Analyst Behavior Following IPOs: The "Bubble Period" Evidence

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Abstract

We examine over 7,400 analyst recommendations in the year after going public for IPOs from 1999-2000. Initiations at the end of the quiet period come almost exclusively from affiliated analysts, while initiations afterwards are predominantly from unaffiliated analysts. Once we control for timing, we find no evidence of a difference in market reaction to affiliated versus unaffiliated analyst initiations. Our results contradict prior findings that the market discounts recommendations from affiliated analysts, suggesting instead that the informational advantage possessed by affiliated analysts outweighs the greater conflicts of interest they may face. Finally, the amount of analyst coverage is related to the number of managing underwriters only for the smallest IPOs.

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1. 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 institutional investors who are long in a stock, maintain information flows from 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 retail investors who rely on the recommendations provided by sell-side analysts may be harmed. Controversy over biased and misleading recommendations led to the Global Settlement in early 2003 between major brokerage firms and regulators, with fines and commitments to subsidize third-party independent research totaling $1.4 billion.

By definition, an affiliated analyst's employer has an investment banking relationship with a company that is covered by the analyst, and an unaffiliated analyst's employer does not. As is widely noted, an affiliated analyst faces a conflict of interest and may be pressured to give overly optimistic recommendations. Balanced against this potential bias is the fact that an affiliated analyst may also have superior access to information and greater expertise. In some circumstances, however, the conflict of interest faced by an affiliated analyst actually may be less severe than that faced by an unaffiliated analyst, because the affiliated analyst has the incumbent's advantage in competing for future underwriting mandates. Complicating matters further, positive recommendations by affiliated analysts may be anticipated by the market to a greater degree than recommendations by unaffiliated analysts. Lastly, upgrades, downgrades, and reiterations (but not initiations) are affected by confounding effects from company-specific news that motivate many of these recommendations. Thus, we can view the market's reaction to a recommendation as a net effect of a variety of forces that push in different directions. As a result, compared to announcements by unaffiliated analysts, affiliated recommendations may be associated with larger announcement effects, smaller announcement effects, or the same announcement effects.

Affiliated recommendations may be associated with a more positive announcement effect than unaffiliated recommendations if the market views these analysts as having sufficiently

superior information and/or expertise to more than offset any conflicts of interest. We refer to this as the *superior information hypothesis*. Alternatively, affiliated recommendations would be associated with a more positive announcement effect if unaffiliated analysts are perceived to actually face a greater conflict of interest due to the lack of the incumbent's advantage in competing for future investment banking mandates, which we refer to as the *currying favor hypothesis*.

Affiliated recommendations may be associated with a less positive announcement effect than unaffiliated analysts if the market views these analysts as having a greater conflict of interest that is not offset by superior information. We refer to this view as the *skeptical markets hypothesis*.

Lastly, there may be no difference in announcement effects because the market is naïve about the differential conflicts of interest, which we call the *naïve markets hypothesis*. Alternatively, there may be no difference in announcement effects because, on balance, the more severe conflicts that affiliated underwriters face are offset by their superior information.

Several previous papers have examined the announcement effects of analyst initiations after IPOs.[1] Michaely and Womack (1999) 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 reaction to these recommendations is significantly less positive, consistent with the skeptical markets hypothesis.

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, the issuing firm and members of the underwriting syndicate are not allowed to issue opinions concerning valuation, including research recommendations.[2] Bradley *et al.* document that, during the 1996-2000 time period, approximately three-fourths of IPOs have analyst coverage initiated immediately after 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

[1] 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.

[2] The quiet period was lengthened to 40 days for managing underwriters, but not for other syndicate members, in July 2002, as specified by NASD Rule 2711 and NYSE Rule 472.

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 expiration of the quiet period, 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 the market reactions to these recommendations are similar for lead and non-lead underwriters, consistent with either the naïve markets hypothesis or offsetting effects from superior information and skeptical markets.

Our paper differs from Michaely and Womack (1999) and Bradley *et al.* (2003) in several important ways. First, unlike Bradley *et al.*, 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, downgrades, and reiterations. We also include target prices in our analysis, unlike Bradley *et al.* or Michaely and Womack. Finally, we examine the determinants of analyst coverage.

We report several interesting findings. First, we find that initiations occurring immediately after the end of the quiet period are fundamentally different from initiations during the following eleven months, both from the standpoint of market price and volume reactions, and from the standpoint of target price behavior. Adams (2003), in a paper related to ours, examines 1,758 analyst initiations for 448 IPOs from 1997-1998. He also finds that the market reacts differently to end of the quiet period and later initiations. We find that the market reaction is virtually the same for affiliated and unaffiliated initiations once we control for the timing of the announcement.

When we separate lead underwriters from co-managing underwriters, however, 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 evidence consistent with the superior information hypothesis and/or the currying favor hypothesis.

We also examine the determinants of analyst coverage, placing a particular emphasis on the number of managing underwriters that participate in the syndicate. The results in Rajan and Servaes (1997), Chen and Ritter (2000), Bradley *et al.* (2003), and Corwin and Schultz (2005) suggest that the number of deal managers is highly correlated with the number of analysts that subsequently follow a stock. We find that this is the case only for small IPOs. For larger IPOs, the number of deal managers is not related to the number of brokers that follow the firm once we control for the other determinants of analyst coverage. This suggests that while firms may purchase a minimum level of analyst coverage at the time of the IPO by including more co-managers, only small firms seem to benefit from this practice. Firms with higher trading volume and greater market capitalization receive substantial analyst coverage, regardless of the number of deal managers they include in their IPO.

2. Hypotheses development

The conventional wisdom among practitioners is that institutional investors largely ignore published analyst recommendations. Every October, *Institutional Investor* (*II*) reports the results of its annual poll of institutional investors. This poll determines who is chosen as an *II* all-star analyst. In the October 1999 issue, "industry knowledge" is rated as the single most important attribute of an equity analyst. "Stock selection" (i.e., recommendations) is ranked 5th out of 8 attributes, slightly ahead of "earnings estimates." In the October 2000 survey, where a wider choice of responses is offered, industry knowledge is still ranked as the most important attribute, with stock selection 11th out of 15 attributes, far behind "accessibility/responsiveness" and "useful & timely calls & visits." Written reports rank 7th and earnings estimates rank 12th out of the 15 attributes. The October 2001 survey has similar rankings.

Why don't institutional investors pay more attention to the recommendations? 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, and unless there is a lagged market reaction, any price impact should occur immediately. An analyst provides value to a money manager by answering questions and supplying information in individual telephone calls before the information is fully reflected in market prices. Especially prior to the implementation of Regulation FD in October 2000, bullish analysts are also sometimes provided with material non-public information by company

management, which they then pass along to favored clients. Institutional investors move up the priority list in terms of who is told earlier than others by generating commissions for the analyst's firm. Simply put, the private value of public information is zero, but the private value of private information can be substantial. Institutional investors reward analysts on the basis of the private value.

