

***Conflict of Interest and the Credibility of
Underwriter Analyst Recommendations***

Roni Michaely

Cornell University and Tel-Aviv University

and

Kent L. Womack

Dartmouth College

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Conflict of Interest and the Credibility of Underwriter Analyst Recommendations

Abstract

Brokerage analysts frequently comment on and sometimes recommend companies that their firms have recently taken public. We show that stocks that underwriter analysts recommend perform more poorly than “buy” recommendations by unaffiliated brokers prior to, at the time of, and subsequent to the recommendation date. We conclude that the recommendations by underwriter analysts show significant evidence of bias. We show also that the market does not recognize the full extent of this bias. The results suggest a potential conflict of interest inherent in the different functions that investment bankers perform.

Introduction

Investment banks traditionally have had three main sources of income: (1) corporate financing, the issuance of securities, and merger advisory services; (2) brokerage services; and (3) proprietary trading. These three income sources may create conflicts of interest within the bank and with its clients. A firm's proprietary trading activities, for example, can conflict with its fiduciary responsibility to obtain "best execution" for clients.

A more frequent and more observable conflict occurs between a bank's corporate finance arm and its brokerage operation. The corporate finance division of the bank is responsible primarily for completing transactions such as initial public offerings (IPOs), seasoned equity offerings, and mergers for new and current clients. The brokerage operation and its equity research department, on the other hand, are motivated to maximize commissions and spreads by providing timely, high-quality (and presumably unbiased) information for their clients. These two objectives may conflict.

Many reports in the financial press also suggest that conflict of interest in the investment banking industry may be an important issue.¹ One source of conflict lies in the compensation structure for equity research analysts. It is common for a significant portion of the research analyst's compensation to be determined by the analyst's "helpfulness" to the corporate finance professionals and their financing efforts (See, for example, *The Wall Street Journal*, June 19^t,

¹ For example, Paine Webber allegedly forced one of its top analysts to start covering Ivax Corp., a stock that it had taken public and sold to its clients. According to the *Wall Street Journal* (July 13, 1995), the "stock was reeling and needed to be covered." On February 1, 1996, the *WSJ* reported that the attitude of the investment bank analysts toward AT&T was a major factor in AT&T's choice of the lead underwriter of the Lucent Technologies IPO.

1997: “All Star Analysts 1997 Survey.”). At the same time, analysts’ external reputations depend at least partially on the quality of their recommendations. And, this external reputation is the other significant factor in their compensation. When analysts issue opinions and recommendations about firms that have business dealings with their corporate finance divisions, this conflict may result in recommendations and opinions that are positively biased. A Morgan Stanley internal memo (*Wall Street Journal*, July 14, 1992), for example, indicates that the company takes a dim view of an analyst’s negative report on one of its clients: “Our objective . . . is to adopt a policy, fully understood by the entire firm, including the Research Department, that we do not make negative or controversial comments about our clients as a matter of sound business practice.” Another possible outcome of this conflict of interest is pressure on analysts to follow specific companies. There is implicit pressure on analysts to issue and maintain positive recommendations on a firm that is either an investment banking client or a potential client.

Conflicts between the desire of corporate finance to complete transactions and the need of brokerage analysts to protect and enhance their reputations are likely to be particularly acute during the IPO process. First, this market is a lucrative one for the investment banking industry. Second, implicit in the underwriter-issuer relationship is the underwriter’s intention to follow the newly issued security in the aftermarket: that is, to provide (presumably positive) analyst coverage. This coverage is important to most new firms because they are not known in the marketplace, and they believe that their value will be enhanced when investors, especially institutional investors, hear about them. For example, Galant (1992) and Krigman, Shaw, and Womack (1999) report surveys of CEOs and CFOs doing IPOs in the 1990s. About 75 percent of these decision makers indicated that the quality of the research department and the reputation

of the underwriter's security analyst in their industry were key factors in choosing a lead underwriter. Hence, a well-known analyst who follows a potential new client's industry represents an important marketing tool for the underwriters.

Finally, a positive recommendation after an IPO may enhance the likelihood that the underwriter will be chosen to lead the firm's next security offering. Consequently, there may be substantial pressure on analysts to produce positive reports.

These potential conflicts of interest may have been exacerbated in the last decade with changes in the marketing and underwriting strategies of investment banks. In the past, the corporate finance arm of the investment bank was more likely to perform due diligence on an issuer using its own staff and not analysts in the equity research department. Only after an offering was completed would the underwriting firm assign an equity research analyst to cover the stock. The trend in the last two decades, however, has been to use equity research analysts directly in the marketing and due diligence processes (see McLaughlin, 1994). While there are several good reasons that can explain this trend (less duplication of expertise, improved marketing efforts), it is likely that the "walls" between departments have become less clear. Consequently, the analyst has become more dependent on the corporate finance group.²

The potential conflict of interest between a research analyst's fiduciary responsibility to investing clients and the analyst's responsibility to corporate finance clients suggests several testable implications. First, underwriter analysts may issue recommendations that are overly

² See Dickey (1995). Several conversations with investment bankers confirm this conclusion. It should be noted that, while the transmission of information and the close links between the corporate finance division and the

optimistic (or positively biased) than recommendations made by their non-underwriter competitors. Second, these analysts may be compelled to issue more positive recommendations (than non-underwriter analysts) on firms that have traded poorly in the IPO aftermarket, since these are exactly the firms that need a “booster shot” (a positive recommendation when the stock is falling). The implication is that rational market participants should, at the time of a recommendation, discount underwriters’ recommendations compared to those of non-underwriters.

There is little empirical evidence relating the performance of investment bankers’ recommendations to their affiliation with issuing firms. There are some studies that examine the nature of the relation between the investment banker association with the issuing firm and how this relation affects the investment banker’s earnings forecasts and type of recommendations [See Lin and McNichols (1997) and Dugar and Nathan (1995)]. They find that around seasoned equity issues, underwriters’ earnings forecasts and recommendation ratings are more positive (but not in a statistically significant way) than those of non-underwriters.

Lin and McNichols (1997) report that recommendation classifications are more positive for underwriters’ recommendations. Dugar and Nathan (1995) find, despite the fact that affiliated analysts are more optimistic, that their earnings forecasts “are, on average, as accurate as those of non-investment banker analysts.” More recently, however, Dechow, Hutton, and Sloan (1997) conclude that the earnings estimates of underwriters’ analysts are significantly more optimistic than those of unaffiliated analysts, and that stocks are most overpriced when they are covered by affiliated underwriters.

equity research division may result in biased recommendations, they do not constitute a violation of the “Chinese

A credible alternative theory is that underwriters' recommendations will be not only unbiased but also more accurate than those of non-affiliated equity analysts. Several authors, including Allen and Faulhaber (1989), suggest that investment bankers will have superior information on firms they have underwritten. Underwriter analysts will have an informational advantage gained during the marketing and due diligence processes; they may thus be more knowledgeable than their competitors and produce more accurate forecasts. At the beginning of an IPO firm's public life, information asymmetry is at its greatest, which could lead to differing forecasts. It is also plausible that the IPO firm will continue to provide the underwriter analyst more and better information to maintain a healthy agency relationship.

If this superior information story is the dominant effect, the market should greet underwriters' better information with a more pronounced immediate response. Ex post, if their information is superior, their recommendations should be more predictive of future prices and provide investors with superior investment results. (The superior information idea suggests no clear price behavior differences in the pre-recommendation period.)

We analyze three issues. Does an underwriting relationship bias analysts' recommendations, or does it result in more accurate recommendations? Do underwriter analysts tend to be overly optimistic about stock prices of firms they underwrite? Does the market correctly discount the overly positive recommendations of affiliated underwriters?

The regulatory environment provides a convenient testing ground for this question. Twenty-five calendar days after the IPO is an important date for a new company. It is only then that underwriters (and all syndicate members) can comment on the valuation and provide earnings

wall."

estimates on the new company.³ And, although non-underwriters technically can express their opinions before that time, typically they do not. Thus, the end of the Securities and Exchange Commission (SEC) “quiet period” marks a transition. Before that time, investors must rely solely on the prospectus and audited financial information (disclosures regulated under security laws). After that time, research analysts can interpret the factual information and disseminate estimates, predictions, and recommendations as to valuation of the new firm relative to its competitors.

We examine the information—particularly the “buy” recommendations disseminated by brokerage analysts in the period after the end of the quiet period. Our findings indicate, first, that in the month after the quiet period lead underwriter analysts issue 50 percent more buy recommendations on the IPO than do analysts from other brokerage firms. Second, there is a significant difference in the pre-recommendation price patterns of underwriter and non-underwriter analysts’. Stock prices of firms recommended by lead underwriters fall, on average, in the 30 days before a recommendation is issued, while prices of those recommended by non-underwriters rise.

Third, the market responds differently to the announcement of buy recommendations by underwriters and non-underwriters. The size-adjusted excess return at the event date is 2.7 percent for underwriter analyst recommendations (significantly different from zero) versus 4.4 percent for non-underwriter recommendations.

³ See Rule 174 of the Securities Act of 1933; Rule 15c2-8 of the Securities Exchange Act of 1934; and the 1988 revision to Rule 174 by the Securities and Exchange Commission. The revision to Rule 174 reduces the “quiet period” to 25 calendar days for any equity security that is listed on a national securities exchange. It does not apply to securities for which quotations are listed solely by the National Quotation Bureau in the “pink sheets.” SEC release #5180 (August 16, 1971) explicitly states that the issuers (i.e., the firm and its investment bankers) should avoid issuance of forecasts, projections, or predictions related to but not limited to revenues, income, or earnings

Finally, the long-run post-recommendation performance of firms that are recommended by their underwriters is significantly worse than the performance of firms recommended by other brokerage houses. The difference in mean and median size-adjusted buy-and-hold returns between the underwriter and non-underwriter groups is more than 50 percent for a two-year holding period beginning on the IPO day.

