chooses the offer price and allotment schedule to induce their regular clients to disclose their private information. Since investors have an incentive to withhold positive private information to maximize their gains, Benveniste and Spindt [2] show that IPOs have to be underpriced to compensate them for revealing positive information. Consistent with these predictions, empirical investigations by Carter and Manaster [5], Carter, Dark, and Singh [4], and Michaely and Shaw [26] find that IPOs managed by more prestigious underwriters are associated with less initial underpricing. Moreover, they report that the widely documented long-run underperformance is less severe for IPOs handled by more prestigious underwriters.
If issuers in SUIs acquire private info about demand for IPOs in a similar fashion, then we should expect SUIs to be underpriced because this conditional underpricing is the result of an incentive compatibility constraint. But there should be full adjustment to public info with SUIs because there is no underwriter moral hazard problem.

Evidence on the microstructure characteristics following an IPO is sparse. The lead underwriter and other syndicate members continue to serve as major market-makers in their new issues in the over-the-counter (OTC) market. For IPOs on the New York Stock Exchange, the underwriters facilitate market making by placing limit orders and acting as floor brokers. Using daily data, Hegde and Miller [13] study IPOs during 1983-84 and report that quoted percentage spreads for IPOs are on average three-fourths as large as those for seasoned stocks. They find significant differences in both the determinants of spreads (e.g. price level and trading volume) and in elasticities across samples. Hanley [10] and Rudd [29] study the effects of price stabilization by underwriters. Hanley finds that the daily closing bid-ask spreads are smaller for issues hypothesized to be most affected by underwriter price support during the first ten days of trading.

Investment bankers can affect the secondary market trading in new issues for several reasons. First, Carter and Manaster [5] argue that prestigious underwriters screen new issues and select the less risky firms using non-public information. The low risk of these new issues may attract fewer informed traders in the secondary market. Second, the new issues brought out by prestigious investment bankers tend to be larger in firm size, and may be characterized by more analyst following. The larger rate of flow of public information that accompanies a wider group of analysts lowers the marginal return on information gathering. Third, if prestigious investment bankers succeed in attracting more uninformed investors in the secondary market, the cost of informed trading would be spread over a larger number of liquidity traders [7]. Finally, if, as in Benveniste and Spindt [2] model, underwriters have induced their regular clients to reveal their positive private information in the premarket, the investment bankers begin market making in the secondary market with less information disadvantage. These arguments suggest that uninformed investors in the primary and secondary markets expect less adverse selection risk the higher the reputation of the underwriter of the IPO.

We focus our analysis on the following three questions: (1) Do SUIs suffer greater initial underpricing relative to IUIs? (2) How do the stock returns on SUIs compare with those on IUIs in the immediate aftermarket? (3) Do SUIs suffer from poorer aftermarket liquidity relative to IUIs?

3. Data and Measurement

We select a sample of firms that went public with, and without, the intermediation of an underwriter on the New York Stock Exchange (NYSE) and Nasdaq between 1996 and 2000. We retain all IPOs that have complete intraday transactions data over the first 60 days of trading in the files provided by the Trades and Quotes (TAQ) database. Our final sample comprises 41 self-underwritten IPOs (of which 21 are taken from the NYSE and the rest from the Nasdaq market) that do not employ the services of investment bankers, and 968 IPOs (141 NYSE and 827 Nasdaq) underwritten by investment bankers over the 1996 – 2000 period. We obtain IPO details such as the IPO price, date, number of shares offered, and offer proceeds for the 41 self-underwritten firms from Edgar, and for the 968 firms underwritten by investment bankers from Securities Data Corporation (now a unit of Thomson Financial).

All trades during the sample period, except opening transactions on each day, are used in our analysis[2]. We follow Lee and Ready [20] in adjusting for the time lag in reporting trades and identify the prevailing quotes for each transaction as those that are in effect five seconds earlier. Returns data, closing prices, SIC codes, as well as market capitalization on the first trading day were obtained from the Center for Research in Security Prices (CRSP) daily files.

Several proxies for underwriter prestige have been used in the IPO literature. Evaluating the effects of three different measures of underwriter reputation on initial underpricing and long-run performance of IPOs, Carter, Dark, and Singh [4] conclude that the Carter and Manaster [5] ranking of investment bankers is the most significant. This ranking method compiles, on a scale of zero (low reputation) to nine (high reputation), underwriters' relative placements in IPO tombstone announcements from 1985 through 1991. We use the rankings developed by Carter, Dark, and Singh [4] to assess the role of underwriter reputation in shaping market liquidity.