Sell-side research, especially that provided by the major brokerage firms, is rarely paid for directly. Thus, research needs one or more "patrons." The two main sources of revenue are trading commissions from institutional investors, and investment banking revenue from the companies that are covered. The investment banking revenue includes mergers and acquisition advisory fees and gross spread revenue from securities issues, as well as commission revenue received from rent-seeking investors when underwriters have underpriced IPOs to allocate (Loughran and Ritter (2002, 2004)). Because research is paid for indirectly, two serious conflicts of interest result, as discussed by Boni and Womack (2002), among others.

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 well 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 in their private communications, but they want that analyst to publicly have a "buy" recommendation.

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. On *a priori* grounds, it is not obvious whether affiliated or unaffiliated

analysts face the greater conflict of interest. Because affiliated underwriters possess the incumbent's advantage in winning future mandates, unaffiliated underwriters might have to be even more aggressive in their recommendations in order to win future mandates.[3] Bradley, Clarke, and Cooney (2005) find that the market discounted affiliated analyst initiations throughout the early to mid-1990's, but not during the bubble period of 1999-2000. Additionally, affiliated analysts were more optimistic than unaffiliated analysts before the bubble period, but not during. They suggest that the incentives to curry favor were strongest during 1999-2000 for unaffiliated analysts and therefore they faced conflicts just as severe as affiliated analysts.

In addition to potential conflicts, the market's response to a recommendation is also a function of other factors. An affiliated analyst may have an informational advantage relative to an unaffiliated analyst as a result of private information acquired by the analyst's firm from the due diligence investigation at the IPO stage or through talks with firm management. Furthermore, the degree of rationality by market participants will also influence the announcement effect. For instance, if retail investors are the primary traders reacting to recommendations, and they are unaware of the conflicts that analysts face, they might be too credulous in interpreting recommendations from conflicted analysts. Consistent with individuals being unable to correctly interpret recommendations, Malmendier and Shanthikumar (2004) report that individuals, but not institutions, are net buyers in response to buy recommendations, while institutions, but not individuals, are net sellers in response to hold recommendations. Additionally, some recommendations, such as those at the end of the quiet period, may be anticipated by the market and thus greeted with a muted reaction.

Thus, the market reaction to a recommendation will be a function of the conflicts that analysts face, the degree to which the market recognizes these conflicts, the informational advantage affiliated underwriters have over their peers, and the degree to which the recommendation was anticipated. We illustrate some of the various possibilities in Table 1.

Insert Table 1 about here

There are six possible scenarios that we consider with regard to the announcement return to analyst recommendations, as shown in Table 1. If affiliated analysts face more severe conflicts, but at the same time possess valuable private information, the relative market reaction

[3] This view provides an explanation for the finding in Ljungqvist, Marston, and Wilhelm (2004) that optimistic recommendations don't improve the chance of winning a mandate.

to affiliated versus unaffiliated recommendations is ambiguous as the two effects will pull in opposite directions. A more positive reaction to affiliated analysts would support the superior information hypothesis, and a less positive reaction would support the skeptical markets hypothesis. Of course, it could be the case that superior information and conflicts of interest offset each other such that there is no differential reaction.

If unaffiliated analysts face conflicts more severe than affiliated analysts because of their desire to win future mandates, then the predicted market response for affiliated recommendations relative to unaffiliated recommendations would be unambiguously positive (we assume that unaffiliated analysts never have, on average, superior information). This positive effect would be even stronger if the affiliated underwriter indeed has an information advantage, but even assuming one did not exist, the predicted outcome would still remain the same. Thus, the *currying favor hypothesis* predicts a positive relationship between affiliated underwriter recommendations and the announcement return.

Finally, under the *naïve markets hypothesis*, market participants do not recognize analysts' incentives. If they are cognizant of affiliated analysts' informational advantage, then the market will react more positively to affiliated recommendations. This would again be consistent with the superior information hypothesis. On the other hand, if investors are naïve and no information advantage exists for affiliated underwriters, then there should be no difference in the market reactions between affiliated and unaffiliated underwriters.

3. Sample selection and descriptive statistics

We first identify firms that went public during 1999-2000 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, reverse LBOs, 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.[4]

[4] As is widely recognized by researchers, the SDC database contains significant errors. We try to fix errors to the best of our ability by checking outliers or suspicious data points.

Analyst data are hand-collected from Briefing.com, a commercial 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," "broker," and "underwriter" interchangeably.

Briefing.com does not capture all analyst recommendations. Neither do I/B/E/S nor First Call. For example, in the year following the June 29, 1999, IPO of Digital Island, I/B/E/S does not report any recommendations. 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 more comprehensive than I/B/E/S and First Call, so we rely on this source. Finally, stock return and volume data are from the University of Chicago's 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 2 provides a further description of our sample.

Insert Table 2 about here

In Table 2, we partition the sample along several different lines. In Panel A, we report the number of recommendations issued after the quiet period ends, but within 30 calendar days after going public (the "quiet period"), and during the subsequent 11 months (the "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.

About one-quarter (1,720) of the recommendations in our sample are issued immediately following the end of the quiet period. Our definition of quiet period recommendations 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 26th 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 29th calendar day. The remaining three-quarters of our sample recommendations occur more than 30 days after the IPO, which we define to be the post-quiet period.

In Panel B, we report the distribution of analyst ratings by type (initiation, reiteration, upgrade, downgrade). Several papers 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. All recommendations at the end of the quiet period are initiations.[5] Close to half (1,720 of 3,519) of all initiations in the first year after the IPO occur at the end of the quiet period.

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, such as a "buy" recommendation preceded by a "buy" from the same brokerage firm. 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 15 percent of all recommendations in our sample.

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 large number of initiations in the first month relative to subsequent months represents end of the 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, a practice that has been alleged (and is now explicitly banned, as specified in NYSE Rule 472).

[5] 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.

In Panel C of Table 2, 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. 87 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.[6]

We partition the sample based on the role of the investment bank at the IPO stage in Panel D. 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, as well as other syndicate members. While the lead underwriter certainly has the most at stake in an IPO, the co-managers also have a significant economic interest. 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 percent) are by unaffiliated analysts. We include syndicate members who are not deal managers in the unaffiliated category.[7]

In Panel E, we report that 53 percent of the initiations are by deal managers. This is slightly less than the 57 percent of all recommendations by deal managers reported in panel D. This reflects the fact that deal managers on average initiate sooner than unaffiliated analysts, and thus are more likely to issue multiple recommendations on a stock before the one-year anniversary of the IPO.

