

## **Analyst Behavior Following IPOs: The “Bubble Period” Evidence**

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September 7, 2004

We thank Michael Cliff, Kent Womack and seminar participants at the 3<sup>rd</sup> Annual Entrepreneurship, Venture Capital, and Initial Public Offerings conference at Dartmouth University for useful comments and suggestions.

## **Analyst Behavior Following IPOs: The “Bubble Period” Evidence**

### **Abstract**

We examine over 7,400 analyst recommendations for IPO firms during 1999-2000. We find that initiations at the end of the quiet period come almost exclusively from the analysts of managing underwriters while initiations afterwards are predominantly from unaffiliated analysts. Once we control for the effect of quiet period versus later initiations, we find little evidence of a distinction between the market reaction to affiliated versus non-affiliated analyst initiations. On the other hand, lead underwriter reiterations, upgrades, and downgrades result in a *greater* market response. These results suggest that either (1) investors are unaware of the potential bias in recommendations from affiliated underwriters or (2) affiliated underwriter recommendations are, on balance, more credible. Finally, we find the number of analysts covering a company during the year following its IPO does not depend on the number of managing underwriters, contrary to the conventional wisdom that issuing firms are buying additional analyst coverage by hiring incremental co-managers at the IPO stage.

# Analyst Behavior Following IPOs: The “Bubble Period” Evidence

## I. Introduction

The role of sell-side research analysts has attracted significant attention in recent years. It is widely held that analysts have incentives to issue positive recommendations to appease constituents (both institutional investors who are long in a stock and company management) and to attract and retain lucrative investment banking business. While institutional investors are unlikely to be misled by biased recommendations, it is alleged by some that small retail investors who relied on the recommendations provided by the banks were harmed. Controversy over biased and misleading recommendations led to the Global Settlement in early 2003 between major brokerage firms and regulators, involving \$1.4 billion in fines and commitments to subsidize third-party independent research.

An important issue in the debate, although not one that is generally articulated, is to what degree biased recommendations affect a stock’s price.<sup>1</sup> At one extreme is the efficient markets viewpoint that “the market” can see through the incentives of conflicted analysts and therefore discounts their recommendations. This view, which we call the *skeptical market hypothesis*, has been tested with some support in the context of initial public offerings (IPOs) by Michaely and Womack (1999) and others. At another extreme is the *superior information hypothesis* that suggests affiliated analysts possess private information, which they incorporate into their recommendations, making them more valuable to market participants. In between these two extremes is a naïve view that a biased recommendation coming from an analyst working for a firm that has an investment banking relation with a company impacts the price just as much as an equivalent recommendation from an analyst who was not explicitly faced with this conflict of interest.<sup>2</sup> We call this view the *credulous market hypothesis*.

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<sup>1</sup> Iskov (2003) does explicitly distinguish between whether analyst forecasts are biased, and to what degree this bias affects the market price and subsequent returns.

<sup>2</sup> Following the literature, we refer to the analysts that work for banks that managed the IPO as affiliated analysts and those that do not as unaffiliated analysts.

Michaely and Womack study recommendations in the year after the IPO for 391 companies from 1990-1991, categorized by whether the analyst worked for the lead underwriter of the IPO or not. They find that lead underwriters issue more optimistic ratings compared to non-lead underwriters, and the immediate market reactions to these recommendations are significantly smaller, consistent with the skeptical market hypothesis. However, they also find that the long-term performance of IPOs following lead underwriter recommendations is worse than the long-term performance following non-lead recommendations. This is consistent with the credulous market hypothesis, in that if the market correctly valued the stocks after the recommendations, there should be no difference in subsequent abnormal returns (and the average abnormal return should be indistinguishable from zero).

More recently, Bradley, Jordan, and Ritter (2003) focus on a unique time frame to investigate, among other things, potential conflicts of interest in underwriter recommendations—the end of the IPO quiet period. For a time period of 25 calendar days following an IPO (lengthened to 40 days starting in July 2002 for managing underwriters, but not for other syndicate members), the issuing firm and members of the underwriting syndicate are not allowed to issue opinions concerning valuation, including research recommendations.

Bradley *et al.* (2003) document that, during the 1996-2000 time period, approximately three-fourths of IPOs have analyst coverage initiated immediately when the quiet period expires, almost always with a favorable rating. During the 1999 and 2000 Internet bubble, this coverage frequency is over 90 percent. Interestingly, although the end of the quiet period is known in advance with complete certainty, the market responds favorably—the unconditional abnormal return in the week surrounding the IPO quiet period expiration is approximately 3 percent. Moreover, most of this abnormal return is confined to just before the quiet period expires, consistent with the view that some market participants were withholding the sale of the stock until the actual recommendations occurred, or buying in anticipation of the recommendations. Bradley *et al.* find that both the strength of recommendations and the market reactions to these recommendations are virtually the same for lead and non-lead underwriters, but note that virtually all recommendations come from managing underwriters. In other words, almost all recommendations come from underwriters with at least some stake in the IPO, and, hence, there are varying degrees of conflicts inherent in these recommendations.

Our paper differs from Michaely and Womack (1999) and Bradley *et al.* (2003) in several important ways. First, unlike Bradley *et al.* (2003), we include all analyst recommendations within the first year after an IPO. Second, we use recent data; the Michaely and Womack sample of IPOs from 1990-1991 is potentially unrepresentative of practice a decade later and contains only 200 firms (out of 391 possible) with one or more recommendations (initiations, upgrades, or downgrades) in the year after the IPO. We focus on the more recent Internet bubble period of 1999-2000, a period of great controversy, and we have over 7,400 observations (including reiterations) on 683 IPOs. We separately analyze initiations, upgrades and downgrades, and reiterations. We also include target prices in our analysis, unlike Bradley *et al.* or Michaely and Womack, and we study the affiliation issue that Brav and Lehavy (2003) leave for future research. Houston, James, and Karceski (2004) analyze target prices issued by the lead underwriter's analyst at the time of initiating for a sample of IPOs, but their emphasis is on the pricing of IPOs relative to the comparable firms used by the analysts. Finally, we examine the determinants of analyst coverage.

We report several interesting findings. First, we find that quiet period initiations are fundamentally different from post-quiet period initiations from the standpoint of market and volume reactions and target price behavior. We find that deal manager (lead and co-manager) ratings (the numerical value of the recommendations, with a strong buy =1 and a sell=5) are not significantly different from non-deal manager ratings, but deal managers are less likely to issue a target price, and, conditional on one being issued, are less optimistic. We find that the market reaction is virtually the same for affiliated and unaffiliated initiations. When we separate lead underwriters from co-managing underwriters, we find that lead manager upgrades and downgrades are associated with a greater market reaction. Overall, we find no support whatsoever for the skeptical markets hypothesis, but rather find limited evidence consistent with the *superior information hypothesis*.

Our results differ from Michaely and Womack's (1999) due to several factors. First, non-stationarities in the IPO market have caused many relationships to change (Ritter and Welch (2002)). Consistent with the hypothesis that there was more emphasis placed on analyst coverage during our sample period compared to a decade earlier, the number of managing underwriters increased significantly between 1990-1991 and 1999-2000 (Loughran and Ritter (2004)). Second, the average firm in our sample receives 11 recommendations within one year of going

public from an average of five separate analysts. Michaely and Womack report that only 11 percent of their IPO firms receive two or more recommendations. Third, we separate lead and co-manager recommendations from unaffiliated recommendations whereas Michaely and Womack compare lead versus all other recommendations.<sup>3</sup> We show that not doing so can lead to erroneous inferences. Fourth, we investigate initiations, upgrades and downgrades separately and also include reiterations, which Michaely and Womack do not.

We find that the number of analysts who initiate coverage on a firm in the year following its IPO is positively related to market capitalization, trading volume, and the prestige of the lead underwriter. Of more interest, however, the number of deal managers is not a significant determinant of the number of initiations a firm ultimately receives in its first year. This finding is in sharp contrast to Rajan and Servaes (1997), Chen and Ritter (2000), Bradley *et al.*, and Corwin and Schultz (2003). Our result suggests that firms may believe that they are paying for research at the time of the IPO by adding incremental co-managers, but other factors are ultimately more important considerations.

Although the number of analysts following a firm is not affected by the number of managing underwriters in the IPO, it is possible that the choice of managing underwriters affects which analysts follow a firm. For example, by not hiring Goldman Sachs as an underwriter, an issuing firm may wind up being followed by an analyst from a regional investment banking firm rather than an *Institutional Investor* all-star analyst. We explore this question indirectly by looking at the average prestige of the investment banks that follow a firm. We find that there is relatively little variation in average prestige relative to the number of analysts that follow a firm, and we also find the percentage of analysts following a firm that work for “high prestige” underwriters is roughly constant.

The remainder of this paper will proceed as follows. Section 2 provides some background and a discussion of the hypotheses. Section 3 describes the sample and provides descriptive statistics. Section 4 dissects the recommendations based on type and the role of the investment bank providing research coverage. Section 5 examines market reactions to analyst recommendations while section 6 provides cross-sectional regression results to these market reactions. Section 7 investigates the determinants of analyst coverage and section 8 concludes.

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<sup>3</sup> We also separately analyzed other syndicate members participating in the IPO (non-deal managers), but since they have very little stake in the deal, we treat them as unaffiliated analysts throughout the paper. We note that doing so does not change our qualitative results.

## 2. Sources of Analyst Conflicts of Interest

The conventional wisdom among practitioners is that institutional investors largely ignore published analyst recommendations. For example, the October 1999 issue of *Institutional Investor (II)* reports the results of its annual poll of institutional investors, which determines who is chosen as an *II* all-star analyst. “Industry knowledge” is rated as the single most important attribute of an equity analyst. “Stock selection” (i.e., recommendations) is ranked 5<sup>th</sup> out of 8 attributes, slightly ahead of “earnings estimates.” In the October 2001 survey, where a wider choice of responses is offered, industry knowledge is still ranked as the most important attribute, with earnings estimates 9<sup>th</sup> out of 12 attributes, and stock selection 10<sup>th</sup>, far behind “accessibility/responsiveness” and “useful & timely calls & visits.” Written reports rank 6<sup>th</sup> of the 12 attributes.

Why don't institutional investors pay more attention to the recommendations? The answer is simple: information has value to the degree that it is not already impounded in the price. Published recommendations and written reports are disseminated simultaneously to scores if not hundreds of investors. An analyst provides value to a money manager by answering questions and supplying information in individual telephone calls. Especially prior to the implementation of Regulation FD in October 2000, bullish analysts were also sometimes provided with material non-public information by company management, which they would then pass along to favored clients. Institutional investors moved up the priority list in terms of who would be told earlier than others by generating commissions for the analyst's firm.

Sell-side research, especially that provided by the major brokerage firms, is rarely paid for directly. Thus, research needs one or more “sponsors.” The two main sources of revenue are trading commissions from institutional investors (the commissions are set above the costs of execution, with the premium sometimes referred to as “soft dollars”) and investment banking revenue from the companies that are covered. The investment banking revenue includes mergers and acquisition advisory fees, gross spread revenue from securities issues, as well as commission revenue (and potential future business) received from investors when underwriters have underpriced securities offerings to allocate (Loughran and Ritter (2002, 2004)). Because research is paid for indirectly, two serious conflicts of interest result.