These results are consistent across the major brokers making buy recommendations for both their underwriting clients and non-clients. The mean long-run return of buy recommendations made on non-clients is more positive than those made on clients for 12 out of 14 brokerage firms. In other words, it is not the difference in investment banks' ability to analyze firms that drives our results, but a bias directly related to whether the recommending broker is the underwriter of the IPO.

I. The Sell-Side Security Analyst

A. The Delivery of Financial Information and Recommendations to Customers

Brokerage analysts ("sell-side" analysts) are responsible for distributing reports such as "buy" recommendations to investors. They provide external ("buy-side") customers with information on and insight into particular companies they follow. Most analysts focus on a

per share, *and* refrain from publishing opinions concerning value, as long as the firm is in registration and in the post-effective period (i.e., the quiet period).

specific industry, although some are generalists, covering multiple industries or stocks that do not easily fit into industry groupings.⁴

The analyst's specific information dissemination tasks can be categorized as 1) gathering new information on the industry or individual stock from customers, suppliers, and firm managers; 2) analyzing these data and forming earnings estimates and recommendations; and 3) presenting recommendations and financial models to buy-side customers in presentations and written reports.

The analyst's dissemination of information to investment customers occurs in three different time circumstances: urgent, timely, and routine. The result is the main "information merchandise" that is transmitted to customers on a given day. An urgent communication may be made following a surprising quarterly earnings announcement or some type of other corporate announcement while the market is open for trading. In this case, the analyst immediately notifies the salespeople at the brokerage firm, who in turn call customers who they believe might care (and potentially transact) on the basis of the change. Once the sales force is notified, the analyst may directly call, fax, or send e-mail to the firm's largest customers if the analyst knows of their interest in the particular stock.

Less urgent but timely information is usually disseminated through a morning research conference call. Such conference calls are held at most brokerage firms about two hours before the stock market opens for trading in New York. Analysts and portfolio strategists speak about,

⁴ We thank managing directors and vice presidents in the equity research and M&A departments of BT Alex Brown, Goldman Sachs, Lehman Brothers, Morgan Stanley, and Salomon Brothers for extensive discussions on this topic.

interpret, and possibly change opinions on firms or sectors they follow. Both institutional and retail salespeople at the brokerage firm listen to this call, take notes, and ask questions.

After the call, and usually before the market opens, the salespeople will call and update their larger or transaction-oriented customers (professional buy-side traders) with the important news and recommendation changes of the day. The news from the morning call is duplicated in written notes, and released for distribution to internal and external sources such as *First Call*. Important institutional clients may receive facsimile transmissions of the highlights of the morning call.

Thus, the “daily news” from all brokerage firms is available to most buy-side customers, usually well before the opening of the market at 9:30 AM. The information is sometimes retransmitted via the Dow Jones News Service, Reuters, CNNfn, or other news sources when the price response in the market is significant.

The importance and timeliness of the “daily news” varies widely. One type of announcement is a change of opinion by an analyst on a stock. New “buy” recommendations are usually scrutinized by a research oversight committee or the legal department of the brokerage firm before release. Thus, a new added-to-buy recommendation may have been in the planning stage for several days or weeks before an announcement. Sudden changes in recommendations (especially, removals of “buy” recommendations) may occur in response to new and significant information about the company. Womack (1996) shows that new recommendation changes, particularly “added to the buy list” and “removed from the buy list”, create significant price and volume changes in the market. For example, on the day that a new buy recommendation is issued, the target stock typically appreciates 3 percent, and its trading volume doubles.

For routine news or reports, most of the items are compiled in written reports and mailed to customers. At some firms, a printed report is dated several days after the brokerage firm first disseminates the news. Thus, smaller customers of the brokerage firm who are not called immediately may not learn of the earnings estimate or recommendation changes until they receive the mailed report.

More extensive research reports, whether an industry or a company analysis, are often written over several weeks or months. Given the length of time necessary to prepare an extensive report, the content is typically less urgent and transaction-oriented. These analyst reports are primarily delivered to customers by mail, and less often cause significant price and volume reactions.

B. Sell-Side Security Analysts' Compensation

An important aspect of our analysis is related to sell-side security analyst compensation, since a significant portion of it is based on their ability to generate revenue through service to the corporate finance arm of the investment bank.

At most brokerage firms, analyst compensation is based on two major factors. The first is the analyst's perceived (external) reputation. The annual *Institutional Investor* All-American Research Teams poll is perhaps the most significant external influence driving analyst compensation (see Stickel, 1992). All-American rankings are based on a questionnaire asking over 750 money managers and institutions to rank analysts in several categories: stock picking, earnings estimates, written reports, and overall service. Note that only the first two criteria are directly related to accurate forecasts and recommendations.

The top analysts in each industry are ranked as first, second, or third place winners or (sometimes several) runner-ups. Directors of equity research at brokerage firms refer to these results when they set compensation levels for analysts. Polls indicate that analysts' being "up to date" is of paramount importance. The timely production of earnings estimates, buy and sell opinions, and written reports on companies followed are also key factors. Polls also indicate that initiation of timely calls on relevant information is a valuable characteristic in a successful (and hence, well-compensated) analyst.

An analyst's ability to generate revenues and profits is the second significant factor in compensation. An analyst's most measurable profit contribution comes from involvement in underwriting deals. Articles in the popular financial press describe the competition for deal-making analysts as intense. Analysts who help to attract underwriting for clients may receive a portion of the fees or, more likely, bonuses that are two to four times those of analysts without underwriting contributions. The distinction between vice president and managing director (or, partner) for analysts at the largest investment banks is highly correlated with contributions to underwriting fees (see Galant [1992], and Raghavan [1997], and Dorfman [1991]).

Another potential source of revenues, commissions generated by transactions in the stock of the companies the analyst follows, may also be a factor in the analyst's compensation. It is difficult, however, to define an analyst's precise contribution to trading volume. There are many other factors, including the trading "presence" of the investment bank that affect it. Moreover, customers regularly use the ideas of one firm's analysts, but transact through another firm. For institutional customers, this is the rule rather than the exception. In the short run, institutional "buy-side" customers seek out the most attractive bids and offers independently of analysts'

research helpfulness. Over a quarter or a year, the allocation of commission dollars among brokerage firms is more closely tied to research value-added.

II. Data, Sample Selection, and Sample Description

A. Return Data for IPOs

The data we examine come from two sources. First, we identify firms that conducted initial public offerings in 1990 and 1991 using *Investment Dealers Digest (IDD)*. A total of 391 IPOs are included in the sample. We collected relevant information on each offering, including the lead underwriter, offering price, size, and date. Stock returns are then collected from the Center for Research in Securities Prices (CRSP) NYSE/AMEX/Nasdaq data tape.

Table 1 describes the IPO sample in terms of offering month, market capitalization, and industry distribution. We limit the sample to firm commitment offerings of equity only (no warrants or bonds attached) and offering size of \$5 million or more. The sample includes almost all underwritings by the major well-known underwriters in the U.S. Most underwriters make their recommendation comments available on *First Call*.

As in previous studies (e.g., Ibbotson, Sindelar, and Ritter, 1994), the number of IPOs is positively correlated with the lagged changes in the level of the market (Panel A). Fifty-two percent of the firms in the IPO sample have market capitalizations between \$50 million and \$200 million (Panel B). (Market capitalization is calculated as the number of shares outstanding, as reported on the CRSP tapes, multiplied by share price at the end of the SEC quiet period, 25 days after the IPO.) Twenty-six percent of the offerings have a capitalization of less than \$50 million. The industry composition of the sample is well balanced; business services (including computer

software), chemicals, health services, and high-tech equipment (including computer hardware) are the most frequent SIC code designations (Panel C).

Table 2 reports the number size, first-day return, and two-year excess return of IPOs by underwriter. Seventy-two different underwriters acted as lead managers in our sample of 391 IPOs. Fourteen underwriters managed 246 or 63 percent of the IPOs. Because of an insufficient number of observations, we assign all the remaining underwriters to a single group.

We find a general pattern of substantial underpricing at the offering date (10.8 percent mean excess return on the first day) and modest positive size-adjusted returns (relative to CRSP size-decile return) in the next five months. Thereafter, the mean and median size-adjusted returns for the entire IPO sample are mostly negative, averaging about -5 percent per year. These returns are consistent with Ritter's (1991) and Michaely and Shaw's (1994) findings of positive early-term and negative longer-run performance of IPO firms. Because we eliminate smaller IPOs, which have the most negative long-run returns in Ritter's study, our mean and median long-term returns are not as negative as his.

The finding of a positive first-day excess return is not unique to a particular underwriter, but holds for all the 14 major underwriters in the sample (it varies between 18.6 percent and 2.1 percent), as well as for the combined group of non-major underwriters. The two-year excess return is negative for 9 of the 15 underwriter categories, and it varies between -45.8 percent and +21.3 percent.

B. Analysts Recommendation Data

Information on analysts' recommendations of companies that completed initial public offerings was obtained from *First Call*. First Call Corporation collects the daily commentary of portfolio strategists, economists, and security analysts at major U.S. and international brokerage firms, and sells it to professional investors through an on-line PC-based system. As brokerage firms report electronically from their "morning calls", First Call Corporation makes the information it available almost immediately to its subscribers. Thus, *First Call* is a convenient and centralized source of brokerage research information. Institutional investors typically pay for subscriptions through soft-dollar commissions. That is, they purchase *First Call* services in exchange for agreeing to transact a commission-dollar amount through an agent of First Call.