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

[6] In 2002, after the end of our sample period, most major securities firms switched to a three-point classification scheme in anticipation of the Global Settlement, with buy, hold, and sell (or their equivalents) as the three possible ratings.

[7] We also separately analyzed non-managing syndicate members; however, we group them with the unaffiliated analysts as they tend to have very little at stake in a deal. Grouping other syndicate members with completely unaffiliated analysts does not influence our qualitative results.

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 2 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 made a distinction between quiet period and post-quiet period recommendations, with the exception of Adams (2003).

Insert Table 3 about here

In Table 3, we study the full sample of analyst recommendations during the first year after the IPO based on the role of the investment bank and type of recommendation (initiation, reiteration, upgrade, downgrade). In addition, for initiations, we compare quiet period recommendations to post-quiet period recommendations.

Panel A of Table 3 focuses on 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. 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 47 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 3. 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 about the same regardless of when they occur.

Interestingly, lead and co-managers do not issue as many target prices as unaffiliated analysts. *Target* is the percentage of the time a recommendation is accompanied by a target price, and *Premium* is the percentage 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 (2005). 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 reiterations, upgrades, and downgrades are highly unlikely until after the quiet period since, by definition, they must be preceded by an initiation of coverage.

The average rating for reiterations does not show much variation 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. These differences probably reflect, 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.[8]

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 conflicts of interest 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.

[8] 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 premium 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.

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 those of 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 than 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 market reactions to analyst recommendations. We report cumulative average market-adjusted returns (CMARs) using the Nasdaq Composite index return (inclusive of dividends) as our proxy for the market return. We calculate CMARs over days t - n to $t + m$ as follows:

$$CMAR\ (t-n, t+m) = \sum_{t=t-n}^{t+m} \frac{1}{N_t} \sum_{i=1}^{Nt} (r_{it} - r_{mt})$$

where t=0 is the recommendation date and N_t is the number of sample company returns on event day t. In all of our analysis, we examine announcement-period returns. In a related paper, Iskoz (2003) examines long-run returns.

5.1 Initiations

As in Table 3, Panel A of Table 4 presents results for initiations by time, and Panel B separately reports results for reiterations, upgrades, and downgrades. To facilitate comparison with Bradley *et al.* (2003), we report both a (-2,+2)-day window and a (0,+2)-day window.

Insert Table 4 about here

As shown, new initiations on average elicit positive responses over the (-2,+2) window for all three affiliation categories. For the "All" sample over the (-2,+2)-day window, 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 and is consistent with results found in Bradley *et al.* (2003), who document a pronounced run-up before

the quiet period expires. In contrast, for the (0,+2)-day window, the CMARs are smallest for the lead and co-manager categories, consistent with the skeptical markets hypothesis.

If we examine quiet period and post-quiet period recommendations separately, we reconcile these seemingly contradictory results. Since lead and co-managers are the major participants in quiet period recommendations, and these recommendations are highly predictable, it isn't surprising that the (0,+2) abnormal return is close to zero for initiations by affiliated analysts.

Focusing just on the less predictable post-quiet period recommendations, initiations from all three categories of analysts generate positive market responses, but now the majority of the reaction is confined to the (0,+2)-day period. Furthermore, the market reaction is highest for lead underwriter recommendations and second highest for co-manager recommendations. This is inconsistent with the skeptical markets hypothesis. Thus, the market reaction to quiet period recommendations is very different from post-quiet period recommendations.

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. For quiet period recommendations, there is a dramatic increase in share value during the pre-initiation period. In fact, over the (-10,-1) window, the CMAR is almost +13 percent.[9] 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. These patterns are consistent with the view that quiet period initiations are largely anticipated, whereas non-quiet period initiations, which are also overwhelmingly bullish, are largely unanticipated.

Insert Figure 3 about here

[9] The 13 percent CMAR for the 1,704 recommendations from 1999-2000 during days (-10,-1) is sample-period specific. In Bradley *et al.* (2003), a similar figure for 1,229 IPOs from 1996-2000 with initiations at the end of the quiet period shows an 8 percent CMAR. These two numbers are not directly comparable, however, because in Bradley *et al.* each firm is one observation whereas here each recommendation is one observation. That is, each firm is included on average about 2.5 times here. If we consider each firm as one observation in 1999-2000, we find an average CMAR preceding the quiet period (days –10,-1) of 12.3 percent. This implies that the average CMAR for IPOs from 1996-1998 is approximately 3 percent, far below the 12.3% in 1999-2000.

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 for quiet and post-quiet period recommendations. First, the pre- and post-event change in volume is much larger for quiet period initiations. This partially reflects the fact that there are typically multiple initiations at the end of the quiet period, whereas non-quiet period initiations are rarely clustered. Following an initiation, average volume drops to approximately 350,000 shares for post-quiet period recommendations, whereas it declines to approximately 175,000 shares for quiet period recommendations.[10] 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 highly predictable, there is little value to early access to information. In 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

One way to address the relative importance of conflicts of interest versus the informational content of analysts' reports is to distinguish between the level of recommendations and changes in the level. Suppose that an affiliated analyst is subject to a conflict of interest that results in a positive recommendation that is discounted by a skeptical market. If the market views the affiliated analyst as having superior information, there may still be a larger market reaction to an upgrade or downgrade from that analyst than there would be from an unaffiliated analyst.

In Panel B of Table 4, we examine non-initiation recommendations. 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.

[10] 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 tend to be much larger than those where there are no or few additional initiations.

There is a large, positive market reaction associated with upgrades for all three affiliation groups, while there is a large negative reaction associated with downgrades. 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 generally not known in advance (as opposed to quiet period recommendations, which are highly 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.

Reiterations, upgrades, and downgrades frequently occur in response to contemporaneous company-specific news (Michaely and Womack (1999)), unlike initiations. 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.[11] When 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 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 show 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

[11] 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.

largest increase in volume, both in absolute and percentage terms. Average volume increases by 150 percent 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 regressions 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 *k* events per IPO (and *k* CMARs), where *k* 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.[12]

Insert Table 5 about here

Table 5 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

[12] Tables 5-7 report *p*-values based on OLS standard errors. In all cases, we have also calculated robust standard errors using the usual Huber-White "sandwich" estimator and also a sandwich estimator with a modification to allow for clustering, where a cluster is two or more initiations that occur on the same day. The particular estimator is discussed in, e.g., Chapter 13 of Wooldridge (2002). These robust standard errors with clustering adjustments usually produce somewhat larger (less significant) *p*-values, but have no effect on statistical inferences in our analyses.

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. These results are consistent with Michaely and Womack's (1999) findings.