Initial underpricing is measured as the percentage difference between the first-day closing market price and the offer price of a new issue. Because liquidity is more difficult to measure, we use several measures of trading costs and trading activity. Our primary measure of adverse selection cost is based on the quote revision model of Huang and Stoll [14], Lin, Sanger, and Booth (LSB) [21], and Stoll [31]. Following LSB, we estimate the adverse selection cost component, λ, of one-half the effective spread, Z, as follows:

$$Q_{t+1} - Q_t = \lambda Z_t + e_{t+1}, \quad (1)$$

where
$Q_t = (A_t + B_t) / 2$
B_t, A_t = bid and ask price quotes at time t
$Z_t = P_t - Q_t$ (one-half the signed effective spread)
P_t = transaction price at t
e_{t+1} = the disturbance term.

As in LSB [21], the λ and effective spread estimates are based on the logarithms of Q_t and P_t. This transformation produces continuously compounded rates of change in the quote midpoints and transaction prices, which facilitates cross-sectional comparisons. The effective relative spread is computed as twice the absolute value of the logarithm of the ratio of transaction price to quote midpoint. In this model, λ ($0 < \lambda < 1$) measures the dealer's quote revision in response to a trade as a fraction of half the signed effective spread Z_t. We also use the relative quoted spread, defined as the dollar quoted spread divided by the quote midpoint Q_t, and the relative effective spread, measured as twice the absolute value of Z_t, as alternative measures of liquidity costs.

We present several measures of trading costs and market depth. These estimates are first averaged across all trades over each day for a given firm, then averaged across all trading days for each firm, and finally averaged across all sample firms. The mean relative quoted spread is defined as the dollar quoted spread divided by the quote midpoint, while the mean relative effective spread is equal to $2 |\log (P_t/Q_t)|$.

Lee, Mucklow, and Ready [19] show that market makers adjust not only their bid and ask quotes, but also the number of shares they are willing to trade at those quotes (quoted depth) in response to a trade. In our sample, the mean quoted depth is equal to depth at the bid plus depth at the ask. Since a wide quoted spread indicates lower market liquidity, but a large quoted depth implies greater market liquidity, we construct ratios of trading costs to the quoted depth to obtain a summary measure of liquidity. The mean relative quoted and effective spreads per unit of depth are constructed by dividing the relative quoted spread and the relative effective spread respectively by total depth.

We have relied on the Lin, Sanger, and Booth [21] estimate of the adverse selection component of the bid-ask spread. This model focuses on quote revisions in response to a trade in estimating the spread components, but it does not directly take into account the transaction price response to signed order flow. Glosten and Harris [8] develop an alternative model of measuring adverse selection cost in terms of the response of transaction price to signed order flow:

[2] We exclude daily opening transactions from the analysis because they take place in a call market environment, whereas the rest of trades are generally conducted in a continuous auction market.

$\Delta p_t = \lambda q_t + P[D_t - D_{t-1}] + y_t,$ (2)

where Δp is the change in transaction price, q is the signed trade size, D is a dummy variable that is equal to +1(-1) for a trade classified as a buy (sell), and y is an error term. To scrutinize the robustness of the previous results based on the LSB estimate of adverse selection costs, we estimate the Glosten and Harris λ, λ_{GH}. Our revised estimate of adverse section costs are qualitatively similar to those based on the LSB estimate of λ.

4. Empirical Results

Table 1 presents descriptive statistics on the 41 self underwritten IPOs. We measure underpricing (also called the initial return) as the percentage difference between the first trading day closing market price and the offer price. From Panel A the majority of SUIs are taken from the manufacturing industry, and 6 of the remaining come from finance, insurance and real estate. SUIs in the manufacturing industry have the highest mean underpricing of 20% followed by a mean of 17% for their counterparts in the finance, insurance and real estate sectors. From Panel B, our sample is concentrated in two calendar years, 1997 and 1998. The average underpricing is at its highest level of 18% in 1999, which saw the hottest IPO market in our sample period. The next largest mean underpricing was in 1996 at 14%.

TABLE 1. DESCRIPTIVE STATISTICS ON THE SELF-UNDERWRITTEN IPOS

The self underwritten sample includes 41 firms that went public through an initial public offering on NYSE or NASDAQ between 1996 and 2000. Of the 41 firms, 21 went public on the NYSE

Panel A: Number of SUIs and their underpricing by industry:
Manufacturing: 17: 20.32%
Transport/electric/gas/sanitary services: 1: 16.26%
Retail Trade: 3: -6.67%
Finance/Insurance/Real Estate: 6: 17.24%
Services: 14: 4.66%

Panel B Number of SUIs and their underpricing by Calendar Year:
1996: 3: 14.20%
1997: 3: 1.73%
1998: 16: 12.14%
1999: 14: 18.49%
2000: 5: 2.11%

In Table 2 we compare the SUIs with the contemporaneous IUIs on the two exchanges. From column 2, the NYSE SUIs have a median market capitalization (as of the first trading day closing price) of $390 million as compared with $785 million for IUIs. On the Nasdaq, the median SUI has a market cap of $141 million versus $420 million for the meidan IUI. These results show that SUIs are considerably smaller in firm size that their IUI counterparts. From column 3, the median gross IPO proceeds for the NYSE SUIs and IUIs are, respectively, $345 and 191 millions. The corresponding figures for the Nasdaq market are $48 and 67 millions. The last column shows that the median IPO price ranges from $10 to $18.