In the 1990-1991 period that we analyze, there are about 1,000 comments in the database that apply specifically to IPO firms within one year of their offering dates. All comments provide: (1) the time and date recorded in the system; (2) the name and ticker symbol of the relevant company; (3) the brokerage firm and analyst producing the comment; (4) a headline summarizing the topic; and (5) the text of the comment, sometimes including tables of earnings estimates and financial ratios. Comments can range from new stock recommendations and revised earnings estimates to new product and industry analyses.

All comments on IPO firms are read to identify the initial opinions and opinion changes by all analysts providing information to *First Call*. While brokerage firms use different rating systems, all can be reduced to four or five categories. We categorize all opinion changes as "buy," "attractive," "hold," and "sell." Some brokerage firms also offer an "aggressive buy" or "trading buy" category, which we code simply as "buy." (We concluded that price reactions to the 12 "aggressive buy" recommendations were similar to those of simple "buy" recommendations.)

Only initiations and changes to another recommendation category, not reiterations of previous opinions (which occur frequently in conjunction with earnings analyses or other news), are included in the sample.

Table 3 details the extent to which brokerage analysts initiated or changed opinions on the 391 IPO firms during the first year after the IPO date. No recommendations were found for 191 (49 percent) of the IPO firms. In general, these firms have the smallest market capitalizations in our sample. We categorize the remaining 200 firms in four ways: (1) IPOs that received buy recommendations only by the lead underwriter's analyst for its offering (63 firms); (2) IPOs that received buy recommendations made only by analysts other than the lead underwriter's (44 firms). Several of these firms received a recommendation by more than one non-lead underwriter; (3) IPOs that received buy recommendations by both lead underwriter's analyst and other analysts (41 firms); and (4) IPOs that received recommendations other than buy (e.g., attractive, hold, and sell) (52 firms). A total of 360 recommendations are documented in *First Call* on these 200 IPO firms in the first year after they went public.

We analyze the distinction between recommendations by the lead manager of the IPO and other brokerage firms for two reasons. First, the lead manager is responsible for the due diligence process, for "building the book" of committed investors, for setting the price of the IPO and, ultimately for the aftermarket price support. Hence, in investors' minds, the decisions of the lead manager (and, thus, its reputation) are most associated with the aftermarket "performance" of the IPO. These association and reputation effects are less operable or even non-existent for other syndicate members. (This conclusion was argued or defended by three senior executives at well-known buy- and sell-side firms, all of whom preferred anonymity.) Indeed, Ellis, Michaely and

O'Hara (1998) also show that it is only the lead underwriter that is actively involved in the after market trading of the IPO, and the other syndicate members, including the co-manager, do not play a significant role in this process.

Second, the analyst working for the lead manager is most directly involved in helping the firm do the due diligence, marketing his or her own industry expertise to the IPO candidate, and then marketing the IPO to investors. Thus, this analyst has greater potential for pre-commitment and self-justification of the IPO's valuation than other analysts.

Multiple recommendations of single firms occur, but do not predominate in the sample. Table 3, Panel B, shows that about half of the 200 companies are recommended only once, and only 42 companies are recommended more than twice. As expected, the firms with the most recommendations are among the largest firms in the IPO sample.

Only three (1 percent) of the recommendations are "sell" recommendations (the lowest rating given by the brokerage firm). Not surprisingly, non-underwriter investment banks issued all the sell recommendations. There are also 74 "attractive" recommendations (38 by the underwriter and 36 by non-underwriters), 23 "hold" recommendations (8 by the underwriter and 15 by non-underwriters), 42 "removed from buy" recommendations (20 by the underwriter and 22 by non-underwriters), and 11 downgrades from "attractive" recommendations (7 by the underwriter and 4 by non-underwriters).

Table 4 analyzes the characteristics of the 214 buy recommendations (59 percent) by underwriters and non-underwriters. Three distinctions between underwriter and non-underwriter recommendations are apparent. First, underwriter recommendations appear to be made sooner

after the IPO date than those by non-underwriters. Sixty-seven percent of the buy recommendations by underwriters are made in the first two months after the IPO date, compared to 49 percent by non-underwriters. For the first 12 months, however, the numbers of recommendations by underwriters and non-underwriters are not very different.

Second, the recommendations by non-underwriter analysts are made on slightly larger firms. Note in Table 4, Panel B, that non-underwriters recommended 20 firms with initial market capitalization of more than \$400 million; underwriters recommended 11. Conversely, non-underwriters recommended only five firms with initial capitalization of less than \$50 million; underwriters recommended nine. Thus, non-underwriters tend to initiate coverage and recommend larger firms. This finding is consistent with the observations of Irvine (1995) and Bhushan (1989), who suggest that analysts tend to initiate coverage on larger firms.

Finally, Panel C of Table 4 shows that the distribution of recommendations across industries is very similar to the distribution of the IPO sample across industries reported in Table 1.

III. Market Reactions to Recommendation Changes

To evaluate the effect of underwriter and non-underwriter recommendations on the firms in our sample before, during, and after the recommendation date, we calculate the return for a buy-and-hold strategy. We compare those returns to several benchmark portfolios: The Nasdaq Composite index, the CRSP equally weighted index, and the appropriate CRSP market capitalization decile index. While all indexes provide similar results, we believe the size decile index is the most appropriate for at least two reasons. First, it explicitly accounts for the well-

known size factor and is therefore advocated in the literature (e.g., Dimson and Marsh, 1986). Second, the market segment portfolios created by CRSP are value-weighted, and the potential bias from compounding an equally weighted index is avoided (see Canina, Michaely, Thaler, and Womack, 1998). We therefore discuss only the size-adjusted excess return.

The size-adjusted excess return is defined as the geometrically compounded (buy-and-hold) return on the stock minus the compounded return on the relevant CRSP market capitalization decile portfolio:

$$ER_{a \text{ to } b}^i = \left[\prod_{t=a}^b (1 + r_t^i) - \prod_{t=a}^b (1 + r_t^{size}) \right] \quad (1)$$

where r_t^i is the raw return on Stock i on Day t , and r_t^{size} is the return on the matching CRSP market capitalization size decile for day t . $ER_{a \text{ to } b}^i$ is the excess return for Firm i from Time a to Time b . For the three days around the recommendation, the time period (a to b) is trading days $t = -1, 0, +1$ (Day zero is the recommendation day). Returns are calculated similarly for longer periods beginning on Day $t - 1$ and extending for n months (where a month is defined as 21 trading days). Similarly, returns are calculated for the pre-event 30-day period ending on Day $t - 2$.

The average excess return for each period, PER (Portfolio Excess Return), is the mean of the ER^i :

$$PER_{a \text{ to } b} = \frac{1}{n} \left(\sum_{i=1}^n ER_{a \text{ to } b}^i \right) \quad (2)$$

where n equals the number of sample firms in the event period with available returns. If a firm is

delisted within one year of a recommendation, which happened for nine firms of the 391, this assumes that the proceeds are equally distributed among the remaining stocks in the sample. T-statistics are calculated using the cross-sectional variance of excess returns in the relevant period.

The price patterns for the various recommendation types are consistent with previously reported reactions to recommendations of non-IPO firms [Elton, Gruber, and Grossman (1986), and Womack (1996)]. That is, the market responds positively but incompletely in the short run to “buy” recommendations, and negatively but incompletely to “removed-from-buy” and “sell” changes. The reaction to bad news (removed-from-buy and sell recommendations) is greater in absolute terms than the reaction to good news (new buy recommendations).

The immediate average price reaction to the buy recommendations is positive (3.5 percent) and significant. The removed-from-buy and sell recommendations are both greeted with initial strong negative reactions of -12.7 percent and -10.5 percent, respectively. Both are highly significant. While the longer-term reaction to sell recommendations is more severe than the market reaction to removed-from-buy recommendations, we caution that there are only three sell recommendations in the sample.

A. Market Reaction to Recommendations Differentiated by Underwriting Relationship

Table 5 reports the differential price reaction to recommendation announcements made by lead underwriters and other brokers. The immediate price reactions to the recommendations indicate that the market discounts the value of underwriter buy recommendations compared to those of non-underwriters. In the three-day period surrounding the recommendation date on *First Call*, the underwriter buy recommendation stocks increase in price by 2.7 percent on average

(with a t-statistic of 2.92); whereas the non-underwriter increase buys by 4.4 percent. This difference is large, but its statistical significance is marginal (t-statistic of 1.55). The non-parametric results point in the same direction: 62 percent of the stocks recommended by their own underwriter increase in value compared to 72 percent of those recommended by non-underwriters.

To ensure that the differences are not due to differences in the market capitalization of the IPOs or to the time since the firm began trading, we also run the following regression:

$$ER_{(-1,1)}^j = 11.4 - 2.8UR_i - 0.6Size_i - 0.04Time_i - 0.14DEarn + 0.8DFirst + 0.0UR_i * Time_i \quad \bar{R}^2 = 0.023 \quad (3)$$

(1.59) (-1.78) (-1.02) (-0.48) (-0.06) (0.62) (0.91)

where:

$ER_{(-1,1)}^j$ is the three-day excess return (percent) centered around the buy recommendation announcement;

UR_i is a dummy variable that takes the value of one if underwriters make the recommendation and zero if a non-underwriter makes the recommendation;

$Size_i$ is the log of market capitalization at the end of the quiet period;

$Time_i$ is the number of days between the IPO and the recommendation;

DEarn is a dummy variable that takes the value of one if an earnings announcement has occurred in the three days around the recommendation date;

DFirst is a dummy variable that takes the value of one if the recommendation is the first one to be issued on the IPO, and zero otherwise;

$UR_i * Time_i$ is an interaction term between the source of recommendation and the number of days between the IPO and the recommendation

Standard errors are corrected for heteroskedasticity using White's (1980) procedure. T-statistics are reported in parentheses.

