

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

Daniel J. Bradley  
320C Sistine Hall  
Clemson University  
Clemson, SC 29634  
(864) 656-6545

[dbradle@clemson.edu](mailto:dbradle@clemson.edu)

<http://www.clemson.edu/~dbradle/homepage>

Bradford D. Jordan  
Gatton College of Business and Economics  
University of Kentucky  
Lexington, KY 40506-0034  
(859) 257-4887

[bjordan@uky.edu](mailto:bjordan@uky.edu)

<http://www.uky.edu/~bjordan>

Jay R. Ritter  
Warrington College of Business  
University of Florida  
Gainesville, FL 32611-7168  
(352) 846-2837

[jay.ritter@cba.ufl.edu](mailto:jay.ritter@cba.ufl.edu)

<http://bear.cba.ufl.edu/ritter>

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

### **Abstract**

We examine over 7,400 analyst recommendations made in the year after going public for IPOs from 1999-2000. Initiations of coverage at the end of the quiet period come almost exclusively from affiliated analysts, while initiations afterwards are predominantly from unaffiliated analysts. Contrary to previous findings, we find no evidence that the market discounts recommendations from affiliated analysts once we control for recommendation characteristics and timing. Moreover, analyst coverage in the first year is not affected by underpricing and, after the flurry of initiations at the end of the quiet period, the number of analysts covering a firm during the following eleven months is unrelated to the number of managing underwriters.

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

We examine two important issues concerning post-IPO coverage by security analysts. We first study market reactions to recommendations, focusing on whether or not the market discounts recommendations by affiliated analysts. We then investigate whether the number of analysts that ultimately cover a firm depends on the number of managing underwriters included in the IPO or on the extent of underpricing of the IPO. Our empirical analysis uses analyst recommendations made in the year after going public for IPOs from the “bubble period” years of 1999-2000. Controversy over biased and misleading recommendations made in these years led to the Global Settlement in April 2003 between major brokerage firms and regulators, with fines and commitments to subsidize third-party independent research totaling \$1.4 billion.

For our sample of 683 IPOs, we collect data on over 7,400 analyst initiations, upgrades, downgrades, and reiterations made in the year following the IPO. For each recommendation, we classify the analyst as affiliated if the analyst’s employer was a managing underwriter of the IPO; otherwise, we consider the analyst to be unaffiliated.

When a security analyst makes a recommendation, the market’s reaction depends on, among other things, the extent to which the recommendation was anticipated, both in terms of the timing and the specific rating. Beyond this, the market’s perceptions of the particular analyst’s ability, access to information, and credibility will also likely play an important role.

In evaluating an analyst’s credibility, market participants may consider whether or not the analyst’s employer has a banking relationship with the company in question. It is widely held that, in such cases, a severe conflict of interest exists, and the market may thus be inclined to discount recommendations from affiliated analysts. We label the prediction that the market discounts recommendations from affiliated analysts as the skeptical market hypothesis.

It is also the case, however, that an affiliated bank has the incumbent’s advantage in competing for future investment banking mandates. Recognizing this advantage, unaffiliated analysts have a significant economic incentive to issue positively biased ratings in an attempt to win future banking mandates. Thus, it is not clear *a priori* that affiliated analysts are necessarily more conflicted than unaffiliated analysts. Consequently, we propose the currying favor hypothesis, which predicts that the market discounts recommendations from unaffiliated analysts.

Even if affiliated analysts have greater conflicts of interest, it is likely that such analysts have greater access to company management and, thus, superior information (particularly before the implementation of Regulation FD in October 2000). Furthermore, the most widely respected analysts (i.e., *Institutional Investor* “all-stars”) tend to work at high-prestige banks and frequently make recommendations on client companies. Thus, affiliated analysts may have better and more timely information as well as greater perceived ability, thereby offsetting, or more than offsetting, the effect of any conflicts of interest.

The observed market reaction to an analyst recommendation reflects the net impact of these potentially offsetting forces. Our first major goal is therefore to ask whether or not the market is, on balance, skeptical regarding recommendations from affiliated analysts, after controlling for recommendation characteristics and timing.

During our sample period, analysts whose employers were members of the underwriting syndicate were prohibited by the SEC from issuing recommendations for 25 calendar days after the IPO date (as of July 2002, this period has been lengthened to 40 days for managing underwriters), a window known as the quiet period. Once the quiet period expires, affiliated analysts are free to give their opinions concerning firm value and release their recommendations. We find that initiations of coverage occurring immediately after the end of the IPO quiet period differ from initiations during the following eleven months in two ways: who initiates and how the market reacts. First, over 90% of initiations at the end of the quiet period are from affiliated analysts, whereas later initiations are overwhelmingly from unaffiliated analysts. Second, the highly predictable initiations from affiliated analysts at the end of the quiet period are greeted with a muted market response, whereas later initiations from both affiliated and unaffiliated analysts contain much more of a surprise element and are greeted with a positive market reaction.

Specifically, the market’s reaction to initiations of coverage for IPOs from 1999-2000, as measured by the cumulative average market-adjusted returns for the three-day window beginning on the announcement day, are as follows:

Underwriter role in IPO	Timing of initiation		
	All	Quiet period	Post-quiet period
Lead	0.3%	-0.3%	4.8%
Co-lead	0.2%	-0.5%	2.9%
Unaffiliated	2.6%	2.2%	2.6%

Looking at the first column, the stock market greets initiations from affiliated analysts with skepticism in comparison to initiations from unaffiliated analysts. As the next two columns show, however, once we control for the timing of the announcement, the market's reaction to affiliated and unaffiliated analyst initiations appears to be determined primarily by the element of surprise. In addition, we find that subsequent upgrades and downgrades are associated with a greater market reaction when they come from an analyst associated with the lead manager in the IPO rather than an unaffiliated analyst. Thus, in contrast to the conclusion in Michaely and Womack (1999), we do not find that the market discounts recommendations from affiliated analysts.

It is commonly alleged that firms going public can affect analyst coverage in three ways. First, if a firm wants coverage from a particular set of analysts, it can include those analysts' banks as managers in the offer, since there is at least a tacit understanding that coverage will be provided. Second, a firm can obtain more coverage by adding more co-managers to the underwriting syndicate. Third, a company going public may be able to attract analyst coverage through underpricing. For example, highly underpriced offerings may generate investor interest, which then increases the demand for research coverage.

It is plausible that all three effects are present in the short run, but not in the long run. A natural question is "how long does it take to arrive at the long run?" Our second major goal in this study is therefore to examine how long these actions at the time of the IPO increase the number and/or quality of analysts that follow a firm.

The conventional wisdom is that the analyst of a managing underwriter will cover the stock after it goes public. We find that this is indeed the case over three-quarters of the time, but, in about one-third of the cases, an initiation at the end of the quiet period is not followed by any additional recommendations from that analyst in the next eleven months. The existing literature suggests that increasing the number of deal managers increases the number of analysts

subsequently following a stock. Our results indicate that adding co-managers does increase the amount of analyst coverage immediately after the IPO, but, during the subsequent eleven months, the number of analysts issuing reports on the stock is not affected by the number of managing underwriters. Furthermore, the existing literature reports that higher underpricing results in more analyst coverage. We find that underpricing is associated with analyst coverage at the end of the quiet period, but not during the subsequent eleven months. In other words, the long run arrives very quickly.

### **1. Sample selection and descriptive statistics**

We 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 REITs, closed-end funds, spinoffs, reverse LBOs, or units, along with bank and S&L IPOs, issues by foreign companies, and offerings with an initial file range midpoint of less than \$8. Furthermore, we exclude IPOs that were not listed on the NYSE, AMEX, or NASDAQ National Market System. Our sample contains 683 IPOs. We collect firm-specific information from SDC, including SIC codes, IPO dates, venture capital-backing status, and the number and names of managers in the IPO underwriting syndicate and their role.<sup>1</sup> Stock return and volume data are from the University of Chicago's Center for Research in Security Prices (CRSP).

Analyst data are hand-collected from Briefing.com, a commercial website. Briefing.com does not capture all analyst recommendations, but neither do I/B/E/S nor First Call. For example, in the year following the June 29, 1999, IPO of Digital Island, Briefing.com reports Bear Stearns recommendations on July 26, 1999, February 28, 2000, and June 21, 2000, but I/B/E/S does not report any recommendations by Bear Stearns, the lead underwriter.

For each recommendation, we record the name of the brokerage firm and the date and strength of the recommendation. If a target price is issued simultaneously, we capture it as well. Since it is standard industry practice to have one analyst at a brokerage firm following a stock and periodically putting out earnings forecasts, recommendations, and written research reports, we use the terms "analyst," "broker," and "underwriter" interchangeably.