TABLE 2. SUMMARY MEASURE FOR SELF UNDERWRITTEN IPOS AND FOR THE UNIVERSE OF ALL OTHER IPOS

The self underwritten sample includes 41 firms that went public through an initial public offering on NYSE or NASDAQ between 1996 and 2000. Of the 41 firms, 21 went public on the NYSE. There were 141 other firms that went public on the NYSE using investment bankers (conventional IPOs), and 827 conventional IPOs on Nasdaq. The values represent means followed by standard deviations in parentheses, and then by the median.

	FIRST DAY MARKET CAPITALIZATION	GROSS PROCEEDS FROM IPO	IPO PRICE ($)

	(MILLIONS)	(MILLIONS)	
Self-Underwritten (NYSE)	1,522.6 (2,757.5) 389.5	577.5 (654.9) 345.1	21.1 (14.6) 17.1
Conventional (NYSE)	2,102.5 (3,587.4) 784.5	660.7 (1,375.8) 190.5	19.7 (9.7) 18.0
Self-Underwritten (Nasdaq)	286.7 (374.5) 141.4	145.1 (345.3) 48.1	12.9 (9.4) 9.5
Conventional (Nasdaq)	1,004.6 (2,540.7) 419.8	95.1 (164.7) 67.2	15.2 (4.5) 14.0
Self Underwritten (Total Sample)	937.2 (2,088.1) 342.1	285.5 (513.7) 49.7	17.25 (12.92) 12.3
Conventional (Total Sample)	1,164.6 (2,743.6) 454.8	177.4 (580.6) 73.0	15.9 5.8 15.0

Table 3 presents univariate test results on (a) initial underpricing (initial return), (b) aftermarket stock returns up to 60 trading days (roughly three calendar months), and (c) stock return volatility in the aftermarket. From column 2, the average (median) underpricing for the NYSE SUIs is 2.29% (0.96%), which is significantly lower (at the 1 percent level) than the mean (median) of 13.98% (10.00%) for their IUI counterparts (based on a t-test). Similarly, the Nasdaq SUIs have a mean (median) initial return of 13.86% (16.25%), which is significantly below the average (median) of 63.98% (29.43%). When we merge the NYSE and Nasdaq samples, the mean (median) initial returns for SUIs is 7.76% (7.78%), which is significantly less than the average (median) return of 56.70% (24.74%) for the IUIs. Thus, self-underwritten IPOs are underpriced significantly less than the investment banker-underwritten IPOs, despite the formers' smaller market capitalization and smaller offer size.

From the last column and the last row (i.e., the last cell), the mean (median) holding period return over the following 59 trading days for the SUIs is 1.10% (-6.41%) as compared with 6.53% (-7.67%) for the IUIs. The results over shorter time windows show similar patterns. Thus, we find no significant difference in aftermarket stock returns between SUIs and IUIs in the first three months of trading.

The remaining three tables present estimates concerning the market liquidity of IPOs. By doing away with underwriters, SUIs lose the support of a dedicated investment banker in nurturing a public market in their new issues. This raises questions as to whether SUIs suffer from less liquid markets relative to IUIs. To address this question we present results on quoted dollar spread, relative quoted spread (%), trade size (number of shares traded), daily number of trades, daily share volume of trading, quoted depth (number of shares), effective spread ($), relative effective spread (%), relative quoted spread divided by depth, relative effective spread divided by depth, and two estimates of the adverse information component (%) using the LSB and GH models.

TABLE 3. UNIVARIATE ANALYSIS OF STOCK RETURNS FOR SELF UNDERWRITTEN IPOS AND FOR THE UNIVERSE OF ALL OTHER IPOS

The self underwritten sample includes 41 firms that went public through an initial public offering on NYSE or NASDAQ between 1996 and 2000. Of the 41 firms, 21 went public on the NYSE. There were 141 other firms that went public on the NYSE using investment bankers (conventional IPOs), and 827 conventional IPOs on Nasdaq. The values represent means followed by standard deviations in parentheses, and then by the median. *** denotes significantly different at 1%, ** at 5%, and * at 10% based on t-test for difference between samples.

