Asymmetric Price Adjustment: Are IPO Prices too "Sticky"?

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ABSTRACT

The study of IPO mispricing is salient because it raises important questions concerning market efficiency and the existence of systematic stock patterns that can be employed by investors to generate excess market returns. The purpose of this paper is to investigate the informational efficiency of IPO market prices with respect to the first 3 trading day's return and to examine the effect of varying investor sentiment on this information efficiency. Under traditional definitions of market efficiency, asset prices, including IPO prices should fully reflect all available and relevant information (Fama 1970). An increasing body of empirical evidence, however, suggests that IPO prices are not efficient as evidenced both in the short run and the long run. The speed of incorporation of new information into stock prices is critical to many central issues in financial research, such as market efficiency, arbitrage, and market structure. This paper analyzes the speed of price adjustment to information events for IPOs. The setting of the immediate aftermarket presents an opportunity to investigate the issue when little or no trading history exists. In such a setting, investors are more exposed to new information because they cannot observe the stock price behavior or the reactions to previous information signals.

Keywords: market efficiency, Asymmetric Information, investor sentiment, IPO underpricing

INTRODUCTION

The U.S. market for IPOs is larger than rest of the world's IPO markets combined, with IPOs accounting for 30-45% of all new equity raised each year. The IPO market provides a number of essential functions for U.S. companies and the American economy. First, these markets allow equal access to equity capital for large and small entrepreneurial businesses startups. Second, IPOs are the primary mechanism in which venture capital is recycled into the next generation of companies (now 15% of U.S. GDP). Without the IPO option, venture commitments would be substantially diminished. Third, they create jobs and a higher standard of living by promoting the growth of U.S. companies. Fourth, IPOs perform a critical role in moving capital to areas of future potential growth.

Initial public offerings (IPOs) of common stock, on average, earn abnormally high initial returns in general [Ibbotson (1975), Ritter (1984), Loughran, *et. al.* (1994)]. The initial abnormal return is defined as abnormal gains/losses of a new issue relative to the offer price during the first day of trading. The underpricing/overpricing is the difference between the offer price and the last traded price on the first trading day (Kooli and Suret, 2004; Ritter, 1998). One method of testing whether the offer price or the first closing market price is a better measure of "true" value is to examine long-run returns. If the first closing market price is an unbiased measure of a firm's fundamental value, then there should be no abnormal returns in the future

THEORIES BASED ON ASYMMETRIC INFORMATION

One of the most popular theories about the IPO pricing is the asymmetric information theory, also referred as information-acquisition models (first developed by Benveniste and Spindt (1989) and extended by Benveniste,

Busaba, and Wilhelm (2002)). The intuition is that, issuers have to underprice their IPOs to compensate the costly information production of informed investors. The most prominent evidence for this information-acquisition process is the positive relationship between price revisions at the offering and initial returns on the first trading day, i.e. partial adjustment of IPO prices, first documented by Hanley (1993).

If issuers are more informed than investors, the lemon problem deters the participation of rational investors (e.g., Allen and Faulhaber (1989), and Welch (1989)). Still, aside from the persistence of this explanation on the street, the most appealing feature of the signaling hypotheses is that some issuers voluntarily desire to underprice and leave money on the table to create "a good taste in investors' mouths." Rock (1986) provides a model of 'winner's curse' to explain IPO underpricing. That is, uninformed investors are afraid to receive an allocation of IPOs because they fear that informed investors would only subscribe for the underpriced IPOs, and leave all the overpriced IPOs. Thus, uninformed investors are reluctant to participate in the IPOs. In order to induce the participation of uninformed investors, issuers have to price all the IPOs at a discount. In a winner's curse scenario, investors fear that they will only receive IPO allocations if they happen to be among the most optimistic investors. When everyone else desires the offering, they get rationed. An investor would receive a full allocation of overpriced IPOs but only a partial allocation of underpriced IPOs. Thus, his average return, conditional on receiving shares, would be below the unconditional return. To break even, investors need to receive IPO underpricing.

