5-2009

Hype my stock: Do firms really want biased research?

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May 2009

Abstract

Analyst research is alleged to be biased because of conflicts of interest when analysts' employers underwrite securities for the firms covered. I posit that affiliated analyst optimism should be the strongest for offering firms with a desire to over-inflate stock prices. I hypothesize that a firm's corporate governance and its CEO incentives are related to the affiliation bias. Using stock recommendations data, I find evidence that the affiliation bias is indeed more pervasive for firms with high CEO wealth sensitivity to stock price (i.e., high CEO delta). The larger affiliation bias for high delta firms remains even after the introduction of regulatory reforms aimed at limiting analyst optimism. There is mixed evidence that firms with poorer corporate governance have more serious analyst affiliation biases. Examining event reactions to recommendations, I find that the market does not sufficiently discount the fact that affiliated analyst optimism is more serious for some firms. I also show post-offering evidence suggestive of quid quo pro in that hyping banks win more future deals from high delta firms while the firm's CEO makes more insider stock sales.

Keywords: Conflicts of Interest; Affiliation Bias; Security Analysts; Investment banks; Corporate Governance; Biased Research; Stock Recommendations

JEL Classification Codes: G24; G34; G38

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* I thank Hank Bessembinder, John Chalmers, Phil Davies, Karl Diether, Alex Edmans, Rudi Fahlenbrach, Paolo Fulghieri, Vidhan Goyal, Kewei Hou, Ravi Jagannathan, Li Jin, Ohad Kadan, Andrew Karolyi, Mike Lemmon, Alexander Ljungqvist, Tim Loughran, Michelle Lowry, Gilberto Loureiro, Angie Low, Tom Noe, Carrie Pan, S. A. Ravid, Vikrant Vig, Rong Wang, and especially René Stulz for their comments and suggestions. I also thank Jay Ritter for detailed comments on an early draft, seminar participants at the European Finance Association 2008 Athens meetings, Ohio State University, and Singapore Management University for valuable input, Thomson Financial for providing the I/B/E/S broker translation file, Angie Low for sharing the managerial delta code, Paul Wanner of Institutional Shareholder Services for helpful discussions, Gilbert Ho for research assistance, The Dice Center for Financial Economics at Ohio State University and the Office of Research at Singapore Management University for financial support.

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1. Introduction

Prior literature on conflicts of interest suggests that security underwriting results in overly-optimistic sell-side analyst research. Consequently, analysts whose investment banks are affiliated with the issuing firm are likely to produce over-optimistic research. It is puzzling, however, that the empirical evidence supporting this notion is at best mixed. On the one hand, Michaely and Womack (1999) find that affiliated analysts issue more biased research. On the other hand, Bradley, Jordan, and Ritter (2008) find little evidence that investment banking conflicts lead to more biased affiliated analyst advice. This disparate evidence is highlighted best in the survey by Mehran and Stulz (2007) who detail the mixed evidence surrounding conflicts of interest and analyst optimism.[1]

This paper postulates that affiliated analyst optimism could be more serious for firms that have stronger desires to inflate their stock prices. Prior studies often assume that all firms desire over-optimistic analyst research and are willing to pay to obtain it. For instance, Krigman, Shaw, and Womack (2001) report survey evidence that analyst coverage is one of the main reasons why firms switch underwriters. Degeorge, Derrien, and Womack (2007) posit the analyst hype hypothesis: that IPO firms prefer book-building over auctions because the book-building package includes hyped analyst coverage. Cliff and Denis (2004) find that firms use IPO underpricing to purchase star analyst coverage and interpret their evidence as consistent with the

[1] For e.g., other papers showing that conflicts lead to more biased research are Lin and McNichols (1998), James and Karceski (2006), McNichols, O'Brien, and Pamukcu (2006), and recently, Chahine, Ljungqvist, and Michaely (2008). Papers showing that conflicts do not lead to more biased research are Bradshaw, Richardson, and Sloan (2006) and Clarke, Khorana, Patel, and Rau (2007). See Table 1 of Mehran and Stulz (2007) for a longer list of papers.

analyst lust hypothesis in Loughran and Ritter (2004)—that firms underprice IPOs to obtain favorable coverage from influential analysts.

This paper postulates that some firms could desire biased analyst research more than others. The focus is on two main firm characteristics, corporate governance and CEO wealth sensitivity to stock price. While one can think of other potential dimensions (I consider some in robustness tests), these two examined characteristics are intuitive, easily developed, and draw on supporting evidence from past literature. From the corporate governance perspective, if biased analyst research is detrimental to a firm's shareholders, well governed firms will be less likely to seek biased research. Attempts to boost the current stock price can benefit existing shareholders (for e.g., the firm may be able to raise equity cheaply) but this short-term benefit must be balanced against the long-term cost of misleading the market. If a firm considers the welfare of long-term shareholders, it may be less likely to participate in such short-term gaming (Jensen (2005)).

The second setting considers the firm's managerial compensation since managers can directly benefit from overvaluation if their wealth is tied to the firm's stock price. Although tying managerial wealth to stock price presumably aligns the interests of managers to the interests of shareholders, this mechanism could have the perverse effect of inducing managers to prop up stock prices artificially. For e.g., Bergstresser and Philippon (2006) find that the use of discretionary accruals to manipulate earnings is more pronounced when the CEO's wealth is more sensitive to stock price. Burns and Kedia (2006) show that corporate misreporting is more prevalent at firms whose CEOs' option wealth is more sensitive to stock price. I posit that firms could also use the channel of biased analyst advice to boost the stock price. Mayew (2008) provides suggestive evidence. He shows that the probability that an analyst participates in a

conference call is positively related to the analyst's optimism and that this relation is stronger for firms whose managers have higher wealth sensitivities to stock price.

This paper relates closely to the literature showing that analysts tend to provide over-optimistic advice on average. Boni and Womack (2002) describe four pressures driving this overall optimism. The analyst faces pressures from, 1) the investment bank who wants more brokerage and advisory business, 2) the management of the covered firm who wants its stock touted, 3) institutional clients of the bank who are long the stock, and 4) the conflicts created by the analyst's personal investments.[2] While most of the existing work on conflicts focuses on the first source of pressures (the supply of biased research), my study focuses on the second source of pressures—the pressure from firms who desire over-optimistic research (the demand for biased research). Another distinguishing feature of this paper is that it investigates the affiliation bias rather than the overall bias. Studies that have examined whether the overall optimism bias depends on firm characteristics are, for e.g., Ljungqvist, Marston, Starks, Wei, and Yan (2007) and Lim (2001).

This study uses data from I/B/E/S detail stock recommendations from 1994 to 2006. I define an affiliated analyst as one whose bank was a lead or co-manager of the firm's equity offering in the prior three years. I follow Ljungqvist et al. (2007) in building a calendar-time panel of an analyst's relative recommendations versus peers who cover the same firm. I find some evidence that the affiliation bias is worse for firms with poor corporate governance. In general, this evidence depends on the governance proxies employed. However, I find robust evidence that firms with high CEO wealth sensitivity to stock price (i.e., high CEO delta firms) are associated with larger analyst affiliation biases. This affiliated analyst hype remains even after controlling for the overall reduction in optimism as result of investment bank reforms in

[2] Ritter (2007) also discusses the first three pressures.

2003. I surmise that high delta firms continue to pressure affiliated analysts to supply over-optimistic advice even in the post-regulation period.

I then examine if the market is aware of cross-sectional differences in affiliation biases by comparing the average rating change event cumulative abnormal return (CAR) of affiliated versus unaffiliated analysts. Although investors discount the recommendations of affiliated analysts' on average, they do not discount affiliated recommendations issued on high CEO delta firms more than they discount affiliated recommendations on other firms. This suggests that the market is not fully cognizant of the stronger analyst affiliation bias of such firms.