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<sup>1</sup> As is widely recognized by researchers, the SDC database contains significant errors. We try to fix errors to the best of our ability by checking outliers or suspicious data points.

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

Insert Table 1 about here

In Table 1, we partition the data along several lines. In Panel A, we report the number of recommendations issued after the quiet period ends, but within 30 calendar days of the IPO (the “quiet period,” shorthand for “immediately following the end of the quiet period”), and during the subsequent eleven months (the “post-quiet period”).<sup>2</sup> Almost one-quarter (1,720 of 7,487) of the recommendations in our sample are issued immediately following the end of the quiet period.

In Panel B of Table 1, we report the distribution of analyst ratings by type (initiation, reiteration, upgrade, downgrade). As shown, almost half of all recommendations issued within the first year are new initiations. Reiterations are the second most common type of recommendation, followed by downgrades and then upgrades. A reiteration is a restatement of a previously issued recommendation. Upgrades and downgrades are issued when analysts change their position on a stock that they are covering. Upgrades and downgrades combined represent only 15% of the 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 reflects the rush to initiate at the end of the quiet period. After the first month, initiations are relatively constant. Reiterations tend to increase as time passes, which is not surprising since more firms are covered through time. 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) in order 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 by NYSE Rule 472).

In Panel C of Table 1, we provide information on the strength of analyst recommendations. Following I/B/E/S and other commercial services that track analysts, we code

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<sup>2</sup> In principle, an unaffiliated bank could initiate coverage before the end of the quiet period, but this happens very rarely. We do not include these recommendations in our analysis.

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.<sup>3</sup> As shown, and consistent with other research, analyst ratings are overwhelmingly positive. 87% of all recommendations in our sample are either strong buy or buy. There are only 15 total recommendations in the worst category of sell.

We partition the sample based on the role of the investment bank at the IPO stage in Panel D of Table 1. Unlike Michaely and Womack (1999) and others who investigate the lead underwriter versus non-lead underwriters, we classify analysts into three categories. During the period we study, an IPO typically has 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 in Panel D, lead manager recommendations represent 22% and co-manager recommendations represent 36% of all recommendations. Hence, deal managers make over half of the recommendations in our sample. The remaining recommendations (42%) are by unaffiliated analysts. We include syndicate members who are not deal managers in the unaffiliated category.<sup>4</sup>

In Panel E, we report that of the 767 potential initiations from lead and co-lead analysts for the 683 IPOs, there were, by coincidence, 683 initiations. Combining the initiations from lead and co-managing underwriters, we report that 54% of the initiations are by deal managers. This is slightly less than the 58% of all recommendations by deal managers reported in Panel D. This difference reflects the fact that deal managers on average initiate sooner than unaffiliated analysts, and they thus are more likely to issue multiple recommendations on a stock before the one year anniversary of the IPO.

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

In this section, we examine the behavior of analysts based on their role in the IPO (lead, co-manager, or unaffiliated). For example, in Table 1, over half of all recommendations are made by deal managers, and, from Bradley, Jordan, and Ritter (2003), we know that typically the deal

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<sup>3</sup> 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 overweight, market weight, and underweight (or their equivalents) as the three possible ratings.

<sup>4</sup> We also separately have 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.



managers immediately initiate coverage when the quiet period expires. To date, however, with the exception of Adams, Slovin, and Sushka (2005), the literature has not made a distinction between quiet period and post-quiet period recommendations. Adams *et al.* perform an analysis using IPOs from 1997-1998 that is complementary to our analysis using IPOs from 1999-2000. Their results are consistent with ours.

Insert Table 2 about here

Panel A of Table 2 focuses on initiations and reports full sample, quiet period, and post-quiet period initiations based on the role of the investment bank. Close to half of all initiations (1,704 of 3,519) in the first year occur at the end of the quiet period. Lead underwriters issue approximately 19% of all initiations (683 of 3,519), with almost 90% of these initiations occurring around the expiration of the quiet period. Co-managers issue about 35% of all initiations (1,233 of 3,519), with almost 80% occurring at the end of the quiet period. The reverse is true for unaffiliated analysts. While they issue approximately 46% of all initiations (1,603 of 3,519), less than 10% occur immediately when the quiet period ends.

In our sample, an analyst employed by the lead or co-lead underwriter initiates coverage 89% (683 of 767) of the time within one year of the IPO, and a co-manager's analyst initiates coverage 73% (1,233 of 1,698) of the time. Taking a weighted average of these numbers, 78% (1,916 of 2,465) of deal manager analysts initiate coverage within the first year. Thus, consistent with the conventional wisdom, adding a co-manager results in a high probability that the affiliated analyst will cover the firm at some point within a year of going public.

Of the 84 cases where we do not report coverage by a lead underwriter's analyst, we have been able to find initiations for all but 16 cases. For 59 cases, there were initiations that were reported by First Call or Investext that Briefing.com did not record.<sup>5</sup> A further nine cases had coverage by the lead before the quiet period ended. The SEC quiet period restrictions on analyst coverage do not apply for companies that are already subject to public reporting requirements because, for example, they have more than 500 shareholders before the IPO. Thus, although we report 89% coverage from the lead underwriters, the true figure using all data sources appears to

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<sup>5</sup> Three of the 16 missing cases involve foreign firms that we inadvertently failed to exclude from the sample. In only four cases are we relatively certain that there was no coverage by the lead: Goldman Sachs has never covered itself after going public in May 1999, and Allen & Co., Invemed, and Wit Capital had no equity analysts, although each was the lead or co-lead underwriter on one IPO.

be 98%. We have been less diligent in tracking down analyst coverage from co-managers, but the 73% coverage that we report is also a lower bound to the true number.

We next focus our attention on the ratings and target price information in Panel A of Table 2. Lead and co-managers tend to be a bit more optimistic in their ratings (1.69 and 1.64, respectively) compared to unaffiliated analysts (1.88). The average ratings appear to be about the same regardless of when they occur.

Lead and co-managers have a lower propensity to give target prices when initiating coverage than do unaffiliated analysts. *Target* is the percentage of recommendations that are accompanied by a target price. *Premium* is the percentage premium of the target price to the stock price on trading day -3 (relative to the recommendation date), conditional on the existence of a target price. Lead and co-managers issue target prices 41% and 46% of the time, respectively, compared to unaffiliated analysts, who issue target prices 56% of the time. In addition, deal manager ratings and their target price estimates of firm value are both slightly more optimistic, consistent with the findings of Houston, James, and Karceski (2006). Conditional on a target price accompanying a recommendation, the average target price is 74% above the current market price for lead analysts and 65% above for co-manager analysts, in contrast to a 63% premium from unaffiliated analysts.

In Panel B, we provide the same information as in Panel A, but focus on reiterations, upgrades, and downgrades. Reiterations, upgrades, and downgrades are highly unlikely within 30 days of the IPO since, by definition, they must be preceded by an initiation of coverage, so we do not split the sample based on when the recommendation occurred.

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 more frequently on those stocks originally rated higher. In other words, analysts are more likely to reiterate bullish recommendations. 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* when initiating is 74% for leads and 65% for co-managers, but the corresponding numbers for reiterations for these two groups are 134% and 148%, 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.<sup>6</sup>

It is not surprising that the average rating for upgrades is higher compared to downgrades and that the target price premium is higher as well. 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 given that an affiliation exists, but 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.

### 3. Market reactions to recommendations

In this section, we investigate 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:

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

where  $t = 0$  is the recommendation date and  $N_t$  is the number of sample company returns on event day  $t$ .

#### 3.1 Initiations

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<sup>6</sup> Although we only report results for the entire sample period in this paper, we have re-run all of the analyses for 1999 IPOs (where most of the analyst recommendations in the following year occurred during a bull market period) and 2000 IPOs (where most of the analyst recommendations occurred during a bear market period) separately. All of our qualitative results regarding both the behavior of analysts and market reactions remain unchanged, with the exception that the target price premiums reported in Table 2, Panel B, are lower for IPOs from 1999 than for IPOs from 2000. James and Karceski (2005) analyze the target prices of IPOs from November 1996-August 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.