The results in Equation 3 indicate that the size of the IPO is not a significant factor in determining the market reaction to the recommendation announcement. And while underwriter recommendations come sooner than non-underwriter recommendations (a median of 47 versus 63 days after the IPO date), the regression results show that time since issuance does not affect the market reaction to the announcement. The insignificant coefficient of *DFirst* indicates that the sequencing of the recommendation is not the reason for our findings. The results also show that the 13 earnings announcements within the three-day event window are not the reason for the difference between the market reaction to underwriter and non-underwriter recommendation announcements.

The effect of the recommendation source is similar to what we find in the univariate analysis. If the underwriter makes the recommendation, the average impact is 2.8 percent less than if the recommendation is made by a non-underwriter. Statistically, the underwriter coefficient is significant at the 10 percent level (two-sided test). These results are consistent with

the conflict of interest hypothesis, but not with the superior information hypothesis, which predicts a stronger price reaction to underwriters' buy recommendations because they have more precise information.

B. Pre-Recommendation Price Performance

If underwriters attempt to boost stock prices of firms they have taken public, the time to administer the shot is when it is really needed—is when a firm is performing poorly. Indeed, as reported in Table 5, we find a significant difference in the pre-event period abnormal price performance between buy recommendations made by underwriters and non-underwriters. Returns of firms with underwriter recommendations declined, on average, 1.6 percent in the 30 trading days prior to a buy recommendation, while firms receiving non-underwriter buy recommendations increased 4.1 percent, over the same period, a significant difference (t-statistic = 2.36). Median results are similar (-1.5 percent versus +3.5 percent). Sixty percent of the firms recommended by their own underwriters experience negative price movement in the 30 days before the recommendation announcement, compared with only 34 percent of the firms recommended by independent sources.

We confirm the univariate results with a multivariate regression analysis. The dependent variable is the two-month excess return before the announcement, and the independent variables are a dummy variable that takes the value of one if the underwriter issued the recommendation; the log size of the IPO; and the time since the IPO. T-statistics are in parentheses.

$$ER_{(pre)}^i = -1.9 - 6 UR_i - 0.1 Size_i - 1.2 Time_i \quad (4)$$

$$(-0.09) \quad (-2.37) \quad (-0.24) \quad (-0.61) \quad \bar{R} = 4.66 \%$$

The multivariate regression in Equation (4) shows a 6 percent negative excess return for IPO stocks in the period prior to the recommendation announcement by their own underwriter (similar to the 5.7 percent in the univariate analysis). These results, combined with the announcement reaction, are consistent with the hypothesis that underwriter analysts attempt to boost prices of poorly performing underwritten firms, while non-underwriter analysts have more independence to recommend only those stocks that they believe are attractive.

There are at least two alternative explanations for our results. The first one is selection bias. Underwriters are selected because they value an issue more highly. The second explanation is that underwriters and analysts are anchored in their views and opinions and simply ignore some relevant new information. They are emotionally attached in some way to the firm they brought to market, and they therefore frame the evidence so as to justify their rosy opinion of the firm. Outside analysts who do not have this bias can come up with a more objective valuation of a firm.

C. Post-Recommendation Price Performance

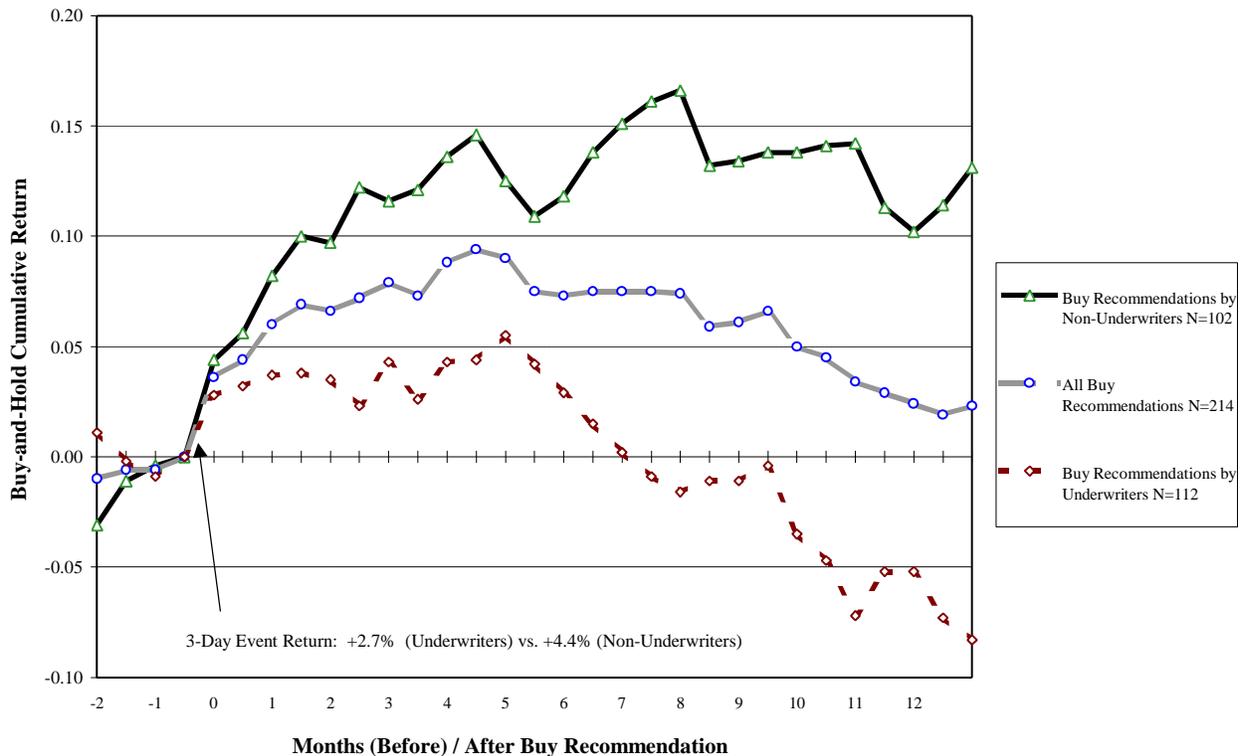
The event-period reaction shows a differential market perception of the advice of underwriters and non-underwriters. An analysis of longer-term performance results can tell us whether the recommendations by the underwriters were indeed upward-biased (supporting the conflict of interest hypothesis). If lead underwriters have “better” information—not yet incorporated into prices—the stocks they recommend should perform better than the stocks recommended by the non-underwriter analysts.

The mean difference in post-recommendation performance between underwriter and non-underwriter buy recommendations is shown in Table 5 and Figure 1. For “buy”

recommendations, the performance of the two groups diverges immediately. The price impact difference after three months is 8.9 percentage points, with a t-statistic of 2.43. This divergence continues for a year, with non-underwriter recommendations outperforming underwriters' by an average 18.4 percentage points after one year (t-statistic = 2.29). The median one-year size-adjusted returns are 3.5 percent versus -11.6 percent for a 15.1 percentage point difference.

A non-parametric result indicates that 41 percent of the firms recommended by their underwriters experienced positive excess returns in the first year after the recommendation, compared with 51 percent of the firms recommended by non-underwriters. Note that this comparison yields a simple trading strategy of buying stocks on the day after non-underwriters'

Figure 1: Cumulative Mean Size-Adjusted Event Return for Firms Receiving New Buy Recommendations within One Year of their IPO, Conditional Upon the Source of Recommendation



recommendations, which yields returns above “normal.”

Because the long-run performance of IPOs has been shown to be related to size and time since issue (Ritter, 1991; Michaely and Shaw, 1994), it is important to control for these variables before drawing inferences about the effect of a recommendation source on long-term performance. (Remember that the recommendations we analyze were announced at different times during the first year of trading. Thus, the “post-recommendation” performance does not start at the same time after the IPO issue date.)

We examine long-run performance using the regression in Equation (5). The dependent variable is the excess return in the year after the buy recommendation is announced, and the independent variables are a dummy variable for the source of recommendation; the size of the IPO; the time between the IPO date and the recommendation date; a dummy variable indicating whether the recommendation was the first one issued on the IPO firm; and a set of industry dummy variables (based on two-digit SIC code). Standard errors are corrected for heteroskedasticity using White’s (1980) procedure. T-statistics are reported in parentheses.

$$ER_{(post)}^i = 9 - 15.5 UR_i - 0.1 Size_i - 0.8 Time_i - 4 DFirst + industrydummies \quad (5)$$

(0.04) (-1.97) (-0.01) (-0.14) (-0.516)

$$\bar{R} = 13.71\%$$

Consistent with the univariate analysis, the performance of an IPO stock after a buy recommendation from an underwriter is 15.5 percentage points worse than the performance after a recommendation from a non-underwriter (the univariate results show an 18.4 percentage point

difference in performance). The difference is significant. None of the control variables is significant.

To analyze the performance of IPO stocks, depending on whether they are recommended by only the underwriter, by non-underwriters, or by both, we calculate excess returns (starting at the first day of trading) contingent on the source of the recommendation. Note that a given stock appears only in one subsample, so there are no overlapping observations. While this categorization is made on an ex post basis (only at the end of the first year after the IPO do we know in which group a stock belongs), it yields further insight about the relationship between underwriters and firms and recommendation bias.

The 391 IPOs in our sample can be categorized into five groups according to the source of the buy recommendation information available on *First Call*. Four of these are analyzed in Table 6. First, there are 191 firms for which there are no recommendations available on *First Call* within one year of the IPO date (recommendations for IPOs toward the end of the sample period could not be tracked for the entire 12 months after the IPO). Second, there are 63 firms with recommendations made only by their lead underwriters. Third, there are 41 firms with recommendations made by both underwriters and non-underwriters. Finally, there are 44 firms with recommendations made only by non-underwriters. The fifth group, omitted from Table 6, is the 52 firms with non-buy recommendations.