While results are consistent with the idea that the firm induces its affiliated analyst to issue a biased report, an alternative explanation is that the affiliated analyst has private positive information about the firm (McNichols and O'Brien (1997)). If this selection story were true, the recommendations of the affiliated analyst would outperform those of unaffiliated analysts. I compare calendar-time portfolios of high delta firms with and without affiliated analyst hype. Inconsistent with the selection story, there is no evidence of the hyped firm portfolio outperforming the non-hyped portfolio. Instead, the hyped firm portfolio significantly underperforms in both value-weighted and equal-weighted average returns.

One can interpret the evidence as firms pressuring affiliated analysts to issue over-optimistic recommendations. Firms (and their insiders) may benefit from a temporarily boosted share price if the market does not discount such hyping. In return, the potential payoff for the affiliated analyst could be in the form of access to management or future deal business for the bank. To search for evidence of quid quo pro between the firm and the investment bank, I count the incidence of future equity offerings. I focus on high delta firms since the evidence on this firm characteristic is the most robust. I find that banks that hype win a larger fraction of

mandates for future deals. On the side of the payoffs to the firm, I examine insider sales data and find that the net sales of stock by the CEO in the years after the offering are significantly higher for high delta firms with hype than without hype. This is consistent with CEOs benefitting or attempting to benefit from the hyping of their firm's stock by affiliated analysts.

The rest of the paper is organized as follows. Section 2 details the methodology and hypotheses, Section 3 describes the data and descriptive statistics of the sample, Section 4 reports main results, Section 5 examines the market's reaction to the affiliation bias and develops further tests, and finally, Section 6 concludes.

2. Methodology and hypotheses

2.1. Empirical model

To measure analyst optimism, I focus on stock recommendations rather than on earnings forecasts since the alleged impact of conflicts of interest on stock recommendations is unambiguously upward. The effect of conflicts on earnings forecasts is more ambiguous. Conflicts could bias earnings forecasts upward because optimism enables analysts to curry favor with management (Lim (2001)), or conflicts could bias earnings forecasts downward so that firms are able to beat forecasted earnings (e.g., Chan, Karceski, and Lakonishok (2007)). The basic empirical model is as follows.

$$RelRec_{ijt} = \eta + \alpha Affiliated_{ijt} + \beta FirmChar_{ijt} + \delta\left(Affiliated_{ijt} \times FirmChar_{ijt}\right) + \boldsymbol{\gamma}'\mathbf{X} + \varepsilon_{ijt}. \quad (1)$$

$RelRec_{ijt}$ is analyst i's average end-of-quarter relative recommendation minus the end-of-quarter median outstanding recommendation (i.e. consensus) across all analysts covering firm j in year t. I construct this as an annual panel since most of the variables in the model are measured annually and not quarterly. For variables that can be measured quarterly, like $RelRec_{ijt}$ in this case, the

average of the quarterly observations within year *t* is computed. To allow the magnitude of $RelRec_{ijt}$ to be positively associated with relative optimism, I reverse ratings from I/B/E/S so that a strong buy has a rating of 5 and a sell has a rating of 1.

$Affiliated_{ijt}$ is a dummy variable indicating that the analyst's employer has an underwriting relationship (primary or secondary equity offering) with the covered firm *j* during the prior three years. Because my focus is on the optimism of equity research, affiliation is based on past equity issuance rather than debt issuance or merger and acquisition advisory relationships.[3] Allowing the affiliation to be active for up to three years follows Lin and McNichols (1998).[4] $FirmChar_{ijt}$ takes value of one when the firm is hypothesized to be more likely to pressure its affiliated analysts to issue biased research. **X** is a vector of control variables of analyst, bank, and firm characteristics. The calendar-time panel setup is similar in spirit to the model in Ljungqvist et al. (2007), except that they do not examine an interaction term with analyst affiliation.

The model is estimated via OLS analyst fixed effects and with the standard errors clustered by analyst. Having analyst fixed effects is equivalent to asking whether an analyst who covers *n* firms is more optimistic than peers for firms with certain identified characteristics. Analyst clustering accounts for the fact that observations from the same analyst may not be independent within the panel.[5]

[3] Affiliation can also come from mutual funds. Guidolin and Mola (2008) show that analysts are more optimistic about firms held by their bank's affiliated mutual funds.

[4] Some papers assume affiliation lasts for five years (Malmendier and Shanthikumar (2007)) while some assume it lasts only one to two years (Michaely and Womack (1999)). My results are generally stronger when affiliation is assumed to last for a shorter number of years but choosing three years matches the horizon dictated in NASD regulations that banks disclose underwriting relationships in the prior three years.

[5] Other forms of estimation, for e.g., using analyst fixed effects and firm-level clustered standard errors, or using generalized least squares with analyst random effects yields similar results. Finally, because the dependent variable in Eq. 1 is not normally distributed but bounded in [-4,4], I also estimate an ordered probit model in which the dependent variable takes on three values: above the consensus, at the consensus, or below the consensus. The results are similar with this alternative estimation method and are unreported in most tables.

2.2. Hypothesized firm characteristics that affect affiliation bias

Hypothesis 1: Overall affiliation bias

We test if α is positive, which indicates that affiliated analysts are more likely than unaffiliated analysts to issue optimistic stock recommendations.

Hypothesis 2A: Poor corporate governance worsens the affiliation bias

Hypotheses 2A and 2B investigate if the affiliation bias is more serious for a particular firm type. δ is positive if the hypothesized firm type is associated with more affiliated analyst optimism. Hypothesis 2A tests if firms' corporate governance characteristics are associated with affiliated analyst optimism.[6] The underlying motivation is that a well governed firm will not mislead the market with biased analyst advice if short-term overvaluation incurs detrimental long-term costs for shareholders. Jensen (2005) argues that short-term gaming leading to overvalued equity can ultimately lead to the destruction of part or all of the firm's core value (see also Fuller and Jensen (2002)). Well governed firms may thus be less likely to engage in encouraging or supporting analyst hype.

Two proxies for governance are used. The first is the governance index (G-index) by Gompers, Ishii, and Metrick (2003) from RiskMetrics (formerly IRRC) counts the number of adopted anti-takeover provisions (1 to 18) that protect managers from the discipline of the corporate control market. Entrenched managers could pursue their own interests in empire building, leading to shareholder wealth destruction. Masulis, Wang, and Xie (2007) find that firms with more anti-takeover provisions make more value-destroying acquisitions. If these

[6] Although corporate governance is endogenous, the analysis here will not suffer from the issue of endogeneity as long as one can argue that $E(PoorGov_{ijt} \times \varepsilon_{ijt})=0$. Clearly, if the dependent variable were firm value, then $E(PoorGov_{ijt} \times \varepsilon_{ijt}) \neq 0$. However, the dependent variable in this paper is not an outcome variable of the firm but an individual analyst's relative optimism. By definition, this means that for a firm, some of its covering analysts would be optimistic and some would be pessimistic. Consequently, it is less likely that an analyst being more optimistic affects the firm's governance structure since there are also other analysts who are pessimistic at the same time.

acquisitions are financed in part by the firm's equity, the incentive for optimistic affiliated analyst advice could be higher. I identify a firm as poorly governed ($FirmChar_{ijt}$= $PoorGovGindex_{ijt}$ =1) when its most recently reported G-index ≥10. This corresponds to the bottom five deciles in Gompers et al. and accounts for 40% of the G-index firm-years.