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. Our results indicate that including a target price with a recommendation isn't significantly related to the market's reaction. In separate, unreported analyses, we further examine target prices. Conditional on a target price being issued, we find that the premium of the target price relative to the day -3 market price is significantly positively related to the market reaction. Brav and Lehavy (2003) and Asquith, Mikhail, and Au (2004) find similar results.

Tech and *Venture* are also dummy variables, with our definition of tech firms including Internet-related firms. 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.

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. In the (-2,+2) CMAR regression, the coefficient of -10.88 on performance implies that 10.88% of the previous week's performance is reversed in the week of the initiation, and the coefficient of -1.64 on underpricing implies that 1.64% 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 1.64% (2% rather than 3.64%, for example) than for an IPO that traded flat on its first day of trading.

Model 2 of Table 5 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 for

the (0,+2) window, the coefficient on *Quiet* is negative and strongly significant in both a statistical and economic sense. This result is consistent with the CMARs reported in Table 4, which shows 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 specification behave essentially the same as in Model 1.[13]

Insert Table 6 about here

In Table 6, we duplicate the analysis in Table 5, except that we separate quiet period and post-quiet period recommendations because our Table 5 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 5.

Taken together, the results from Tables 5 and 6 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 7, 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 the (0,+2)-day CMARs, and the independent variables are as previously defined. It bears repeating that reiterations, upgrades, and downgrades are frequently in response to news announced after the close of trading on the previous day, unlike initiations. To lessen the possibility that our results

[13] In unreported results, we also included the Carter-Manaster rank of the bank whose analyst makes the recommendation in our regression models dealing with the market reaction in Tables 5-7. The results remain qualitatively unchanged.

are confounded by news events, we report two models for each category. The "All" group includes all recommendations, while the "No multiples" group eliminates all cases in which more than one analyst issued a recommendation on the same day. Thus, if a major news event is released and has significant implications for a company, it is likely that multiple analysts will react and update their rating in response to this event. By purging multiple recommendations that occur on a particular date, we significantly lessen the chance that our findings are the result of confounding news.

Insert Table 7 about here

As shown in Table 7, for reiterations, *Sub-Buy, Tech*, and *Performance* are significant in the "All" Category and the "No multiple" group at the 5 percent level or better. A reiteration of a negative rating is viewed negatively, reiterations of high-tech firms are discounted, and there is also a negative relationship between pre-performance and the market reaction. Note that for the "All" category, the coefficient on *Lead* is positive and marginally significant at the 8 percent level. Once we eliminate multiple recommendations, however, the coefficient is much closer to zero.

Turning to upgrades, the coefficients on lead and co-manager are positive and significant at the 5 percent level for both the "All" and "No multiples" groups. In fact, the coefficients become larger and more statistically significant once multiple upgrades are eliminated. In contrast, the skeptical markets hypothesis would suggest a negative relationship. These results provide strong support for the notion that the informational advantage of affiliated underwriters outweighs any conflicts they may have. Beyond this, *Strong Buy* and *Tech* are at least marginally significant for both categories.

For downgrades, the coefficient on *Lead* is negative and statistically significant at the 2 percent level or better, whether or not multiple downgrades are eliminated. Likewise, the negative coefficient on *Co-manager* is economically and statistically significant once we exclude multiple analyst recommendations. As with upgrades and reiterations, this is the opposite of what the skeptical markets hypothesis would predict. Rather, it suggests that affiliated underwriters' superior information dominates the potential bias in their recommendations.

If the market is skeptical about recommendations from affiliated underwriters, we would also expect to see an asymmetric reaction to upgrades versus downgrades. Comparing the coefficients on the *Lead* dummy for upgrades with no multiple upgrades (+5.60%) with that for

downgrades with no multiple downgrades (-7.66%), in unreported statistical tests, we cannot reject the hypothesis that these two coefficients are equal in their absolute values. Thus, there is no evidence of greater market skepticism towards upgrades from the lead underwriter than towards downgrades.

Although this evidence is not consistent with the skeptical markets hypothesis, the market responses that we report are conditional on a recommendation occurring. If affiliated analysts are less willing to downgrade unless there is a very large reason to downgrade, then the resulting sample selection bias will cause us to overestimate the average impact of the downgrades. We know of no way to control for this potential endogeneity problem, however.

Overall, the results of market reactions to analyst recommendations provide no support whatsoever for the skeptical markets hypothesis. This is true for new initiations of coverage and for reiterations and changes to recommendations (upgrades and downgrades). Instead, our findings suggest that the market places more weight on an underwriter's informational advantage than it does on conflicts faced by an analyst. Alternatively, if currying favor generates conflicts that are as important as those faced by affiliated analysts, then the entire differential reaction is due to the informational advantage that affiliated underwriters possess.

7. Analyst following

7.1 Does the number of managing underwriters matter?

In this section, we examine the determinants of analyst coverage following IPOs. Of particular interest is the number of deal managers involved in the IPO and its relation to the number of analysts 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 (2004) 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 8 about here

In Table 8, 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.[14]

In our first specification (column 1), the dependent variable is the total number of brokers following the IPO firm within one year after the IPO. This includes all brokers that make at least one recommendation during this 12 month period. We standardize by dividing market capitalization by the concurrent value of 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 take an average over calendar 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.[15] 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. Similarly, *Log volume* is the natural log of average share volume over days 183 to 365. We also include *Turnover*, average share volume divided 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 surprisingly, 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, partly 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 variables of interest, *Small firm managers* and *Big firm managers*, are the number of deal managers participating in the IPO multiplied by a dummy variable taking on the value of one for firms with a deflated market capitalization below and above the median,

[14] 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).

[15] In unreported results, we have also measured market value and other variables using the day 183 value, with results that are qualitatively unchanged.

respectively, and zero otherwise. For small firms, the number of deal managers is positively related to the number of analysts that ultimately cover the stock in the year after the IPO, which is consistent with the conventional wisdom. For big firms, however, the number of managing underwriters is not related to the number of total brokers that ultimately follow the firm in the year following the IPO. 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 look at 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 Aggarwal, Krigman, and Womack (2002), Cliff and Denis (2004), and Rajan and Servaes (1997), who find that analyst coverage is positively related to underpricing. The reputation of the lead underwriter, as measured by the Carter and Manaster (1990) rank, has a positive and significant coefficient, so companies brought to market by large, reputable banks receive more total analyst coverage.[16] Finally, the coefficient on *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 initiating coverage at the end of the quiet period is the dependent variable. By far the most significant variables are the number of managers for small and for large firms Interestingly, neither size nor volume, the two variables typically cited as the most important determinants of analyst coverage, is statistically significant. This is consistent with the conventional wisdom that adding co-managers to the IPO underwriting syndicate buys analyst coverage.