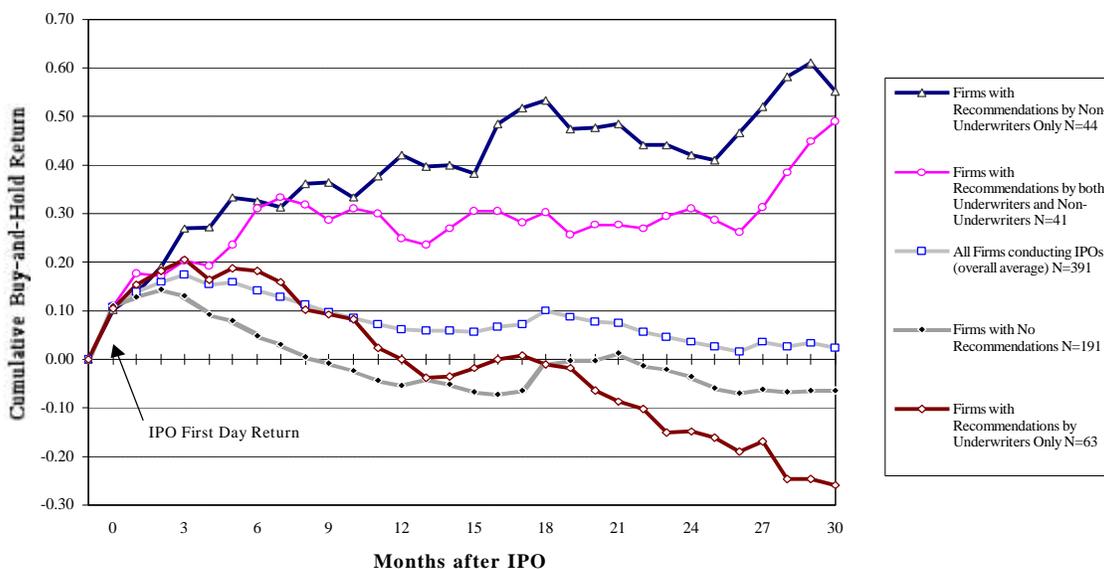
Not surprisingly, as indicated in the last row of Panel A, Table 6, the 191 IPOs without any *First Call* recommendations have by far the lowest market capitalization; the median IPO size is \$59 million compared with a median market capitalization of \$111 million, \$162 million, and \$177 million for firms recommended by their own underwriters, by non-affiliated underwriters,

and by both, respectively. (Consistent with their small market capitalization, most of the firms without any recommendations were also issued by less well-known underwriters.)

Mean excess returns for each the four groups up to two years after the IPO date are reported both in Table 6 and in Figure 2. There is virtually no difference in the first-day IPO returns, regardless of recommendation or source. All the initial returns hover around +10.5 percent. As soon as six months after the IPO, however, a distinct difference among the groups becomes evident; the IPOs recommended only by their own underwriter have increased by 7.7 percentage points (to an 18.1 percent excess return, including the first day), while the group recommended by only non-underwriters experiences additional excess return of 18.6 percentage points (to 28.9 percent).

Figure 2 : Cumulative Mean Buy-and-Hold Size-Adjusted Return for Companies Conducting Initial Public Offerings in 1990-1991 Conditional Upon Source of Brokerage Recommendations.

Cumulative Return begins at the IPO Price.



The difference in performance between the two groups is even larger after one and two years. The mean excess return for the IPOs recommended by underwriters is -18.1 percent after two years, compared with a mean excess return of +45 percent for the IPOs recommended by non-underwriters. The differences in performance are statistically significant, as shown in Panel B. The results are not attributable to outliers; 30 percent of the IPOs recommended by only their underwriter performed better than the market, compared with 57 percent of the IPOs recommended only by non-underwriters.

The median numbers are even more dramatic. The median two-year excess return for firms receiving recommendations by underwriters is -51.9 percent, compared with a median performance of positive 23.1 percent, a difference of 75 percentage points.

We also examine whether the difference in performance of firms recommended by their own underwriter and those recommended by non-underwriters is because there are multiple recommendations by non-underwriters. For example, say that an IPO firm receiving a buy recommendation from non-underwriters always receives more than one from independent sources. Then, it could be argued that the reason for the difference is not the source of the recommendation but rather the intensity or frequency: Firms that receive more than one recommendation are more likely to perform better.

This issue turns out not to be a major factor in our sample. Of the 44 firms receiving recommendations exclusively from non-underwriters, only five received multiple recommendations (four firms received two recommendations, and one firm received three). Repeating the analysis using only the remaining 39 firms yields results similar to those reported in

Table 6 and Figure 2. The mean two-year excess return is 46 percent, significantly different from the performance of the IPOs receiving a recommendation from their underwriter only.

Table 6 and Figure 2 clearly show that underwriter recommendations, on average, are not reliable. They also reveal that the best indicator for long-term performance of an IPO is not what the underwriter does or says, but what the more independent sources predict. Stocks recommended by non-underwriter analysts do well in the long run (with or without the underwriter analyst's blessing), and stocks not recommended by non-underwriter analysts do poorly, whether the underwriter recommends it or not.

This assertion is confirmed using a regression analysis. The dependent variable is the two-year excess return (*2YREX*), calculated from the end of the first day of trading. The independent variables are a dummy variable that takes the value of one if the underwriter issues a buy recommendation (*Self*); a dummy variable (*Other*) that takes the value of one if a non-underwriter recommends the IPO (and zero otherwise); the size of the IPO at the end of the quiet period (in logs); and a series of industry dummies.⁵ (Standard errors are corrected for heteroskedasticity using White's (1980) procedure.) T-statistics are reported in parentheses.

$$2YREX = -140 - 0.17 \textit{Self} + 30 \textit{Other} + 11 \textit{Size} + \textit{Industry Dummies} \quad (6)$$

$$(-2.26) \quad (-1.33) \quad (2.09) \quad (1.98)$$

$$\bar{R} = 3.2 \text{ percent}, \quad \text{NOB} = 382$$

⁵ Nine firms in the sample ceased trading before their second anniversary. One firm is from the group recommended by their own underwriters only, one from the group of IPOs recommended by non-underwriters only, five from the group without any recommendations, and two from the group with recommendations other than buy.

Consistent with results in other studies, large IPOs tend to do better in the long run, as indicated by the significant size coefficient. IPOs with a recommendation from an independent underwriter show an excess return of 30 percent above average (significant at the 3.7 percent level). The “recommended by own underwriter” (*Self*) coefficient is negative but not statistically significant.

At the same time, it seems that underwriter buy recommendations have a significant short-term impact on stock prices. First, we have documented that the market reacts significantly positively to a buy recommendation announcement by underwriters (an abnormal return of +2.7 percent). Second, despite a very significant drop in value in the next two years (a median drop of over 50 percent), Table 6 and Figure 2 show that stocks recommended by underwriters do not drop in price for about six months, while the prices of IPOs without any recommendation start to fall after three months. The difference in performance between the two groups six months after the IPO is 13 percentage points, significant at the 5 percent level. Since most recommendations occur in the first two months after the firm goes public, the value of underwriter recommendations appears to be positive but short-lived.

Can the poor performance of the IPO firms recommended only by their own underwriters be attributed to some underwriters recommending all the stocks they underwrite, no matter what? We look at the consistency of the post-recommendation results by comparing mean one-year excess returns after buy recommendations for each of the 14 underwriters. That is, for each broker recommending its own IPOs as well as others’, we compare the one-year ex post performance of *all* the IPOs they recommend. The null hypothesis is that it is equally likely that underwriters’ own issues will perform as well as those they recommend but do not underwrite.

For 12 of the 14 underwriters, the IPOs they recommend but do not underwrite perform better. We can reject the hypothesis that recommendations by a lead underwriter are as good as

its recommendations on other IPOs (the t-statistic is 2.76, calculated as $\frac{\hat{p} - p}{\sqrt{p(1-p)/N}}$, where N is the number of observations (14), $P = 1/2$, and \hat{P} is 12/14).

Our investigation thus far reveals several interesting conclusions. First, it appears that underwriter analysts' recommendations are positively biased. Second, this recommendation bias is not unique to one or two investment banks, but is widespread. Third, the market does not appear to fully recognize this bias. Finally, non-underwriter recommendations appear to be more reliable indicators of future performance.

IV. Robustness

There are several possible concerns about the results presented so far. First, since our data on recommendations end in December 1991, we are unable to track all 12 months of recommendations for firms that went public in 1991. For example, for firms that went public in October 1991, we have only two months of recommendation history. This potentially affects our findings, although most recommendations occur soon after the quiet period ends.

Second, the large brokerage firms are the main suppliers of information to *First Call*. Could it be that the difference between the performance of IPOs recommended by underwriters and non-underwriters is affected by the fact that our IPO sample comprises all IPOs (including those issued by non-*First Call* information providers), while the recommendations sample is a subset of only *First Call* investment banker recommendations? For example, if we categorize a

firm as one recommended only by non-underwriters, because its own underwriter did not provide information to *First Call*, it would bias our findings.

Third, are there significant omissions in the *First Call* database (i.e., recommendations made by *First Call* information providers that are not reported on *First Call*)?

A. Buy Recommendations Within Two Months of the IPO Date

There are two potential problems with using recommendations made in the first full year after a firm goes public. The first is that not all IPOs can be tracked for a full year because of data limitations. The second is that the choice of one year is somewhat arbitrary. (We base our choice of one year on several court filings that define the “booster shot” period as up to one year.)

To minimize the effect of uneven tracking intervals and to examine the sensitivity of the results to different tracking intervals, we repeat the tests on recommendations made within two months of the IPO date. This selection criterion yields 125 buy recommendations: 75 by underwriters and 50 by non-underwriters.