The disadvantage of the G-index is that it measures only one dimension of corporate governance—managerial entrenchment. Entrenchment may not be unequivocally bad according to Stein (1988), since managers subject to takeover discipline may want to pump up current earnings so as to avoid being taken over at undervalued prices or losing their jobs. Hence, entrenched managers could actually be *less* focused on the short-term stock price (less myopic) and thus less concerned about analyst coverage. This motivates a boarder measure of governance. The second proxy I use is the corporate governance quotient (CGQ) industry index by Institutional Shareholder Services (ISS).[7] ISS gathers data on 63 different issues in the four broad governance categories, namely, board of directors, audit, anti-takeover, managerial compensation/ownership. A firm's CGQ industry score is based on all 63 categories with proprietary weights on each category. For e.g., a technology firm with a CGQ industry score of 75 has better governance than 75% of all technology firms. For this proxy, I set $FirmChar_{ijt}$= $PoorGovCGQ_{ijt}$= 1 when the firm's score is in the lowest tercile of firms.[8]

[7] Other studies that have employed ISS data are Doidge, Karolyi, and Stulz (2007), Aggarwal, Erel, Stulz, and Williamson (2008), Brown and Caylor (2006), and Aggarwal and Williamson (2006). Unlike the G-index which is only available for bigger firms, ISS provides a larger universe of firms although it is only available annually from 2001-2006.

[8] One concern about governance indices is that their usage promotes a "one size fits all" view of corporate governance (see for e.g., the arguments and evidence in Bates, Becher, and Lemmon (2008) and Gillan, Hartzell, and Starks (2006)). The G-index suffers from such criticisms since it considers only one aspect of governance. The CGQ is certainly not immune to the "one size fits all" argument even though it considers various aspects of governance. One mitigating fact, however, is that the CGQ used here measures relative governance scores within an industry and not absolute governance scores across the whole universe of firms.

Hypothesis 2B: High CEO delta worsens the affiliation bias

The next key variable considered is CEO wealth sensitivity to stock price. This directly proxies for the potential benefits to the CEO when the firm's stock price goes up. Of course, all firm managers should aim to maximize shareholder value. However, if stock price can be manipulated, firms whose managers' wealth depends more on the stock price could be pressured to artificially inflate the stock price for their own benefit. For e.g., Bergstresser and Philippon (2006) find that earnings manipulation is more pronounced at firms where the CEO's compensation is more closely tied to the value of stock and option holdings (see also, Kadan and Yang (2006) and Cheng and Warfield (2005)).[9]

Another related study is Bolton, Scheinkman, and Xiong (2006) who model a setting where the stock price reflects not only the fundamental value of the firm but also a short-term speculative component. In this case, optimal compensation contracts may emphasize short-term stock performance, at the expense of long-run fundamental value. Equity-based compensation could thus create an incentive to induce managers to pursue actions which increase the speculative component in the stock price.

I use Execucomp to compute the change in the CEO's wealth for a one percent change in stock price, following the one-year approximation method by Core and Guay (2002), also used in Coles, Daniel, and Naveen (2006) and Low (2008). The CEO delta is the sum of the stock holdings delta and the option holdings delta.[10] For each calendar year, the variable $HighDelta_{ijt}$ is set to one if the firm's prior fiscal year CEO delta is in the highest tercile of CEO deltas among

[9] One can argue that managers may also want to manipulate stock price downwards during times of stock option grants. However, such manipulation is unlikely dominate when we examine the level of affiliation bias over the whole year. Further, the impact of new grants is less of a concern when the underlying manager already has existing wealth that is very sensitive to stock price.

[10] I also recalculate the delta by excluding unexercisable options and find similar results. This is mainly because the tests rely on a dummy variable to indicate high delta firms and there is a high correlation between firms identified as high delta and those identified as having high exercisable delta.

all firms with available data.[11] When there is more than one CEO associated with a firm-year, the delta values are averaged for that firm-year.

3. Data and descriptive statistics

3.1. Stock recommendations

Individual analyst recommendations are from Thomson Financial's I/B/E/S Detail U.S. File from 1993-2006. The use of I/B/E/S potentially raises concerns because of the problem reported in Ljungqvist, Malloy, and Marston (2008). They find inconsistencies in matched observations across seven downloads of I/B/E/S recommendations data between 2000 and 2007. To mitigate the impact of such alterations, I create an I/B/E/S spliced data set. 1993-2000 is the first half of the spliced dataset and comes from an I/B/E/S snapshot on January 19, 2001. To the extent that the I/B/E/S alterations were a result of analysts or brokers trying to touch up their pre-regulation stock-picking histories during the period of heightened regulatory scrutiny, an earlier snapshot could be closer to an "as-was" tape. The second half from 2001 to 2006 is from a March 15, 2007 snapshot. Ljunqqvist et al. report that Thomson reinstated missing analyst names in the history file as of February 12, 2007 and hence the March 2007 snapshot should reflect such corrections.

When computing quarter-end relative ratings, outstanding ratings are used. A rating is outstanding if it is less than one year old. If the rating is between one and two years old, it is treated as outstanding only if the analyst issued at least one earnings forecast for the firm in last

[11] Defining all binary $FirmChar_{ijt}$ variables by quintiles instead of terciles does not affect the results. The benefit of terciles is that I will have more nonzero observations when $FirmChar_{ijt}$ is interacted with $Affliated_{ijt}$, hence increasing the power of the tests.

one year (matching to the I/B/E/S Detail Earnings Forecast File).[12] The consensus includes ratings made by anonymous analysts—this is possible since I/B/E/S does not anonymize the broker code. The regressions exclude observations where the average number of analysts in the quarterly consensus is <3 so that relative ratings are based on a reasonable number of analysts.

3.2. Firm and analyst variables

Using information from CRSP, I remove non-ordinary shares from the sample (share codes not 10 or 11), and exclude financial firms (SIC codes 6000-6999) and regulated utilities (SIC codes 4900-4949).

I also compute other firm control variables that have been shown to impact overall analyst optimism. Ljungqvist et al. (2007) suggest that institutional ownership is a moderating force on optimism (see also, Guidolin and Mola (2008)). Each year, I compute from Thomson 13f the average quarterly-reported proportion of the firm's shares that are held by institutions. Next, I obtain the prior December CRSP market capitalization of the firm as a control for firm size. The book-to-market ratio is computed from Compustat data following the definition in Fama and French (2006).

Analyst-level variables are also useful when looking at the determinants of overall optimism. I compute analyst experience as the number of quarters since the analyst began issuing recommendations for the firm. The number of firms covered by the analyst is also used a proxy for the busyness of the analyst.

[12] Most studies use a one-year old stale screen. This criterion is too stringent because in I/B/E/S, the average time it takes for an analyst to revise a recommendation is 274 days and 25% of the time it takes more than 360 days. By refining the stale recommendation criterion, I avoid excluding outstanding recommendations that would be considered stale by other studies. The fact that the analyst issued a recent earnings forecast for the firm is consistent with continuing active coverage. My results are insensitive to using a one-year stale criterion.

3.3. Equity issuance data

From the SDC's New Issues database, I extract all primary and secondary equity issues from 1991-2006 and match to I/B/E/S using both the issuer's ultimate parent CUSIP and the issuer's own CUSIP (since the offering could affect analyst behavior for the issuing and parent firm). $IssuedEquity_{ijt}$ equals one if the firm-year is associated with equity issuance in the years [-1,-3] where year 0 is the filing year (if missing, then the issue year).

An analyst affiliation dummy variable $Affiliated_{ijt}$ equals one if the analyst's broker is a lead- or co-manager in [-1,-3] years around the equity issue. To code this variable, the manager names in SDC are hand-matched to broker names in I/B/E/S. Thomson provided the I/B/E/S Recommendation Broker Translation File upon request. When a broker is acquired or merged, the successor bank inherits the issuance relationships from the year of the merger. For e.g., Donaldson Lufkin & Jenrette was merged with Credit Suisse in 2000. Hence, Credit Suisse inherits issuance relationships (if still active as defined by the [-1,-3] window) of Donaldson Lufkin & Jenrette from 2000 onwards. I use Figure 1 of Ljungqvist, Marston, and Wilhelm (2006) and the appendix of Corwin and Schultz (2005) to determine merger relationships and the years of occurrence.[13]

I also define a proxy for underwriter reputation. First, I compute the share of the industry's (updated 30 industry definitions by Fama and French (1997)) equity issuance proceeds commanded by the bank in the prior calendar year. This variable is similar in spirit to the

[13] For SDC brokers that are not mentioned in these two sources, the "ultimate parent of manager" field in SDC shows the current subsidiary or merger relationships of the bank. This field is backfilled by SDC whenever a bank merges so that the merged bank is shown as the subsidiary's ultimate parent even in the prior-merger years. I undo such backfilling by using the Internet to determine the exact year of the merger.

underwriter reputation measure in Megginson and Weiss (1991).[14] The second reputation measure is the number of recommendations that the bank issued in the industry during the prior year. This proxies for the overall amount of analyst research that bank produced in that particular industry.