The two conflicts that indirect payment for research creates are the underwriting conflict and the pressure not to downgrade from investors who are long in a stock. Because many

investment banking services are priced above marginal cost, winning an underwriting or advising mandate is lucrative for an investment banking firm. Firms generally do not award mandates to investment banks that have an analyst who is negative on their stock, so there is an incentive for an analyst to issue a positive recommendation. This incentive is stronger the more extensively a firm uses investment banking services and the more a firm focuses on analyst coverage in awarding a mandate.

The pressure not to downgrade from investors who are long in a stock is present whenever brokerage business is used to fund research. Thus, firms such as Sanford Bernstein, where very little investment banking business is done, still are faced with an important conflict. Institutional investors who are long in a stock want to receive unbiased research from an analyst, but they want that analyst to publicly have a “buy” recommendation.

These conflicts are discussed by Boni and Womack (2002, p. 94), who state:

...at the heart of the credibility controversy are the disparate incentives of investment banks' clients: while brokerage clients (investors) want *unbiased* research, most corporate finance clients (issuers) benefit from *optimistic* research. As corporate financing revenues dwarf brokerage commissions, investment banks face large incentives to maintain policies that favor issuers over investors. Furthermore, the managements of the corporations—the subjects of brokerage research—provide an additional incentive to analysts: issue positive research and maintain direct access to valuable future information or risk being shut out by management entirely...

We also conclude that institutional investors, aware of analysts' conflicts of interest, are able to de-bias the brokerage research they receive by maintaining their own in-house research staffs and purchasing independent research services. The disenfranchised are largely the individual investors, who lack the awareness or education necessary to adequately filter the recommendations of brokerage research analysts.

Of the three major conflicts of interest that analysts face (the need to get information from management, the need to appease investors who are long in a stock, and the need to attract investment banking business), only the last differentially affects the incentives of affiliated and non-affiliated analysts. But even here, there is an offsetting bias. To the degree that an incumbent (affiliated) underwriter has an advantage in winning future investment banking mandates from a firm, perhaps through personal relations established with a firm's management, there may be less pressure on its analyst to give an optimistic recommendation than for a non-incumbent. An unaffiliated analyst may initiate coverage either because there is demand from brokerage clients, or because his/her firm is attempting to win a mandate. If the latter is important, there may be

even stronger pressure to give an optimistic recommendation than if the analyst possessed the incumbent's advantage.<sup>4</sup> We call this the *currying favor* hypothesis, which gives a further reason to suggest that the superior information hypothesis is not merely a straw man. Thus, it is not obvious on *a priori* grounds that affiliated analysts have stronger incentives to give biased recommendations than unaffiliated analysts.

### 3. Sample selection and descriptive statistics

We first identify firms that went public during the 1999-2000 time period from the Thomson Financial Securities Data Company (SDC) U.S. Common Stock Initial Public Offerings database. Consistent with prior IPO research, we eliminate IPOs that are classified as ADRs, REITs, closed-end funds, spinoffs, or units, along with offerings having a file range midpoint of less than \$8. Our sample contains 683 IPOs. We collect firm-specific information from SDC, including SIC codes, IPO dates, venture capital-backing status, and the number and names of managers in the IPO underwriting syndicate and their role.<sup>5</sup>

Analyst data are hand-collected from Briefing.com, a proprietary website. Briefing.com lists recommendations by broker, not by the name of the analyst. Therefore, for each recommendation, we record the issuing bank's name and the date and strength of the recommendation. If a target price is issued simultaneously, we capture that as well. Since it is standard industry practice to have one analyst at a brokerage company following a stock and periodically putting out earnings forecasts, recommendations, and written research reports, we use the terms "analyst" and "broker" interchangeably.

Briefing.com does not capture all analyst recommendations. Neither do I/B/E/S nor First Call. For example, for the June 29, 1999, IPO of Digital Island, I/B/E/S reports just one recommendation from Bear Stearns, on August 10, 2000. But Briefing.com reports Bear Stearns recommendations on July 26, 1999, February 28, 2000, and June 21, 2000. Based on our experience in this and related studies, we believe that Briefing.com is far more comprehensive

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<sup>4</sup> This provides an explanation for the implausible finding in Ljungqvist, Marston, and Wilhelm (2003) that optimistic recommendations don't improve the chance of winning a mandate.

<sup>5</sup> As is widely recognized by researchers, the SDC database contains significant errors. We try to fix errors to the best of our ability by hand-verifying outliers or suspicious data points.

than I/B/E/S and First Call, so we rely on this source. Finally, stock price and volume data are from the Center for Research in Security Prices (CRSP).

We investigate all analyst recommendations that occur within one year of going public. Our sample consists of 7,487 recommendations during the year following the IPO for the 683 sample firms. Hence, each firm receives an average of about 11 recommendations in its first year as a public company, with the recommendations coming from an average of five separate analysts. Table 1 provides a further description of our sample.

Insert Table 1 about here

In Table 1, we partition the sample along several different lines. In Panel A, we give the number of recommendations issued during the quiet period and post-quiet period. Bradley *et al.* (2003) focus exclusively on analyst recommendations at the expiration of the quiet period. During their sample period (and ours), analysts whose employers were members of the underwriting syndicate were prohibited by the U.S. SEC from issuing recommendations for a period of 25 calendar days after the IPO date. Once this quiet period expires, analysts are free to give their opinions concerning firm value and release their recommendations. Bradley *et al.* show that affiliated underwriters frequently issue a recommendation, almost always favorable, as soon as the quiet period ends. In fact, for IPOs from the 1999-2000 period that we focus on, they report that at least one recommendation is issued immediately after the quiet period expires for 90 percent of their sample firms.

About one-quarter (1,720) of the recommendations in our sample are issued at the end of the quiet period. Our definition of the end of the quiet period differs slightly from that in Bradley *et al.* We define a quiet period recommendation as one that occurs within 30 calendar days of going public. Bradley *et al.*, on the other hand, define a quiet period recommendation as one that falls within three trading days of the end of the quiet period (days 0, +1, and +2). So, for example, suppose the 25<sup>th</sup> calendar day is a Monday and a recommendation falls on a Thursday. In this case, Bradley *et al.* would not consider this recommendation since it falls on day +3. We do, however, since it falls on the 29<sup>th</sup> calendar day. About three-quarters of our sample recommendations occur more than 30 days after the IPO, which we define to be post-quiet period recommendations. These recommendations, which were not considered in the Bradley *et al.* study, are a major focal point of this study.

In Panel B, we report the distribution of analyst ratings by type (initiation, reiteration, upgrades, downgrade). Several papers, such as Irvine (2000), argue that there are differences between these types of recommendations. An initiation represents new analyst coverage by a securities firm. As shown, close to half of all recommendations issued within the first year are new initiations. By definition, all recommendations at the end of the quiet period are initiations.<sup>6</sup> Therefore, close to half (1,720 of 3,519) of all initiations occur when the quiet period expires.

Reiterations are the second most common type of recommendation issued, followed by downgrades and then upgrades. A reiteration is simply a restatement of a previously issued recommendation. For example, an analyst may have issued a “buy” recommendation a few months earlier and issues a reiteration of “buy.” In contrast, upgrades and downgrades are issued when analysts change their position on a stock that they are covering. Upgrades and downgrades combined represent only 14 percent of all recommendations in our sample, with upgrades being a little less common than downgrades.

Insert Figure 1 about here

In Figure 1, we plot the frequency of the four types of recommendations in the month they occur relative to the IPO date. The preponderance of initiations in the first month represents quiet period recommendations. After the first month, however, initiations are relatively constant. Reiterations tend to increase as time increases, but this isn’t very surprising since more firms are covered as time increases. No noticeable pattern is found for upgrades or downgrades. Notably, this graph does not suggest that analysts time their recommendations to coincide with the end of the lockup period (typically 180 days after the IPO) to provide a “booster shot” just before insiders are allowed to sell their holdings.

In Panel C, we provide information on the strength of analyst recommendations. Following I/B/E/S and other commercial services that track analysts, we code the recommendations on a numerical scale with 1 being the best rating, the equivalent of a strong buy, and 5 the worst, the equivalent of a sell. As shown, and consistent with other research, analyst ratings are overwhelmingly positive. Close to 90 percent of all recommendations in our sample are either “strong buy” or “buy.” There are only 15 total recommendations in the worst category of sell.

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<sup>6</sup> In principle, an unaffiliated bank could initiate coverage before the end of the quiet period, but this happens very rarely. We do not include these recommendations in our analysis.

We partition the sample based on the role of the investment bank at the IPO stage in Panel D of Table 1. Unlike Michaely and Womack (1999) and others who investigate the lead underwriter versus non-lead underwriters, we classify analysts into three categories. Specifically, an IPO will typically have a lead underwriter(s) and several co-managers, who are collectively referred to as the deal managers or managing underwriters, and other syndicate members. While the lead underwriter certainly has the most at stake in an IPO, the co-managers also have a major stake. As shown, lead manager recommendations represent 21 percent and co-manager recommendations represent 36 percent of all recommendations. Hence, deal managers make over half of all recommendations in our sample. The remaining recommendations (43%) are by unaffiliated analysts. We include syndicate members who are not deal managers in the unaffiliated category.<sup>7</sup>

#### **4. Type of recommendation and role of investment bank**

Thus far in our analysis, we have simply shown a breakdown of our sample on a univariate level. In this section, we investigate on a finer scale the variables that we previously partitioned. We are particularly interested in the behavior of analysts based on their role in the IPO (lead, co-manager, unaffiliated). For example, we know from Table 1 that over half of all recommendations are made by deal managers, and, from Bradley *et al.* (2003), we also know that typically the deal managers immediately issue coverage when the quiet period expires. To date, however, the literature has not closely analyzed analyst behavior following this period.

Insert Table 2 about here

In Table 2, we study the full sample of analyst recommendations based on the role of the investment bank and type of recommendation (initiation, reiteration, upgrade, downgrade). In addition, for new initiations, we compare quiet period recommendations to post-quiet period recommendations.

Panel A of Table 2 focuses on new initiations and reports full sample, quiet period, and post-quiet period recommendations based on the role of the investment bank. Lead underwriters issue approximately 18 percent (649/3,519) of all initiations, with almost 90 percent of these initiations occurring around the expiration of the quiet period. A similar pattern is shown for co-

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<sup>7</sup> As indicated earlier, we also separately analyzed non-managing syndicate members; however, we group them with the unaffiliated analysts as they tend to have very little stake in the deal. Grouping other syndicate members with completely unaffiliated analysts does not qualitatively influence our results.

managers. Co-managers issue about 35 percent of all initiations and, as with lead managers, most (approximately 80 percent) occur at the end of the quiet period. The reverse is true for unaffiliated analysts. While they issue approximately 46 percent of all initiations, only about 10 percent occur immediately when the quiet period ends.

We next focus our attention on the ratings and target price information in Panel A of Table 2. Lead and co-managers tend to be a bit more optimistic in their ratings (1.68 and 1.64, respectively) compared to unaffiliated analysts (1.87). The average ratings appear to be the same regardless of when they occur. This pattern is consistent with the notion that those underwriters with greater stakes in the IPO tend to issue slightly more optimistic ratings.