In Table 7, Panel A, we report the relative performance of stocks before, at, and after they receive a buy recommendation either from their underwriter or from a non-underwriter (the presentation parallels that Table 5). Using only the first two months of recommendations does not significantly affect any of the results. In the two months prior to an underwriter recommendation, the stocks under performed the market by 1.5 percent. Stocks receiving a recommendation from a non-underwriter recommendations, outperformed the market by 0.9 percent. The difference is significant. The announcement-period effect is almost double for non-underwriters (5.2 percent versus 2.7 percent), but the statistical significance is marginal. Finally,

the post-recommendation performance is significantly better in the year after non-underwriter recommendations (12.3 percent versus -5.4 percent). Thus, our results do not appear to differ whether we track buy recommendations for two months after the IPO or for one year.

B. Recommendation Sample Versus IPO Sample

The second possible concern is that the IPO sample includes all IPOs above \$5 million, while the recommendation sample includes only the recommendations made by large investment banks. The most serious issue here is that a firm we categorize as receiving recommendations from non-underwriters only may actually have received recommendations from its own underwriter, but the underwriter is not a *First Call* information provider. We address this concern by examining only the IPOs issued by underwriters that are also *First Call* information providers.

The results are reported in Panel B of Table 7. Note first that most of the buy recommendations are in fact issued on IPOs for which the lead underwriter is also a *First Call* information provider; we are left with 195 of the original 214 buy recommendations. Not surprisingly, the results in Panel B are very similar to those reported in Table 5, and none of our conclusions change.

Finally, we need to ensure that there are no major omissions in the *First Call* database that may affect our findings. That is, does the database indeed include most or all of the recommendations made by the major brokerage houses? With this objective in mind, we cross-

check in *Investext* all the IPOs either recommended by only their own underwriter or by only non-underwriters (63 and 44 firms, respectively).⁶

For each firm, we search for and read all recommendations and comments reported on *Investext* within the time period analyzed, identifying all the buy recommendations. The last step is to compare the source and number of recommendations made on each firm with our *First Call* data. Since this process is labor-intensive and time-consuming, we limit the search to only a subset of the IPO sample, as described above.

For the 63 IPOs recommended by only their own underwriters (according to *First Call* data), we find only two additional recommendations by non-underwriters on *Investext*. For the 44 IPOs recommended by only non-underwriters (again, according to *First Call* data), we find three additional recommendations made by their own underwriters on *Investext*. These omissions are inconsequential and do not change any of the main results.

V. Discussion: Why are Analysts' Recommendations Biased?

Our evidence suggests that underwriters' recommendations are biased and, in the long run, inferior to recommendations by non-underwriters. We have argued that the bias has its roots in an investment bank's agency relationship with the IPO firm from which it receives sizable underwriting fees. This explanation does not imply illegality, but rather that underwriters' actions

⁶ *Investext* is a very large database of company, industry, and product analysis, beginning in May 1982. It includes full-text reports written by analysts from investment banks, brokerage firms, research companies, and trade associations (over 300 organizations). It covers over 50,000 companies worldwide and 54 industry groups. Access is via Dialog and, more recently, the World Wide Web.

may be suboptimal for the investing public. The pattern of recommendations we describe can be seen as nothing more than a questionable business practice.

There are at least three other explanations for underwriter bias. The first has to do with cognitive biases documented in the psychological literature. That is, it is possible that underwriter analysts genuinely believe that the firms they underwrite are better than the firms underwritten by other investment banks. In fact, history (or research) is not likely to change their priors. This reasoning is a direct outcome of what Kahneman and Lovallo (1993) label “the inside view.”

According to this theory, analysts view IPOs underwritten by their firms in a unique narrow frame (much like parents who see their children as special). They are unable to accept the statistical reality that many of their IPOs will turn out to be average or below average. Unaffiliated analysts take the “outside view,” developing their judgment about the quality of an IPO by considering *all* IPOs in comparable situations, as well as other statistical information. Thus, they are able to frame the problem more broadly and, it turns out, more appropriately.⁷

This explanation is consistent with our finding that an investment bank is better at forecasting the performance of other investment bank IPOs than its own (using presumably the

⁷ A related cognitive bias is the “anchoring bias.” (We thank Sheridan Titman for his insights on this issue.) The underwriter analysts establish or anchor their views and opinions during the due diligence phase, long before the firm goes public. This anchoring bias explains not only why they recommend stocks that have dropped in price (51 percent of underwriter analyst recommendations are for firms that experienced a price depreciation of more than 20 percent from the offering day), but also why they do not always recommend stocks that rise in price when non-affiliated analysts do. Their priors are presumably fixed and do not change, whatever the market says and does. They are too anchored to change their views. This anchoring idea is consistent with the underwriter firm giving an implicit recommendation at the offering price. In essence: “If I sold this IPO to you at \$18, it sure better be attractive at \$14,” but, since “I sold it to you at \$18 and it is now \$28, I’m ‘off the hook’ and don’t need to recommend it.” Presumably, unaffiliated analysts are less anchored by the offering price and are more willing to recommend high-momentum new issues.

same levels of intelligence and skill). When analyzing the IPOs of others, they take the “outside view,” which more often yields accurate estimates.⁸

A second and related explanation is that underwriters are chosen, in part, *because of* the favorable views they have about a firm. Their recommendations and views are thus a manifestation of the well-known “winner’s curse” or selection bias (see for example McNichols and O’Brien, 1997). Thus, the underwriter analyst’s priors are almost by definition overly positive. Now assume the recommending analyst is attempting to apply the same criteria to recommendations of firms underwritten as to those not underwritten by his firm. With a positive predisposition, the analyst interprets the new information signals differently from other analysts.

While most of the empirical results are generally consistent with both the (unintentional) cognitive and selection biases and the (strategic and intentional) conflict of interest explanations, there is some evidence that suggests that the cognitive bias explanation is the less dominant. Our interpretation that the bias in recommendations is an outcome of a strategic act is also consistent with findings of Teoh, Welch, and Wong (1998) and Lang and Lundholm (1997). They find that managers “massage” earnings upward just before equity issuance.

Because our evidence does not allow us to decisively disentangle the selection bias and conflict of interest biases, we conducted a survey of investment professionals to determine respondent *perceptions* of the cause for the bias. While respondent perceptions may themselves

⁸ Rajan and Servaes (1996) show that analysts are at times overoptimistic about the prospects of IPOs. Our findings indicate that the degree of overoptimism depends on the relationship between the underwriter and the recommended firm.

be biased or wrong, they nonetheless represent the views of professionals who contribute to market pricing through their decisions.

The pool of candidates surveyed was MBA recipients with at least 4 years' work experience in either the investment banking or investment management industry. We choose this pool because these are the people who are actively involved in the IPO process, either on the sell side (investment bankers) or on the buy side (investment managers).

We wrote to 31 professionals and received responses from 26. We chose not to follow up on those not responding since the 26 who did respond are equally divided between investment banking and investment management. The survey is attached as an appendix. In the survey, we provided a summary of the findings and asked respondents to choose the explanation, that in their opinion best explains the results. We used a standard survey technique designed to prevent question-order bias. One-half of randomly chosen participants received the survey showing the selection bias as Option A and the strategic conflict as Option B, and the other half received the survey showing the strategic conflict choice as Option A.

When survey participants were asked to choose between the conflict of interest explanation and the selection bias explanation, they overwhelmingly chose conflict of interest (see Table 8). In fact, 100 percent of investment managers (buy-side respondents) believed the conflict of interest story best explains our empirical results. Moreover, only 3 of 13 of investment-banking professionals, or 23 percent, chose the winner's curse explanation.

In essence, even the majority of the investment bankers chose the conflict of interest explanation as more likely, effectively acknowledging that the recommendation pattern we have

found is not completely innocent. [One could argue that this result may be tainted, since it is at least possible that respondents were affected by stories they have read in the financial press. Still, in the case of the investment bankers (sell-side respondents), their responses are counter to their self-interest.]

These results suggest that market participants, and even those potentially engaging in the conflict, believe that the conflict of interest explanation is the more plausible one.

VI. Conclusion

There are several times when investment bank-firm relationships are observable, such as at the time a firm goes public. Our sample of analyst recommendations of IPO firms allows the testing of two hypotheses concerning the relationships among investment bankers, issuing firms, and investing clients. The first hypothesis is that underwriter analysts have superior information about issuing firms through their due diligence process. If they have superior information, underwriter analysts' opinions, and hence their recommendations, should be more accurate than those of non-underwriter analysts. We find no empirical support for this hypothesis.

The second hypothesis is that underwriter analysts have a strong incentive to recommend IPOs that their firms have recently taken public, regardless of the IPOs' quality. That is, there may be a conflict of interest between analysts' fiduciary responsibility to investing clients (to make accurate recommendations) and their incentive to market stocks underwritten by their firms. Our evidence is consistent with this hypothesis.

The long-run post-recommendation performance of the firms in our sample that are recommended by their underwriters is significantly worse than the performance of firms

recommended by other brokerage houses. The difference between the underwriter and non-underwriter groups is more than 50 percent for a two-year holding period beginning on the IPO day. The very same investment banks make better recommendations on IPOs when they are not the lead underwriter. Thus, it is not the difference in analysts' ability to value firms that drives our results, but a bias directly related to whether the recommender is the underwriter of the stock.

There is also a significant difference between the pre-recommendation price pattern of underwriter analyst recommendations and non-underwriter recommendations. Stock prices of firms recommended by lead underwriters have dropped, on average, in the 30 days before a recommendation is issued, while prices of those recommended by non-underwriters have risen. Finally, there is a differential market reaction to the announcement of buy recommendations by underwriters and non-underwriters. The size-adjusted excess return at the event date is +2.7 percent for underwriter analyst recommendations compared to +4.4 percent for non-underwriter recommendations.