As in Table 2, in Panel A of Table 3 we present results for initiations by time, and in Panel B we separately report 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 3 about here

As shown, new initiations on average elicit positive responses over the (-2,+2)-day window for all three affiliation categories. This result is consistent with the findings of Bradley *et al.* (2003), who document a pronounced stock price run-up before the quiet period expires. For the unconditional results (the “All” sample) over the (-2,+2)-day window, the CMARs are highest when the lead underwriter issues a recommendation and lowest when an unaffiliated analyst issues a recommendation. In contrast, for the (0,+2)-day window, the CMARs are smallest for the lead (0.3%) and co-manager (0.2%) categories, and highest for the unaffiliated (+2.6%) category.

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 is not surprising that the (0,+2)-day 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 essentially all of the reaction is confined to the (0,+2)-day period. Thus, the market reacts quite differently to quiet period recommendations compared to post-quiet period recommendations. Furthermore, looking at the numbers in each column, the difference in the market reaction for the different analyst categories seems to be driven more by the surprise element than by skepticism towards recommendations from affiliated analysts. For initiations at the end of the quiet period, the only (0,+2)-day CMAR that is positive is for initiations by unaffiliated analysts. Since unaffiliated analysts initiate at this time in only 128 cases, out of the 683 IPOs, it is quite plausible that the +2.2% reaction for these cases is attributable to the surprise element in these initiations.

Simply put, the more muted market reaction to affiliated recommendations compared to unaffiliated recommendations in the unconditional results is driven by the correlation between who initiates and when the initiation occurs. Once we control for the timing of the initiation, we

find that the evidence supporting the skeptical market hypothesis is due to the low returns surrounding the highly predictable initiations by affiliated analysts at the end of the quiet period. When we examine the much less predictable post-quiet period initiations, the results show that the market reacts more strongly to initiations from affiliated analysts.

Insert Figure 2 about here

To further illustrate how the announcement effects depend on the timing of the initiations, in Figure 2 we plot the CMARs over a 21 trading day period beginning on trading day -10 (relative to the recommendation date). We categorize the recommendations with a 2×3 sort on the timing (quiet period, post-quiet period) and strength (strong buy, buy, and sub-buy) of the recommendations. Within the quiet period, for all three strength categories, there is a pronounced increase in share value during the pre-initiation period. In fact, over the (-10,-1)-day window, the CMAR is approximately +13% for all three ratings categories.<sup>7</sup> On the announcement date, there is a positive reaction to strong buy recommendations, a negative reaction to sub-buy recommendations (such as hold), and little reaction to buy recommendations, which are the most common type. After day 0, a modest decline of three percent over the next six trading days is experienced for buy and strong buy recommendations, and a more precipitous drop of six percent is experienced for the small number of sub-buy recommendations.

In 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 for both buy and strong buy recommendations. For sub-buy recommendations, there is a modest stock price drop of about one percent. For all three categories of recommendations, there is no further adjustment during the six trading days following day 0. These patterns are consistent with the view that quiet period initiations are largely anticipated, whereas non-quiet period initiations are largely unanticipated. For both quiet period and non-quiet period initiations, the strength of the recommendation (i.e., strong buy versus hold) significantly influences the market reaction.

Insert Figure 3 about here

In Figure 3, we graph the average daily trading volume for quiet period and post-quiet period initiations. As shown, volume hits a high of around 450,000 shares in both cases.

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<sup>7</sup> The 13% CMAR for the 1,704 initiations from 1999-2000 during days (-10,-1) is noticeably larger than the 8% CMAR in Bradley *et al.* (2003) for the period 1996-2000. The primary reason is that this runup is much smaller in the 1996-1998 period. A second reason is that Bradley *et al.* measure day 0 as the first day after the quiet period ends, whereas we measure day 0 as the day of the initiation. If one analyst initiates on calendar day 26 and another on calendar day 27, the second analyst's event day -1 return will have been affected by the first analyst's initiation.

However, for quiet period initiations, this volume level represents an increase of approximately 200% versus an increase of about 30% for post-quiet period initiations. This difference 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. 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 (Bradley, Jordan, Roten, and Yi (2001)). Another reason for the higher volume is that firms with analyst coverage from unaffiliated analysts tend to be much larger than those firms for which there are no or few additional initiations.

Another pattern displayed in Figure 3 is that volume peaks on day 0 for quiet period initiations, but on day -1 for post-quiet period initiations. This latter result is consistent with 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. Note that since quiet period initiations are already highly predictable, there is little value to early access to information regarding them.

### **3.2 Reiterations, upgrades, and downgrades**

In Panel B of Table 3, 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 (2003) and suggests that there is differential information contained in initiations compared to reiterations.

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 is stronger for deal managers than for non-deal managers, again indicating that the market does not discount recommendations from affiliated underwriters.<sup>8</sup>

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, it is not 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 to upgrades and downgrades does not appear to reverse in the subsequent ten trading days.

Reiterations, upgrades, and downgrades frequently occur in response to contemporaneous company-specific news, 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.<sup>9</sup> 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

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<sup>8</sup> Using a large sample of analyst recommendations from 1994-2003, Agrawal and Chen (2005) conclude that the market reacts more skeptically to recommendations coming from analysts who are affiliated with firms that receive a large fraction of their revenue from investment banking.

<sup>9</sup> According to Briefing.com, Salomon Smith Barney (SSB) and Dresdner Kleinwort Wasserstein both downgraded, while Credit Suisse First Boston (the lead underwriter on the IPO), CIBC World Markets, and Epoch Partners reiterated their recommendations. Investext reports that Dain Rauscher Wessels (DRW), JPMorgan, Chase H&Q, and Robertson Stephens also reiterated, although DRW lowered its price target.

largest increase in volume, both in absolute and percentage terms. Average volume increases by slightly more than 150% for downgrades, by about 100% for upgrades, and by approximately 50% for reiterations. The average post-recommendation volume for downgrades is less than the average volume for both upgrades and reiterations. Once again, because of the endogeneity issue, we cannot ascertain how much of the volume spike is a reaction to news versus a reaction to analyst recommendations.

#### 4. Cross-sectional regressions of market reactions to recommendations

##### 4.1 Initiations

Thus far, we have examined market reactions to analyst recommendations in a univariate setting. We now turn 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, 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.<sup>10</sup> 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.<sup>11</sup>

[Insert Table 4 about here]

Table 4 presents results for the entire sample of initiations. The dependent variables are the percentage 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

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<sup>10</sup> We also considered counting same-day events as a single observation as is done in Bradley *et al.* (2003). Our results are qualitatively unaffected.

<sup>11</sup> Tables 4 and 5 report  $p$ -values based on OLS standard errors. In both 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.



none of these variables are significant over the (-2,+2)-day period, both lead and co-manager are negative and economically and statistically significant for the (0,+2)-day window. Hence, these results appear to strongly support the contention that the market discounts recommendations from the lead underwriter and other co-managers relative to those from unaffiliated analysts, which is 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 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. The coefficients in the (0,+2) CMAR regression of 3.32 (a 3.32% higher announcement return, *ceteris paribus*) on *Strong buy* and -2.51 on *Sub-buy* are consistent with the patterns reported earlier in Figure 2.

*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 is not significantly related to the market's reaction.<sup>12</sup>

*Tech* and *Venture cap* are also dummy variables, with our definition of tech firms including internet-related firms. The technology and internet stock classifications are the same as those used in Loughran and Ritter (2004). 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 (measured in millions), 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 (0,+2) CMAR regression, the coefficient of -9.92 on performance implies that 9.92% of the previous week's performance is reversed in the week of the initiation, and the coefficient of -1.16 on underpricing implies that 1.16% 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 1.16% (e.g., 2% rather than 3.16%) than that of an IPO that traded flat on its first day of trading.

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<sup>12</sup> 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 (2005) find similar results.

Model 2 of Table 4 is the same as Model 1, except that 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 of -2.56 on *Quiet* is negative and strongly significant in both a statistical and economic sense. This result is consistent with the CMARs reported in Table 3, 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 pattern is in contrast to Model 1, where these coefficients are negative and significant. Hence, for the period we study, not conditioning for quiet versus post-quiet period initiations leads to grossly incorrect conclusions regarding the market reaction to recommendations from affiliated versus unaffiliated analysts. The remaining variables in the Model 2 specification behave essentially the same as in Model 1.<sup>13</sup>

In unreported results, we have duplicated the analysis in Table 4, except that we separate quiet period and post-quiet period recommendations because our Table 4 results indicate that pooling them may not be appropriate. As in Model 2 of Table 4, the coefficients on the deal manager variables continue to be insignificant.

The results from Table 4 indicate that 1) there is no reliable difference in the market's reaction to initiations from affiliated versus unaffiliated analysts following a company's IPO; and 2) the market reacts differently to quiet period recommendations compared to post-quiet period recommendations. This lack of a differential reaction to affiliated 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 is not supported once we control for the timing of initiations.