Interestingly, lead and co-managers do not issue as many target prices as other syndicate members and completely unaffiliated analysts. *Target* is the percentage of times a recommendation is accompanied with a target price and *Premium* is the premium of the target price to the stock price on trading day -3 (relative to the recommendation date). Lead and co-managers issue target prices 41 percent and 46 percent of the time, respectively, compared to unaffiliated analysts, who issue target prices 56 percent of the time. In addition, while deal manager ratings are more optimistic, their target price estimates of firm value are slightly less optimistic, consistent with the findings of Houston, James, and Karceski (2004). For instance, conditional on a target price accompanying a recommendation, the average target price of lead and co-manager analysts is 30 percent above the current market price. In contrast, the average target price of unaffiliated analysts is 35 percent above the prevailing stock price.

In Panel B, we provide the same information as in Panel A, but focus on reiterations, upgrades, and downgrades. Note that, by definition, reiterations, upgrades, and downgrades are highly unlikely until after the quiet period (i.e., after there has been an initiation of coverage).

The average rating for reiterations is relatively consistent across the three underwriter classifications. The average reiteration rating is higher than the average rating for new initiations, which suggests that analysts tend to make reiterations on those stocks originally rated higher. In other words, analysts are more likely to reiterate good news. While the percentage of times a target price is issued remains about the same compared to new initiations, the percentage difference between the target price and current market price increases dramatically. For example, the average *Premium* for lead and co-managers for initiations is 30 percent, and the corresponding numbers for reiterations for these two groups are 50 percent and 75 percent,

respectively. This difference probably reflects, at least in part, the maintenance of a given target price following price declines during the bear market of 2000 and 2001, resulting in a higher ratio of the target to the current market price. James and Karceski (2004) report that analysts typically maintain a target price following an IPO, consistent with our findings.<sup>8</sup>

It is not surprising that the average rating for upgrades is higher compared to downgrades and that the target price premium is higher for upgrades than downgrades. There are, however, two interesting findings. First, downgrades are more common than upgrades among lead and co-managing underwriters, whereas downgrades and upgrades are about equally common for unaffiliated analysts. This is the opposite of what might be expected in light of the conflict of interests faced by affiliated banks. One simple explanation is that affiliated underwriters give stronger recommendations in the first place, leaving less room for an upgrade (i.e., a “strong buy” cannot be upgraded; it can only be reiterated). Finally, we see that analysts are less likely to issue a target price for a downgrade compared to any other type of recommendation.

To summarize, we find that deal managers immediately issue new recommendations when the quiet period expires, while non-deal managers wait before initiating coverage. The average strength of ratings for new initiations is slightly higher for deal managers compared to unaffiliated analysts, but deal managers, on average, are less likely to issue a target price. Moreover, conditional on a target price being issued, deal manager target prices are less optimistic than non-deal managers. Unaffiliated analyst reiterations and upgrades are just as optimistic as deal manager recommendations, and we find that deal managers are more likely to downgrade as opposed to upgrade a stock whereas unaffiliated analysts are equally likely to upgrade or downgrade. Target price premiums are lower for initiations than in subsequent recommendations.

## **5. Market reactions to recommendations**

In this section, we investigate the issues raised in the previous section, but now focus on market reactions to analyst recommendations. We report cumulative market-adjusted returns (CMARs) using the Nasdaq Composite index (inclusive of dividends) as our proxy for the

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<sup>8</sup> James and Karceski (2004) analyze the target prices of IPOs from 1996-2000. They report that there is a tendency for the lead underwriter's analyst to give positive recommendations with a high target price when a stock has declined to near or below the offer price. Lin, McNichols, and O'Brien (2004), in a sample of IPOs from 1994-2001, report that affiliated analysts are less prompt in downgrading their recommendations.

market return. To compute  $t$ -statistics, we estimate the variance of daily market-adjusted returns using an estimation period of 100 trading days beginning on trading day +20.

### 5.1 Initiations

As in Table 2, Panel A of Table 3 presents results for initiations by time, and Panel B separately reports results for reiterations, upgrades, and downgrades. To facilitate comparisons with Bradley *et al.* (2003), we report both a (-2,+2)-day window and a (0,+2)-day window.

Insert Table 3 about here

As shown, new initiations elicit positive and significant responses for all affiliation categories. We note two interesting findings. For the “All” sample over the (-2,+2)-day window, the CMARs appear to be increasing with the degree of potential conflict of interest. In other words, CMARs are highest when the lead underwriter issues a recommendation and lowest when an unaffiliated analyst issues a recommendation. This result contradicts the skeptical markets hypothesis, which would predict the exact opposite, and agrees with results found in Bradley *et al.* (2003). However, if we focus on the (0,+2)-day window, the CMARs are smallest for the lead and co-manager categories, and greatest for the unaffiliated analysts. This suggests that the majority of the CMAR is confined to the pre-initiation period for the lead and co-manager category, but clustered in the post-period for syndicate and unaffiliated analysts.

If we examine quiet period recommendations separately, we resolve this puzzle. As Bradley *et al.* document, there is a pronounced run-up before the quiet period expires. They suggest that market participants are bidding up prices before the quiet period ends in anticipation of a positive recommendation being announced. Since lead and co-managers are the major participants in quiet period recommendations, it isn’t surprising that most of the abnormal return is concentrated in the pre-announcement period.

Of particular interest is the market reaction to post-quiet period recommendations. All new initiations generate positive market responses (as do quiet period recommendations); however, now the majority of the reaction is confined to the (0,+2)-day period. This is true for all underwriters. Also, the market reaction is highest for lead underwriter recommendations and second highest for co-manager recommendations. Once again, this does not support the skeptical markets hypothesis. In addition, this finding lends further support to the notion that quiet period

recommendations are very different from post-quiet period recommendations.<sup>9</sup> This might not be too surprising, in that recommendations by affiliated analysts at the end of the quiet period are highly predictable, whereas the number and timing of additional initiations during the following 11 months are generally not predictable.

Insert Figure 2 about here

We plot the CMARs over a 21 trading day period beginning on trading day -10 (relative to the recommendation date) in Figure 2. There is a dramatic increase in share value over the pre-initiation period for quiet period recommendations. In fact, over the (-10,-1) window, the average CMAR is almost +14 percent. There is virtually no reaction on the announcement date. After day 0, a modest decline of 4 percent over the next six trading days is experienced following quiet period recommendations. In sharp contrast, for post-quiet period recommendations, there is a very small rise in the stock price before day 0 followed by a sharp positive reaction on the announcement date. There is no further adjustment during the next six trading days after day 0.

Insert Figure 3 about here

In Figure 3, we graph the average daily volume for quiet period and post-quiet period initiations. As shown, volume hits a high of around 450,000 shares traded in both cases. However, two differences emerge between the volume patterns between quiet and post-quiet period recommendations. First, the pre- and post-event change in volume is much larger for quiet period recommendations. Following an initiation, for example, average volume drops to approximately 350,000 shares for post-quiet period recommendations, whereas it declines to less than half of that for quiet period recommendations.<sup>10</sup> Second, volume peaks on day 0 for quiet period initiations, but on day -1 for post-quiet period initiations. This is consistent with results in Irvine, Lipson, and Puckett (2004) who find abnormally high trading volume among institutional investors immediately before an initial recommendation is released, suggesting that they were tipped before the public release of the recommendation. Since quiet period initiations are already

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<sup>9</sup> Dhiensiri and Sayrak (2004) examine first initiations for First Call-covered firms in 1995-2000. While their findings are consistent with ours, their sample includes many non-IPOs, and they focus on liquidity issues.

<sup>10</sup> Part of the higher post-recommendation volume for post-quiet period initiations is attributable to a larger public float for recommendations that occur after the lock-up period has expired, typically 180 calendar days after the IPO. Another reason for the higher volume is that firms with analyst coverage from unaffiliated analysts (which overwhelmingly occur during the post-quiet period interval) tend to be much larger than those where there are no or few additional initiations.

highly predictable, there is little value to early access to information. By contrast, the timing of post-quiet initiations is much less predictable, so a trading opportunity may exist if one possessed knowledge of the initiation prior to its release.

### *5.2 Reiterations, upgrades, and downgrades*

We now turn to the non-initiation recommendations in Panel B of Table 3. The first several columns provide information on reiterations. The average CMAR across all affiliation categories from reiterations is marginally positive and substantially smaller than that observed for initiations. This result is consistent with Irvine (2000) and suggests that there is differential information contained in initiations compared to reiterations.

There is a large, positive market reaction associated with upgrades for three of four affiliation groups (unaffiliated upgrades are the exception), while there is a large negative reaction associated with downgrades regardless of affiliation. The market reaction to recommendations by deal managers has a greater impact compared to non-deal manager recommendations. Again, this pattern does not lend support to the skeptical markets hypothesis.

Insert Figure 4 about here

We plot the CMARs for reiterations, upgrades, and downgrades in Figure 4. Consistent with post-quiet period initiations, most of the reaction is concentrated in day 0. Since post-quiet period initiations, reiterations, upgrades, and downgrades are not fully known in advance (as opposed to quiet period recommendations, which are relatively predictable), it isn't surprising that a majority of the reaction is on the announcement date. There is virtually no impact on share value for the reiterations over the entire 25-day period graphed here. Both upgrades and downgrades decline in value before the change in recommendation is issued. The share price response appears to be permanent for both upgrades and downgrades.

Unlike initiations, reiterations, upgrades and downgrades frequently occur in response to contemporaneous company-specific news (Michaely and Womack (1999)). For example, on April 26, 2001, Corvis issued its quarterly earnings report after the markets closed. Before the opening of trading the next day (event day 0), several analysts downgraded the stock.<sup>11</sup> When

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<sup>11</sup> According to Briefing.com, Salomon Smith Barney (SSB) and Dresdner Kleinwort Wasserstein both downgraded, while Credit Suisse First Boston (the lead underwriter on the IPO), CIBC World Markets, and Epoch Partners reiterated their recommendations. Investext reports that Dain Rauscher Wessels (DRW), JPMorgan Chase H&Q and Robertson Stephens also reiterated, although DRW lowered its price target. SSB's research report states "Corvis reported 1Q revenues ahead of forecast but was unable to bring down any contracts other than a finalization and expansion of the Qwest deal."

trading opened on day 0, the stock dropped 18.9% from the prior day's close, ending the day with a market-adjusted return of -20.9%. While the analyst downgrades may have contributed to the price decline, it is plausible that most, if not all, of the price fall would have occurred anyway, and the analyst downgrades were simply a response to the bad news. In other words, with reiterations, upgrades, and downgrades, there is a significant endogeneity problem. In contrast, the timing of initiations is almost always planned at least several weeks in advance, especially for those occurring at the end of the quiet period. One of the few endogeneity issues with initiations is that analysts tend to avoid initiating immediately prior to the release of an earnings announcement.

Insert Figure 5 about here

We investigate volume patterns for reiterations, upgrades, and downgrades in Figure 5. There is a spike in volume for all three types of recommendations, with downgrades associated with the largest increase in volume, both in absolute and percentage terms. Average volume increases by 2.5 fold for downgrades and about doubles for upgrades while it increases approximately 50 percent for reiterations. Volume pre- and post-recommendation for downgrades is less than average volume for both upgrades and reiterations. All categories remain at or near the same average level of volume before and after the recommendation. Once again, because of the endogeneity issue, we cannot tell whether the volume spikes are a reaction to news, analyst recommendations, or some combination of the two.