Why are analyst recommendations biased when analysts are affiliated with the underwriter? We have laid out two possibilities. First, the underwriter has an incentive to issue positively biased recommendations on firms it takes to market. That is, the underwriter analyst is aware of the bias. The second explanation that is consistent with the evidence is that the bias is cognitive and unintentional. The analyst approaches the judgement with strong priors about the quality of the firm. The analyst truly believes that his own IPOs are the best, despite external statistical evidence, and this results in a biased recommendation-but the bias is not intentional.

We attempt to determine which explanation is more dominant by surveying investment bankers and investment managers who are directly involved in buying and selling IPOs. Their response is consistent with the intentional or conflict of interest explanation.

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Appendix A—Questionnaire

Dear professional in the investment business:

Could you answer one question for us? We have been asked by the editor of an academic journal to poll professionals as part of rewriting a paper we are trying to publish. We are working on a research project examining whether the underwriting relationship affects the recommendations that security analysts issue. Specifically, we are looking at the differences between “buy” recommendations issued by lead underwriters’ analysts of new initial public offerings (IPOs) and recommendations by non-underwriter sell-side analysts.

We would like to ask your opinion on how to interpret the results we find.

Here are the facts:

(Shown in the attached Figure 1) We find the following differences in returns before, at, and after analysts’ buy recommendations (made in the first 12 months). The graph shows returns from before to after the date of the recommendation (date 0), adjusted for the market.

1. When the lead underwriter recommends “buy,” the IPO stock increases 2.7% on average *at the time of* the “buy” recommendation. When analysts from non-lead banks recommend “buy,” the increase is 4.4%.
2. In the month *before* a “buy” recommendation, the stocks recommended by lead underwriters had gone down 1.6% on average. In contrast, stocks recommended by non-lead bank analysts had gone up 4.1%.
3. In the one-year period *after* the buy recommendations, the underwriter recommended stocks underperformed the market by 5% on average, while the stocks recommended by non-underwriters outperformed the market by 13 %.
4. For twelve out of fourteen brokerage firms we examine, the average one-year market-adjusted return after buy recommendations where they were the lead underwriter was lower than the return after their recommendations on other banks’ IPOs.

So, our conclusion is that *there is a bias* associated with lead underwriters’

recommendations. The important question is “**Why?**” How should we *interpret* the bias?

On the following page, please choose and circle Option A or Option B.

Most of us believe the *primary* goal of sell-side analysts is to recommend stocks that they believe are undervalued and will outperform the market in the future. However, we hypothesize two possible explanations for the observed bias (these two explanations are not mutually exclusive).

Here are the competing explanations:

Which option is more convincing, given your experience, and creates the bias described above? We are looking for “the truth” as you believe it, please do not be strategic or “PC” in your answer. Please choose only one answer, but feel free to give us comments on the reverse side of this page if you believe other issues are even more important.

Please circle the most convincing explanation of the bias:

Option A: The lead underwriter and its analysts suffer from “the winner’s curse.” That is, they won the lead managership of the IPO because their honest valuation of the firm was and is higher than most of their competitors. Hence, when they issue a buy recommendation, they also honestly believe it is a good buy. They attempt to apply the exact same “hurdle” or criteria to all buy recommendations, regardless of their underwriting relationship. They truly believe that the buy recommendation is issued in the best interest of their investing clients.

Option B: Underwriters' analysts may recommend their own IPO deals for strategic reasons, for example, to protect and reinforce relationships with the offering firms—even if it is not in the best interest of their investing clients. Their valuation “requirements” for issuing a buy recommendation are strategically less stringent (or, they use a lower “hurdle”) when they have underwritten the IPO recently.

Circle the type of firm you work for:

INVESTMENT BANK/BROKERAGE INVESTMENT MANAGEMENT

Table 1
Description of IPO Sample

All firms conducting initial public offerings in 1990 and 1991 with offering proceeds of \$5 million or greater (with details available in *Investment Dealers Digest*) are included in the sample. Panel A shows the time series of IPO dates across months in 1990-1991. Panel B shows the market capitalization of IPO firms, which is calculated as shares outstanding times market price as of the end of the 25-day SEC quiet period after the issue date. Panel C describes the sample by industry (two-digit SIC codes).

Panel A: Distribution of firms conducting initial public offerings by month in 1990-1991 (with offering size (flotation) greater or equal to \$5MM) and the month-end Nasdaq Price Index

Month and Year	Number of IPOs	Nasdaq Price Index
Jan 1990	8	415.81
Feb	6	425.83
Mar	14	435.54
Apr	16	420.07
May	13	458.97
Jun	19	462.29
Jul	17	438.23
Aug	10	381.21
Sep	5	344.51
Oct	1	329.84
Nov	1	359.06
Dec	2	373.84
Jan 1991	3	414.20
Feb	5	453.04
Mar	15	482.29
Apr	21	484.72
May	22	506.11
Jun	36	475.92
Jul	31	502.04
Aug	26	525.67
Sep	18	526.88
Oct	35	542.97
Nov	37	523.90
Dec 1991	<u>30</u>	586.34
	391	

Table 1, continued**Panel B: IPO firms differentiated by market capitalization (mkt cap), in millions (\$M)**

	<u>percent of IPOs</u>	<u># of IPOs</u>
MktCap less than \$ 50 M	26 %	100
MktCap, \$ 50 M to \$ 99.9 M	27	105
MktCap, \$100 M to \$199.9 M	25	98
MktCap, \$200 M to \$400 M	15	58
MktCap, greater than \$400M	<u>7</u>	<u>30</u>
All IPO Firms	100 %	391

Panel C: Distribution of IPO firms across industry groups (by two-digit SIC code)

	<u>SIC Code</u>	<u>percent of IPOs</u>	<u># of IPOs</u>
Business Services	(73)	10.0 %	39
Chemicals and Allied Products	(28)	9.5	37
Health Services (80)	7.7	30	
Electronic Equipment	(36)	6.9	27
Industrial Equipment	(35)	5.6	22
Instruments	(38)	5.6	22
Insurance	(63)	4.1	16
Banks and Investment Firms	(67)	4.1	16
Oil and Gas	(13)	3.8	15
Durable Goods	(50)	3.1	12
Other Industries	(various)	<u>39.6</u>	<u>155</u>
All IPO Firms		100.0 %	391

Table 2
Number and Performance of IPOs Differentiated by Underwriter

Underwriting firms conducting IPOs in 1990-1991 are divided into the 14 leading underwriting firms and 58 smaller firms classified as "Others". The number of IPOs for which the underwriter was the lead underwriter in the 1990-1991 period is shown in column 1. The average market capitalization (at the end of the twenty-five day SEC quiet period) of IPOs by each underwriter is in column 2. Size-adjusted buy-and-hold average excess returns for each underwriter for the three-day issue date event and then the next two-year size-adjusted post-event period are shown in columns 3 and 4.

Underwriter	# of IPOs	Average Mkt. Cap. (\$ Millions)	Average 3-Day Size-Adjusted Issue Date ER	Average Two-Yr. Post- Issue-Date ER
# 1	34	\$140	18.6 %	8.8 %
# 2	27	557	12.2	3.1
# 3	25	190	3.9	-24.4
# 4	23	119	9.1	-33.3
# 5	18	288	12.7	-5.7
# 6	17	145	9.6	2.7
# 7	16	156	7.9	-45.8
# 8	14	126	11.3	-12.3
# 9	11	203	6.7	-41.7
#10	11	150	2.1	21.3
#11	10	163	10.3	-44.2
#12	8	109	8.5	-18.2
#13	8	122	12.4	7.1
#14	4	64	15.0	13.5
Others	165	133	11.0	-9.8
Totals/Averages*	391	\$176M	+10.8 %	-10.9 %

*The Averages are across all IPOs in the sample.

Table 3
IPO Firms and Their Recommendations
by Sell-Side Security Analysts

Recommendation information on the IPO firms in 1990-1991 (Recs) is taken from *First Call*. In Panel A, we categorize all issuing firms according to the types of recommendations made by sell-side brokerage analysts within one year of the initial IPO date. Recommendations by underwriters (U) signify information provided by the equity research analyst of the lead manager brokerage firm. Recommendations by non-underwriters (Non-U) originate from brokerage firms other than the lead manager of the IPO. “Non-buy recommendations only” is a composite of the firms with only “attractive,” “hold,” or “sell” recommendations. Panel B shows the frequency of recommendation changes on any one IPO firm.

Panel A: IPO firms, differentiated by source of buy recommendations on First Call within the first year after IPO date

	<u>Percent of IPOs</u>	<u># of IPOs</u>
Firms w/ Buy Recs by Underwriters (U) Only	16 %	63
Firms w/ Buy Recs by Non-Underwriters (Non-U) Only	11 %	44
Firms w/ Buy Recs by Both U and Non-U	11 %	41
Firms w/ Non-Buy Recs Only (by U or Non-U)	13 %	52
Firms w/ No Recommendations	<u>49 %</u>	<u>191</u>
All IPO Firms in Sample	100 %	391

Panel B: Multiple recommendations of individual firms

	<u>Percent of IPOs</u>	<u># of IPOs</u>
Firms with no recommendations in first year on <u>First Call</u>	49 %	191
Firms where 1 Recommendation was made	25 %	102
Firms where 2 Recommendations were made	14 %	56
Firms where 3 Recommendations	6 %	26
Firms where 4 Recommendations	4 %	9
Firms with 5 to 7 Recommendations	<u>2 %</u>	<u>7</u>
Atmel, Fingerhut Companies Inc., Interstate Bakeries Corporation, MBNA Corp., Xilinx Inc., Advanced Logic Research, Readers Digest Association, Inc.		
All IPO Firms in Sample	100 %	391

Table 4
Description of “Buy” Recommendations Made by Sell-Side Security Analysts on IPO Firms

This table provides information on the 214 “buy” recommendations made by sell-side (brokerage) research analysts in the first year after the initial IPO date of the 391 IPOs in our 1990-1991 sample. We define “by underwriter” as recommendations made by sell-side research analysts of the lead manager of the IPO and “by non-underwriter” as recommendations made by other brokerage firm analysts. Market capitalization of IPO firms is calculated as shares outstanding times market price of the end of the 25-day SEC quiet period after the initial IPO date.