Because Michaely and Womack (1999) use IPOs from 1990-1991, their different findings could be due to changes in market reactions between 1990-1991 and 1999-2000 rather than a failure to control for the timing of an initiation. Possible changes over time in market reactions can be addressed by comparing their results with ours, as we do in Table 5.

Insert Table 5 about here

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<sup>13</sup> In unreported results, we also included the Carter and Manaster (1990) rank of the bank whose analyst makes the recommendation in our regression models dealing with the market reaction in Tables 4 and 6. The results remain qualitatively unchanged.

Michaely and Womack's main result, leading them to conclude that the market discounts recommendations from affiliated analysts, is contained in the "All" column, where the three-day CMAR of 2.7% for lead underwriter initiations is smaller than the CMAR of 4.4% for initiations from other analysts. This difference, however, is not significant at conventional levels ( $t = 1.55$ ). Further, the medians are 2.2% and 2.8%, and the difference between them is neither economically nor statistically significant ( $z = 1.15$ ). For initiations occurring in months 1-2, Michaely and Womack report announcement effects of 2.7% for lead underwriters and 5.2% for others. For initiations occurring in months 3-12, there is a more modest difference in the market reaction for initiations from lead versus other analysts (2.7% for leads, 3.6% for others). In sum, in their sample, the market's reactions do not appear to be dependent on the timing of the initiation. This lack of a pattern is in contrast to our results from Table 3, which we summarize in the right-hand side of Table 5 to facilitate a direct comparison. In our results, once we control for the timing of the initiation, there is no reliable evidence that the market reacts more skeptically to initiations from the lead underwriter. Instead, the month 1 announcement effects of essentially zero for both lead and other analysts are the most noteworthy feature of our results. Because Michaely and Womack's sample sizes are so small, we are unable to determine whether the difference in results is due to a change in the market's reaction over time or sample-specific findings.

#### **4.2 Reiterations, upgrades, and downgrades**

In Table 6, we examine 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. If a major news event is released and has significant implications for a company, it is common for multiple analysts to react and update their rating in response to this event. To lessen the possibility that our results 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. 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 6 about here

As shown in Table 6, for reiterations, *Sub-Buy*, *Tech*, and *Performance* are generally significant at the 5% level or better in both the “All” and the “No multiples” samples. A reiteration of a negative rating is viewed negatively (with a stock price drop of over 4%, *ceteris paribus*), reiterations of high-tech firms are discounted, and there is also a negative relation between the (-7,-3) CMAR (*Performance*) and the market reaction. Note that for the “All” category, the coefficient on *Lead* is a positive 1.31% and is marginally significant at the 8% level. Once we eliminate multiple recommendations, however, the coefficient is much closer to zero, at only 0.38%.

Turning to upgrades, the coefficients on lead and co-manager are positive and significant at the 5% level for both the “All” and “No multiples” groups. In fact, once multiple upgrades are eliminated, the coefficients become larger (increasing from 4.25% to 5.60%) and more statistically significant. These results suggest that, if anything, the market gives greater weight to recommendations from affiliated underwriters. 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% level or better, whether or not multiple downgrades are eliminated, so the market’s response is again stronger for affiliated underwriters. Likewise, the negative coefficient on *Co-manager* is economically and statistically significant once we exclude multiple analyst 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 reliable evidence of greater market skepticism towards upgrades from the lead underwriter than towards downgrades. This lack of an asymmetric reaction occurs in spite of the bias created by the endogeneity of the decision to issue a recommendation. If affiliated analysts are less willing to downgrade unless there is a particularly strong reason to do so, then the resulting sample selection bias will cause us to overestimate the impact of a downgrade by a lead

underwriter's analyst. If this bias did not exist, the average downgrade reaction of -7.66% would be closer to zero.

## 5. Analyst following

### 5.1 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 the desire for analyst coverage 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 7 about here

In Table 7, we analyze firm and IPO characteristics that have been found in previous research (e.g., Brennan and Hughes (1991)) to be related to the number of analysts following a stock. Because our dependent variable is the number of brokers that follow a firm over a particular time period, we are necessarily dealing with count data, for which OLS is inappropriate. Instead, as is common with such data, we use Poisson regressions.<sup>14</sup> Because the standard errors in Poisson regressions can be sensitive to departures from the assumed Poisson distribution, we report *p*-values calculated using a robust standard error.<sup>15</sup>

In our first specification (column 1) in Panel A, the dependent variable is the total number of brokers following the IPO firm within one year after the IPO. This total includes all brokers that make at least one recommendation during the 12 month period.

The first explanatory variables of interest, *Small firm dummy*×*managers* and *Big firm dummy*×*managers*, are the number of deal managers participating in the IPO multiplied by a

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

<sup>15</sup> The robust standard error is the “sandwich” estimator described in footnote 11 (without the clustering adjustment).

dummy variable taking on a value of one for firms with an adjusted market capitalization below and above the median, respectively, and zero otherwise. Table 7 shows that for smaller firms, the number of deal managers is positively and significantly related to the number of analysts that cover the stock at some point in the year after the IPO, which is consistent with the conventional wisdom. For big firms, however, the number of managing underwriters is not reliably related to the total number of brokers that ultimately follow the company.

In Panel B, we present economic interpretations of the Panel A coefficients on *Small firm dummy*×*managers* and *Big firm dummy*×*managers*. 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. Thus, as shown in the first column, the mean number of total brokers covering the firm at any point during its first twelve months as a public company is 5.15. For small companies, the coefficient of 0.05 implies that an incremental co-manager in the underwriting syndicate results in  $0.05 \times 5.15 = 0.26$  more analysts covering the firm in its first year. For big companies, the coefficient of 0.03 implies 0.16 more analysts covering the firm during the year.

As we showed previously, deal managers tend to 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.

In the second specification (column 2), the number of analysts initiating coverage at the end of the quiet period is the dependent variable. Among the most significant variables are the number of managers for both small and large firms. This result is consistent with the conventional wisdom that adding co-managers to the IPO underwriting syndicate buys analyst coverage. Neither size nor volume, the two variables typically cited as the most important determinants of analyst coverage, are statistically significant at the 5% level.

In Table 3, we report 1,704 quiet period initiations, for a mean of 2.49 initiations per IPO. Thus, the column 2 coefficients of 0.13 and 0.12 for small and big firms imply 0.32 and 0.30 more initiations for small and 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.<sup>16</sup> Since the mean of the dependent variable in column 3 is 4.31, the post-quiet period coefficients imply that incremental co-managers add, for small and large firms, respectively, only 0.09 and 0.04 more analysts covering a firm in months 2-12. Comparing the mean number of analysts covering a recent IPO, Panel B shows that on average about one-third of the analysts who initiate coverage at the end of the quiet period do not issue any further recommendations during the subsequent 11 months  $[(5.15 - 4.31)/2.49 = 0.34]$ . Thus, there is no reliable evidence for either small or large firms that adding additional deal managers results in more analyst coverage subsequent to the flurry of initiations at the end of the quiet period. This finding contradicts the conclusions of Chen and Ritter (2000), Corwin and Schultz (2005), and Das, Guo, and Zhang (2006), although none of these studies distinguishes between initiations at the end of the quiet period and subsequent initiations.

*Underpricing*, as defined previously, is not related to the number of analysts that ultimately cover a company by the end of its first year of trading. This result is inconsistent with Rajan and Servaes (1997), Chen and Ritter (2000), Aggarwal, Krigman, and Womack (2002), Cliff and Denis (2004), and Das *et al.* (2006), who find that analyst coverage is positively related to underpricing.

We also include a number of other explanatory variables in the model. *Log adjusted size* is a measure of market capitalization. Before taking the natural logarithm, we standardize market capitalizations by dividing them by the concurrent value of the NASDAQ Composite index to account for the fact that the NASDAQ more than doubled between the beginning of 1999 and March 2000. 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. 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.

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<sup>16</sup> Analysts that cover a stock in the quiet period may or may not be included in the coverage 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.

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. (In specification 2, where we are focusing on coverage at the end of the quiet period, we replace all averages computed over days 183-365 with averages over days 2-25 to avoid a look-ahead bias.) 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 ultimately 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 revenues for their employers and/or because customers request more research on such firms. Turnover, on the other hand, is not statistically significant.

The reputation of the lead underwriter, as measured by the Carter and Manaster (1990) rank, has a positive and significant coefficient, consistent with the results in Das *et al.* (2006). Thus, companies brought to market by large, reputable banks receive more total analyst coverage.<sup>17</sup> 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.