	DAY 1 INITIAL	DAYS 2-5	DAYS 6-60	DAYS 2-60 RETURN

	RETURN %	RETURN %	RETURN %	%
Self-Underwritten (NYSE)	2.29	-3.46	2.74	-0.04
	(19.80)	(11.29)	(22.24)	(29.48)
	0.96	-3.18	2.58	-1.47
	13.98*	***-1.68***	***-2.38***	***-3.97***
	(22.50)	***(7.14)***	***(26.49)***	***(27.64)***
Conventional (NYSE)	***10.00***	***-1.52***	***-4.32***	***-6.88***
Self-Underwritten (Nasdaq)	13.86	-6.35	8.35	2.36
	(30.29)	(15.24)	(53.13)	(54.50)
	16.25	-3.12	-5.51	-10.00
Conventional (Nasdaq)	***63.98****	***-0.61***	***8.34***	***8.32***
	(88.65)	***(20.90)***	***(161.38)***	***(148.78)***
	29.43	***-1.99***	***-5.00***	***-8.28***
Self Underwritten (Total Sample)	7.76	-4.83	5.40	1.10
	(25.60)	(13.20)	(39.48)	(42.58)
	7.78	-3.12	-2.37	-6.41
Conventional (Total Sample)	***56.70****	***-0.76***	***6.78***	***6.53***
	(84.24)	***(19.51)***	***(149.54)***	***(137.97)***
	24.74	***-1.86***	***-4.84***	***-7.67***

From Table 3, the NYSE SUIs have a mean quoted spread per share of 17 cents, which is significantly larger than the mean of 14 cents for the conventional IPOs over the first 60 trading days. Other spread measures support this finding that trading costs for SUIs are significantly higher than those for IUIs. For instance, the mean relative effective spread over the first three months of trading for SUIs and IUIs, respectively, are 0.81% and 0.49%, and the difference is highly significant. The lower effective spread compared to the quoted spread indicates that a number of trades are executed inside the quotes. Similarly, the average daily number of trades is lower for SUIs. The average number of shares traded is significantly lower for SUIs over the first 20 days of trading, but this difference turns insignificant over the entire 60 day period. The mean quoted depth (equal to depth at the bid plus depth at the ask, in number of shares) is also lower for SUIs, but only over the first 10 days. These results show that the NYSE SUIs have lower market liquidity over the first 60 days of trading as compared with their IUI peers.

The last two rows of Table 3 present estimates on the adverse selection component of the spread. The models of Benveniste and Spindt [2] and others argue that underwriters certify the quality of IPOs and mitigate information asymmetry between informed and uninformed investors. These models imply that a firm that chooses to reject investment banker intermediation at the IPO stage would expose investors to greater adverse selection risk in the aftermarket trading. Consistent with this implication, we find that the mean adverse section component of the spread based on the LSB model for the NYSE SUIs is 54% on the first day of trading, as compared with 23% for the IUIs. The difference is significant at the 1 percent level. The estimates based on the GH model (see the last row) support this finding. The remaining results show that the NYSE SUIs have significantly greater adverse selection component of the spread over the first 20 days of trading, but not beyond. Thus our estimates show the NYSE SUIs have greater bid-ask spreads in the aftermarket due primarily to larger adverse selection risk.

TABLE 4. UNIVARIATE ANALYSIS OF LIQUIDITY VARIABLES FOR SELF UNDERWRITTEN IPOS AND FOR THE UNIVERSE OF ALL OTHER IPOS
NEW YORK STOCK EXCHANGE

The self underwritten sample includes 41 firms that went public through an initial public offering on NYSE or NASDAQ between 1996 and 2000. Of the 41 firms, 21 went public on the NYSE. There were 141 other firms that went public on the NYSE using investment bankers (conventional IPOs), and 827 conventional IPOs on Nasdaq. The values represent means followed by standard deviations in parentheses, and then by the median.*** denotes significantly different at 1%, ** at 5%, and * at 10% based on t-test for difference between samples.