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 3, we report 1,704 quiet period initiations, for a mean of 2.5 initiations per IPO. The column 2 coefficients of 0.13 and 0.10 for small and big firms thus imply 0.325 and 0.25 more initiations for small and

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

big firms, respectively, at the end of the quiet period per incremental manager. The magnitude of these effects seems a bit low, since if deal managers automatically initiate at the end of the quiet period, and unaffiliated analysts do not, we would expect the magnitude to be closer to one.

In the third specification, we investigate the number of analysts that cover the stock in the post-quiet period. This number includes post-quiet period initiations plus analysts who initiated in the quiet period month and then made at least one additional recommendation in months 2-12.[17] For small firms, the coefficient is .05, which is statistically significant at the 5 percent level. This coefficient implies that 0.13 more analysts follow a firm in months 2-12 after the IPO per incremental managing underwriter in the IPO. For large firms, however, the coefficient is zero with a *p*-value close to 1. The variables that have been shown to influence analyst behavior, size and volume, behave as expected in these specifications.

At the bottom of Table 8, we report the value of the Pearson χ^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 .9522 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.[18]

[17] 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 any time during the subsequent 11 months, then it would be considered in the post-quiet period count. However, if Merrill did not issue a recommendation of any kind in the post-quiet period, we assume coverage was dropped and do not include it.

[18] In formal tests, we find that the first two regressions are well specified, but not the third. We examined a common alternative specification that allows for overdispersion (a negative binomial regression). We found that the coefficients are quite similar to those in the Poisson regression, but, as predicted, the standard errors are larger and are similar to the robust standard errors in the table.

Because the standard errors in Poisson regressions can be sensitive to over- or underdispersion, we also report *p*-values calculated using a robust standard error.[19] As shown, the implied standard errors behave as predicted, meaning that they are similar to the ordinary standard errors in the first regression, but generally smaller in the second regression and larger in the third regression. Overall, our results in Table 8 reveal that for both small and large firms, more deal managers translates into 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 for larger firms. This suggests that it may be important for small firms to "purchase" research coverage by including more co-managers at the IPO stage, but large firms are likely to receive substantial coverage anyway, regardless of the number of deal managers that participate in their IPOs. Also, we do not find a relationship between underpricing and analyst coverage, which contradicts prior research (for example, 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 8, 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)).

As previously mentioned, 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

[19] The robust standard error is the "sandwich" estimator described in footnote 11 (without the clustering adjustment).

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 9 about here

We investigate this issue in Table 9. As shown in columns 1 and 2, the number of brokers following the IPOs in our sample ranges from 0 to 29. Only five 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 coverage 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 mean 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, additional co-managers in the underwriting syndicate result in more analyst coverage, consistent with the conventional wisdom. Large firms, on the other hand, do not receive more coverage when additional co-managers are added.

Insert Table 10 about here

As a final investigation of research quality, we look at the behavior of analysts from four top underwriters: Credit Suisse First Boston, Goldman Sachs, Merrill Lynch, and Morgan

Stanley.[20] Do analysts at these banks tend to cover only IPO firms with whom they are affiliated? Inspection of Table 10 shows that 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 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. The results also show that top banks will cover firms with whom they are not affiliated, so a firm may receive coverage from a high-prestige bank even if there is no banking relationship at the IPO stage.

8. Conclusions

We examine analyst recommendations for newly public firms in the first year following their IPOs. For 683 IPOs from 1999-2000, we collect a total of 7,487 recommendations. 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 that are affiliated with the firms they cover. If this is true, then recommendations by affiliated underwriters may be discounted relative to recommendations from non-affiliated underwriters. This *skeptical markets hypothesis* predicts that the announcement effects should be less positive when affiliated analysts initiate coverage. In contrast, the *superior information hypothesis* predicts that the announcement effect for recommendations from affiliated analysts should be stronger than those from unaffiliated analysts because, on balance, the better access to information and/or superior expertise possessed by affiliated analysts outweigh any conflicts of interest.

[20] 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.

We also consider two additional hypotheses. The *naïve market hypothesis* conjectures that the market is unaware of conflicts faced by affiliated and unaffiliated banks. This view predicts that there should be a stronger reaction to announcements from affiliated analysts if these analysts are perceived to have superior information and/or ability, or else no difference if the market does not distinguish at all between affiliated and unaffiliated analysts. Finally, 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 recommendations from unaffiliated analysts should be more muted than that from affiliated analysts. Taken together, these hypotheses suggest that the market's reaction to a recommendation reflects a variety of influences that may push in different directions. In practice, we can only observe and evaluate the net effects of these forces.

When we examine market reactions to analyst recommendations, we find that initiations at the end of the quiet period are fundamentally different from initiations during the subsequent 11 months from the standpoint of market price and volume reactions and target price behavior. Contrary to the skeptical markets hypothesis, once we control for the timing of initiations, the market reaction is virtually the same for deal manager and non-deal manager initiations. This contrasts with the findings of Michaely and Womack (1999) and Chen (2004), neither of whom control for the timing of the initiations. Consistent with the superior information hypothesis, affiliated underwriter upgrades and downgrades are associated with a greater market reaction than those from unaffiliated analysts.

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 is only true for small firms. For the largest half of firms going public, 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 these firms may be under the illusion that they are paying for research at the time of the IPO, but other factors are ultimately more important considerations.

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Table 1. Announcement effects from analyst recommendations

This table shows predicted announcement effects for recommendations from affiliated analysts relative to those from non-affiliated analysts, assuming a positive recommendation. Assuming that markets are aware of conflicts of interest (Part A), a positive incremental effect is consistent with the *superior information hypothesis* and/or the *currying favor hypothesis*. A negative incremental effect is consistent with the *skeptical markets hypothesis*. If markets are unaware of conflicts (the *naïve markets hypothesis*, Part B), a positive incremental effect supports the superior information hypothesis.

	Information of affiliated analysts	
Relative analyst conflict	Have info advantage	No info advantage
A. *Markets recognize conflicts of interest*		
Affiliated analysts more conflicted	+/-	-
Unaffiliated analysts more conflicted	+	+
B. *Markets are naïve about conflicts of interest*	+	No difference

Table 2. 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 calendar 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 for all recommendations. Panel E provides data on the affiliation of the investment bank relative to the IPO firm for all initiations 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 ($30 < t \leq 365$)
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 (9%)

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, all recommendations

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

Panel E: Affiliation of investment bank to IPO firm, initiations only

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

Table 3. 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 percentage premium of the target price to the market price on trading 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 within the first 30 calendar days following the IPO, and post-quiet period recommendations are those occurring during the subsequent eleven months. Panel B separates subsequent recommendations into reiterations, upgrades, and downgrades. IPO data are from the Thomson Financial (SDC) Initial Public Offerings database for 683 IPOs from January 1, 1999 to December 31, 2000. Analyst data are from Briefing.com.