Panel A: Number of added-to-buy recommendations in first year after IPO, by time since IPO

	<u>By Underwriter</u>	<u>By Non-Under.</u>	<u>Total</u>
Months 1 to 2 after IPO date	75	50	125*
Months 3 to 6	32	31	63
Months 7 to 12	<u>5</u>	<u>21</u>	<u>26</u>
All Added-to-Buy Recommendations	112	102	214

* 5 of 125 Added-to-Buy Recommendations were made before the end of the SEC quiet period (by firms not in the underwriting syndicate).

Panel B: Added-to-buy recommendations by market capitalization

	<u>By Underwriter</u>	<u>By Non-Under.</u>	<u>Total</u>
MktCap, under \$ 50 M	9	5	14
MktCap, \$ 50 M to \$99.9 M	23	18	41
MktCap, \$100 M to \$199.9 M	44	36	80
MktCap, \$200 M to \$400 M	25	23	48
MktCap, over \$400 M	<u>11</u>	<u>20</u>	<u>31</u>
All Added-to-Buy Recommendations	112	102	214

Panel C: Added-to-buy recommendations differentiated by industry (two-digit SIC codes)

	<u>By Underwriter</u>	<u>By Non-Under.</u>	<u>Total</u>
Chemicals and Allied Products (28)	11	14	25
Electronic Equipment (36)	10	10	20
Industrial Equipment (35)	10	9	19
Health Services (80)	6	11	17
Insurance (63)	8	7	15
Business Services (73)	8	5	13
Instruments (38)	9	3	12
Oil and Gas (13)	5	2	7
Banks and Investment Firms (67)	4	2	6
Durable Goods (50)	2	3	5
Other Industries (various)	<u>39</u>	<u>36</u>	<u>75</u>
All Added-to-Buy Recommendations	112	102	214

Table 5
Excess Returns before, at, and after Analyst Buy Recommendations of IPO Firms,
Differentiated by Underwriting Relationship

Excess returns (size-adjusted mean and median buy-and-hold returns) are calculated for periods before, at, and after the added-to-buy recommendation event date given on *First Call* for the 214 observations in our sample. Size adjustment is calculated by subtracting the buy-and-hold return from the appropriate value-weighted CRSP decile. We define “by underwriter” as recommendations made by equity research analysts of the lead manager of the IPO and “by non-underwriter” as recommendations made by other brokerage firm analysts. “Days after IPO date” is the number of days after the initial IPO date until the added-to-buy recommendation. T-statistics are calculated using the cross-sectional variance in the excess returns and assume independence. The Z-statistic from the Wilcoxon rank-sum test compares the distributions of the underwriter and non-underwriter recommendations non-parametrically.

Added-to-Buy Recommendations	All Buy Recs N=214	By Underwriter N=112	By Non – Underwriter N=102	T-Statistic/ Z-Statistic of the Difference U vs. Non-U
<u>Excess Return, prior 30 days.</u>				
Mean	1.2 %	-1.6 %	4.1 %	2.36*
Median	0.7 %	-1.5 %	3.5 %	2.71*
<u>Excess Return, 3-day Event</u>				
Mean	3.5 %	2.7 %	4.4 %	1.55
Median	2.5 %	2.2 %	2.8 %	1.15
Days after IPO date, Mean	83	66	102	2.60*
Days after IPO date, Median	50	47	63	3.48*
<u>Excess Return, Event + 3 mos.</u>				
Mean	7.8 %	3.6 %	12.5 %	2.43*
Median	6.3 %	3.3 %	8.0 %	2.44*
<u>Excess Return, Event + 6 mos.</u>				
Mean	8.2 %	3.2 %	13.8 %	1.69
Median	5.7 %	3.9 %	7.8 %	1.58
<u>Excess Return, Event + 12 mos.</u>				
Mean	3.5 %	-5.3 %	13.1 %	2.29*
Median	-5.1 %	-11.6 %	3.5 %	2.71*

* Significant at 0.05 level.

Table 6
Return History of Firms Conducting Initial Public Offerings in 1990-1991,
Differentiated by Source of Recommendation Information

This table presents returns on firms conducting initial public offerings in 1990-1991, partitioned into four categories: (1) IPO firms that did not receive any added-to-buy recommendations in the first year after the firm went public on First Call; (2) firms with added-to-buy recommendations from their own underwriters only; (3) firms with added-to-buy recommendations from both their underwriters and non-underwriters; and (4) firms with added-to-buy recommendations from a non-underwriter firm only. Excess returns (size-adjusted mean buy-and-hold returns) are calculated from the offering price. Size adjustment is calculated by subtracting the buy-and-hold return from the appropriate value-weighted CRSP decile. Market capitalization of IPO firms is calculated as shares outstanding times market price at the end of the 25-day SEC quiet period. T-statistics are calculated using the cross-sectional variance in excess returns. The Z-statistic from the Wilcoxon rank-sum test compares the distributions of the underwriter and non-underwriter recommendations non-parametrically.

Panel A:	(1)	(2)	(3)	(4)
Excess return of:	Firms w/ No Recs N=191	Buy Recs by Under Only N=63	Buy Recs by Both U and NU N=41	Buy Recs by Non-Under Only N=44
First Trading Day, Mean	11.0%	10.4%	10.7%	10.3%
Median	5.9	6.7	9.2	6.5
First six months ^a	4.8	18.1	35.3	28.9
	0.6	14.6	28.6	20.5
First one year	-5.4	-0.1	36.1	34.4
	-11.6	-18.1	33.0	34.3
First two years	-2.3	-18.1	33.6	45.0
	-36.8	-51.9	-8.8	23.1
Mkt Cap, Mean	\$130	\$167	\$322	\$318
Median	59	111	177	162

Panel B:		
Underwriter vs. non-underwriter comparison	Median Difference in percent between U only and Non-U only (col. 2 - col 4, 2nd row)	Mean Difference in percent between U only and Non-U only (col. 2 - col 4, 1st row)
First Trading Day ER (Z-Stat, T-Stat) ^b	0.2 % 0.39	0.1 % 0.05
First six-months ER (Z-Stat, T-Stat) ^b	-5.9 % -0.72	-10.8 % -1.08
First one year ER (Z-Stat, T-Stat) ^b	-52.4 % -2.84**	-34.1 % -2.64**
First two years ER (Z-Stat, T-Stat) ^b	-75.0 % -2.90**	-63.2 % -2.31*

^a All excess returns are calculated from the offer price to the price at the relevant day.

^b The Z-Statistic is computed from the Wilcoxon rank-sum test. T-statistics of the difference are calculated under the assumption of an unequal variance.

* Significant at $\alpha = 0.05$.

** Significant at $\alpha = 0.01$.

Table 7
Robustness Checks on Excess Returns before, at, and after Sell-Side Analysts' Buy Recommendations of IPO Firms Differentiated by Underwriting Relationship

This table reports the buy-and-hold excess return around added-to-buy recommendations for two subsamples of firms going public in 1990-1991. In Panel A, we include only buy recommendations made within two months after the IPO went public, and in Panel B we include only recommendations made by underwriters covered by *First Call*. Excess (size-adjusted mean buy-and-hold) returns are calculated for periods before, at, and after the recommendation event date given in *First Call*. Size adjustment is calculated by subtracting the buy-and-hold return from the appropriate value-weighted CRSP decile. We define "by underwriter" as recommendations made by equity research analysts of the lead manager of the IPO and "by non-underwriter" as recommendations made by other brokerage firms' analysts. T-statistics are calculated using the cross-sectional variance of the excess returns.

Panel A: Buy recommendations within two months of the IPO date

Added-to-Buy Recommendations	All Buy Recs N=125	By Underwriter N=75	By Non – Underwriter N=50	T-Statistic of the Difference U vs. Non-U
Excess Return, prior 30 days	-0.7 %	-1.5 %	0.9 %	0.61
Excess Return, 3-day event	3.6 %	2.7 %	5.2 %	1.85
Days after IPO date, Mean	35	36	34	
Excess Return, event + 2 mos	5.9 %	2.7 %	10.7 %	2.53*
Excess Return, event + 6 mos	5.7	1.1	12.1	1.63
Excess Return, event + 12 mo	1.7	-5.4	12.3	1.70

Panel B: Buy recommendations by only underwriters with First Call coverage

Added-to-Buy Recommendations	All Buy Recs N=195	By Underwriter N=110	By Non – Underwriter N=85	T-Statistic of the Difference U vs. Non-U
Excess Return, prior 30 days	1.1 %	-1.8 %	4.7 %	2.60
Excess Return, 3-day event	3.5 %	2.8 %	4.3 %	1.33
Days after IPO date, Mean	81	66	98	2.55*
Excess Return, event + 2 mos	6.0 %	4.0 %	8.5 %	1.65
Excess Return, event + 6 mos	3.9	2.1	6.2	0.79
Excess Return, event + 12 mo	-1.0	-7.5	7.4	2.04*

Table 8: Poll Results:

Respondent's Choice: Respondent From:	Strategic Conflict of Interest	Selection Bias (Winner's Curse)
Investment Management	13	0
Investment Banking	10	3
Total	23 (88 percent)	3 (12 percent)