SELF UNDERWRITTEN IPOS ***CONVENTIONAL IPOS***	**DAY 1**	**DAYS 1-10**	**DAYS 1-20**	**DAYS 1-60**
Average Share Price ($)	22.01 (14.90) 16.53 ***22.48*** ***(12.41)*** ***20.29***	21.46 (15.40) 15.76 ***22.63*** ***(13.21)*** ***19.99***	21.41 (15.50) 14.81 ***22.68*** ***(13.88)*** ***19.92***	21.24 (15.21) 15.17 ***22.62*** ***(14.61)*** ***19.71***
Quoted Dollar Spread ($)	0.17 (0.04) 0.17 ***0.11**** ***(0.06)*** ***0.10***	0.17 (0.03) 0.18 ***0.13**** ***(0.06)*** ***0.12***	0.17 (0.03) 0.18 ***0.14**** ***(0.06)*** ***0.13***	0.17 (0.03) 0.18 ***0.14**** ***(0.06)*** ***0.13***
Relative Quoted Spread (%)	1.18 (0.90) 0.86 ***0.53**** ***(0.29)*** ***0.49***	1.18 (0.86) 0.98 ***0.64**** ***(0.34)*** ***0.61***	1.18 (0.86) 0.98 ***0.70**** ***(0.35)*** ***0.65***	1.26 (1.07) 0.96 ***0.80**** ***(0.40)*** ***0.75***
Trade Size	3,097 (2,042) 2,578 ***5,680**** ***(3,734)*** ***4,606***	3,119 (1,741) 2,676 ***3,713*** ***(1,938)*** ***3,134***	2,919 (1,693) 2,461 ***3,268*** ***(1,705)*** ***2,834***	2,521 (1,466) 2,126 ***2,653*** ***(1,320)*** ***2,297***
Daily Number of Trades	183 (197) 132 ***1,182**** ***(872)*** ***1,018***	149 (148) 93 ***393**** ***(425)*** ***283***	133 (132) 87 ***284**** ***(301)*** ***190***	110 (113) 60 ***185**** ***(198)*** ***112***
Daily Share Volume	719,290 (1,222,321) 340,300 ***7,689,257**** ***(10,426,226)*** ***4,149,100***	534,898 (720,211) 278,390 ***1,608,664**** ***(2,331,932)*** ***736,650***	458,048 (638,113) 214,375 ***1,035,967**** ***(1,507,442)*** ***476,235***	312,026 (428,372) 151,168 ***541,856*** ***(785,646)*** ***237,232***
Quoted Depth	13,598 (12,163) 10,146 ***43,052**** ***(45,373)*** ***28,577***	14,906 (16,968) 9,083 ***26,845**** ***(31,649)*** ***15,853***	14,622 (17,244) 8,790 ***20,946*** ***(25,903)*** ***12,508***	12,459 (13,603) 8,540 ***13,020*** ***(13,604)*** ***8,742***

Effective Spread ($)	0.11 (0.03) 0.11 ***0.07**** ***(0.03)*** ***0.06***	0.11 (0.03) 0.11 ***0.08**** ***(0.03)*** ***0.08***	0.11 (0.03) 0.11 ***0.08**** ***(0.03)*** ***0.08***	0.11 (0.02) 0.11 ***0.09**** ***(0.04)*** ***0.09***
Relative Effective Spread (%)	0.77 (0.62) 0.57 ***0.35**** ***(0.16)*** ***0.32***	0.77 (0.60) 0.63 ***0.40**** ***(0.20)*** ***0.38***	0.76 (0.58) 0.64 ***0.43**** ***(0.20)*** ***0.41***	0.81 (0.71) 0.63 ***0.49**** ***(0.23)*** ***0.45***
Relative Quoted Spread/Depth*1,000,000	1.58 (1.79) 0.72 ***0.31**** ***(0.57)*** ***0.17***	1.53 (1.87) 0.97 ***0.52**** ***(0.60)*** ***0.38***	1.56 (1.87) 1.04 ***0.66**** ***(0.65)*** ***0.49***	2.09 (3.46) 1.16 ***1.00**** ***(0.74)*** ***0.85***
Relative Effective Spread/Depth*1,000,000	1.09 (1.43) 0.40 **0.19***** **(0.31)** **0.11**	1.01 (1.35) 0.60 ***0.33**** ***(0.37)*** ***0.23***	1.03 (1.36) 0.57 ***0.41**** ***(0.39)*** ***0.32***	1.36 (2.43) 0.73 ***0.63**** ***(0.46)*** ***0.52***
Adverse Information Component (LSB) %	54.39 (22.32) 46.83 ***22.70**** ***(10.23)*** ***22.65***	46.51 (15.52) 42.84 ***30.36**** ***(9.72)*** ***30.88***	44.01 (13.33) 45.52 ***33.84**** ***(9.31)*** ***33.97***	44.98 (13.23) 44.73 ***41.41*** ***(11.50)*** ***40.45***
Adverse Information Component (GH) %	45.18 (17.41) 45.29 ***20.37**** ***(11.01)*** ***20.15***	46.04 (20.71) 44.72 ***27.14**** ***(11.01)*** ***28.01***	43.66 (20.28) 43.77 ***30.47**** ***(10.96)*** ***31.43***	41.63 (16.03) 46.34 ***37.47*** ***(10.56)*** ***37.31***

TABLE 5. UNIVARIATE ANALYSIS OF LIQUIDITY VARIABLES FOR SELF UNDERWRITTEN IPOS NASDAQ

The self underwritten sample includes 41 firms that went public through an initial public offering on NYSE or NASDAQ between 1996 and 2000. Of the 41 firms, 21 went public on the NYSE. There were 141 other firms that went public on the NYSE using investment bankers (conventional IPOs), and 827 conventional IPOs on Nasdaq. The values represent means followed by standard deviations in parentheses, and then by the median. *** denotes significantly different at 1%, ** at 5%, and * at 10% based on t-test for difference between samples.