3.4. Post-2000 regulatory reform

In most specifications, I also include an interaction term *Post2000*×*Affiliated* so as to test whether the affiliation bias attenuates across the pre and post-regulation period. *Post2000*=1 for the years after 2000. Post-2000 regulations include Regulation Fair Disclosure (Reg FD), passed in August 2000, which specifically aimed at reducing the channel of private information release from firms to their favored analysts. The Global Analyst Research Settlement in 2003 and the National Association of Security Dealers (NASD) Rule 2711 in 2002 imposed reforms to limit the conflicts of interests between investment banking and analyst research. These reforms made it more difficult for banks to supply biased advice, so it is possible that the analyst affiliation bias disappears after these rules. The 2001 to 2006 period represents, to date, the largest sample employed to study the impact of the reforms in limiting analyst bias. For e.g., Boni (2006) and Kadan, Madureira, Wang, and Zach (2008) use data up to 2004 only. Finally, I also add a control variable "Settlement-affected bank" that equals one 2003 onwards for the ten banks fined by the Settlement.[15] This variable controls for the fact that these ten banks may have sharply reduced their overall optimism after the Settlement.

[14] I also tried using an alternative reputation measure, the Carter and Manaster (1990) (CM) rankings, and the results are unchanged. Specifically, I assign a value of one if the CM rank is eight or higher on a nine-point scale using the modified rankings provided by Jay Ritter in Loughran and Ritter (2004).

[15] The ten are respectively, Bear Stearns, CSFB, Goldman Sachs, Lehman Brothers, JP Morgan, Merrill Lynch, Morgan Stanley, Citigroup, UBS, and Piper Jaffray. See press statement in http://www.sec.gov/news/press/2003-54.htm.

3.5. Descriptive statistics of sample

[Table 1 here]

The sample descriptive statistics are reported annually in Table 1. From Panel A, we see that the final 1994-2006 panel contains 336,279 firm-analyst-year observations of relative recommendations. As expected, the relative recommendations are close to zero although most values are above zero except for the year 2000. The total number of unique firms in the 13 year period is 6,157. The rest of the columns in Panel A report the average of firm level attributes for the panel. The average market cap for a firm is slightly over $3 billion and the average number of analysts making up the consensus for typical firm in the sample year is 8.56. The institutional ownership of a typical firm increases over time from 46% to 71%.

The average CEO delta for a firm in the sample is $1.21 million. This indicates that the CEO's wealth would change by $1.21 million due to a one percent change in the stock price of the firm. This number is larger than the average delta of $600,000 reported in Coles et al. (2006) and could be due to two factors. First, the sample in this study focuses on larger firms and from a more recent sample period. Second, there are outliers that skew the average—the median delta in the sample is $235,862. In any case, the magnitudes do not affect my results since I rely on a dummy variable instead of the raw values of delta to identify the impact of high CEO delta on the analyst affiliation bias. For the governance attributes, the average number of anti-takeover provisions that a firm has is 9. The average CGQ index score of 61 implies that the sample tilts towards firms that are better governed than the average firm in the CGQ universe.

Panel B of Table 1 next describes the analyst-level variables. There are a total number of 8,365 unique analysts in the sample. The peak in the number of analysts occurs in 2001 and drops after that, consistent with views that research departments downsized in the post-regulation

years (Boni (2006)). The average experience that an analyst has in covering firm *j* is 6.59 quarters and the average number of firms covered is 7.96.

Finally, Panel C of Table 1 counts the instances where the dummy variables equal one in the panel of firm-analyst-year observations. An observation is associated with an equity issue in the last three years 29.77% of the time. 9.54% of the sample's relative recommendations are associated with an analyst whose bank is affiliated with an equity offering in the last three years. For the firm characteristics that test the hypotheses, I report the percentage of non-missing observations where the dummy variables are equal to one. We see that 30.70% of the relative recommendations are issued on firms with G-index values greater or equal to 10. Since the G-index is usually available for larger firms, 38.79% of the observations do not have G-index data (reported in the last row of Panel B). For the CGQ however, for which data begins only in 2001, only 16.36% of observations do not have CGQ data in this period. 25.44% of the non-missing CGQ observations are associated with firms that have the lowest tercile of CGQ scores. For high CEO delta, 46.3% of the non-missing observations are associated with firms in the highest tercile of CEO delta. That the percentage is greater than one-third shows that there is more analyst coverage for high CEO delta firms.

[Table 2 here]

Table 2 describes the equity issuance data from 1991 to 2006 that can be matched to the sample. Pre-1994 equity issuance data is required since analyst affiliation is assumed to last for three years. The issuance sample contains a total of 235 unique banks who function as lead managers or co-managers of the offerings for a total of 5,413 unique firms responsible for 7,329 deals. This sample of equity deals is likely to be representative of the deals examined in prior research. For e.g., James and Karceski (2006) examine a sample of 1,355 IPOs from 1996-2000.

My sample contains a comparable 1,548 IPOs from 1996-2000. Turning to deal characteristics, secondary offerings have mean proceeds of $183 million and are associated with 1.89 lead-managers and 2.88 co-managers. IPOs have mean proceeds of $175 million and an average of 1.30 lead-managers and 2.55 co-managers. The trend of having multiple managers in recent years is similar in spirit to Hu and Ritter (2007)'s observation that firms are more likely to go with multiple bookrunners in recent years, possibly motivated by issuers trying to increase their own bargaining power in the securities deal.

4. Results

4.1. Event time analyst affiliation bias by types of firms

Figure 1 plots the affiliation bias in event time. I include firms-years around [-3,5] years from an equity offering. I then take the average affiliated minus the average unaffiliated $Relrec_{ijt}$ for each firm-year and plot this affiliation bias for different types of firms.

The first graph shows the analyst affiliation bias for firms with poor G-index scores versus other firms. Dashed red lines show the bias for high G-index firms and the unbroken black lines show the bias for all other firms. In general, affiliated analysts have outstanding quarterly recommendations that are 0.1 to 0.2 rating points higher than unaffiliated analysts and this bias peaks in the year of the offering. Three years after the offering, the affiliation bias virtually vanishes. One can interpret this as consistent with hypothesis 1—that regardless of the type of firm, affiliated analysts are in general more optimistic than unaffiliated analysts.

A 0.2 rating point difference could seem trivial. However, one piece of evidence that investors do not think this is trivial is that they do indeed discount recommendations from

affiliated analysts in terms of the recommendation's stock market reaction (shown in a later table).

One also observes that the affiliation bias is larger for poor G-index score firms and high CEO delta firms. This stronger bias is more pronounced in the first two years after the offering. For low CGQ score firms, for which we have data only from 2001-2006, there is only modest evidence of a greater affiliation bias. Overall, there is some support for hypotheses 2A and 2B, that the analyst affiliation bias is more serious for poorly governed firms and high CEO delta firms. However, the evidence here is only suggestive since there are no controls yet for analyst or firm attributes.

4.2. Determinants of relative optimism

I now estimate a panel regression that examines the determinants of relative optimism. Regression analysis allows for stronger conclusions because one can control for other firm and analyst attributes that explain analyst optimism. $RelRec_{ijt}$ is the dependent variable in Table 3. The explanatory variables include the *Affiliated* dummy, an *IssuedEquity* dummy, hypothesized firm characteristic interacted with the *Affiliated* dummy, and various control variables commonly featured in the literature.