There is no shortage of papers assuming or conjecturing that some investors in the IPO market exhibit sentiment (e.g., Dorn (2002), Ljungqvist, Nanda, and Singh (2003)). It is implicitly assumed that these investors follow positive-feedback investment strategies – buy when prices rise and sell when prices fall. To take advantage of them, speculators (probably some informed investors) buy at the offering and sell shares immediately in the secondary aftermarket. The strong demand of speculators before the offering leads to a higher offer price while the entry of sentimental investors in the aftermarket drives the price even higher, and results in substantial initial returns. Therefore, refilling in the bookbuilding period is a way for underwriters to stimulate investor sentiment since it takes time for the sentimental investors to learn information Investors in U.S. IPO offerings are only asked to reveal their views about the IPO during the bookbuilding phase, which starts with the announcement of an initial indicative price range, and involves road-show presentations, one-on-one meetings with selected investors, and via direct marketing by members of the investment banking syndicate. During the bookbuilding bids are submitted to the bookrunner who constructs a demand curve for the issue. If demand is strong the initial price range can be revised. Within this institutional context Benveniste and Spindt (1989) first analyzed how investment banks can provide investors with incentives to produce and reveal information regarding the value of the firm. In an informational cascade, investors attempt to judge the interest of other investors. They only request shares when they believe the offering is hot. Pricing just a little too high leaves the issuer with too high a probability of complete failure, in which investors abstain because other investors abstain. In support, Amihud, Hauser, and Kirsh (2001) find that IPOs are either hugely oversubscribed or totally undersubscribed, with very few offerings moderately oversubscribed.

Benveniste and Spindt (1989) and Benveniste and Wilhelm (1990) have been the first to study the underpricing phenomenon in IPOs with the book building method. They argue that financial intermediaries must underprice shares to extract information from institutional investors. Informational rents are therefore conceded to these investors in order to induce them to reveal their information. To induce investors to truthfully reveal that they want to purchase shares, underwriters must offer them some combination of more IPO allocations and underpricing when they indicate a willingness to purchase shares at a high price. This information gathering perspective of book-building is certainly useful, but it is not clear how valuable the information provided by one incremental investor is when the investment banker can canvas hundreds of potential investors. Thus, it is unclear whether the Benveniste and Spindt (1989) framework is capable of explaining underpricing of more than a few percent. In the context of the U.S. institutional arrangements, various authors have extended the Benveniste and Spindt model to explain how optimal mechanisms for extracting private information from investors requires discriminatory share allocation and a partial adjustment to positive news from investors (Benveniste and Wilhelm, 1990; Hanley, 1993; Sherman and Titman, 2002).

But, as Loughran and Ritter (2002) and Lowry and Schwert (2002) point out, the bookbuilding theories apply to *private* information only. If plain and simple reluctance to adjust prices, rather than a deeper theoretical cause (the search for information from investors) were at work, then we would also see public market changes help

predict IPO underpricing. Indeed, both sets of authors find that when the overall stock market has rallied, underwriters do not fully adjust their pricing. The fact that past performance by other firms has an influence on IPO underpricing points more to a behavioral explanation, such as that in Loughran and Ritter (2002), than to an information extraction theory. Baron (1982) offers a different, agency-based explanation for underpricing. His theory also has the issuer less informed, but relative to its underwriter, not relative to investors. To induce the underwriter to put in the requisite effort to market shares, it is optimal for the issuer to make the shares easier to sell by underpricing them. In Habib and Ljungqvist (2001), underpricing is similarly a substitute for IPO marketing.

Most theoretical models that explain underpricing rely on asymmetric information, though they differ regarding institutional features. For example, Rock (1986) explains underpricing as a consequence of an adverse selection problem that implies that underpricing increases with the level of uncertainty that uninformed investors have regarding the value of the firm. Chemmanur (1993) explains it as a device to induce information production about the firm that will benefit good firms in the secondary market. Jenkinson and Ljungqvist (2001) and Beatty and Ritter (1986) propose that reduced *ex ante* uncertainty reduces underpricing at the IPO stage

Several recent studies have looked at the relationship between investor demand for IPOs and aftermarket performance of these firms. Hanley (1993) Specifically, stocks that are priced above the initial filing range perform very well on the first day in spite of being offered at the higher price, while stocks that are priced below the initial filing range do poorly on the first day. Thus, the final offer price represents a partial adjustment to additional market information about investor demand received during the pre-issuing period. Her study clearly indicates a positive relationship between investor demand and the first trading day performance of IPOs. Kandel, et al (1999) also document a positive relationship between the demand schedule and the abnormal return on the first trading day for a small (27 IPOs) sample of Israeli IPOs. An interesting finding in their paper is that the above relationship holds even when the prices of IPOs are totally determined by investors rather than issuers or underwriters *as is the case in*