## **6. Cross-sectional regression of market reactions to recommendations**

### *6.1 Initiations*

Thus far, we have examined market reactions to analyst recommendations in a univariate sense. We now turn our attention to regression analyses to examine whether our main results hold after conditioning for joint effects. In these analyses, compared to Bradley *et al.* (2003), there is an important methodological difference. In Bradley *et al.*, there is one event per IPO (i.e., the quiet period expiration) and, hence, one CMAR per IPO. In our analyses here, there are N events per IPO (and N CMARs), where N is the number of analyst recommendations for a firm in the period studied. Furthermore, in our regressions, if there are multiple announcements on the same day, we include each one separately. As documented in Bradley *et al.*, multiple initiations are the norm

when the quiet period expires. We also expect clustering in upgrades and (particularly) downgrades when these occur following company-specific news.

[Insert Table 4 about here]

Table 4 presents results for the entire sample of initiations. The dependent variables are the CMARs over the (-2,+2) window and the (0,+2) window. In Model 1, we ignore any differences that may arise from quiet period versus post-quiet period recommendations. The first two independent variables (*Lead*, *Co-manager*) identify the role of the underwriter at the IPO stage. These are simply dummy variables with unaffiliated analysts as the omitted category. While none of these variables are significant over the (-2,+2)-day period, both lead and co-manager are negative and significant for the (0,+2)-day window. Hence, this result appears to strongly support the skeptical markets hypothesis in that the market seems to discount recommendations from the lead underwriter and other co-managers relative to those from unaffiliated analysts.

The next two variables (*Strong buy* and *Sub-buy*) are dummy variables designed to capture the strength of the recommendation relative to the default of a buy recommendation. As expected, a strong buy recommendation is associated with a positive and significant coefficient, while a sub-buy recommendation is associated with a negative and significant coefficient.

*Target* is included to evaluate the incremental information contained in target prices and is measured as a dummy variable. Brav and Lehavy (2003) suggest that target prices indeed contain information valued by market participants. Our results indicate the including a target price with a recommendation isn't significantly related to the market's reaction.<sup>12</sup>

*Tech* and *Venture* are also dummy variables. High-tech and venture capital-backed firms experience greater positive market reactions to analyst initiations compared to their non-tech and non-venture-backed counterparts.<sup>13</sup>

*Log sales* is the natural log of the firm's sales, which we include as a measure of firm size. Our results suggest that size is not related to the abnormal returns. On the other hand, *Performance*, the (-7,-3)-day CMAR (relative to the announcement date), and *Underpricing*, the first-day return for the IPO, are negatively related to the CMARs. The coefficient of -10.88 on

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<sup>12</sup> In separate models, although not reported, we further analyze target prices. Conditional on a target price being issued, we find that the analyst's assessment of the expected return is significantly positively related to the market reaction. That is, the higher the target price relative to the market price on day -3, the greater the market impact. Asquith, Mikhail, and Au (2004) and Brav and Lehavy (2003) find similar results.

<sup>13</sup> Our definition of high-tech includes Internet-related firms.

performance implies that 10.88% of the previous week's performance is reversed in the week of the initiation, and the coefficient of -1.14 on underpricing implies that 1.14% of the first-day return is reversed in the week of the analyst initiation. Thus, an IPO with a 100% first-day return is expected to have an initiation week return that is lower by 1.14% (2% rather than 3.14%, for example) than for an IPO that traded flat on its first day of trading.

Model 2 of Table 4 is the same as Model 1, except we include a dummy variable, *Quiet*, representing whether or not the initiation occurred at the end of the quiet period. As shown, the coefficient on *Quiet* is negative and strongly significant in both a statistical and economic sense for the (0,+2) window. This result is consistent with the CMARs reported in Table 3, which show that quiet period initiations are different in that most of the effect occurs prior to the event date. More importantly, in the (0,+2) window, the coefficients on *Lead* and *Co-manager* become economically small and insignificant. This is in contrast to Model 1, where these coefficients were negative and significant. Hence, not conditioning for quiet versus post-quiet period initiations may lead to incorrect conclusions regarding market reactions and the role of underwriters. The remaining variables in the Model 2 behave essentially the same as in Model 1.

Insert Table 5 about here

In Table 5, we duplicate the analysis in Table 4, except that we separate quiet period and post-quiet period recommendations because our Table 4 results indicate that pooling them may not be appropriate. As shown, the coefficients on the deal manager variables are not significant. Other variables are generally similar to those in Table 4.

Taken together, the results from Tables 4 and 5 indicate that 1) there is no reliable relationship between the CMARs from initiations and the role of the underwriter at the IPO stage; and 2) the market reacts differently to quiet period recommendations compared to post-quiet period recommendations. This lack of a differential reaction to lead versus unaffiliated initiations is one of our central findings. The Michaely and Womack (1999) result that there is a less positive market reaction to affiliated analyst recommendations, consistent with the skeptical markets hypothesis, is not supported once we control for the timing of initiations.

## 6.2 Reiterations, upgrades, and downgrades

We further investigate the market response to analyst recommendations in Table 6, where we now turn our attention to reiterations, upgrades, and downgrades. Recall that these events can only occur at some point following an initiation. The dependent variables are again the (-2,+2)-

and (0,+2)-day CMARs, and the independent variables are as previously defined. It bears repeating that unlike initiations, reiterations, upgrades, and downgrades are frequently in response to news announced after the close of trading on the previous day.

Insert Table 6 about here

As shown in Table 6, for reiterations, the only highly significant variables are *Sub-Buy* and *Performance*. A reiteration of a negative rating is viewed negatively, and there is also a negative relationship between pre-performance and the market reaction. Note that for the (0, +2) window, the coefficient on *Lead* is positive and marginally significant at the 8 percent level. This lends support to the superior information hypothesis. Turning to upgrades, the coefficient on lead is positive and significant at the five percent level for both the (-2,+2) and (0,+2) window, so upgrades by the lead underwriter are viewed more positively than upgrades by unaffiliated underwriters. Additionally, the coefficient on *Co-manager* is also positive and economically large and significant. In contrast, the skeptical markets hypothesis would suggest a negative relationship, but these results lend more credence to the superior information hypothesis. Beyond this, *Strong Buy* and *Tech* are at least marginally significant for both windows.

For downgrades, *Lead* is negative and statistically significant at the two percent level for the (0,+2)-day window. As with upgrades and reiterations, this is the opposite of what the skeptical markets hypothesis would predict. Similar to the upgrade specifications, *Tech* is also statistically significant. Since tech firms may have greater information asymmetries associated with them, a recommendation by an analyst could help alleviate some of these information problems. Therefore, we would predict a greater market response to upgrades and downgrades for technology-related companies.

Comparing Tables 5 and 6, many of the variables that appear to be important for initiations are not significant for reiterations, upgrades, and downgrades. This is true even though, as shown in Table 3, the CMARs associated with upgrades and downgrades are typically much larger. In line with some of our earlier discussion, we believe this is likely due to the fact that upgrades and downgrades are frequently the result of company-specific events. In such cases, the stock price reaction will be mostly determined by the nature of the event rather than broader characteristics of the firm or the specifics of an analyst's recommendation. Nonetheless, collectively, we find absolutely no support for the skeptical markets hypothesis. Rather, our results lend more support to the superior information hypothesis.

## 7. Analyst following

### 7.1 Does the number of deal managers in the IPO syndicate matter?

In this section, we examine the attributes of analyst following of IPOs. Of particular interest is the number of deal managers involved in the IPO and its relation to the number of brokers who ultimately follow the stock. Much recent research has emphasized the importance of analyst following for newly public firms. For instance, Loughran and Ritter (2004) propose an “analyst lust” hypothesis in which the research services of underwriters were so sought after that it could partially explain the dramatic rise in underpricing in the late 1990s. Consistent with this view, Cliff and Denis (2003) provide evidence that issuing firms pay for analyst coverage indirectly through underpricing, particularly if the lead underwriter employs an *Institutional Investor* all-star analyst.

Insert Table 7 about here

In Table 7, we analyze firm and IPO characteristics that have been found to be related to analyst following in previous research (for example, Brennan and Hughes (1991)). Because our dependent variable is the number of brokers who follow a firm over a particular time period, we are necessarily dealing with count data, for which OLS is inappropriate. Instead, as is very common with such data, we use Poisson regressions.<sup>14</sup>

In our first specification (column 1), the dependent variable is the number of total brokers following the IPO firm within one year after the IPO. We standardize market capitalization by the Nasdaq Composite index to account for the fact that the Nasdaq index more than doubled between the beginning of 1999 and March 2000, before taking the natural logarithm. Additionally, instead of taking one market capitalization measure, we instead take an average over days 183 to 365, as market values changed significantly for many of the sample firms over this period, and analysts may have initiated coverage based on any of these values. This smoothing procedure measures a firm’s typical or average size, which is likely to be more relevant in terms of attracting analyst attention than the value at any single point in time. To remain consistent with our market value measure (*Log Deflated-size*), *Log volume* is the natural log of average volume over days 183 to 365. We also include *Turnover*, average volume divided

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<sup>14</sup> OLS is not appropriate with count data for a variety of reasons, including the fact that count data cannot take negative values. For a detailed, but very readable, discussion of Poisson regressions, see Chapter 19 of Wooldridge (2002).

by shares outstanding during calendar days 183 to 365, to gauge trading intensity. Although volume and turnover are positively correlated, they measure separate things. Most obviously, volume is directly affected by stock splits. The most attractive firms to analysts would most likely be those with a combination of high volume and high turnover.

Not surprising, size and volume are statistically significant determinants of the number of analysts covering a firm. As is widely recognized, analysts tend to cover larger, more visible firms and those with high volume most likely because these stocks tend to generate brokerage revenue for their firm and/or because customers request more research on such firms. Turnover, on the other hand, is not statistically significant.

The primary variable of interest, *Number managers*, is the number of deal managers participating in the IPO. The number of managers is marginally related to the number of analysts that ultimately follow the firm in the year following the IPO, which is consistent with conventional wisdom. However, as we showed previously, many of these deal managers immediately initiate coverage. Thus, it is unclear at this point if these same brokers continue to follow the stock after their initial assessment. To evaluate this possibility, we analyze the number of analysts that follow a stock when the quiet period expires and then separately in the post-quiet period. Before proceeding to these results, we examine the remainder of the variables in our model.

*Underpricing*, as defined previously, is not related to the number of analysts that cover the stock. This result is inconsistent with Aggrawal, Krigman, and Womack (2002), Cliff and Denis (2003) and Rajan and Servaes (1997), who find analyst coverage is positively related to underpricing. The reputation of the lead underwriter, as measured by the Carter and Manaster (1990) rank is positive and significant, so companies brought to market by large, reputable banks receive more total analyst coverage.<sup>15</sup> Finally, *Tech* is positive and significant, suggesting that analysts are more likely to follow high-tech and internet-related firms. This is consistent with Jegadeesh, Kim, Krische, and Lee (2004) who argue that analysts tend to be attracted to “glamour” firms.

In the second specification (column 2), the number of analysts that initiated coverage at the end of the quiet period is the dependent variable. The number of managers is by far the most

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<sup>15</sup> The ranks we use in this paper are from Loughran and Ritter (2004), which provide an update to the Carter and Manaster (1990) ranks. They can be downloaded at <http://bear.cba.ufl.edu/ritter>.

significant variable. Interestingly, neither size nor volume, the two variables typically cited as the most important determinants of analyst coverage, are statistically significant. This is consistent with the conventional wisdom that adding co-managers to the IPO underwriting buys analyst coverage. Corwin and Schultz (2004) also show that the number of managers is highly significant in explaining the number of analysts that cover a stock over the first three months after the IPO. Thus, their specification closely resembles our quiet period specification.