We first look at specification 1 (G-index specification). The coefficient on *Affiliated* is positive and significant. Affiliated analysts maintain an outstanding relative rating 0.066 higher than all other analysts, controlling for all other determinants of relative optimism. This overall affiliation bias finding is consistent hypothesis 1 and with Lin and McNichols (1998). There is also no evidence that post regulatory analyst reform succeeded in removing the affiliation bias since the coefficient on *Post2000×Affiliated* is insignificantly negative. Hypothesis 2A asks if the affiliated analyst bias is different for poorly governed firms. A positive coefficient on

$PoorGovGindex \times Affiliation$ indicates that poor G-index firms had analyst affiliation biases that were larger than that for other firms. We see that the coefficient for $PoorGovGindex \times Affiliation$ is positive but insignificant—no evidence that poor G-index firms are associated with stronger analyst affiliation biases.

[Table 3 here]

In specification 2, the coefficient on $Highdelta \times Affiliation$ tests whether firms whose CEOs have higher deltas are associated with larger analyst affiliation biases (hypothesis 2B). Column 2 shows that this coefficient is positive and significant. The affiliated analyst bias of high CEO delta firms is 0.047 rating points higher than the affiliated analyst bias afflicting all other firms. In specification 3 (with G-index variables added), the additional bias is 0.064 rating points. Interestingly, the coefficient for *Affiliated* is no longer statistically significant (at least in this specification), signifying that once we control for the differences in affiliation bias across corporate governance and high delta dimensions, the affiliation bias is indistinguishable from zero.

One observation across specifications 2 and 3 is that the coefficient for *HighDelta* is significantly negative, which means that analysts are in general less optimistic for high delta firms. This is surprising but perhaps can be explained by the fact that high delta can align the manager's interest with shareholders, and hence reduce analyst over-optimism in general. When controlling for corporate governance with the G-index however, the negative coefficient remains. Improving the proxy for corporate governance with the CGQ index, we find that the negative coefficient on *HighDelta* becomes attenuated. Importantly, $HighDelta \times Affiliated$ remains positive and significant even in specification 5.

Specification 4 and 5 also tests if poor governance as proxied by the CGQ index differentiates the affiliation bias across firms. I find that it does. In specification 5, the affiliation bias is worse by 0.074 rating points. Again, we see in this "all-in" specification that the coefficient on *Affiliated* is rendered insignificant.

How do we think about the economic significance of an additional recommendation bias of 0.07 points? One way is to compare this magnitude to the impact of regulatory reform in reducing the general optimism of analysts. We see that the ten Settlement-affected banks (bottommost variable) reduced their general optimism by about 0.06 to 0.09 rating points as a result of court action. Thus 0.07 rating points is clearly not trivial—the magnitude is at least as close to that of a regulatory-motivated change in overall optimism.

The control variables in the regression also deserve some discussion. The coefficient on *IssuedEquity* is significantly negative across most specifications. This is similar to the finding in Ljungqvist et al. (2007) and could mean that analysts on average understand and expect post-equity offering underperformance compared to other covered non-issuing firms. Consistent with main result of Ljungqvist et al., the coefficient on institutional ownership is usually negative and significant (at least for the first three specifications). Their explanation is that the presence of institutional investors exerts a moderating force on analyst optimism. The sign and significance of the other controls are also consistent with the literature. The log of the number of analysts covering the firm is positively associated with analyst optimism—an analyst is more optimistic for the firms with higher analyst coverage. This could be due to analysts being more likely to cover a stock when they predict better prospects for the firm. The number of firms covered by an analyst is negatively associated with relative optimism. Log of the B/M ratio is positively related

to relative optimism meaning that analysts are in general more optimistic for value firms than they are for growth firms.[16]

The average prior quarter return serves as a control variable because an analyst covering multiple firms could be more optimistic for one firm because that firm stock price has performed well recently. The estimated coefficient on this variable is however mixed. The two proxies for bank reputation, market share and number of issued recommendations, are negatively related to relative optimism. This could be viewed as the moderating role of reputation or that the bank is such a large player that it does not need to use relative optimism as a tool to retain investment banking business.

5. Market reaction to affiliation bias and further tests

5.1. Does the market discount recommendations of firms with worse affiliation biases?

The main finding is that affiliated analysts' over-optimism is stronger for some firms. The next natural question is to ask whether the market sees through such biases (see for e.g., Michaely and Womack (1999) and Lin and McNichols (1998)). Mehran and Stulz (2007) argue that conflicts on interests will not have an adverse impact if the market understands conflicts and is able to "debias" recommendations.

I repeat the main analysis except that the dependent variable is now the average rating change CAR for the analyst-firm-year. CAR is computed as the sum of daily abnormal return (AR) over a three day window around the event date. AR is the raw CRSP return minus the return on an equally-weighted average return of a portfolio matched on size, B/M, and momentum, as in Daniel, Grinblatt, Titman, and Wermers (1997) (using net of market return

[16] Doukas, Kim, and Pantzalis (2002) also find similar evidence.

CARs obtains similar results). Since the dependent variable is the recommendation CAR, I add the average rating change and rating level after the rating change as controls.

[Table 4 here]

Table 4 reports the results. The coefficients on average rec-change and rec-level are both positive and significant. A unit rating change brings about an additional CAR of 1.5% to 2%. The significantly negative coefficient on *Affiliated* shows that the market understands the overall affiliation bias—an affiliated analyst's rating change CAR is reduced by between 0.7% to 1.4%. A negative coefficient means that upgrades (downgrades) by affiliated analysts have a smaller positive (larger negative) event CAR reaction, consistent with the market adjusting for affiliated analyst optimism. Interestingly, the positive coefficients on *Post2000×Affiliated* reveal that the market reduced their discounting of affiliated recommendations in the post-regulation period. This is surprising since we did not find any material drop in the affiliation bias in the earlier table. This appears that the market assumed the attenuation of the analyst affiliation bias after regulatory actions.

Earlier analyses showed that high CEO delta firms are associated with larger analyst affiliation biases. If the market recognizes this, the coefficient on *HighDelta×Affiliated* should be negative and significant. However, the coefficient for is not significant, suggesting that the market is not cognizant of the higher affiliated analyst bias on such firms. Looking at *PoorGovCGQ×Affiliated*, we see some evidence the market further discounts affiliated analyst recommendations on poor CGQ index firms (-0.688, t=1.86 in specification 4), but this coefficient is not significant once we control for the other firm characteristic interactions (specification 5).

5.2. Instrument for affiliation: Presence of a Star analyst

If relative optimism can help banks win investment banking deals, then the causality may run from the dependent variable to the independent variable. Our main analysis mitigates the effect of such reverse causality since lags of affiliation instead of future or current affiliation defines the investment banking relationship. This means that $Affiliated_{ijt}$ takes a value of one when the broker underwrote an offering for the firm in any of the *prior* three calendar years.

Another method is to use an instrument for $Affiliated_{ijt}$. It is difficult to find an instrument for affiliation—as evident by the lack of guidance in the literature. I propose that whether the bank has an All-Star analyst is a possible instrument for affiliation. To be a valid instrument, the All-Star variable must meet two conditions. First, it should be correlated with affiliation. Loughran and Ritter (2004) and Cliff and Denis (2004) contend that firms are willing to pay to obtain analyst coverage from Star analysts. Thus it is conceivable that having a Star analyst in the research team will increase the chances of a bank winning the next mandate. The second criteria for a good instrument is that All-Star should not be correlated with relative optimism except through affiliation. I find, in my sample, little evidence that All Star is related to relative optimism. When $RelRec_{ijt}$ is regressed on an All-Star indicator variable plus a constant, the slope coefficient is statistically insignificant (-0.012, t=-1.19). When All-Star is added to the Table 3 specifications, three of specifications produce insignificantly positive All-Star coefficients, one is insignificantly negative, and one is significantly negative at the 10% level. That All-Star is unrelated to optimism is not unlikely. On one hand, if All-Star is a proxy for reputation, then that reputation may be a moderating force for bias. On the other hand, if optimism is detrimental to an analyst's reputation, a mediocre analyst may be less willing to use optimism to win deals for

its banks or to get management access. Therefore, the All-Star variable may serve as a reasonable instrument to confirm the main results.