SELF UNDERWRITTEN IPOS ***CONVENTIONAL IPOS***	**DAY 1**	**DAYS 1-10**	**DAYS 1-20**	**DAYS 1-60**
Share Price ($)	14.79 (8.88) 12.87 ***27.20**** ***(24.50)***	14.84 (9.08) 11.85 ***27.67**** ***(24.96)***	14.90 (9.39) 12.01 ***28.43**** ***(25.75)***	14.85 (9.22) 11.95 ***29.29***** ***(26.20)***

	19.39	***19.42***	***19.88***	***20.59***
Quoted Dollar Spread ($)	0.40 (0.31) 0.36 ***0.13**** ***(0.07)*** ***0.11***	0.29 (0.13) 0.32 ***0.20**** ***(0.12)*** ***0.17***	0.27 (0.12) 0.26 ***0.23*** ***(0.14)*** ***0.19***	0.27 (0.12) 0.26 ***0.23*** ***(0.14)*** ***0.19***
Relative Quoted Spread (%)	3.53 (2.65) 2.58 ***0.62**** ***(0.44)*** ***0.54***	2.57 (1.59) 2.04 ***0.89**** ***(0.40)*** ***0.80***	2.28 (1.26) 1.94 ***1.00**** ***(0.43)*** ***0.92***	2.08 (1.11) 1.88 ***1.25**** ***(0.58)*** ***1.14***
Trade Size	2,349 (2,114) 1,683 ***1,121**** ***(1,044)*** ***720***	2,055 (1,300) 2,160 ***1,010**** ***(798)*** ***736***	1,889 (1,126) 1,882 ***950**** ***(696)*** ***736***	1,737 (1,019) 1,670 ***878**** ***(575)*** ***706***
Daily Number of Trades	376 (434) 270 ***12,565**** ***(12,025)*** ***9,510***	283 (339) 223 ***2,459**** ***(2,853)*** ***1,576***	222 (209) 169 ***1,637**** ***(1,962)*** ***1,014***	158 (154) 125 ***890**** ***(1,142)*** ***515***
Daily Share Volume	742,410 (1,047,275) 354,350 ***7,953,575**** ***(7,567,609)*** ***7,014,800***	426,999 (462,402) 231,390 ***1,464,311**** ***(1,548,968)*** ***1,172,390***	346,021 (375,119) 165,502 ***946,849**** ***(1,058,565)*** ***734,935***	228,185 (223,035) 117,849 ***495,537**** ***(567,282)*** ***374,822***
Quoted Depth	1,472 (826) 1,401 ***3,061**** ***(3,140)*** ***2,223***	1,562 (684) 1,489 ***2,081*** ***(1,665)*** ***1,693***	1,637 (856) 1,433 ***1,776*** ***(1,140)*** ***1,536***	1,565 (591) 1,504 ***1,454*** ***(735)*** ***1,320***
Effective Spread ($)	0.32 (0.25) 0.25 ***0.25*** ***(0.30)*** ***0.18***	0.23 (0.11) 0.22 ***0.24*** ***(0.20)*** ***0.18***	0.22 (0.10) 0.21 ***0.24*** ***(0.19)*** ***0.19***	0.20 (0.09) 0.18 ***0.26*** ***(0.17)*** ***0.20***
Relative Effective Spread (%)	2.74 (2.03) 1.93 ***0.92**** ***(0.43)*** ***0.88***	1.99 (1.17) 1.66 ***0.92**** ***(0.32)*** ***0.90***	1.77 (0.88) 1.55 ***0.94**** ***(0.31)*** ***0.92***	1.63 (0.74) 1.52 ***1.03**** ***(0.36)*** ***1.00***
Relative Quoted Spread/Depth	37.20 (43.53) 19.87 ***3.08**** ***(3.73)*** ***2.41***	21.34 (22.32) 15.99 ***5.38**** ***(2.99)*** ***4.86***	19.22 (22.52) 14.69 ***6.69**** ***(3.34)*** ***6.10***	16.70 (18.07) 14.64 ***9.55**** ***(4.55)*** ***8.83***