With a Poisson regression, a one unit change in regressor  $j$  changes the expected value of the dependent variable by  $\beta_j$  times the mean of the dependent variable. In Table 2, we report 1,704 quiet period initiations, for a mean of 2.5 initiations per IPO. The column 2 coefficient of 0.11 thus implies 0.275 more initiations during the quiet period per incremental manager, which seems a bit low. But the CM rank has a coefficient of 0.07, so moving from a rank of 6 to a rank of 9 would mean  $[2.5 \text{ times } (9-6 = 3) \text{ times } 0.07] = 0.52$  more initiations.

In the third specification, we investigate the number of analysts that cover the stock in the post-quiet period.<sup>16</sup> The number of IPO deal managers is not significant, but the variables typically shown to influence analyst behavior, size and volume, behave as expected.

At the bottom of Table 7, we report the value of the Pearson  $\chi^2$  statistic divided by degrees of freedom ( $676 - 8 = 668$ ), which is a common specification test in this context. Values close to one for this ratio, such as the .9724 reported for our first regression, are an indication that the regression is well specified. In our second regression, the value is less than one, which is an indication of “underdispersion,” meaning that the conditional variance is too small relative to the conditional mean. In such cases, the coefficient estimates are consistent, but the standard errors are probably overstated. This underdispersion is likely a reflection of the highly predictable nature of quiet period initiations when the number of managers is known. The third regression exhibits moderate overdispersion, so the standard errors are probably somewhat understated. Note that, because of the direction of the influence, our conclusions are unlikely to be influenced by either the underdispersion in our second regression or the overdispersion in the third.

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<sup>16</sup> Analysts that cover a stock in the quiet period may or may not be included in the initiation count for post-quiet period brokers. For example, if Merrill Lynch initiates coverage during the quiet period and later issues a reiteration, upgrade, or downgrade anytime after this period, then they would be considered in the post-quiet period count. However, if they did not issue a recommendation of any kind in the post-quiet period, we assume coverage was dropped and do include them.

Overall, our results in Table 7 suggest that firms with more deal managers receive more coverage “out of the gate” when the quiet period expires, but the total coverage received in the first year following the IPO does not depend on the number of managing underwriters. Firms that chose to include extra managing underwriters in their IPO to obtain greater research coverage succeed only in changing the timing of coverage, not the quantity. Also, we do not find a relationship between underpricing and analyst coverage, which also contradicts prior research (Rajan and Servaes (1997)). Instead, the primary determinants of coverage are firm size, trading volume, high-tech orientation and the reputation of the lead underwriter. However, this conclusion is tempered by the fact that, so far, we only examine the number of analysts covering a stock, not the reputation of the analyst. In other words, we consider quantity, but not quality, and firms may be able to influence *which* underwriters cover their stock. We explore the quality issue next.

### *7.2 Is there a relationship between the quality of research coverage and the number of brokers that follow an IPO firm?*

In Table 7, we found that underwriter reputation is positively related to the number of brokers that follow a stock. Of course, a firm would prefer to be covered by a higher quality analyst (assuming a positive outlook) as opposed to a lower quality analyst. For instance, Krigman, Shaw, and Womack (2001) argue that the most important reason that issuers switch underwriters between their IPO and SEO stage is to “graduate” to an underwriter with a more prestigious research department. Even more specifically, issuers wish to have *Institutional Investor* all-star analysts covering them (Dunbar (2000)).

Unfortunately, the data source we use does not name the particular analyst covering the firm, so we cannot directly determine whether certain firms are more likely to receive coverage from all-star analysts. However, we can indirectly measure the quality of research coverage by examining Carter and Manaster (1990) ranks. *Institutional Investor* ranks the top investment banks in a given year based on which ones have the most analysts that reach all-star status. These banks also have the highest Carter and Manaster ranks. In other words, there is a relatively high correlation between the Carter and Manaster ranks and banks with all-stars, meaning that high-prestige banks tend to have more all-star analysts.

Is it the case that as the number of brokers increases the quality of research decreases? If so, then the number of analysts covering a firm may not be directly relevant. In other words, a

firm might be better off with a smaller number of higher quality analysts such that the average quality is high (and the variance in quality is low).

Insert Table 8 about here

We investigate this issue in Table 8. As shown in columns 1 and 2, the number of brokers following the IPOs in our sample ranges from 0 to 29. Only four firms have 19 or more brokers, and a substantial majority have between 2 and 10. If we look down column 3, the number of managing underwriters tends to be between 3 and 4 for all but the smallest offerings, so most of the variation in the number of brokers covering is due to unaffiliated brokers. Examining the mean Carter-Manaster rank (*Mean CMRANK*) in column 4, we immediately see that there is not much variation except for the smallest offerings. The Carter-Manaster ranks hover a little over 7, suggesting that the average quality of research stays fairly constant as more brokers cover the stock. Similarly, column 5 shows that the percentage of brokers following a firm with a Carter-Manaster rank of 8 or 9 (i.e., high-prestige brokers) tends to be between 50 and 70 percent. Columns 6 and 7 show the average trading volume and deflated market capitalization for each group over days 183 to 365. Both behave as expected, rising steadily with the number of covering brokers.

For IPO firms with 3 or fewer brokers following their stock, it is generally only their deal managers who are providing coverage. These firms are generally smaller with relatively less trading activity, and therefore are not attractive candidates for coverage by other analysts. Our results indicate that, for these small firms, it may be wise to “purchase” analyst coverage by including additional co-managers in the underwriting syndicate because, if they do not, they may not get the additional coverage. Large firms, on the other hand, do not need to.

Insert Table 9 about here

As a final investigation of research quality, we look at the behavior of analysts from four top underwriters: Credit Suisse First Boston (CSFB), Goldman Sachs, Merrill Lynch, and Morgan Stanley.<sup>17</sup> Do analysts at these banks tend to cover only IPO firms with whom they are affiliated? Looking at Table 9, these four underwriters are responsible for 15 percent (1,118/7,487) of the total recommendations in our sample. More importantly, about 21 percent of the recommendations made by these underwriters are for unaffiliated IPOs, so these banks do

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<sup>17</sup> These banks are both at the top of *Institutional Investor*'s all-star list (brokers ranked by the number of all-star analysts) in every year and also have the highest Carter-Manaster rank.

cover at least some firms with whom they have no relationship (at least in terms of the IPO). Interestingly, the average rating for these underwriters is identical whether they are covering affiliated or unaffiliated firms. Thus, even though these four banks presumably have a greater incentive to issue positive ratings for firms with which they are affiliated, they do not do so. It may be the case, as we previously discussed, that these unaffiliated high quality banks are covering firms with the hope of winning a future mandate (the currying favor hypothesis).

The results in this section suggest that the quality of the research coverage a firm receives in the year following its IPO does not vary substantially with the number of brokers who ultimately follow the firm. Both the average quality and the percentage of high-prestige underwriters are relatively constant. The results also show that top banks will cover firms with whom they are not affiliated, so a firm may receive coverage from an all star analyst or a high-prestige bank even if there is no banking relationship at the IPO stage.

## **7. Conclusions**

We examine analyst recommendations for newly public firms in the first year following their IPOs. For 683 IPOs over the period 1999-2000, we collect a total of 7,487 recommendations. Conventional wisdom, both among academics and practitioners, suggests that firms going public can “buy” additional analyst coverage by including more banks as deal managers in their IPO syndicates. Surprisingly, for the period we study, this turns out to be incorrect. Instead, we show that there is no reliable relationship between the number of managing underwriters and the number of brokers who follow a firm by the end of its first anniversary as a publicly traded firm. Our finding suggests that firms may be under the illusion that they are paying for research at the time of the IPO, but other factors, such as firm size and trading volume, are ultimately more important considerations.

Consistent with Bradley, Jordan, and Ritter (2003), firms that include more deal managers in their IPOs do receive more coverage immediately following the expiration of the quiet period. Thus, firms are able to influence the timing of coverage to a certain extent, but not the number of analysts who will ultimately choose to follow the firm. We also find no evidence that firms are able to influence the average quality of the banks that follow the firm, nor are they able to influence the percentage of analysts associated with high prestige banks.

Some researchers (e.g., Michaely and Womack, 1999) have argued that market participants are aware of the conflicts of interest faced by analysts at underwriters who are affiliated with the firms they cover. If this is true, then recommendations by affiliated underwriters should be discounted relative to recommendations from non-affiliated underwriters. We call this the *skeptical market hypothesis*, which predicts that the announcement effects should be less positive when affiliated analysts initiate coverage. As an alternative, we propose the *credulous market hypothesis*, which conjectures that the market does not distinguish between affiliated and unaffiliated banks. This predicts that there should be no difference in the announcement effects for affiliated and unaffiliated analysts. The *currying favor hypothesis* argues that unaffiliated analysts may have just as big a conflict of interest as affiliated analysts, in that the unaffiliated brokers do not have the incumbent's advantage in competing for investment banking mandates. This hypothesis predicts that the announcement effect of initiations from unaffiliated analysts should be just as muted as those from affiliated analysts. Lastly, the *superior information hypothesis* predicts that the announcement effect for recommendations from affiliated analysts should be stronger. In practice, we observe the net effect of these alternative hypotheses.

When we examine market reactions to analyst recommendations, we find that quiet period initiations are fundamentally different from post-quiet period initiations from the standpoint of market and volume reactions and target price behavior. Contrary to the skeptical market hypothesis, the market reaction is virtually the same for deal manager and non-deal manager initiations, but lead underwriter upgrades are associated with a greater market reaction. Overall, once we control for the effect of quiet period versus later initiations, we find little evidence of any distinction between the market reaction to affiliated versus non-affiliated analyst recommendations, suggesting that either (1) investors are unaware of the potential bias in recommendations from affiliated underwriters or (2) non-affiliated analysts are faced with conflicts of interest as severe as those faced by affiliated analysts.

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**Table 1. Descriptive statistics on analyst recommendations**

This table provides descriptive statistics on analyst recommendations for 683 IPOs from January 1, 1999 to December 31, 2000. Panel A provides information on the time of the recommendation relative to the IPO date in days. Panel B provides a distribution of the types of ratings: new initiation, reiteration, upgrade, and downgrade. Panel C provides a distribution of the rating frequencies. We code an investment bank’s highest rating as a 1 and lowest rating as a 5. Panel D provides data on the affiliation of the investment bank relative to the IPO firm. Panel E provides data on the number of distinct brokerage firms covering the IPOs during the first year. IPO data are from the Thomson Financial (SDC) Initial Public Offerings database, with the elimination of IPOs that are classified as ADRs, REITs, closed-end funds, spinoffs, or unit offers, along with issues with an original midpoint of the filing range less than \$8. Analyst data are from Briefing.com.