Analyst rankings are collected from Institutional Investor Magazine and a firm-year-analyst observation has All-Star=1 when the analyst is ranked as an All-American (first, second, third team, or runner-up) in the prior October polls. The first stage of the instrumental variable estimation is a probit of *Affiliated* against the All-Star variable. The bank's industry market share of equity proceeds, and the log number of recommendations issued last year are added as controls since these are important determinants of deal winning. I confirm that the coefficient on the All-Star variable is significantly positive (0.14, z=7.03), i.e., that it does actually predict affiliation. The predicted probability of *Affiliated* is then used a second stage regression of the determinants of relative recommendations and reported in Table 5.

[Table 5 here]

Table 5 confirms our prior results. The coefficient on *HighDelta* interacted with the predicted affiliation probability is positive and significant. None of the interactions involving corporate governance proxies are statistically significant. Hence, one can view our overall evidence of greater affiliation biases for poorly governed firms as mixed.

5.3. Future returns for affiliated analyst-hyped versus non-hyped stocks

The strongest affiliation bias result is for high CEO delta firms and the market also does not seem to further discount this bias. I interpret this as the market not understanding that affiliated analysts are more biased for high CEO delta firms. However, one alternative argument is that affiliated analysts simply have more positive private information than unaffiliated analysts for such firms (McNichols and O'Brien (1997)), which is why the market does not further discount affiliated recommendations.

If the selection story were true—that affiliated analysts of high delta firms hype stocks because they have private information—a portfolio of high delta firms with affiliated analyst hype would outperform a similar portfolio of high delta firms without hype. Focusing on high delta firms, I form a calendar-time "hype portfolio" every quarter beginning 1994 and ending 2006 by buying these firms whenever the end-of-quarter relative recommendation of an affiliated analyst is positive. This is implemented for three years from the January after the offering year, corresponding to the years where *Affiliated*=1 in the regressions. I assume perfect foresight and start holding the stock at the beginning of the quarter that hype is determined. If the $RelRec_{ijt}$ is not positive, the stock enters the non-hyped portfolio. If the hype portfolio significantly outperforms the non-hype portfolio, this would support a self-selection explanation for why affiliated analysts hype high delta stocks.

[Table 6 here]

Table 6 reports the average returns of these calendar time portfolios. Panel A focus on high delta firms. We see that there is no evidence that the hyped portfolio outperforms the non-hyped portfolio in raw returns or risk-adjusted (Fama-French model alphas) returns. In fact, the hyped minus non-hyped portfolio returns are significantly negative, meaning that hyped stocks underperform non-hyped high delta firms. Similar findings surface whether we use equal-weighted or value-weighted portfolios. Hence I find no support for the self-selection story as an alternative explanation for the results. Panel B shows similar average returns for *PoorGovCGQ* firms. There is also no statistical difference in the hype minus non-hype portfolios for *PoorGovCGQ* firms.

5.4. Post-offering quid quo pro evidence

If firms are indeed urging affiliated analysts to issue over-optimistic advice, why would affiliated analysts play the game? And what benefit do firms gain in trying to get its stock hyped? While it is difficult to find direct evidence of qui quo pro, I offer some suggestive (i.e. "smoking gun") evidence, focusing particularly on high delta firms. First, we look at whether hyped high delta firms are more likely to issue equity again compared to non-hyped high delta firms. To make sure that the year of optimism precedes the future offerings, I define hype in the first year after the offering (if $RelRec_{ijt}$ is positive) and look at incidences of future equity offerings in the years [2,5] after the offering. Panel A of Table 7 reports the results. 9.8% of the hype group observations are associated with a future equity issue and only 9.2% of the non-hype group are associated with a future equity offering. The difference of 0.6% is not significant according to the two proportion *z*-test. However, when we look at the conditional probability that the hyping bank wins the next mandate compared to the non-hyping bank, we see that hyping banks win the next deal with 66.7% probability and non-hyping banks only with 29.9% probability. The evidence extends to both winning lead and co appointments. In fact, the probability of winning co-appointments is 35.7%, slightly higher than the probability of winning lead appointments (31.0%). That optimism can win co-appointments is consistent with Ljungqvist, Marston, and Wilhelm (2009). Overall, the results here suggest that banks that hype high delta firms' stock are more likely to be rewarded with future deal business.

Next, in Panel B, I investigate whether high delta firms benefit from the hype by examining the net sales of stock by firm CEOs after the equity offering. Here, it is necessary to define hype contemporaneously with the period where the net sales are measured since we want to determine if the hype is accompanied by stock sales. Using Thomson Financial's Insider

Filings, net stock sales is defined as the CEO's stock sales (trancode S) minus purchases (P), expressed in number of shares, scaled by the CRSP prior-December total shares outstanding. The hyped group are those observations where the average $RelRec_{ijt}$ is positive for the three years after the offering (corresponds to the period where *Affiliated*=1 in the regressions). Observations in the hyped group are associated with CEO net sales in the year 1 of the offering of 0.818%. The non-hyped group has significantly lower net sales of 0.647% of shares outstanding. This difference is likewise manifested when looking net sales for three years after the offering instead of one year. This implies that high delta CEOs are off-loading shares on average to benefit from analyst hype.

[Table 7 here]

5.5. Other firm characteristics

These two characteristics are by no means exhaustive dimensions to consider the cross-section of the affiliation bias. I considered two other characteristics in unreported tests. Loughran and Ritter (2004) argue that analyst coverage became more important in recent years because of higher valuations. Since there is little ambiguity in valuing assets in place, analyst research has the most impact on the valuation of growth opportunities. In other words, the potential dollar boost in valuations as a result of biased research would be larger and more attractive for growth firms than for other firms. Or James and Karceski (2006), who find that affiliated analysts are more willing to issue optimistic advice for poorly performing IPOs. This could be due to a prior commitment between the bank and the firm for the bank to provide booster shots in the face of poor aftermarket performance. This could mean that the analyst affiliation bias is worse for firms that have poor stock market performance. I investigate these two dimensions in robustness tests and find little consistent evidence that the affiliation bias varies along these two dimensions.

6. Conclusion

This paper investigates whether the analyst affiliation bias differs across firms. I conjecture that firms with certain characteristics are more likely to pressure affiliated analysts to issue over-optimistic recommendations. I find mixed evidence that the analyst affiliation bias is stronger for poorly governed firms and robust evidence that it is stronger for high CEO delta firms. Even in the post-regulation period where new rules supposedly mitigate analyst conflicts high CEO delta firms continue to exhibit larger analyst affiliation biases. These results suggest that regulators have only succeeded partially in mitigating analyst conflicts of interests. For a subgroup of firms, analysts affiliated with the equity issuing firm continue to exhibit excessive optimism. Altogether, this study posits that the analyst affiliation bias is not unequivocal across all firms. Regulators that focus their action on curtailing the behavior of investment banks may have neglected the possibility that firms also have a corresponding role in pressuring banks to issue over-optimistic research.

Interestingly, the market appears also not to be fully cognizant of such biases since investors' event reaction to rating changes does not appropriately discount the affiliated recommendations that contain more bias, even though affiliated analyst hype is associated with lower future returns. For high delta firms, I also find suggestive evidence of qui quo pro in that hyping banks are associated with more future deal business. CEOs with high delta also sell more stock when their firm's stock is hyped by affiliated analysts.