Relative Effective Spread/Depth	29.40 (32.68) 11.76 ***4.70**** ***(4.35)*** ***3.94***	16.40 (15.42) 12.13 ***5.88**** ***(3.51)*** ***5.40***	14.81 (15.32) 10.92 ***6.58**** ***(3.40)*** ***6.11***	13.05 (12.47) 10.72 ***8.15**** ***(3.63)*** ***7.81***
Adverse Information Component (LSB) %	8.04 (8.38) 6.15 ***0.66**** ***(1.26)*** ***0.31***	6.00 (2.87) 6.04 ***1.61**** ***(1.53)*** ***1.14***	6.13 (2.80) 6.52 ***2.16**** ***(1.70)*** ***1.72***	6.40 (2.94) 6.79 ***3.30**** ***(2.00)*** ***2.92***
Adverse Information Component (GH) %	11.50 (8.61) 9.88 ***1.79**** ***(4.80)*** ***1.11***	9.67 (3.41) 8.44 ***2.78**** ***(1.83)*** ***2.29***	9.25 (3.08) 9.03 ***3.49**** ***(1.92)*** ***3.05***	9.26 (3.06) 9.36 ***4.76**** ***(2.23)*** ***4.43***

Table 5 reports the market microstructure results for the Nasdaq IPOs. As with the NYSE IPOs, we find that the Nasdaq SUIs have significantly higher bid-ask spreads, lower trading frequency (daily number of trades), lower trading volume, and higher adverse selection component of the spread relative to their counterparts. Unlike the NYSE sample, the differences in many measures of liquidity persist over the entire 60 trading day period. The estimates in Table 6 confirm that the combined sample of SUIs from both NYSE and Nasdaq has significantly lower aftermarket liquidity due primarily to the larger adverse selection component of the spread.

TABLE 6. UNIVARIATE ANALYSIS OF LIQUIDITY VARIABLES FOR SELF UNDERWRITTEN IPOS

COMBINED SAMPLE

The self underwritten sample includes 41 firms that went public through an initial public offering on NYSE or NASDAQ between 1996 and 2000. Of the 41 firms, 21 went public on the NYSE. There were 141 other firms that went public on the NYSE using investment bankers (conventional IPOs), and 827 conventional IPOs on Nasdaq. The values represent means followed by standard deviations in parentheses, and then by the median. *** denotes significantly different at 1%, ** at 5%, and * at 10% based on t-test for difference between samples.

SELF UNDERWRITTEN IPOS ***CONVENTIONAL IPOS***	**DAY 1**	**DAYS 1-10**	**DAYS 1-20**	**DAYS 1-60**
Share Price ($)	18.49 (12.72) 14.25 ***26.51**** ***(23.19)*** ***19.52***	18.23 (13.0) 13.89 ***26.93**** ***(23.67)*** ***19.50***	18.24 (13.15) 13.99 ***27.59**** ***(24.47)*** ***19.88***	18.12 (12.90) 13.50 ***28.31***** ***(24.96)*** ***20.56***
Quoted Dollar Spread ($)	0.28 (0.24) 0.19 ***0.13***** ***(0.07)*** ***0.11***	0.23 (0.11) 0.19 ***0.19**** ***(0.12)*** ***0.16***	0.22 (0.10) 0.18 ***0.22*** ***(0.14)*** ***0.18***	0.22 (0.10) 0.18 ***0.22*** ***(0.14)*** ***0.18***
Relative Quoted Spread (%)	2.33 (2.27) 1.33 ***0.61***** ***(0.42)***	1.86 (1.44) 1.27 ***0.85***** ***(0.40)***	1.72 (1.20) 1.32 ***0.96***** ***(0.44)***	1.66 (1.16) 1.37 ***1.19***** ***(0.59)***