At the bottom of Table 7, we report the value of the Pearson  $\chi^2$  statistic divided by degrees of freedom ( $676 - 8 = 668$ ), which is a common specification test in this context. Values close to one for this ratio, such as the 0.9675 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. 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. 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

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<sup>17</sup> 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>.



(a negative binomial regression). We found that the coefficients are quite similar to those in the Poisson regression, and the standard errors are similar to the robust standard errors in the table.

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

In Table 7, we found that underwriter reputation is positively related to the number of brokers that follow a stock. Of course, a firm would prefer to be covered by a higher quality analyst (assuming a positive outlook) as opposed to a lower quality analyst. For instance, Krigman, Shaw, and Womack (2001) argue that the most important reason that issuers switch underwriters between their IPO and SEO stages 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-Manaster ranks. *Institutional Investor* ranks the top investment banks in a given year based on which ones have the most analysts that reach all-star status. These banks also have the highest Carter-Manaster ranks. In other words, there is a relatively high correlation between the Carter-Manaster ranks and banks with all-stars, meaning that high-prestige banks tend to have more all-star analysts.

Is it the case that as the number of brokers increases, the quality of research decreases? If so, then the number of analysts covering a firm may not be directly relevant. In other words, a firm might be better off with a smaller number of higher quality analysts such that the average quality is high (and the variance in quality is low).

Insert Table 8 about here

We investigate this issue in Table 8. As shown in columns 1 and 2, the number of brokers following the IPOs in our sample ranges from 0 to 29. Only 5 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%. 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.

As a final investigation of research quality, in untabulated results, we examined the behavior of analysts from four top underwriters: Credit Suisse First Boston, Goldman Sachs, Merrill Lynch, and Morgan Stanley.<sup>18</sup> These four underwriters are responsible for 15% (1,118/7,487) of the total recommendations in our sample. About 21% 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 relation (at least in terms of the IPO). Further, 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. One possible explanation is that these high-prestige banks are attempting to win a future mandate by currying favor with an unaffiliated firm's management through positive research coverage.

## 6. 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. 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 eleven months from the standpoint of market price and volume reactions. Once we control for this difference, the market reaction is essentially the same for affiliated and non-affiliated underwriter initiations. This result is in sharp contrast to Michaely and Womack (1999) and Chen (2004), who find that the market discounts recommendations from affiliated underwriters; however, neither study explicitly controls for the timing of the initiations. Further, affiliated underwriter upgrades and downgrades are associated with a greater market reaction than those from unaffiliated analysts,

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<sup>18</sup> These banks are both at the top of *Institutional Investor's* all-star list (brokers ranked by the number of all-star analysts) every year and also have the highest Carter-Manaster rank.

which again is inconsistent with the market discounting recommendations from affiliated underwriters.

We posit that investors may not discount the recommendations of affiliated analysts relative to those from unaffiliated analysts because unaffiliated analysts may be just as conflicted. This currying favor hypothesis assumes that, in competing for future investment banking business, the deal managers of the IPO have the incumbent's advantage. Unaffiliated analysts may have to give especially optimistic recommendations to catch the attention of company management.

In other findings, we do not observe a disproportionate number of recommendations immediately before the lockup period expires. Thus, we find no evidence to suggest that "booster shots" were widespread, even before they were prohibited by recent regulatory changes. The academic literature has also reported that subsequent analyst coverage is positively related to first-day IPO underpricing, holding constant the market capitalization of the company. In our sample, analyst coverage at the end of the quiet period is related to underpricing, but this pattern disappears by the first anniversary of the IPO.

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. We find that having more deal managers does result in more analyst coverage immediately following the end of the quiet period. Surprisingly, however, for the period we study, there is no reliable relation 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 company. Our finding suggests that firms going public may be under the illusion that they are paying for research at the time of the IPO, but within a very short period of time other factors are the more important determinants of analyst coverage.

Lastly, our findings are for IPOs from 1999-2000. Market practices have changed in the last few years, partly due to regulatory changes induced by the excesses of the bubble period. Specifically, the incentives for analysts to issue bullish recommendations in pursuit of investment banking business appear to have decreased. Initiations at the end of the quiet period are still relatively common, but the ratings tend to be less optimistic. Whether these changes in market practice are permanent remains to be seen.

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

**A: Time of recommendation relative to IPO date**

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

**B: Distribution of analyst ratings**

Initiation	Reiteration	Upgrade	Downgrade
3,519 (47%)	2,865 (38%)	474 (6%)	629 (9%)

**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%)

**D: Affiliation of investment bank to IPO firm, all recommendations**

Lead bank	Co-manager	Unaffiliated
1,668 (22%)	2,669 (36%)	3,150 (42%)

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

Lead bank	Co-manager	Unaffiliated
683 (19%)	1,233 (35%)	1,603 (46%)

This table reports the number of analyst recommendations during the year after the IPO categorized on several dimensions for 683 IPOs from January 1, 1999 to December 31, 2000. Panel A reports information on the time of the recommendation relative to the IPO date in calendar days. Panel B reports the distribution of the types of ratings: new initiation, reiteration, upgrade, and downgrade. Panel C reports the distribution of the rating frequencies. We code an investment bank's highest rating as a 1 and its lowest rating as a 5. Panel D reports data on the affiliation of the investment bank relative to the IPO firm for all recommendations during the year following the IPO. Panel E reports 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 Securities Data Company (SDC) U.S. Common Stock Initial Public Offerings database, with the elimination of IPOs that are classified as REITs, closed-end funds, spinoffs, reverse LBOs, or units, along with bank and S&L IPOs, issues by foreign firms, and offerings with an original file range midpoint of less than \$8. Furthermore, only issues traded on the NYSE, AMEX, or NASDAQ National Market System and with return and volume information available from CRSP are included. Analyst data are from Briefing.com. The 683 IPOs had 767 lead and co-lead underwriters and 1,698 co-managers.

**Table 2**  
**Mean ratings strength, frequency of target prices, and mean target price premiums**

**A: Initiations by time**

Affiliation	All				Quiet period				Post-quiet period			
	N	Rating	Target	Premium	N	Rating	Target	Premium	N	Rating	Target	Premium
Lead	683	1.69	41.1	73.6	604	1.68	41.4	73.6	79	1.72	39.2	74.0
Co-manager	1,233	1.64	45.6	65.4	972	1.63	43.8	63.5	261	1.68	52.1	71.5
Unaffiliated	1,603	1.88	56.1	63.2	128	1.84	34.3	69.2	1,475	1.89	57.9	62.9
All	3,519	1.76	49.5	65.6	1,704	1.67	42.2	67.3	1,815	1.85	56.3	64.4

**B: Reiterations, upgrades, and downgrades**

Affiliation	Reiterations				Upgrades				Downgrades			
	N	Rating	Target	Premium	N	Rating	Target	Premium	N	Rating	Target	Premium
Lead	761	1.50	36.1	134.2	84	1.38	38.1	112.1	140	2.86	15.0	122.8
Co-manager	999	1.43	51.2	147.6	157	1.28	38.9	96.1	280	2.87	24.3	77.9
Unaffiliated	1,105	1.54	51.0	122.0	233	1.34	56.1	105.0	209	2.85	25.4	45.0
All	2,865	1.49	47.1	134.1	474	1.33	47.3	103.5	629	2.83	22.6	72.3

This table reports mean ratings strength, the frequency of target prices, and mean target price premiums 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), conditional on the existence of a target price. Panel A reports 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. The 683 IPOs had 767 lead and co-lead underwriters and 1,698 co-managers. Analyst data are from Briefing.com.

**Table 3**  
**Cumulative average market-adjusted returns grouped by affiliation**

<b>A: Initiations by time</b>									
Affiliation	All			Quiet period			Post-quiet period		
	N	(-2,+2)	(0,+2)	N	(-2,+2)	(0,+2)	N	(-2,+2)	(0,+2)
Lead	683	4.46%	0.32%	604	4.39%	-0.26%	79	4.97%	4.80%
Co-manager	1,233	3.79%	0.23%	972	4.03%	-0.48%	261	2.90%	2.87%
Unaffiliated	1,603	3.25%	2.61%	128	7.16%	2.22%	1,475	2.91%	2.64%
All	3,519	3.68%	1.33%	1,704	4.40%	-0.20%	1,815	3.00%	2.77%

<b>B: Reiterations, upgrades, and downgrades</b>									
Affiliation	Reiterations			Upgrades			Downgrades		
	N	(-2,+2)	(0,+2)	N	(-2,+2)	(0,+2)	N	(-2,+2)	(0,+2)
Lead	761	0.79%	1.40%	84	12.25%	11.40%	140	-21.23%	-19.45%
Co-manager	999	1.02%	0.56%	157	9.19%	11.06%	280	-19.21%	-16.64%
Unaffiliated	1,105	0.69%	-0.32%	233	6.61%	7.09%	209	-17.33%	-15.29%
All	2,865	0.83%	0.44%	474	8.46%	9.17%	629	-19.04%	-16.82%

This table reports percentage 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 NASDAQ Composite index) over the (-2,+2)-day window and (0,+2)-day window, respectively, where day 0 is the recommendation date. Panel A reports 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 separates subsequent recommendations into reiterations, upgrades, and downgrades. The sample is composed of 683 IPOs from January 1, 1999 to December 31, 2000, with 767 lead or co-lead underwriters. Analyst data are from Briefing.com.