Dutch Auctions

In one of the well-known theoretical models explaining underpricing in the first trading days, Rock (1986) suggests that underpricing is a consequence of rational behavior by issuing firms. This is due to the information asymmetry between two major groups of investors. The first group of investors has perfect information regarding the prospects of the issues and, therefore, is considered "informed" investors. The second group of investors is considered "uninformed" investors because they have less knowledge regarding the intrinsic value of the issues than the "informed" investors. As a result of this information asymmetry, "informed" investors compete only for good, underpriced issues and leave inferior, overpriced issues to the "uninformed" investors. Consequently, "uninformed" investors receive disproportionately larger numbers of overpriced issues, causing the "winner's curse." To alleviate this adverse selection problem, Rock (1986) argues that issuing firms have to underprice IPOs in order to induce participation by "uninformed" investors. According to Rock's model, informed investors with superior information have selection ability to distinguish between "good" and "bad" IPOs. They will subscribe to only high quality issues and let uninformed investors subscribe to low quality issues. Therefore, the action by informed investors should lead to high demand for good IPOs. On the other hand, low quality IPOs will have mainly uninformed investors which, in turn, lead to low demand. When all investors know ex-ante that the issuing firm is 'too good' to pass by, a large oversubscription for the firm's shares would be observed. In fact, Koh and Walter (1989) and Lee, et al (1996) use the subscription level (number of shares in a lot) as a proxy for "informed" demand in their study of short- and long-run performance of IPOs in Singapore.

Overall, the IPOs with high investor demand have large positive initial returns but negative longer-run excess returns, while the IPOs with low investor demand have negative initial returns but positive longer-run excess returns. These results are not explained by information asymmetry hypothesis or underpricing (or mispricing) hypothesis. Although the two hypotheses do not indicate a positive relationship between investor demand and the initial returns, information asymmetry hypothesis nor underpricing hypothesis can successfully explain differences in long-run performance between high demand IPOs and low demand IPOs. Investor demand for an IPO is largely driven by the over-optimistic and over-pessimistic reaction by investors to the information about the firm's prospects prior to offerings. Consequently, both high- and low-demand IPOs are not priced at intrinsic values in early aftermarket trading. But, eventually their true values are reflected in the evolution of the pricing process.

Specifically, a high-demand IPO, which is due to investors' over optimism, is more likely to create a speculative bubble. The speculative bubble may temporarily push the stock price above its intrinsic value, followed by long-run price correction. As a result, a relatively high positive initial return will be followed by a negative long-run return. On the other hand, since investors are more likely to underestimate the prospects of the low demand, these IPOs will experience relative low returns on the first trading day.

The most commonly cited evidence in favor of book-building theories is the effect of revisions in the offer price during the filing period, first documented by Hanley (1993). She finds that underwriters seem reluctant to fully adjust their pricing upward to keep IPO underpricing constant when demand is strong. Thus, when underwriters revise the share price upward from their original estimate in the preliminary IPO prospectus, underpricing tends to be higher. Table 3 shows that this pattern has held throughout 1980-2001: When the offer price exceeds the maximum of the original file price range, the average IPO underpricing is significantly above average (53% instead of 3% for IPOs adjusting their offer price downward and 12% for IPOs priced within their filing range). This extra underpricing is interpreted in this dynamic information acquisition theory to be compensation that is necessary to induce investors to reveal their high personal demand for shares. Consistent with the information revelation theory of bookbuilding, Lee, Taylor, and Walter (1999) and Cornelli and Goldreich (2001) show that informed investors request more, and preferentially receive more, allocations.

DATA

We collect offering data (filing price which is computed as the mid-point of the initial price range, of a stratified random sample of 100 IPOs issued between January 1, 2002 and December 31, 2007. The offer price, number of shares offered and date of offering), and the identity of the lead underwriters from the IPOhome.com database. The closing price at the end of the first trading date, number of shares outstanding after the IPO and trading volume are taken from the Hoovers. Data on institutional ownership after the IPO comes from various issues of the S&P Stock Guide. The underwriter reputation ranking is from Carter, Dark and Singh (1998). For each firm, we calculate underpricing as the raw return from the offer price to the closing price on the first trading day. Firm size is the market value of equity, computed as the product of the offer price and the number of shares outstanding on the first trading day. Similar to Chen and Ritter (2000), we compute issue amount as the gross proceeds from the IPO offer price times number of shares issued, including the over allotment provision of the offering. Initial public offerings with an offer price below $5.00 per share, unit offers, ADRs, closed-end funds, REITs, bank and S&L IPOs, and those not listed by Hoovers within six months of the offer date are excluded. IPOs are categorized by whether the offer price is below, within, or above the original file price range. For example, an IPO would be classified as within the original file price range of $10.00-$12.00 if its offer price is $12.00. See Table 1.