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Table 1
Annual descriptive statistics of firm-analyst-year sample

The panel of 336,279 firm-analyst-year relative recommendation observations are summarized annually. A firm-year relative recommendation is the analyst's average quarter-end outstanding rating minus the outstanding median consensus rating. Data are from the I/B/E/S U.S. Detail File 1994-2006. I reverse ratings (5 for strong buy and 1 for sell, etc.) so that higher ratings correspond to greater optimism. Panel A's firm variables are computed by first collapsing the firm-analyst-year observations into unique firm-years and then taking the average within each year. The percentage of shares held by institutions is from Thomson 13f, CEO Delta is computed from Execucomp as in Core and Guay (2002), G-index of Gompers et al. (2003) is from IRRC, industry CGQ index is from ISS, and the last December market cap is from CRSP. I exclude firms with SIC codes 6000-6999 (financials) and 4949-4999 (regulated utilities), and share codes that are non-ordinaries (codes not 10 or 11). Panel B reports analyst variables, computed by collapsing observations into unique analyst-years and taking the average within each year. Panel C reports the percentage of firm-analyst-year observations that are nonzero for the binary variables. *IssuedEquity*=1 when the firm issued equity in the prior three calendar years, *Affiliated*=1 when the analyst's bank was the lead- or co-manager for an equity issue in the prior three years. *HighDelta*=1 when the firm is in the highest tercile based on the prior year CEO Delta, *PoorGovGindex*=1 when the G-index≥10, *PoorGovCGQ*=1 when industry CGQ score for that year is in the lowest tercile. The last row of Panel C reports % observations with no data to compute the binary variables (the CGQ proportion is based on available years of 2001-2006).

			Panel A: Firm Variables						
Year	# Firm-analyst-years	Avg relative rec	# Unique firms	Avg # analysts per firm	Avg % held by Institutions	Avg CEO Delta ($m)	Avg G-Index	Avg CGQ index	Avg mktcap ($m)
1994	17,143	0.048	2,059	7.97	46.01%	0.59	9.44	.	1,594
1995	21,658	0.055	2,408	7.99	46.16%	0.54	9.36	.	1,410
1996	21,150	0.038	2,644	7.08	44.73%	0.66	9.35	.	1,772
1997	24,157	0.025	2,939	7.06	46.10%	0.84	9.41	.	1,945
1998	27,058	0.022	3,052	7.49	46.55%	1.15	8.67	.	2,410
1999	29,874	0.013	3,128	8.13	45.78%	1.48	8.71	.	3,126
2000	30,620	-0.020	3,031	8.62	46.74%	2.15	8.97	.	4,392
2001	28,912	0.025	2,583	9.45	51.10%	1.60	8.98	51.92	4,219
2002	27,967	0.042	2,337	10.00	57.27%	1.44	8.94	58.32	4,082
2003	27,000	0.103	2,223	10.22	62.06%	1.11	8.96	60.62	3,267
2004	26,891	0.073	2,281	9.87	67.27%	1.25	9.05	64.19	4,198
2005	27,099	0.065	2,399	9.32	67.95%	1.25	9.08	63.11	4,400
2006	26,750	0.071	2,422	9.03	70.51%	1.44	9.03	63.12	4,454
All Years	336,279	0.042	6,157	8.56	53.02%	1.21	9.04	60.92	3,173

	Panel B: Analyst Variables				Panel C: Binary Variables				
Year	# Unique brokers	# Unique analysts	Avg # qtrs experience	Avg # firms per analyst	% *IssuedEquity*	% *Affiliated*	% Gindex Poor Gov	% CGQ Poor Gov	% High CEO Delta
1994	140	1,693	2.05	10.47	31.81%	8.32%	41.48%	na	40.13%
1995	164	2,045	3.93	10.05	28.17%	7.53%	40.77%	na	42.40%
1996	191	2,231	4.89	9.00	31.39%	9.56%	39.60%	na	43.72%
1997	233	2,640	5.25	8.41	34.05%	11.12%	40.12%	na	44.81%
1998	254	3,074	5.67	8.00	36.12%	11.74%	29.34%	na	45.41%
1999	267	3,317	6.16	8.00	29.10%	9.20%	29.47%	na	45.79%
2000	251	3,502	6.68	7.64	31.76%	10.44%	30.99%	na	47.74%
2001	247	3,592	6.99	6.96	36.64%	12.19%	31.16%	32.44%	49.59%
2002	234	3,521	7.34	7.06	34.78%	11.29%	25.99%	31.15%	50.32%
2003	259	3,222	7.73	7.62	26.31%	8.27%	26.77%	23.49%	49.55%
2004	290	3,005	8.15	7.90	20.84%	6.77%	27.24%	23.87%	48.89%
2005	305	3,109	8.38	7.53	21.95%	7.62%	26.86%	22.25%	46.99%
2006	299	3,130	8.66	7.38	24.41%	8.96%	25.63%	22.77%	45.22%
All Years	577	8,365	6.59	7.96	29.77%	9.54%	30.70%	25.44%	46.55%
# Missing observations					0.00%	0.00%	38.79%	16.36%	39.22%

Table 2
Sample of equity issuances

The sample of equity issuances is from Thomson's SDC New Issues database. Lead- or co-managers of the deal are hand-matched to I/B/E/S broker names from the recommendations broker translation file. The listed deals are those which are represented in the sample in Table 1. These are deals which can be matched to I/B/E/S through either SDC's issuer cusip or the issuer's ultimate parent cusip, and have valid CRSP and Compustat data. The year of offering is the year of the filing date or the year of the issue date if the filing date is missing. Although the sample period in Table 1 is 1994-2006, the deals here go back to 1991 because analyst affiliation is tracked up to three years after the offering.

Year	Total Deals	Secondary offerings	IPOs	Unique firms	Unique brokers	Secondary offerings				IPOs			
						# Lead mgrs per	# Co-mgrs per deal	Mean deal proceeds ($m)	Mean gross spread ($m)	# Lead mgrs per	# Co-mgrs per deal	Mean deal proceeds ($m)	Mean gross spread ($m)
1991	358	199	159	353	69	1.02	1.52	$99.09	$4.48	1.01	1.33	$58.07	$3.97
1992	390	194	196	386	86	1.01	1.76	$99.07	$3.95	1.02	1.37	$68.52	$4.47
1993	617	305	312	608	108	1.01	1.78	$104.77	$4.41	1.01	1.49	$84.29	$5.36
1994	391	199	192	384	104	1.02	1.81	$98.71	$4.00	1.01	1.34	$52.00	$3.48
1995	673	365	308	664	116	1.03	2.06	$94.12	$4.39	1.03	1.71	$65.25	$4.58
1996	886	433	453	863	133	1.05	2.37	$115.27	$5.41	1.02	1.84	$89.33	$5.47
1997	676	376	300	669	118	1.05	2.52	$112.43	$5.35	1.02	1.84	$69.45	$4.98
1998	432	260	172	422	99	1.12	3.07	$169.32	$7.20	1.15	3.23	$302.21	$14.79
1999	711	332	379	668	102	1.35	3.72	$261.47	$10.96	1.16	3.02	$158.39	$9.41
2000	541	297	244	509	89	1.38	3.19	$268.64	$11.90	1.30	3.03	$345.55	$16.08
2001	262	225	37	246	88	1.74	3.30	$255.62	$11.05	1.60	3.59	$876.71	$30.47
2002	221	181	40	212	89	1.75	3.49	$214.80	$9.07	1.67	4.47	$154.82	$11.35
2003	286	233	53	271	92	1.63	3.57	$224.65	$8.14	2.26	3.07	$274.20	$16.03
2004	361	256	105	342	97	1.89	3.12	$182.26	$7.49	1.96	4.27	$275.48	$14.92
2005	310	186	124	300	98	1.95	3.86	$301.86	$10.70	2.27	3.96	$284.26	$18.04
2006	215	155	60	210	90	1.84	3.29	$240.31	$9.83	2.18	3.32	$206.69	$13.74
Overall	7329	4196	3133	5413	235	1.36	2.88	$183.49	$7.70	1.30	2.55	$175.42	$9.73