Panel A: Initiations by time

	All				Quiet period				Post-quiet period			
Affiliation	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

	Reiterations				Upgrades				Downgrades			
Affiliation	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 4. Cumulative market-adjusted returns grouped by affiliation

This table provides information on cumulative average market-adjusted returns (CMARs) 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 within 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

	All			Quiet period			Post-quiet period		
Affiliation	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

	Reiterations			Upgrades			Downgrades		
Affiliation	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 5. 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 30 calendar days 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 or 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.

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

Table 6. 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 within 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 percentage difference between the close on the first day of trading and the IPO offer price. 683 IPOs from January 1, 1999 to December 31, 2000 comprise the sample. Analyst data are from Briefing.com. *p*-values are in parentheses.

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

Table 7. 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 variable in all of the regressions is the (0,+2)-day cumulativemarket-adjusted percentage return, 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 or 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 percentage 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. "All" represents the full sample and "No multiples" excludes all cases in which more than one analyst issued a recommendation on the same day for the same company. 683 IPOs from January 1, 1999 to December 31, 2000 comprise the sample. Analyst data are from Briefing.com. *p*-values are in parentheses.

	Reiterations		Upgrades		Downgrades	
Variable	All	No multiples	All	No multiples	All	No multiples
Intercept	1.32	1.84	-3.87	-4.26	-7.31	-7.48
	(.2836)	(.2117)	(.2979)	(.3380)	(.0526)	(.0485)
Lead	1.31	0.38	4.25	5.60	-5.57	-7.66
	(.0810)	(.6783)	(.0503)	(.0324)	(.0200)	(.0026)
Co-manager	0.43	-0.24	4.31	4.78	-2.46	-5.01
	(.5300)	(.7843)	(.0147)	(.0298)	(.2093)	(.0181)
Strong buy	0.53	-0.21	3.17	4.09	*NA*	*NA*
	(.3810)	(.7761)	(.0761)	(.0670)		
Sub-buy	-4.59	-4.10	0.45	5.12	0.00	3.50
	(.0037)	(.0363)	(.9164)	(.4442)	(.9973)	(.0713)
Target	0.29	0.94	0.45	-0.64	2.84	0.24
	(.6301)	(.1975)	(.7743)	(.7452)	(.1733)	(.9122)
Tech	-1.59	-2.38	7.60	9.13	-9.88	-1.94
	(.0613)	(.0143)	(.0007)	(.0006)	(.0001)	(.4158)
Venture	-0.33	0.84	1.24	0.31	-0.73	1.33
	(.6758)	(.3647)	(.5661)	(.9054)	(.7387)	(.5694)
Log sales	0.14	0.22	0.86	0.75	0.27	0.67
	(.3778)	(.2567)	(.0752)	(.2088)	(.5338)	(.1377)
Performance	-3.98	-6.77	1.94	-2.68	-4.55	-11.24
	(.0136)	(.0016)	(.6811)	(.6771)	(.3481)	(.0285)
Underpricing	-0.27	-0.29	-1.00	-1.26	-0.13	-4.85
	(.2913)	(.4020)	(.1442)	(.1500)	(.8946)	(.0001)
Observations	2,863	1,659	473	320	629	341
Adjusted R^2	.0068	.0091	.0321	.0431	.0330	.0775

Table 8. 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 one or more recommendations in months 2-12). *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 Composite 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. *Big firm (small firm) managers* is the number of deal managers participating in the IPO (lead plus co-managers) if the median deflated market capitalization is above (below) the median, zero otherwise. *CM-rank* is the Carter and Manaster (1990) 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. Standard *p*-values are in parentheses while *p*-values with Huber-White robust standard errors are italicized and in parentheses immediately below the standard *p*-values.

	Dependent variables		
Variable	Total brokers	QP brokers	Post-QP brokers
Intercept	-3.37	-1.22	-4.30
	(.000)	(.006)	(.000)
	(.000)	*(.000)*	*(.000)*
Log deflated-size	0.23	0.03	0.22
	(.000)	(.487)	(.000)
	(.000)	*(.260)*	*(.000)*
Log volume	0.11	0.07	0.19
	(.000)	(.146)	(.000)
	(.000)	*(.030)*	*(.000)*
Turnover	8.17	-0.84	1.69
	(.149)	(.925)	(.786)
	(.155)	*(.864)*	*(.837)*
Small firm managers	0.07	0.13	0.05
	(.000)	(.000)	(.027)
	(.000)	*(.000)*	*(.070)*
Big firm managers	0.0128	0.10	0.00
	(.422)	(.000)	(.966)
	(.504)	*(.000)*	*(.974)*
Underpricing	-0.01	0.04	0.02
	(.539)	(.217)	(.391)
	(.573)	*(.040)*	*(.528)*
CM-rank	0.08	0.07	0.08
	(.000)	(.009)	(.000)
	(.000)	*(.000)*	*(.001)*
Tech	0.16	0.14	0.23
	(.001)	(.026)	(.000)
	(.000)	*(.002)*	*(.001)*
N	676	676	676
Pearson χ^2/d.f.	.9522	.4274	1.3428

Table 9. Quantity versus quality of banks following an 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 have an analyst covering 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
Mean	5.3	3.5	7.4	61.6	189.9	306.0
(Median)	(4.0)	(3.0)	(8.0)	(NA)	(86.8)	(113.8)

NA is not applicable.

Table 10. Recommendations by four top underwriters

In this table, we examine the recommendations of four top underwriters, 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 recommendations that are made on firms for which the bank was not involved in the IPO. N is the number of recommendations in each category (affiliated versus unaffiliated). *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 event 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 for the 683 sample IPOs are from Briefing.com.