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

Variable	Model 1		Model 2	
	(-2,+2)	(0,+2)	(-2,+2)	(0,+2)
Intercept	1.61 (.205)	0.97 (.353)	1.48 (.242)	1.14 (.276)
Quiet period			1.90 (.040)	-2.56 (.001)
Lead	0.77 (.372)	-2.55 (.003)	-0.73 (.515)	-0.53 (.567)
Co-manager	-0.08 (.908)	-2.81 (.001)	-1.39 (.147)	-1.04 (.187)
Strong buy	3.16 (.001)	3.32 (.001)	3.18 (.001)	3.29 (.001)
Sub-buy	-3.61 (.001)	-2.51 (.003)	-3.45 (.001)	-2.73 (.002)
Target	-0.85 (.181)	-0.31 (.556)	-0.74 (.243)	-0.45 (.389)
Tech	2.91 (.001)	1.01 (.130)	2.86 (.004)	1.08 (.107)
Venture cap	2.10 (.007)	2.02 (.002)	2.03 (.010)	2.13 (.001)
Log sales	-0.15 (.353)	0.05 (.719)	-0.16 (.337)	0.06 (.681)
Performance	-10.75 (.001)	-9.92 (.001)	-11.17 (.001)	-9.37 (.001)
Underpricing	-1.66 (.001)	-1.16 (.001)	-1.66 (.001)	-1.16 (.001)
Observations	3,512	3,512	3,512	3,512
Adjusted R <sup>2</sup>	.0329	.0388	.0338	.0416

This table reports cross-sectional regression results on market reactions to the initiation of analyst coverage. The dependent variables are the (-2,+2)- and (0,+2)-day percentage cumulative market-adjusted returns, where day 0 is the recommendation date. *Quiet period* 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(s) 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 ("attractive" or lower) 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 cap* 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 (in millions). *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. The sample is composed of 683 IPOs from January 1, 1999 to December 31, 2000. Two-tailed *p*-values are in parentheses.

**Table 5**  
**Comparison of Michaely-Womack's (1999) and this paper's announcement effects**

Underwriter role in IPO	Michaely-Womack (1990-91)			This paper (1999-2000)		
	Timing of initiation			Timing of initiation		
	All	Months 1-2	Months 3-12	All	Month 1	Months 2-12
Lead	2.7%	2.7%	2.7%	0.3%	-0.3%	4.8%
Others	4.4%	5.2%	3.6%	1.6%	-0.2%	2.7%
N	214	125	89	3,519	1,704	1,815

For Michaely-Womack's (1999) announcement returns for IPOs from 1990-1991, the "All" results are from their Table 5, and the "Months 1-2" results are from their Table 7. The "Months 3-12" have been computed as the implied numbers based on the stock market reactions and sample sizes reported in their Tables 5 and 7. The "others" announcement returns for IPOs from 1999-2000 have been computed as weighted averages of the co-manager and unaffiliated numbers reported in Table 3 of this paper. The percentage cumulative average market-adjusted returns for the three-day announcement period are computed using trading days (-1,+1) in Michaely-Womack and (0,+2) here. The 214 initiations for Michaely and Womack's sample are all buy recommendations. There were 153 other recommendations in their sample as well, giving an average of 0.94 initiations per IPO, in contrast to the 5.15 initiations per IPO in our sample.

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

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

This table reports cross-sectional regression results on market reactions to analyst recommendations, excluding initiations, in the year after the IPO. “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. The dependent variable in all of the regressions is the (0,+2)-day percentage cumulative market-adjusted 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 cap* 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. The sample is composed of 683 IPOs from January 1, 1999 to December 31, 2000. *p*-values are in parentheses.

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

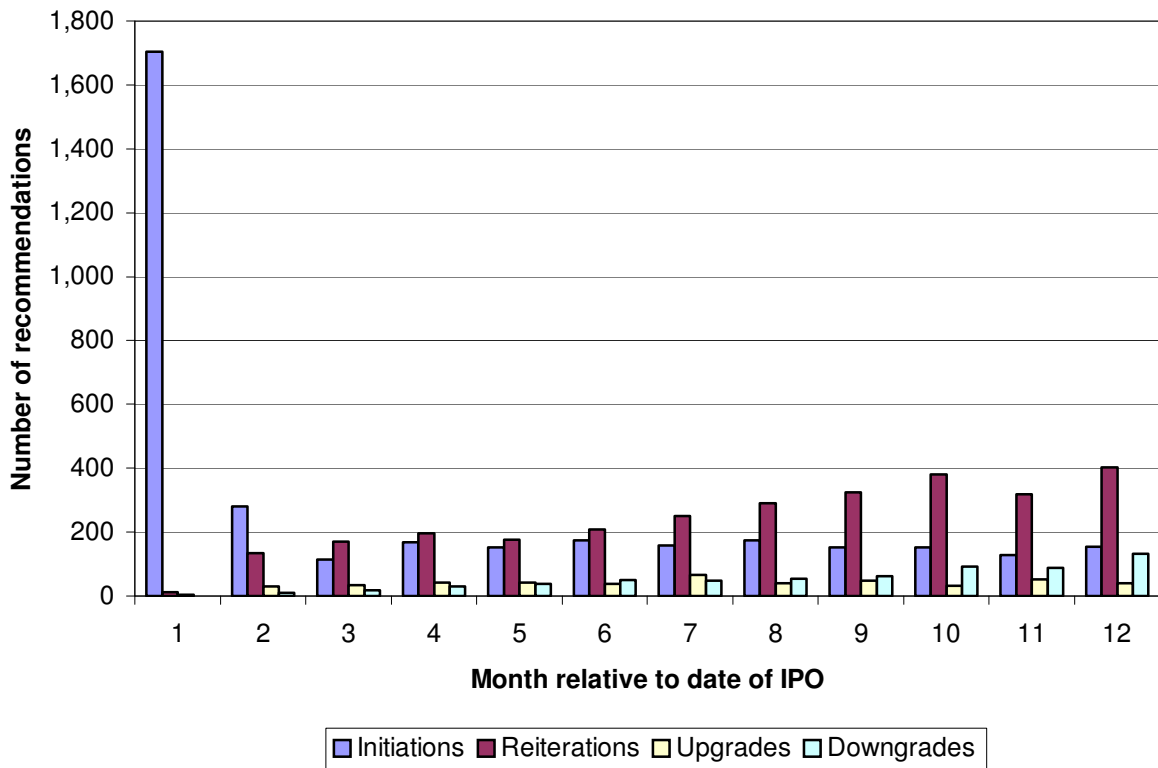
Variable	Dependent variables		
	Total brokers	QP brokers	Post-QP brokers
Intercept	-3.14 (.000)	-0.97 (.001)	-4.06 (.000)
Small firm dummy×managers	0.05 (.020)	0.13 (.000)	0.02 (.469)
Big firm dummy×managers	0.03 (.170)	0.12 (.000)	0.01 (.601)
Underpricing	0.01 (.618)	0.05 (.083)	0.03 (.300)
Log adjusted size	0.17 (.000)	-0.01 (.696)	0.17 (.000)
Log volume	0.13 (.000)	0.06 (.080)	0.20 (.000)
Turnover	4.28 (.482)	0.46 (.881)	-0.09 (.992)
CM-rank	0.09 (.000)	0.08 (.000)	0.08 (.001)
Tech	0.16 (.001)	0.13 (.042)	0.23 (.001)
N	676	683	676
Pearson $\chi^2$ /d.f.	0.9675	0.4273	1.3524
<b>B: Implied incremental effects on the number of brokers covering a company</b>			
Mean of the dependent variable	5.15	2.49	4.31
Small firm dummy×managers	0.26 (.020)	0.32 (.000)	0.09 (.469)
Big firm dummy×managers	0.16 (.170)	0.30 (.000)	0.04 (.601)