ANALYSIS

Table 1

Percentage of IPOs relative to file price range

	Below	Within	Above
1980-1989	30%	57%	13%
1990-1998	27%	48%	24%
1999-2000	18%	38%	44%
2001-2007	34%	45%	22%

Average first-day returns

	Below	Within	Above
1980-1989	0%	6%	20%
1990-1998	4%	11%	32%
1999-2000	8%	26%	121%
2001-2007	2%	10%	30%

Source: Jay Ritter

Results provide new evidence to demonstrate that investor demand for IPOs prior to the offering can affect their aftermarket performance, both in the short and long run. However, to provide a rational explanation about the findings is a challenging job. This is partially due to the fact that the relationship between investor demand and firm performance during and after initial public offerings has been largely unexplored. Although several of the existing models or hypotheses by Rock (1986), Aggarwal and Rivoli (1990), and Chowdhary and Sherman (1996) provide predictions regarding the relationship between investor demand and IPO performance, the literature has focused mainly on the causes of IPO underpricing, such as information asymmetry, ex-ante uncertainty or speculative bubble.

Our findings for low-priced IPOs are consistent with theories that suggest an important role for small uninformed investors, such as Rock (1986), who models underpricing as compensation to uninformed investors for the winner's curse, Brennan and Franks (1997), who show that firms may choose to ration the allocation of shares in favor of small, diffuse investors in order to preserve private benefits of control, and Booth and Chua (1996), who argue that firms may choose a lower price to promote diffuse ownership. Third, we investigate whether the pattern of trading in the immediate after-market is systematically related to prices. Prior research has examined trading behavior immediately following the IPO. Krigman, Shaw and Womack (1999) show that initial turnover of the firm's shares is positively related to underpricing, and that block trades, presumably by institutions, account for a large fraction of initial turnover. Moreover, there is considerable evidence (e.g. McInish and Wood (1992)) that transactions costs are inversely related to the price, which may also influence trading. When we examine the relationship between offer price and initial turnover, we find

This would imply a positive relationship between both offer fraction and log of issue amount, and underpricing. Benveniste and Spindt (1989) argue that underwriters use underpricing (along with preferential allocation) to induce informed investors to reveal their private information. They suggest that if favorable information is revealed in the pre-market, the underwriter responds by increasing the offer price to partially reflect this information. These IPOs would be priced in the upper part of the initial offer price range. Their allocation is rationed and they would be more underpriced. Under this partial adjustment hypothesis, we expect to see a positive relationship between underpricing and the fractional offer price revision. Hanley (1993) empirically shows that underpricing is positively related to the percentage revision in offer price from the original filing price. Hence, we include offer price revision as a control variable

Our results thus far suggest that underpricing is statistically higher both for high-priced and for low-priced IPOs. That underpricing is higher for low-priced IPOs has already been documented earlier (e.g. Chalk and Peavy (1987)). However, our finding that underpricing is also higher for high- priced IPOs are new to the literature. These models of IPO underpricing are based on the information asymmetries that prevail between the different classes of investors associated with the IPO. For example, Benveniste and Spindt (1989) model the IPO process as one where underwriters rely on a clientele of large informed investors to provide information about the value of the firm being offered. The underwriter uses this information to refine the value of the offering. Underpricing in the Benveniste and Spindt (1989) model represents compensation to these investors for truthfully revealing their information. A recent paper by Stoughton and Zechner (1998) suggests that firms may choose to ration the allocation of IPO shares in favor of large, institutional investors for the monitoring benefits they are expected to provide. Underpricing represents compensation for expected future monitoring services

These firms may choose a lower price, but not for "value-decreasing" reasons. Both types of firms will choose a lower price, and will be targeted towards a more retail investor clientele who are less able to differentiate between good and bad firms. The resulting pooling equilibrium will lead to a winner's curse problem and underpricing as in Rock (1986). There is a higher propensity for such investors to invest in low-priced IPOs. This could be because it is easier for retail investors to get an allocation of such IPOs due to a combination of reduced interest from large investors and a higher float. This could also be because retail investors seem to prefer lower prices, as suggested by the findings of Schultz (2000). The Rock (1986) framework suggests that underpricing will increase as the offer price drops. The prediction that low- priced IPOs targeted more towards retail investors will exhibit higher underpricing is also consistent with other explanations of IPO underpricing.