Panel A: Time of recommendation relative to IPO date

Quiet period (within 30 days of IPO)	Post-quiet period (30 < t ≤ 365)
1,720 (23%)	5,767 (77%)

Panel B: Distribution of analyst ratings

Initiation	Reiteration	Upgrade	Downgrade
3,519 (47%)	2,865 (38%)	474 (6%)	629 (8%)

Panel C: Analyst ratings

Strong buy (1)	Buy (2)	Attractive (3)	Hold/ Neutral (4)	Sell (5)
3,249 (43%)	3,316 (44%)	716 (10%)	191 (3%)	15 (0%)

Panel D: Affiliation of investment bank to IPO firm

Lead bank	Co-manager	Unaffiliated
1,576 (21%)	2,682 (36%)	3,229 (43%)

Panel E: Number of distinct brokerages

Lead bank	Co-manager	Unaffiliated
649 (18%)	1,235 (35%)	1,635 (47%)

**Table 2. Ratings strength and target prices grouped by affiliation**

This table provides information on rating strength and target prices based on the affiliation of the investment bank at the IPO stage. *Rating* is the strength of the recommendation with 1 being the best rating and 5 being the worst. *Target* is the percentage of times a target price is issued simultaneously with the recommendation. *Premium* is the premium of the target price to the market price on day -3 (relative to the recommendation date). Panel A provides initiations by time where quiet period and post-quiet period recommendations are separated. Quiet period recommendations are defined as those occurring between calendar days 25 to 30 following the IPO. Panel B further separates recommendations into reiterations, upgrades, and downgrades. IPO data are from the Thomson Financial (SDC) Initial Public Offerings database from January 1, 1999 to December 31, 2000. Analyst data are from Briefing.com.

## Panel A: Initiations by time

Affiliation	All				Quiet period				Post-quiet period			
	N	Rating	Target	Premium	N	Rating	Target	Premium	N	Rating	Target	Premium
Lead	649	1.68	41.3	30.3	573	1.68	41.5	30.5	76	1.73	39.4	29.2
Co-manager	1,235	1.64	45.6	29.9	974	1.63	43.8	27.9	261	1.68	52.1	37.2
Unaffiliated	1,635	1.87	55.7	35.3	157	1.83	35.0	24.6	1,478	1.88	57.9	36.4
All	3,519	1.76	49.5	32.5	1,704	1.67	42.2	28.5	1,815	1.85	56.3	36.3

## Panel B: Reiterations, upgrades and downgrades

Affiliation	Reiterations				Upgrades				Downgrades			
	N	Rating	Target	Premium	N	Rating	Target	Premium	N	Rating	Target	Premium
Lead	714	1.50	37.3	49.5	81	1.37	38.2	37.5	132	2.84	15.9	19.5
Co-manager	1,009	1.42	51.0	75.1	157	1.28	38.9	37.3	281	2.84	24.1	18.9
Unaffiliated	1,142	1.54	49.8	61.3	236	1.34	55.9	60.6	216	2.81	24.5	11.0
All	2,865	1.49	47.1	63.2	474	1.33	47.3	48.9	629	2.83	22.6	16.3

**Table 3. Cumulative market adjusted returns grouped by affiliation**

This table provides information on cumulative market adjusted returns based on the affiliation of the investment bank at the IPO stage. (-2,+2) and (0,+2) are the cumulative market-adjusted returns (using the dividend-inclusive Nasdaq Composite index) over the (-2,+2)-day window and (0,+2)-day window, respectively, where day 0 is the recommendation date. Panel A provides initiations by time period, where quiet period (initiations made between 25 and 30 calendar days following the IPO) and post-quiet period recommendations are separated. Panel B further separates recommendations into reiterations, upgrades, and downgrades. 683 IPOs from January 1, 1999 to December 31, 2000 comprise the database. Analyst data are from Briefing.com.

## Panel A: Initiations by time

Affiliation	All			Quiet period			Post-quiet period		
	N	(-2,+2)	(0,+2)	N	(-2,+2)	(0,+2)	N	(-2,+2)	(0,+2)
Lead	649	4.86%	0.54%	573	4.97%	0.11%	76	4.07%	3.69%
Co-manager	1,235	3.78%	0.22%	974	4.02%	-0.49%	261	2.90%	2.87%
Unaffiliated	1,635	3.13%	2.49%	157	4.63%	0.47%	1,478	2.97%	2.70%
All	3,519	3.68%	1.33%	1,704	4.40%	-0.20%	1,815	3.00%	2.77%

## Panel B: Reiterations, upgrades, and downgrades

Affiliation	Reiterations			Upgrades			Downgrades		
	N	(-2,+2)	(0,+2)	N	(-2,+2)	(0,+2)	N	(-2,+2)	(0,+2)
Lead	714	0.84%	1.35%	81	11.82%	11.54%	132	-20.84%	-19.76%
Co-manager	1,009	0.91%	0.52%	157	9.19%	11.06%	281	-19.22%	-16.67%
Unaffiliated	1,142	0.75%	-0.20%	236	6.83%	7.10%	216	-17.69%	-15.21%
All	2,865	0.83%	0.44%	474	8.46%	9.17%	629	-19.04%	-16.82%

**Table 4. Regression analyses of market reactions to initiations**

This table provides cross-sectional regression results on market reactions to the initiation of analyst coverage. The dependent variables are the (-2,+2)- and (0,+2)-day market-adjusted percentage returns, where day 0 is the recommendation date. *Quiet* is a dummy variable equal to one if the recommendation occurs within calendar days 25 to 30 following the IPO, zero otherwise. *Lead* and *Co-manager* are dummy variables that equal one if the recommendation was made by a firm's lead underwriter and co-manager(s) at the IPO stage, respectively, and zero otherwise. *Strong buy* and *Sub-buy* are dummy variables equal to one if the recommendation is a strong buy or sub-buy rating, respectively, and zero otherwise. *Target* is a dummy variable equal to one if a target price accompanied the recommendation, and zero otherwise. *Tech* is a dummy variable equal to one if the firm is classified as high-tech, inclusive of internet-related firms, and zero otherwise. *Venture* is a dummy variable equal to one if the firm is venture capital-backed, and zero otherwise. *Log sales* is the natural logarithm of the firm's sales. *Performance* is the (-7,-3)-day cumulative market-adjusted return relative to the recommendation date. *Underpricing* is the difference between the close on the first day of trading and the IPO offer price, divided by the offer price. For both performance and underpricing, a 10% return is measured as 0.10. 683 IPOs from January 1, 1999 to December 31, 2000 comprise the sample. Analyst data are from Briefing.com. Two-tailed *p*-values are in parentheses.

Variable	Model 1		Model 2	
	(-2,+2)	(0,+2)	(-2,+2)	(0,+2)
Intercept	1.37 (.2770)	0.74 (.4749)	1.24 (.3270)	1.02 (.3282)
Quiet			1.36 (.1314)	-2.83 (.0001)
Lead	1.36 (.1161)	-2.18 (.0023)	0.32 (.7741)	-0.01 (.9904)
Co-manager	0.07 (.9176)	-2.68 (.0001)	-0.84 (.3688)	-0.78 (.3107)
Strong buy	3.13 (.0001)	3.32 (.0001)	3.15 (.0001)	3.28 (.0001)
Sub-buy	-3.58 (.0006)	-2.44 (.0043)	-3.44 (.0010)	-2.72 (.0015)
Target	-0.80 (.2085)	-0.26 (.6207)	-0.71 (.2633)	-0.44 (.4052)
Tech	2.93 (.0003)	1.02 (.1271)	2.90 (.0004)	1.10 (.1017)
Venture	2.13 (.0067)	2.05 (.0015)	2.08 (.0082)	2.16 (.0009)
Log sales	-0.15 (.3647)	0.05 (.6904)	-0.15 (.3568)	0.06 (.6624)
Performance	-10.88 (.0001)	-10.03 (.0001)	-11.19 (.0001)	-9.39 (.0001)
Underpricing	-1.64 (.0001)	-1.14 (.0001)	-1.64 (.0001)	-1.14 (.0001)
Observations	3,512	3,512	3,512	3,512
Adjusted R <sup>2</sup>	.0334	.0379	.0337	.0416

**Table 5. Regression analyses of market reactions to initiations: Quiet period versus post-quiet period**

This table provides cross-sectional regression results on market reactions to the initiation of analyst coverage. The dependent variables are the (-2,+2)- and (0,+2)-day market-adjusted percentage returns, where day 0 is the recommendation date. Quiet period recommendations are defined as those occurring between calendar days 25 to 30 following the IPO. *Lead* and *Co-manager* are dummy variables that equal one if the recommendation was made by a firm's lead underwriter and co-manager(s) at the IPO stage, respectively, and zero otherwise. *Strong buy* and *Sub-buy* are dummy variables equal to one if the recommendation is a strong buy or sub-buy rating, respectively, and zero otherwise. *Target* is a dummy variable equal to one if a target price accompanied the recommendation, and zero otherwise. *Tech* is a dummy variable equal to one if the firm is classified as high-tech, inclusive of internet-related firms, and zero otherwise. *Venture* is a dummy variable equal to one if the firm is venture capital-backed, and zero otherwise. *Log sales* is the natural logarithm of the firm's sales. *Performance* is the (-7,-3)-day cumulative market-adjusted return relative to the recommendation date. *Underpricing* is the difference between the close on the first day of trading and the IPO offer price divided by the offer price. For both performance and underpricing, a 10% return is measured as 0.10. 683 IPOs from January 1, 1999 to December 31, 2000 comprise the sample. Analyst data are from Briefing.com. *p*-values are in parentheses.

Variable	Quiet period		Post-quiet period	
	(-2,+2)	(0,+2)	(-2,+2)	(0,+2)
Intercept	-1.05 (.6494)	-3.25 (.0924)	2.93 (.0200)	5.06 (.0013)
Lead	0.27 (.8795)	-0.53 (.7250)	0.47 (.7629)	0.22 (.9100)
Co-manager	-0.92 (.5934)	-1.39 (.3338)	-0.63 (.4893)	-1.27 (.2632)
Strong buy	3.09 (.0029)	3.04 (.0005)	3.53 (.0001)	3.30 (.0001)
Sub-buy	-3.37 (.1087)	-3.40 (.0539)	-2.36 (.0097)	-3.45 (.0024)
Target	-0.37 (.7163)	-0.22 (.7963)	-0.53 (.4120)	-0.80 (.3186)
Tech	5.38 (.0001)	1.31 (.2162)	1.12 (.1828)	0.60 (.5660)
Venture	4.38 (.0003)	4.05 (.0001)	0.24 (.7693)	-0.26 (.8011)
Log sales	0.14 (.5966)	0.42 (.0469)	-0.30 (.0766)	-0.44 (.0387)
Performance	-14.21 (.0007)	-11.98 (.0001)	-6.99 (.0003)	-9.23 (.0001)
Underpricing	-2.35 (.0001)	-1.53 (.0006)	-0.87 (.0032)	-1.10 (.0028)
Observations	1,700	1,700	1,812	1,812
Adjusted R <sup>2</sup>	.0406	.0340	.0349	.0295

**Table 6. Regressions of market reactions to reiterations, upgrades, and downgrades**

This table provides cross-sectional regression results on market reactions to analyst recommendations, excluding initiations, in the year after the IPO. The dependent variables are the (-2,+2)- and (0,+2)-day market-adjusted percentage returns, where day 0 is the recommendation date. *Lead* and *Co-manager* are dummy variables that equal one if the recommendation was made by a firm's lead underwriter and co-manager(s) at the IPO stage, respectively, and zero otherwise. *Strong buy* and *Sub-buy* are dummy variables equal to one if the recommendation is a strong buy or sub-buy rating, respectively, and zero otherwise. *Target* is a dummy variable equal to one if a target price accompanied the recommendation, and zero otherwise. *Tech* is a dummy variable equal to one if the firm is classified as high-tech, inclusive of internet-related firms, and zero otherwise. *Venture* is a dummy variable equal to one if the firm is venture capital-backed, and zero otherwise. *Log sales* is the natural logarithm of the firm's sales. *Performance* is the (-7,-3)-day cumulative market adjusted return relative to the recommendation date. *Underpricing* is the difference between the close on the first day of trading and the IPO offer price, divided by the offer price. For both performance and underpricing, a 10% return is measured as 0.10. 683 IPOs from January 1, 1999 to December 31, 2000 comprise the sample. Analyst data are from Briefing.com. *p*-values are in parentheses.