Panel A of this table reports Poisson regressions using several proxies for analyst following. The three dependent variables are *Total brokers* (the total number of brokerage firms issuing one or more 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 brokerage firms providing one or more analyst recommendations in months 2-12). *Big firm dummy×managers* is the number of deal managers participating in the IPO (lead plus co-managers) if the adjusted market capitalization is above the median, zero otherwise. *Small firm dummy×managers* is the number of deal managers if the median adjusted market capitalization is below the median, zero otherwise. *Underpricing* is the percentage difference between the close on the first day of trading and the IPO offer price. *Log adjusted 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. *CM-rank* is the Carter and Manaster (1990) underwriter reputation rank as 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. In the model "QP Brokers," *Log adjusted size*, *Log volume*, and *Turnover* are defined as above, except that calendar days 2 through 25 relative to the IPO date are used to compute the values. The sample is composed of 683 IPOs from January 1, 1999 to December 31, 2000, with the sample sizes reduced in the first and third regressions because 7 firms delisted before their 6-month anniversary. *p*-values with Huber-White robust standard errors are in parentheses for both Panels A and B. Panel B of this table reports the mean of the dependent variables in the Panel A regressions and the implied effect on the dependent variable from the Panel A Poisson regression coefficients. In a Poisson regression, the implied effect of a one unit change in the explanatory variable is the product of the slope coefficient and the mean of the dependent variable.

**Table 8**  
**Quantity versus quality of brokerage firms following an IPO**

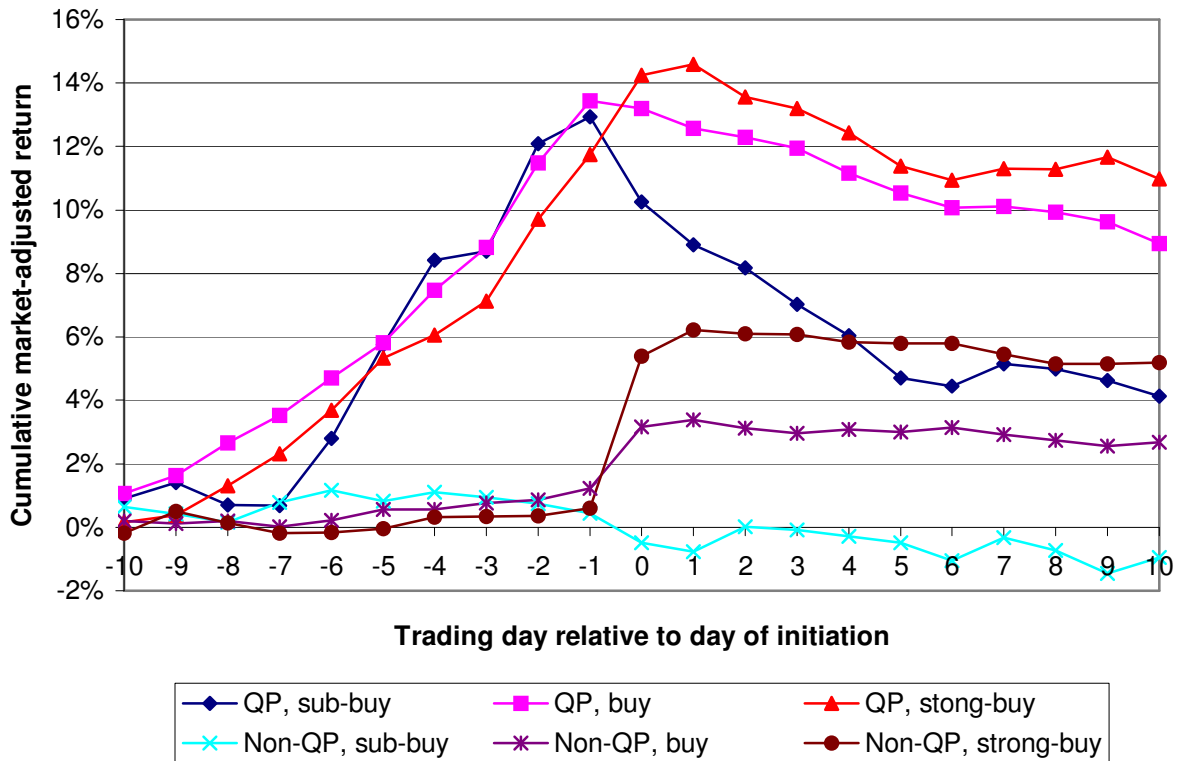
Number of brokers	N	Mean Managers	Mean CMRANK	% High reputation	Average volume	Adjusted size, \$mm
0	5	2.00	NA	NA	31.3	24.7
1	21	2.48	5.4	23.8	41.9	240.6
2	58	2.83	7.0	54.5	56.9	157.1
3	151	3.23	7.7	67.3	73.7	268.8
4	122	3.50	7.7	67.3	105.7	407.9
5	85	3.56	7.4	57.0	112.8	490.7
6	78	3.62	7.4	59.0	198.5	846.2
7	40	3.73	7.5	61.1	282.6	988.8
8	34	4.06	7.6	63.8	263.1	1,333.2
9	16	3.69	7.2	57.5	409.2	1,145.2
10	15	3.87	7.4	55.6	382.1	1,398.4
11	8	5.25	7.5	63.6	611.6	6,047.7
12	15	4.13	7.6	61.5	332.8	1,729.9
13	8	3.75	7.4	65.8	519.7	3,887.1
14	8	5.50	7.4	59.4	1,296.8	7,524.9
15	3	3.67	6.9	46.1	506.5	4,036.7
16	5	3.80	7.4	53.7	698.6	6,374.5
17	4	4.25	7.1	51.8	1,238.3	4,067.0
18	2	4.00	7.2	56.2	755.2	3,187.1
19	1	4.00	6.9	42.4	2,067.6	7,031.6
22-29	4	3.75	7.3	56.3	1,285.3	8,348.0
Mean	5.3	3.5	7.4	61.6	189.9	897.4
(Median)	(4.0)	(3.0)	(8.0)	(NA)	(86.8)	(333.7)

This table reports the quantity versus quality of brokerage firms 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-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. *Adjusted size* is the average over calendar days 183 to 365 relative to the IPO date of the firm's market capitalization, scaled by the Nasdaq Composite Index relative to its average value of 2933 during our sample period, 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 has an adjusted size of  $300 \div (4000/2933) = \$219.8$  million on this day. The sample is composed of 683 IPOs from January 1, 1999 to December 31, 2000. Analyst data are from Briefing.com. *NA* is not applicable.



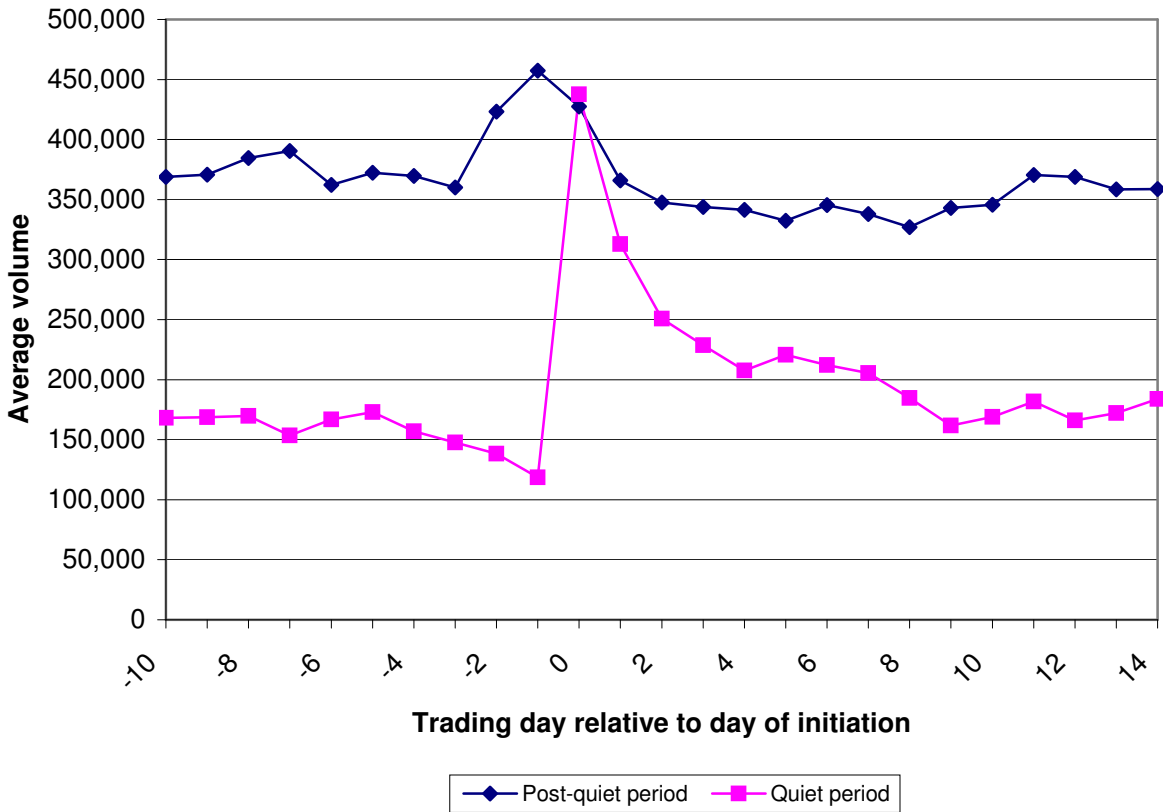
**Figure 1**  
**Recommendations by month**