	0.53	***0.77***	***0.89***	***1.10***
Trade Size	2,732 (2,086) 2,046 ***1,785**** ***(2,353)*** ***840***	2,600 (1,615) 2,586 ***1,404**** ***(1,413)*** ***856***	2,417 (1,518) 2,040 ***1,287**** ***(1,227)*** ***838***	2,138 (1,313) 1,744 ***1,137**** ***(963)*** ***805***
Daily Number of Trades	277 (344) 197 ***10,907**** ***(11,822)*** ***7,003***	214 (265) 97 ***2,158**** ***(2,741)*** ***1,274***	177 (177) 89 ***1,440**** ***(1,879)*** ***815***	133 (135) 69 ***787**** ***(1,087)*** ***425***
Daily Share Volume	730,568 (1,126,119) 340,300 ***7,915,074**** ***(8,041,667)*** ***6,664,400***	482,264 (603,238) 253,450 ***1,485,337**** ***(1,685,033)*** ***1,133,075***	403,401 (523,113) 174,705 ***959,830**** ***(1,134,526)*** ***708,380***	271,128 (342,316) 135,902 ***502,284**** ***(603,751)*** ***358,462***
Quoted Depth	7,683 (10,580) 3,282 ***8,886*** ***(22,487)*** ***2,517***	8,397 (13,776) 3,189 ***5,689*** ***(14,959)*** ***1,862***	8,288 (13,863) 3,408 ***4,568**** ***(12,001)*** ***1,676***	7,145 (11,094) 2,836 ***3,139**** ***(6,627)*** ***1,439***
Effective Spread ($)	0.21 (0.20) 0.13 ***0.22*** ***(0.28)*** ***0.16***	0.17 (0.10) 0.13 ***0.21*** ***(0.20)*** ***0.16***	0.16 (0.09) 0.12 ***0.22**** ***(0.19)*** ***0.17***	0.15 (0.08) 0.12 ***0.23**** ***(0.18)*** ***0.18***
Relative Effective Spread (%)	1.73 (1.77) 1.03 ***0.84**** ***(0.45)*** ***0.82***	1.36 (1.10) 0.91 ***0.85**** ***(0.36)*** ***0.85***	1.26 (0.89) 0.91 ***0.87**** ***(0.35)*** ***0.86***	1.21 (0.83) 0.86 ***0.96**** ***(0.39)*** ***0.94***
Relative Quoted Spread/Depth	18.96 (35.02) 4.84 ***2.67**** ***(3.59)*** ***2.07***	11.19 (18.41) 4.27 ***4.70**** ***(3.26)*** ***4.42***	10.18 (17.96) 4.20 ***5.81**** ***(3.76)*** ***5.49***	9.21 (14.69) 4.36 ***8.31*** ***(5.18)*** ***8.01***
Relative Effective Spread/Depth	14.90 (26.71) 2.89 ***4.04**** ***(4.33)*** ***3.25***	8.52 (13.21) 3.02 ***5.07**** ***(3.79)*** ***4.74***	7.75 (12.69) 3.22 ***5.68**** ***(3.83)*** ***5.51***	7.07 (10.57) 3.32 ***7.06*** ***(4.28)*** ***6.96***
Adverse Information Component (LSB) %	31.78 (28.86) 31.52 ***3.87**** ***(8.77)*** ***0.38***	26.76 (23.34) 22.46 ***5.80**** ***(10.89)*** ***1.37***	25.54 (21.44) 20.21 ***6.78**** ***(11.83)*** ***2.03***	26.16 (21.74) 20.63 ***8.85**** ***(14.26)*** ***3.38***

Adverse Information Component (GH) %	31.95 (28.95) 20.95 ***4.50**** ***(8.95)*** ***1.36***	28.30 (23.63) 17.21 ***6.33**** ***(9.71)*** ***2.64***	26.88 (22.65) 17.42 ***7.42**** ***(10.55)*** ***3.47***	25.84 (20.03) 13.77 ***9.52**** ***(12.40)*** ***4.87***

5. Concluding Remarks

This study investigates a sample of self-underwritten IPOs - a new pricing and distribution mechanism for firms going public through an initial public offering that attracted 41 firms over 1996 to 2000. We focus our analysis on three important issues: initial underpricing, stock market performance over the first three months of trading, and market liquidity of self-underwritten IPOs as compared with the traditional investment banker-underwritten IPOs. Our main findings are as follows. First, self-underwritten IPOs are underpriced significantly less than the investment banker-underwritten (conventional) IPOs, despite the formers' smaller market capitalization and smaller offer size. Second, over the following 59 days of trading we find little difference in the mean and median stock returns between the self-underwritten and conventional IPOs. Finally, self-underwritten IPOs suffer from significantly higher bid-ask spread, lower trading frequency, lower trading volume and higher adverse selection component of the spread. These findings show that going public firms that choose to underwrite their own offerings tradeoff higher aftermarket liquidity costs for lower initial underpricing. In addition, these firms save on the approximately 7% gross underwriting fee; the net saving will be lower because self-underwritten IPO firms have to bear the expenses associated with pricing and distribution of the new issue.

The main question of interest is why do firms choose self-underwriting over traditional underwriting by an investment banker (IB)? There are perhaps multiple reasons why some firms decide to forgo the services offered by investment banks such as risk bearing, distribution of shares, advice and counsel. If there exist net benefits to self-underwriting, then we posit that this may become an increasingly popular trend in future years, even though we found only 41 firms doing so in the past from 1996-2000. As the financial market for IPOs continuously evolves over time, advancements in technology, information dissemination, and trading could be expected to yield more competitive and efficient pricing and distribution systems for firms wanting to tap into capital markets. This trend may be comparable to consumers bypassing realtors to escape paying steep commissions (see [24]), or shopping online to avoid retail margins, or going through internet based mortgage lenders to get more competitive rates and lowering closing costs.

The next immediate step for this paper is to complement the univariate tests presented in this draft by conducting multivariate tests to control for firm-specific factors. These tests would allow us to establish whether the lower initial underpricing and poorer aftermarket liquidity are indeed different for firms that self underwrite their IPOs as compared to traditional IPOs that employ investment bankers. In addition, we plan to take up the other questions regarding self-underwritten IPOs that we discussed in the first section of this draft.

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