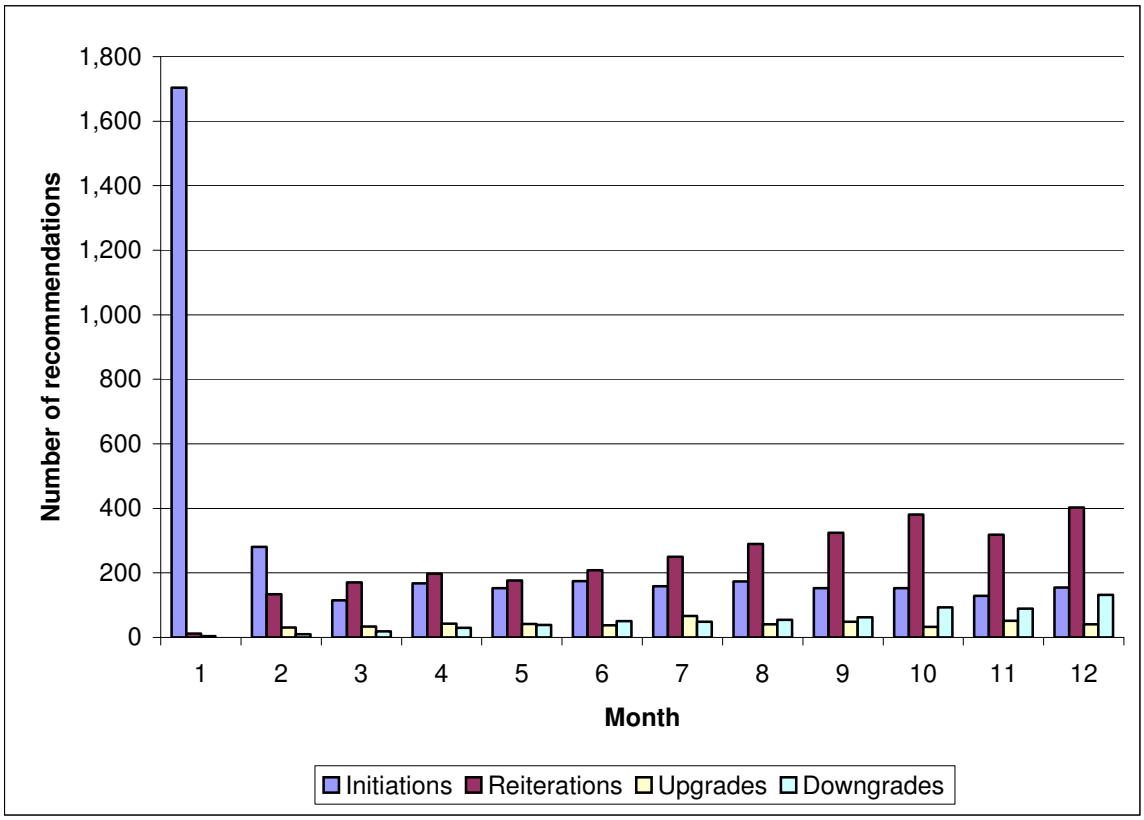

Figure 2. Quiet period versus post-quiet period market-adjusted returns for initiations

This figure presents cumulative average market-adjusted returns (CMARs) for quiet period versus post-quiet period initiations. Each recommendation is one observation. There are 1,704 quiet period initiations (occurring from the end of the quiet period until 30 calendar days after the IPO) and 1,815 post-quiet period (the subsequent 11 months) initiations for the 683 sample IPOs. 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.

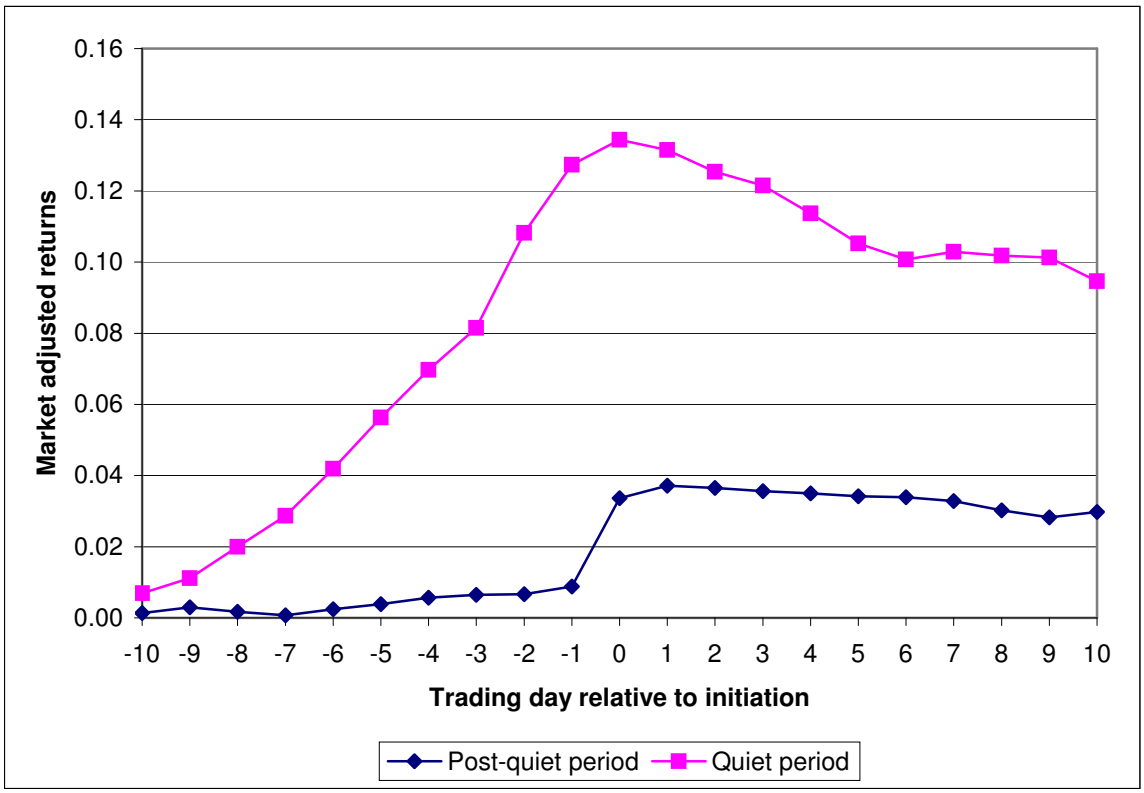

Figure 3. Volume for quiet period versus post-quiet period initiations

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)).