This figure presents the number of recommendations categorized by the type (initiations, reiterations, upgrades, and downgrades) and 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 for 7,487 recommendations made within one year of the IPO.



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

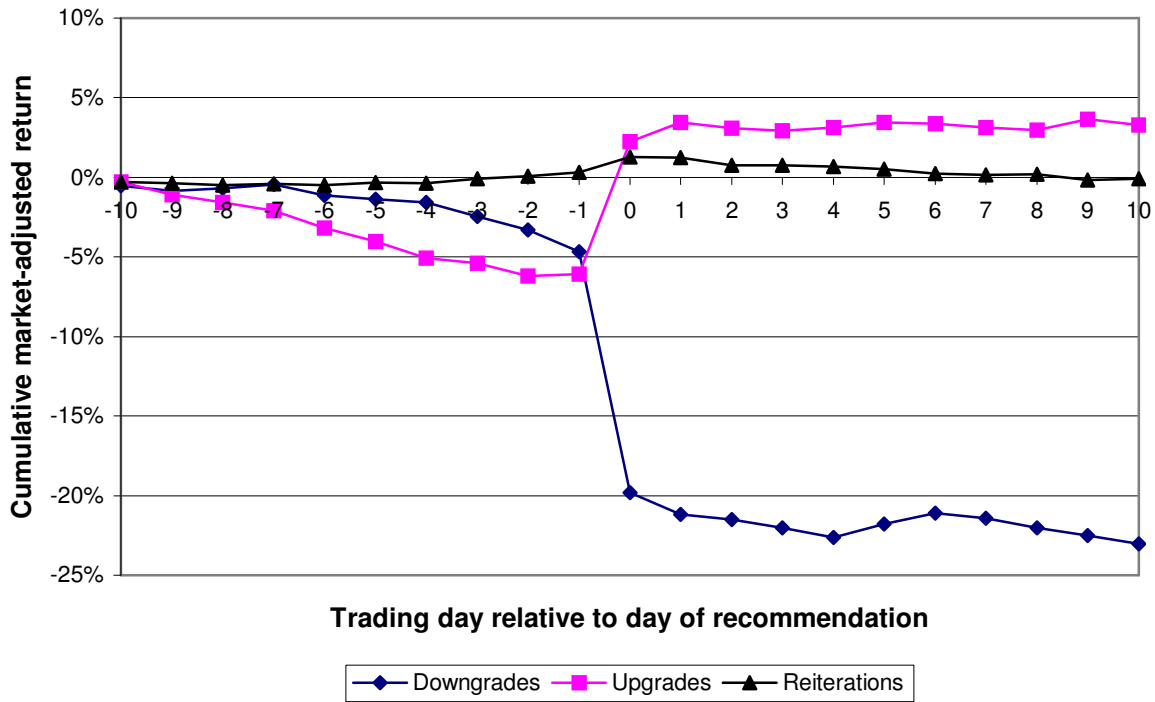
This figure presents percentage cumulative average market-adjusted returns (CMARs) for quiet period versus post-quiet period initiations, categorized by whether the recommendation was a strong buy, buy, or sub-buy recommendation. Each recommendation is one observation. There are 1,704 quiet period initiations (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 from 1999-2000. The 1,704 quiet period initiations include 678 strong buy, 923 buy, and 103 sub-buy recommendations. The 1,815 post-quiet period initiations include 624 strong buy, 906 buy, and 285 sub-buy recommendations. The market return used is the NASDAQ Composite index return (inclusive of dividends). Analyst recommendations are from Briefing.com.



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

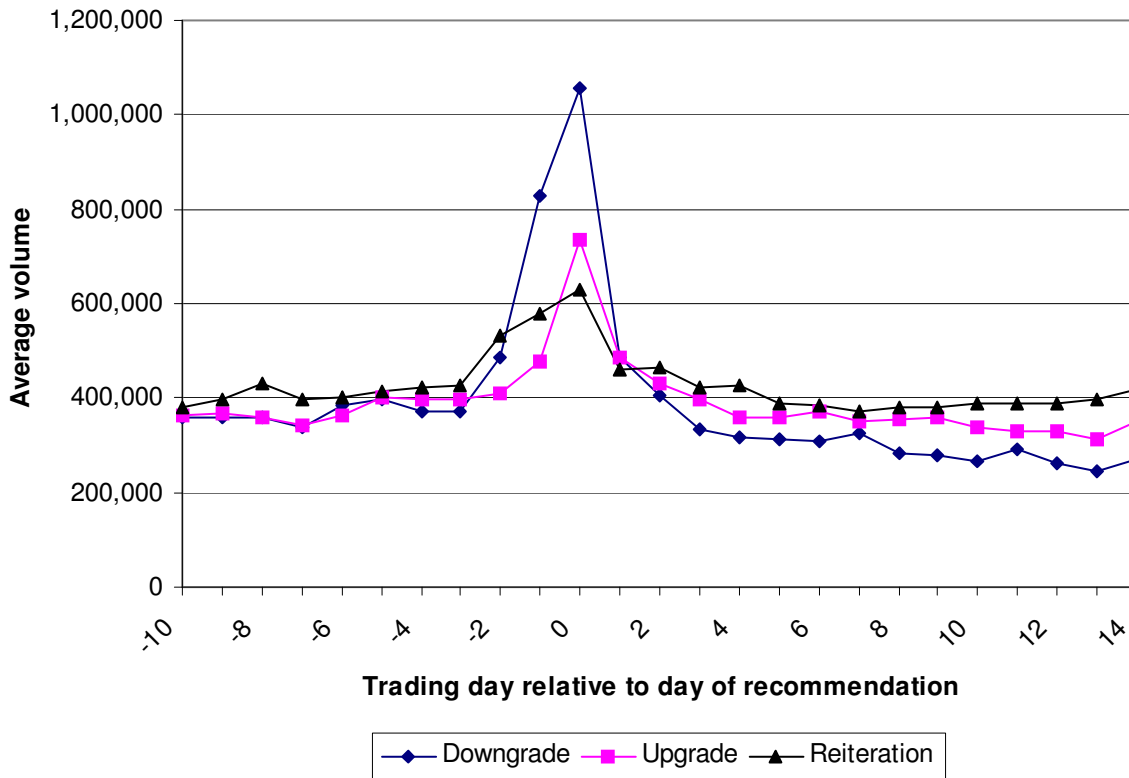
This figure presents average daily share volume for quiet period versus post-quiet period initiations for 683 U.S. IPOs from January 1, 1999 to December 31, 2000. Analyst data are from Briefing.com. Volume data are from CRSP. NASDAQ volume is divided by 2.4 to make it comparable with Amex and NYSE volume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





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

This figure presents percentage cumulative average market-adjusted returns (CMARs), using the NASDAQ Composite index, for downgrades, upgrades, and reiterations in the year after the IPO for 683 U.S. IPOs from January 1, 1999 to December 31, 2000. The (-2,+2) and (0,+2) CMARs are reported in the “All” row of Table 3, Panel B. Analyst data are from Briefing.com.



**Figure 5**  
**Volume for downgrades, upgrades, and reiterations**

This figure presents average daily volume for 629 downgrades, 473 upgrades, and 2,863 reiterations in the year after the IPO for 683 U.S. IPOs from January 1, 1999 to December 31, 2000. Volume data are from CRSP. NASDAQ volume is divided by 2.4 to make it comparable to Amex and NYSE volume (see Gould and Kleidon (1994)).