CONCLUSIONS

Our study makes several contributions to the literature relative to whether IPO price levels are informative. We find that they are. We show that the price level in an IPO is related to other choices the firm makes, including the choice of underwriter and ownership structure. We find that the relationship between IPO price level and underpricing is U-shaped. We also find supporting evidence of partial adjustment and asymmetric response to filing price adjustment (Bradley and Jordan, 2002, Ligon and Hahn, 2004). The filing price adjustment is positively related to initial returns and is significant. Upward adjustment over the upper limit of initial filing range is always positively and significantly related to initial returns and downward adjustment below the lower limit of initial filing price range is significantly related to initial returns. Consistent with previous studies, we find offer price level is informative. There is a consistent significant positive relation between integer pricing and initial returns (Bradley, et al., 2004) and we find evidence of a U-shaped relationship between offer price and IPO initial returns documented by Fernando, et al. (2004).

The Benveniste and Spindt (1989) private information model suggests that only the suppliers of information be compensated with underpricing, but our results indicate that the benefits of underpricing accrue to secondary market participants as well. The Benveniste and Spindt (1989) framework provides no *a priori* reason for them to hold their allocation beyond the first trading day, at which time they are fully rewarded for the information they provided during the pre-marketing phase of the IPO. We show that underpricing is higher for low-priced *and* for high-priced IPOs. That underpricing increases with price for high-priced IPOs is anew result that has not been documented previously. We investigate whether this new finding maybe an artifact of the Hanley (1993) partial adjustment phenomenon and find that it is not. Regardless of whether we use the mid-point of the initial filing offering price range or the final offer price our findings are the same. The U-shape remains when we control for firm size, offer size, initial turnover, fractional offer price revision and underwriter reputation.

SUMMARY

1. Large IPOs typically are underpriced less vis-a-vis smaller offerings. The first day returns are 200 basis points lower for offerings above the mean average for size of offerings.
2. Initial returns are higher in the OTC market than in NYSE.
3. Overall, mean initial returns are much higher than the median returns: a handful of severely underpriced offers drive results.
4. Mean return overstates actual profits for most investors; uninformed investors suffer from *winner's curse.*
5. 80% of the initial price gain occurred in the first day of trading. An additional 20% of the gain occurs within the first three days of trading in the secondary market.

REFERENCES

1. Affleck-Graves, John Hegde, Shantaram Mi. (1996). "Conditional price trends in the aftermarket for initial public offerings." *Financial Management*, Winter, 1996.
2. Ang, James S. and Shaojun Zhang. (2006). "Underwriting relationships: information production costs, underwriting fees, and first mover advantage," *Review of Quantitative Finance and Accounting*, Sept 2006:205-229.
3. Barry, Christopher B. Jennings, Robert H. (1993). "The opening price performance of initial public offerings of common stock," *Financial Management*, Spring 1993 Issue
4. "Behavioral Finance. (Bureau News)," NBER Reporter, Summer, 2002
5. Bradley, Daniel J. Cooney, John W., Jr. (2006) "Penny stock IPOs.(initial public offerings)", *Financial Management*, Spring 2006 Issue
6. Cai, Nianyun Ramchand, Latha Warga, Arthur (2004). "The pricing of equity IPOs that follow public debt offerings." *Financial Management*, Winter 2004 Issue
7. Canina, Linda. (1996). "Initial public offerings in the hospitality industry - underpricing and overperformance," Cornell Hotel & Restaurant Administration, Oct 1996 Issue
8. Carow, Kenneth A. Cox, Steven R. Roden, . "The role of insider influence in mutual-to-stock conversions.(Author abstract)", *Journal of Money, Credit & Banking*, Sept 2007 Issue