Variable	Reiterations		Upgrades		Downgrades	
	(-2,+2)	(0,+2)	(-2,+2)	(0,+2)	(-2,+2)	(0,+2)
Intercept	2.03 (.1826)	1.32 (.2836)	-7.16 (.1143)	-3.87 (.2979)	-7.29 (.1184)	-7.31 (.0526)
Lead	-0.26 (.7805)	1.31 (.0810)	5.58 (.0353)	4.25 (.0503)	-4.62 (.1185)	-5.57 (.0200)
Co-manager	-0.19 (.8208)	0.43 (.5300)	3.15 (.1426)	4.31 (.0147)	-2.66 (.2733)	-2.46 (.2093)
Strong buy	0.61 (.4137)	0.53 (.3810)	4.77 (.0290)	3.17 (.0761)	NA	NA
Sub-buy	-4.40 (.0241)	-4.59 (.0037)	-1.81 (.7295)	0.45 (.9164)	1.66 (.4668)	0.00 (.9973)
Target	0.40 (.5817)	0.29 (.6301)	0.80 (.6767)	0.45 (.7743)	1.46 (.5725)	2.84 (.1733)
Tech	-1.14 (.2785)	-1.59 (.0613)	6.50 (.0165)	7.60 (.0007)	-13.41 (.0001)	-9.88 (.0001)
Venture	-0.70 (.4767)	-0.33 (.6758)	3.99 (.1298)	1.24 (.5661)	-0.49 (.8560)	-0.73 (.7387)
Log sales	0.28 (.1532)	0.14 (.3778)	0.81 (.1710)	0.86 (.0752)	0.41 (.4525)	0.27 (.5338)
Performance	-6.07 (.0023)	-3.98 (.0136)	12.24 (.0341)	1.94 (.6811)	1.89 (.7527)	-4.55 (.3481)
Underpricing	-0.48 (.1267)	-0.27 (.2913)	-0.34 (.6799)	-1.00 (.1442)	-0.95 (.4176)	-0.13 (.8946)
Observations	2,863	2,863	473	473	629	629
Adjusted R <sup>2</sup>	.0056	.0068	.0289	.0321	.0393	.0330

**Table 7. Poisson regressions of analyst following**

This table provides Poisson regressions using several proxies for analyst following. The three dependent variables are Total brokers (the total number of brokerage firms issuing analyst recommendations in the year after an IPO), QP brokers (the number of initiations by analysts in the quiet period, defined as within 30 calendar days of the IPO), and Post-QP brokers (the number of analysts providing recommendations not in the quiet period). *Log deflated-size* is the natural logarithm of the firm's average market capitalization over calendar days 183 to 365 relative to the IPO date scaled by the Nasdaq Index. *Log volume* is the natural log of average volume over calendar days 183 to 365 relative to the IPO date. *Turnover* is the average ratio of daily trading volume divided by the number of shares outstanding for calendar days 183 to 365, with Nasdaq volume divided by 2.4 to make it comparable to Amex and NYSE volume. *Underpricing* is the percentage difference between the close on the first day of trading and the IPO offer price. *Number managers* is the number of deal managers participating in the IPO (lead plus co-managers). *CM-rank* is the Carter and Manaster (1991) underwriter reputation rank updated by Loughran and Ritter (2004). *Tech* is a dummy variable equal to one if the firm is classified as high-tech or internet-related, zero otherwise. 683 IPOs from January 1, 1999 to December 31, 2000 comprise the sample. Analyst data are from Briefing.com. *p*-values are in parentheses.

Variable	Dependent variables		
	Total brokers	QP brokers	Post-QP brokers
Intercept	-2.72 (.0001)	-0.89 (.0123)	-3.80 (.0001)
Log deflated-size	0.17 (.0001)	-0.01 (.8473)	0.17 (.0001)
Log volume	0.12 (.0002)	0.07 (.1360)	0.19 (.0001)
Turnover	7.32 (.1969)	-1.21 (.8921)	0.89 (.8872)
Number managers	0.03 (.0576)	0.11 (.0001)	0.01 (.4496)
Underpricing	-0.00 (.9922)	0.04 (.1479)	0.03 (.1861)
CM-rank	0.09 (.0001)	0.07 (.0066)	0.08 (.0003)
Tech	0.16 (.0003)	0.15 (.0231)	0.23 (.0001)
N	676	676	676
Pearson $\chi^2$ /d.f.	.9724	.4279	1.3515

**Table 8. Quantity versus quality of banks following IPO**

This table investigates the quantity versus quality of banks following an IPO. The number of brokers is the actual number of brokerage firms that cover an IPO during the first year after going public. Managers are the number of deal managers participating in the IPO syndicate. *CMRANK* is the updated Carter-Manaster rank from Loughran and Ritter (2004) of the underwriter issuing a recommendation on a 1-9 scale. *% High reputation* is the percentage of brokers that have a Carter and Manaster rank of 8 or 9. Average daily volume (in thousands) is the average volume during calendar days 183-365, with Nasdaq volume divided by 2.4 to make it comparable to Amex and NYSE volume. *Deflated capitalization* is the firm's average market capitalization over calendar days 183 to 365 relative to the IPO date, scaled by the Nasdaq Composite Index, with the number reported in thousands. For example, the deflated capitalization of a firm with a market capitalization of \$300 million on a day when the Nasdaq Composite was at 4,000 is reported as 75. The sample is composed of 683 IPOs from January 1, 1999 to December 31, 2000. Analyst data are from Briefing.com.

Number of brokers	N	Mean Managers	Mean CMRANK	% High reputation	Average volume	Deflated capitalization
0	5	2.00	NA	NA	31.3	8.4
1	21	2.48	5.4	23.8	41.9	82.0
2	58	2.83	7.0	54.5	56.9	53.6
3	151	3.23	7.7	67.3	73.7	91.6
4	122	3.50	7.7	67.3	105.7	139.1
5	85	3.56	7.4	57.0	112.8	167.3
6	78	3.62	7.4	59.0	198.5	288.5
7	40	3.73	7.5	61.1	282.6	337.1
8	34	4.06	7.6	63.8	263.1	454.5
9	16	3.69	7.2	57.5	409.2	390.4
10	15	3.87	7.4	55.6	382.1	476.8
11	8	5.25	7.5	63.6	611.6	2,062.7
12	15	4.13	7.6	61.5	332.8	589.8
13	8	3.75	7.4	65.8	519.7	1,325.3
14	8	5.50	7.4	59.4	1,296.8	2,565.6
15	3	3.67	6.9	46.1	506.5	1,376.3
16	5	3.80	7.4	53.7	698.6	2,173.4
17	4	4.25	7.1	51.8	1,238.3	1,386.6
18	2	4.00	7.2	56.2	755.2	1,086.7
19	1	4.00	6.9	42.4	2,067.6	2,397.4
22-29	4	3.75	7.3	56.3	1,285.3	2,846.2

**Table 9. Recommendations by four top underwriters**

In this table we examine the recommendations of four top underwriters. We classify Credit Suisse First Boston (CSFB), Goldman Sachs, Merrill Lynch and Morgan Stanley Dean Witter (Morgan Stanley) as the top four underwriters. *Total recs* is the total number of recommendations released by the underwriter on sample firms in the year after their IPOs, including initiations, reiterations, upgrades, and downgrades. *% unaffiliated* is the percentage of unaffiliated recommendations made by deal managers and syndicate members. *N* is the number of recommendations in each category (affiliated versus unaffiliated). *% quiet* is the percentage of recommendations made in the quiet period. *Rating* is the strength of the recommendation with 1 being the best rating and 5 being the worst. IPO data are from the Thomson Financial (SDC) U.S. Common Stock Initial Public Offerings database from January 1, 1999 to December 31, 2000. Analyst data are from Briefing.com.

Underwriter	Total	% Lead	Lead rating	% Co-manage	Co-manage rating	% unaffiliated	Unaffiliated rating
CSFB	507	68.8	1.61	9.9	1.76	21.3	1.62
Goldman Sachs	211	73.9	2.08	6.6	2.36	19.4	2.29
Merrill Lynch	221	35.7	2.10	39.8	2.11	25.6	1.93
Morgan Stanley	179	67.6	2.00	15.1	2.11	17.3	2.10
Total	1,118	63.1	1.84	16.0	2.03	20.9	1.87

Figure 1. Recommendations by month

This figure presents the type of recommendations (initiations, reiterations, upgrades, and downgrades) considered in this paper by month relative to the IPO date. IPO data are from the Thomson Financial (SDC) U.S. Common Stock Initial Public Offerings database from January 1, 1999 to December 31, 2000. Analyst data are from Briefing.com.

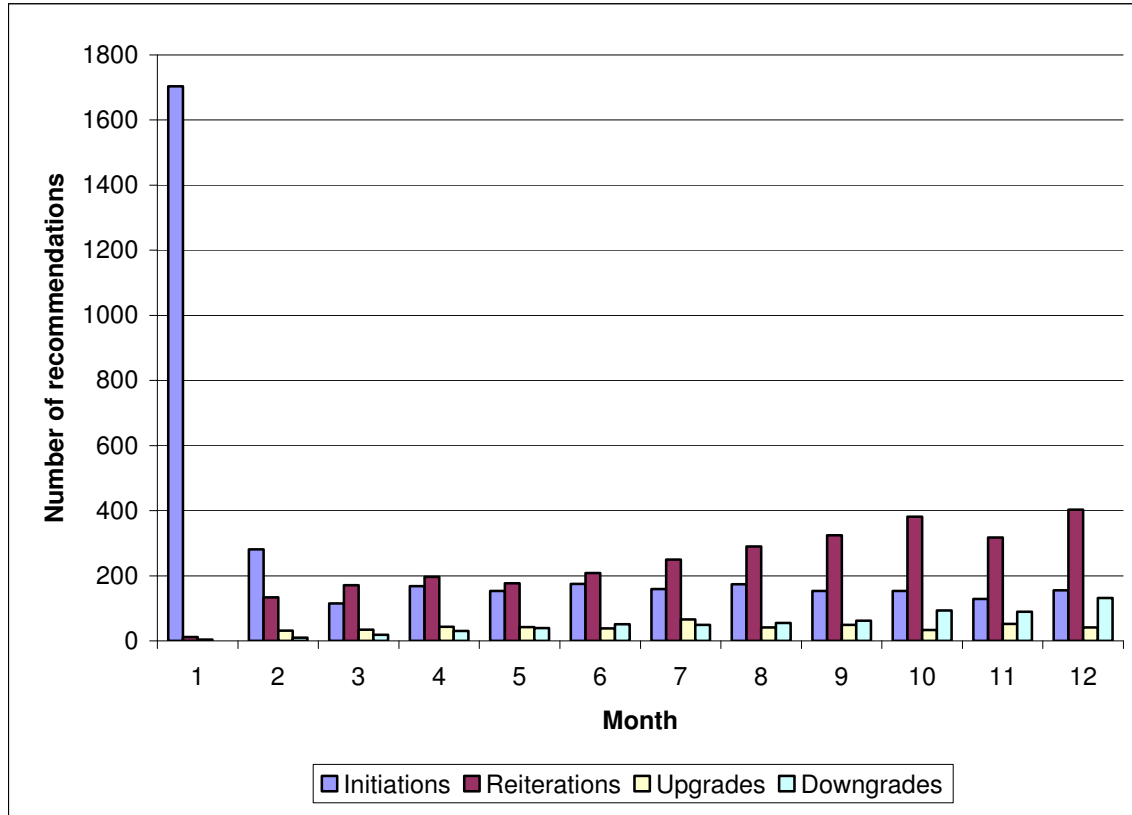


Figure 2. Quiet period versus post-quiet period market-adjusted returns for initiations

This figure presents cumulative average market-adjusted returns (CMARs) for quiet period versus post-quiet period initiations. IPO data are from the Thomson Financial (SDC) U.S. Common Stock Initial Public Offerings database from January 1, 1999 to December 31, 2000. Analyst data are from Briefing.com. A CMAR of 0.14 is 14 percent.