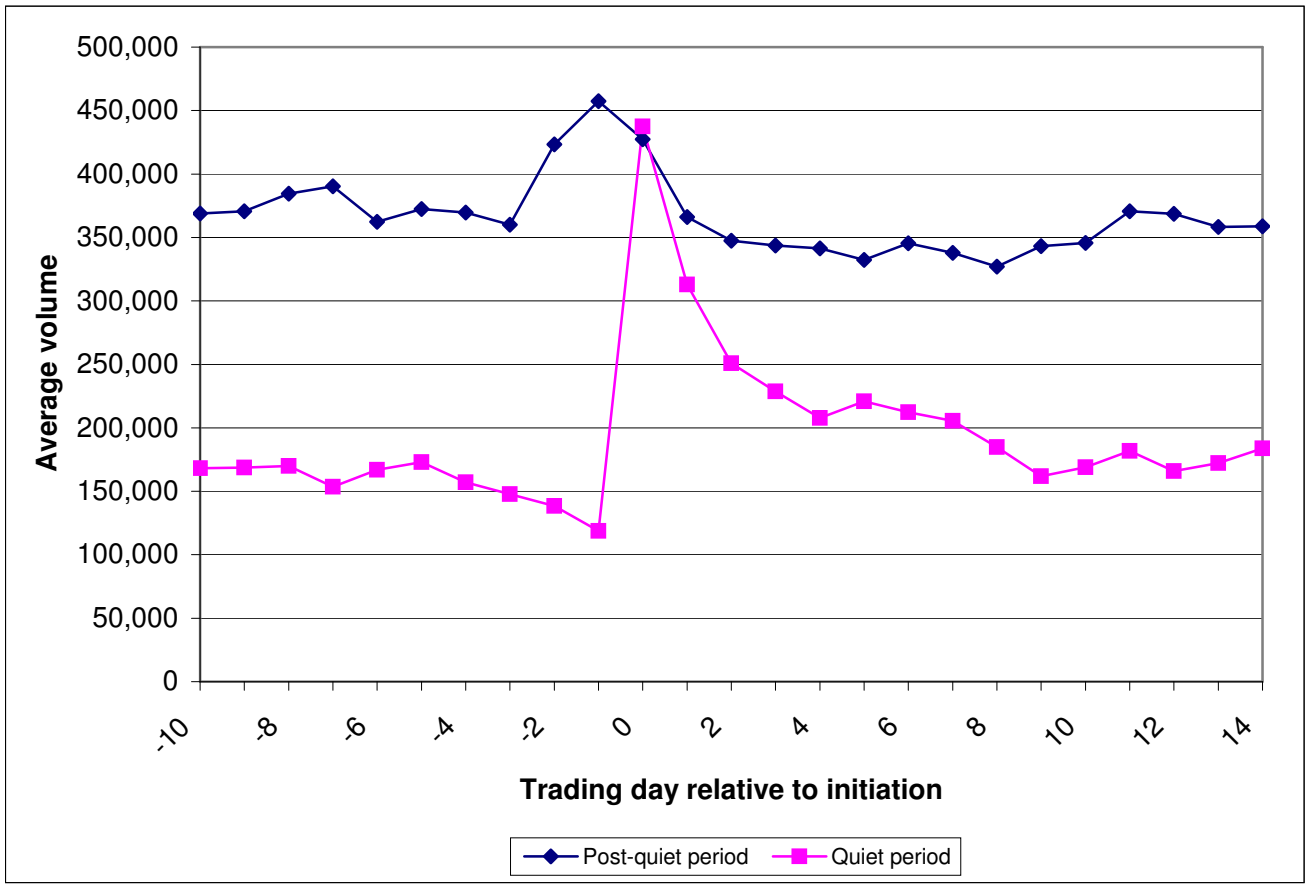

Figure 4. Market-adjusted returns for downgrades, upgrades, and reiterations

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.

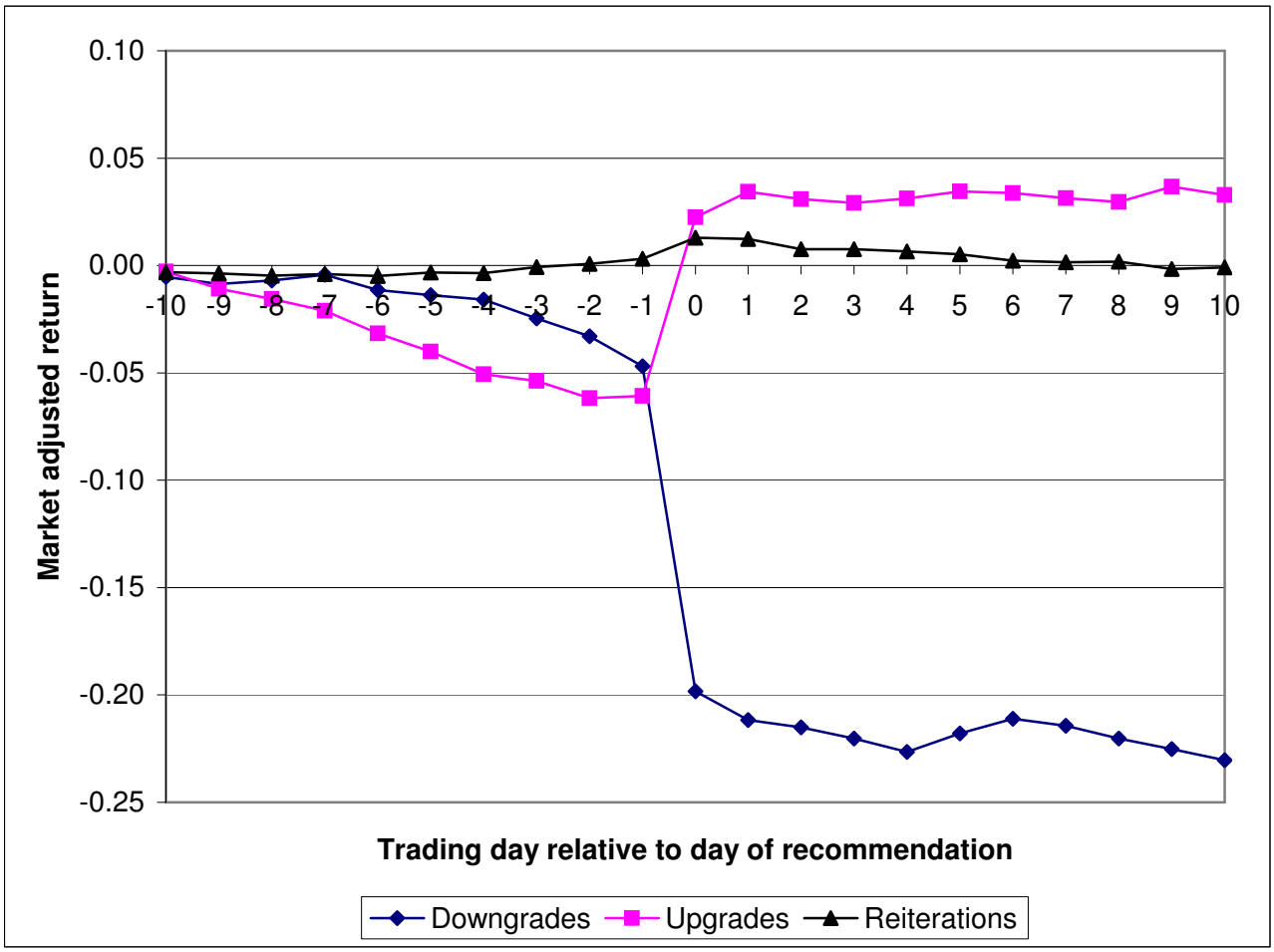

Figure 5. Volume for downgrades, upgrades, and reiterations

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 (see Gould and Kleidon (1994)).