9. Chahine, Salim Filatotchev, Igor. "The effects of information disclosure and board independence on IPO discount (initial public offerin", *Journal of Small Business Management*, April 2008 Issue
10. Chin, Chen-Lung Lee, Picheng Kleinman, G. "IPO anomalies and innovation capital." *Review of Quantitative Finance and Accounting*, August 2006 Issue
11. Chung, Kee H. Li, Mingsheng Yu, Linda. "Assets in place, growth opportunities, and IPO returns.(Initial public offerings)", *Financial Management*, Autumn 2005 Issue
12. Chung, Kee H., Mingsheng Lu and Linda Yu. (2005)."Assets in place, growth opportunities, and IPO returns," *Financial Management 34*(3), Autumn 2005:65-88.
13. Corwin, Shane A. Harris, Jeffrey H.. (2001)"The initial listing decisions of firms that go public," *Financial Management*, Spring 2001 Issue
14. Dalbor, Michael C. Sullivan, Michael J. "The initial public offerings of restaurant firms: the case of industry-specific micromarket capitali", *Journal of Small Business Management*, July 2005 Issue
15. Drake, Philip D. and Michael Vetsuypens. (1993). "IPO underpricing and insurance against legal liability," *Financial Management*, Spring 1993
16. Houge, Todd Loughran, Tim Suchanek, Gerr. (2001) "Divergence of opinion, uncertainty, and the quality of initial public offerings.(Statistical Data In", *Financial Management*, Winter 2001 Issue
17. Garfinkel, Jon A. (1993). "IPO underpricing, insider selling and subsequent equity offerings: is underpricing a signal of quality," *Financial Management*, Spring 1993
18. Ghosh, Chinmoy Nag, Raja Sirmans, C. F.(2000). "The Pricing of Seasoned Equity Offerings: Evidence from REITs," *Real Estate Economics*, Fall 2000 Issue
19. Harper, Joel T. and Jeff Madura. (2002). "Sources of hidden value and risk within tracking stock," *Financial Management*, Autumn 2002
20. Jain, Bharat A. (1994). "Unit IPOs: a mechanism for small businesses to go public," *Journal of Small Business Management*, April 1994
21. Levis, Mario. (1993). "The long-run performance of initial public offerings: the UK experience 1980-1988. (New Issues Market," *Financial Management*, Spring 1993
22. Livingston, Miles Miller, Robert E.. (2000). "Investment bank reputation and the underwriting of nonconvertible debt," *Financial Management*, Summer 2000 Issue
23. Loughran, Tim Ritter, Jay. (2004). "Why has IPO underpricing changed over time?" *Financial Managemen*t, Autumn, 2004:
24. McLaughlin, Robyn Safieddine, Assem Vasu. (2000). "Investment banker reputation and the performance of seasoned equity issuers," *Financial Management*, Spring 2000 Issue.
25. Michaely, Roni Shaw, Wayne H.. (1995). "Does the choice of auditor convey quality in an initial public offering?", *Financial Management*, Winter 1995 Issue.
26. Parlour, Christine and Uday A. Rajan. (2005). "Rationing in IPOs," *Review of Finance*, March, 2005.
27. Prasad, Dev Vozikis, George S. Ariff, Mo. (2006). "Government public policy, regulatory intervention, and their impact on IPO underpricing: the case of", *Journal of Small Business Management*, Jan 2006 Issue.
28. Riddiough, Timothy, J. Moriarty and Mark Yea.(2005). "Privately versus publicly held asset investment performance," *Real Estate Economics*, Spring 2005.
29. Sopranzetti, Ben J. Venezian, Emilio Wan. (2006) "The market for new issues: impact of offering price on price support and underpricing," *Review of Quantitative Finance and Accounting*, March 2006 Issue.
30. Tavakkol, Amir Tin, Jan. "Positive feedback trading in the options market.(Statistical Data Included)", *Quarterly Journal of Business and Economics*, Summer 2000 Issue.
31. Viswanathan, Krupa S.. (2006). "The pricing of insurer demutualization initial public offering,*" Journal of Risk and Insurance*, Sept 2006
32. Williams, David R. and Carlton C. Young. (2006). "Trends in biopharmaceutical IPOs: 1996-2005, " *Journal of Health Care Finance*, Winter 2006
33. Zheng, Steven X. Ogden, Joseph P. Jen, F. (2005) "Pursuing value through liquidity in IPOs: underpricing, share retention, lockup, and trading volume," *Review of Quantitative Finance and Accounting*, Nov 2005 Issue

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