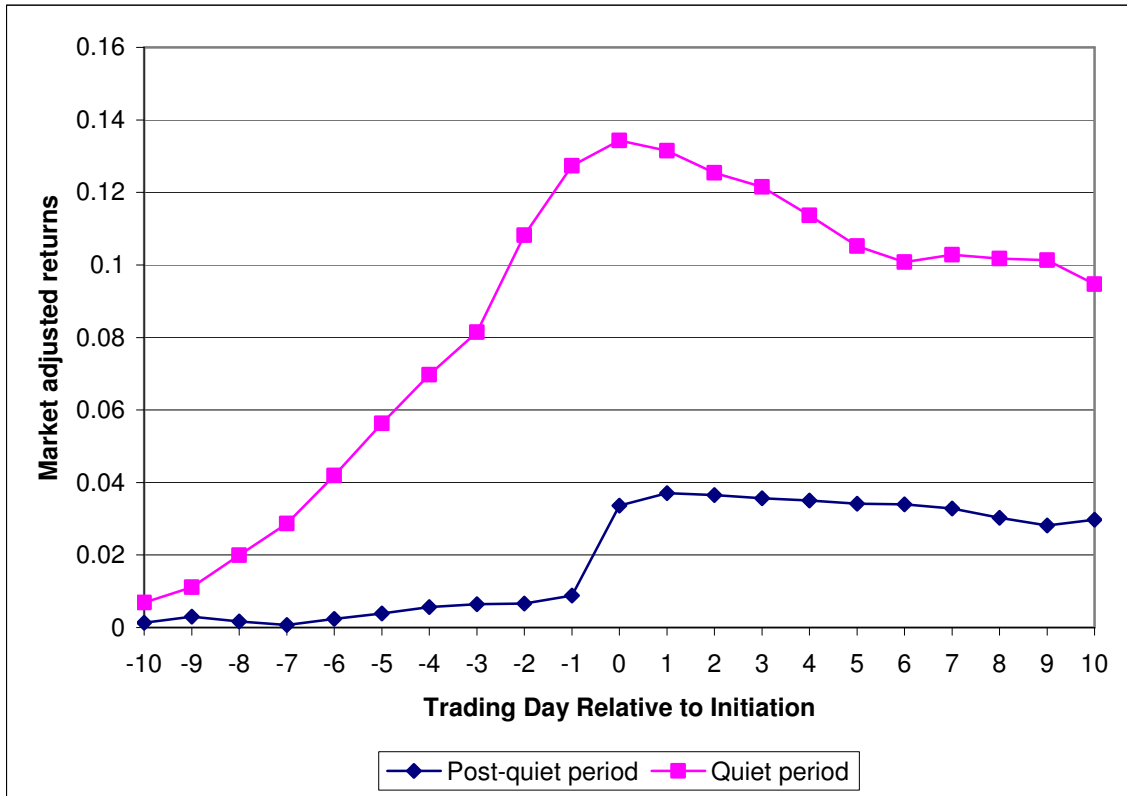


Figure 3. Volume for quiet period versus post-quiet period initiations

This figure presents average daily share volume for quiet period versus post-quiet period initiations for 683 U.S. IPOs from January 1, 1999 to December 31, 2000. Analyst data are from Briefing.com. Nasdaq volume is divided by 2.4 to make it comparable with Amex and NYSE volume (see Gould and Kleidon (1994)).

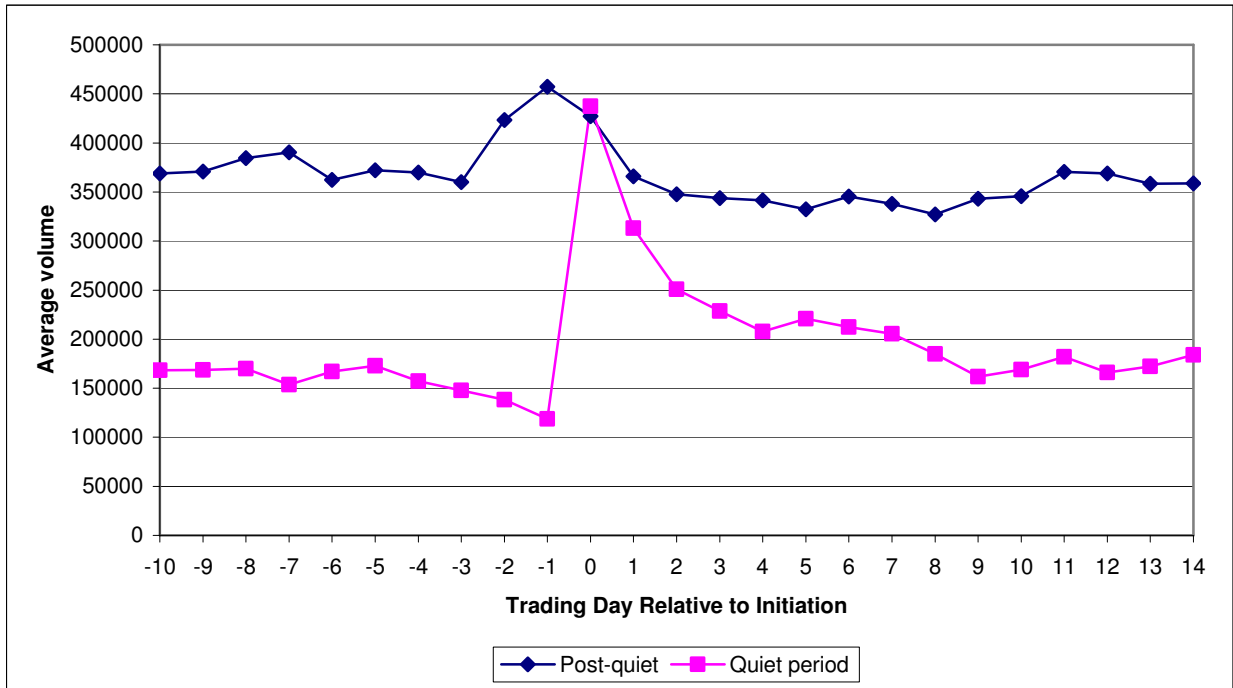


Figure 4. Market-adjusted returns for downgrades, upgrades, and reiterations

This figure presents cumulative market-adjusted average returns (CMARs), using the Nasdaq Composite index inclusive of dividends, for downgrades, upgrades, and reiterations in the year after the IPO for 683 U.S. IPOs from January 1, 1999 to December 31, 2000. Analyst data are from *Briefing.com*. A CMAR of  $-0.25$  is  $-25$  percent.

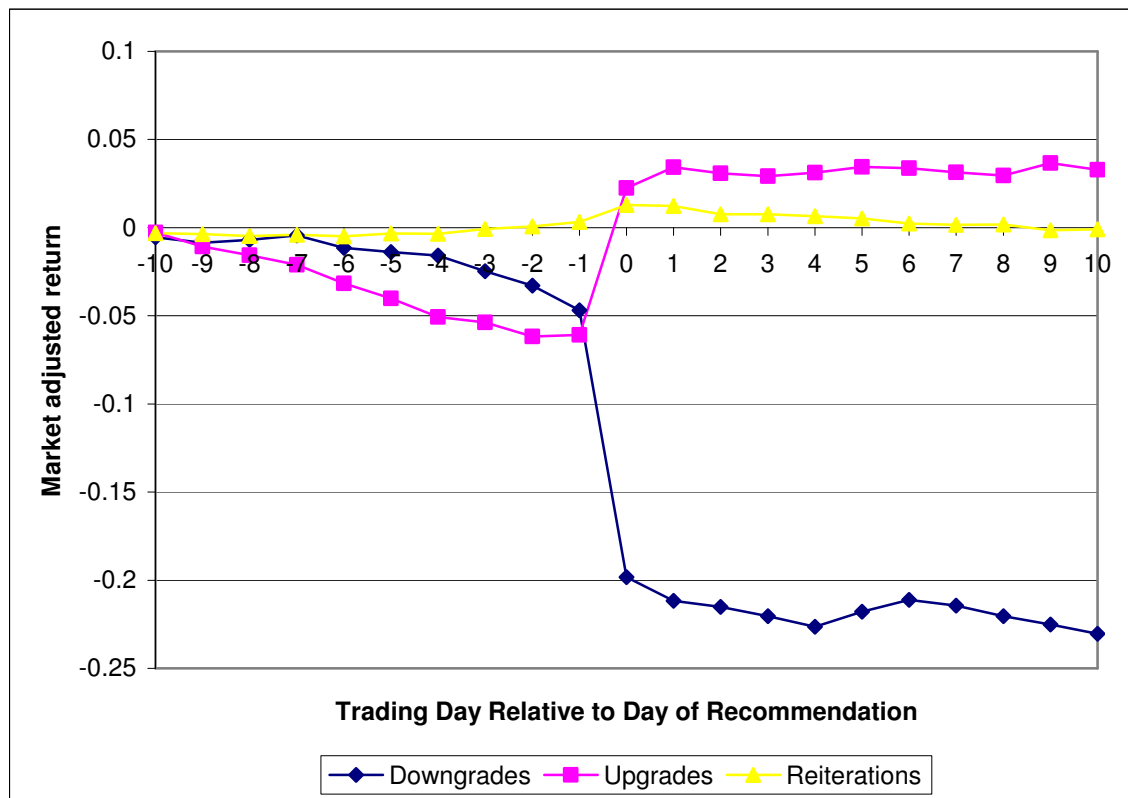


Figure 5. Volume for downgrades, upgrades, and reiterations

This figure presents average daily volume for downgrades, upgrades, and reiterations in the year after the IPO for 683 U.S. IPOs from January 1, 1999 to December 31, 2000. Analyst data are from Briefing.com. Nasdaq volume is divided by 2.4 to make it comparable to Amex and NYSE volume.