Table 3
Determinants of analysts' relative optimism

This is the panel regression of firm-year-analyst observations from 1994-2006. The OLS dependent variable is the analyst's average relative recommendation, which is the average outstanding quarter-end recommendation minus the median quarter-end consensus recommendation. Recommendations are from the I/B/E/S U.S. Detail File, and I code ratings using 5 for strong buy and 1 for sell, etc., so that higher ratings correspond to more optimism. *Affiliated*=1 when the analyst's employer was a lead- or co-manager for the firm's stock offering in years [-3,-1]. Broker mergers are accounted for by allowing successor banks to inherit the issuance relationships of predecessor banks. Equity issuance data are from SDC's New Issues database. *Post2000*=1 for the years after 2000 to capture the impact of the post-regulation period. The G-index from IRRC is used here as a proxy for poor corporate governance with *PoorGovGindex*=1 for firms with G-index≥10. The other governance proxy is the industry CGQ index from ISS with *PoorGovCGQ*=1 when the firm is in the lowest tercile of the CGQ index. Specifications involving *PoorGovCGQ* are for the period 2001-2006 since CGQ data is not available for the 1994-2000 period. *IssuedEquity*=1 when the firm issued equity (IPO or SEO) in years [-3,-1]. *HighDelta*=1 when the firm's prior year CEO delta (computed as in Core and Guay (2002) from data in Execucomp) is in the highest tercile of firms with CEO delta data. Institutional ownership is the proportion of the firm's shares that are held by institutions as computed from Thomson's 13f database. Other control variables are the average # of analysts that make up the quarter-end consensus, analyst experience defined as the number of quarters since the analyst started issuing recommendations for the firm, the number of firms covered by the analyst, the December-end firm market cap, B/M ratio (computed as in Fama and French (2006)), and the average prior quarter holding period return in a typical quarter for that year. Bank mkt share is computed as the fraction of all equity proceeds that the bank accounted for as a lead manager in the firm's Fama-French 30-industry group in the prior year, and bank # recs in industry is the prior year number of recommendations issued by the bank in the covered firm's industry. Settlement-affected bank=1 from 2003 onwards if the bank is one of the ten banks fined in the Global Analysts Research Settlement of 2003. Analyst fixed effects are included. The intercept term is not reported. *, **, and *** indicate statistical significance (based on standard errors clustered by analyst) at the 10%, 5%, and 1% levels respectively with absolute value of t-statistics in parentheses.

Table 3 (Cont'd)

Independent Variables	Dependent Variable: Relative recommendations				
	(1)	(2)	(3)	(4)	(5)
Affiliated	0.066***	0.048***	0.031	0.042***	0.003
	(4.56)	(5.11)	(1.54)	(3.12)	(0.12)
Post2000×Affiliated	-0.014	0.002	-0.003		
	(0.75)	(0.05)	(0.14)		
PoorGovGindex	0.010*		0.006		0.009
	(1.75)		(0.98)		(0.93)
PoorGovGindex×Affiliated	0.011		0.029		0.047
	(0.51)		(1.22)		(1.39)
HighDelta		-0.028***	-0.027***		-0.014
		(4.72)	(4.41)		(1.48)
HighDelta×Affiliated		0.047***	0.064***		0.078***
		(2.94)	(3.18)		(2.65)
PoorGovCGQ				-0.018***	-0.029***
				(2.77)	(3.10)
PoorGovCGQ×Affiliated				0.029*	0.074**
				(1.69)	(2.20)
IssuedEquity	-0.025***	-0.038***	-0.031***	-0.018**	-0.025**
	(3.85)	(5.92)	(4.25)	(2.24)	(2.29)
Institutional ownership	-0.034**	-0.038**	-0.041**	0.035**	0.012
	(2.02)	(2.22)	(2.10)	(2.04)	(0.41)
Ln(market cap)	-0.009***	-0.001	-0.005	0.010***	0.004
	(3.03)	(0.31)	(1.43)	(3.08)	(0.78)
Ln(B/M)	0.034***	0.038***	0.034***	0.038***	0.028***
	(8.75)	(9.58)	(7.74)	(9.02)	(4.49)
Ln(# analysts)	0.088***	0.087***	0.088***	0.095***	0.095***
	(12.90)	(12.97)	(11.75)	(12.18)	(8.74)
Avg prior qtr return	-0.025	-0.049**	-0.046*	0.063**	0.105**
	(1.12)	(2.35)	(1.81)	(2.02)	(2.18)
Bank mkt share	-0.166***	-0.157***	-0.153***	0.019	0.010
	(3.19)	(3.05)	(2.80)	(0.26)	(0.12)
Ln(bank's # recs in industry)	-0.012***	-0.011***	-0.011***	-0.014***	-0.005
	(4.64)	(4.60)	(3.95)	(4.32)	(1.18)
Ln(# firms covered)	-0.039***	-0.036***	-0.039***	-0.030***	-0.037***
	(5.14)	(4.91)	(4.89)	(3.10)	(2.95)
Ln(analyst experience)	0.013***	0.015***	0.012***	0.016***	0.014***
	(5.27)	(5.85)	(4.29)	(5.35)	(3.57)
Settlement-affected bank	-0.097***	-0.094***	-0.095***	-0.069***	-0.067***
	(7.56)	(7.16)	(7.01)	(5.63)	(4.74)
# observations	195247	195197	167110	131124	79942
Adj R-sq	0.1631	0.1602	0.1705	0.1729	0.2047
Analyst fixed effects	Yes	Yes	Yes	Yes	Yes
Clustered by analyst	Yes	Yes	Yes	Yes	Yes

Table 4
Determinants of average recommendation event CAR

This is the panel regression of the determinants of recommendation event CARs in the pre- and post- regulation periods. The dependent variable is the event CAR averaged for all the recommendations issued by the analyst for the covered firm in that year. The CAR uses a benchmark return from a characteristics-matched portfolio as in DGTW (1997). Recommendations are from the I/B/E/S U.S. Detail File, and I code ratings using 5 for strong buy and 1 for sell, etc., so that higher ratings correspond to more optimism. Average rec-change is the average rec-change of that firm-analyst-year observation, and average rec level is the average of the ratings issued by that firm-analyst-year,, Other variable definitions are in Table 3. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels respectively with absolute value of t-statistics in parentheses. Specifications involving *PoorGovCGQ* are for the period 2001-2006 since CGQ data is not available for the 1994-2000 period.

Independent Variables	Dependent Variable: Avg event CAR of rec-change				
	(1)	(2)	(3)	(4)	(5)
Avg rec-change	1.542***	1.534***	1.484***	1.961***	1.523***
	(35.09)	(34.88)	(33.07)	(34.89)	(28.52)
Avg rec level	0.157***	0.125***	0.121***	0.171***	0.089
	(3.59)	(2.87)	(2.68)	(3.13)	(1.64)
Affiliated	-1.227***	-1.250***	-1.405***	-0.726***	-0.791**
	(4.22)	(4.80)	(4.20)	(4.07)	(1.99)
Post2000×Affiliated	1.081***	1.100***	1.289***		
	(3.70)	(3.65)	(4.13)		
PoorGovGindex		0.083*	0.047		-0.057
		(1.94)	(1.05)		(0.98)
PoorGovGindex×Affiliated		-0.075	0.270		0.219
		(0.24)	(1.03)		(0.62)
HighDelta	-0.292***		-0.276***		-0.273***
	(5.41)		(4.91)		(3.69)
HighDelta×Affiliated	-0.121		0.024		0.648
	(0.43)		(0.08)		(1.54)
PoorGovCGQ				-0.010	0.102
				(0.16)	(1.49)
PoorGovCGQ×Affiliated				-0.688*	-0.393
				(1.86)	(0.75)
IssuedEquity	-0.361***	-0.319***	-0.305***	-0.299***	-0.038
	(5.41)	(4.62)	(4.31)	(3.60)	(0.41)
Institutional ownership	0.791***	0.110	0.424**	0.006	-0.493*
	(4.38)	(0.60)	(2.05)	(0.03)	(1.87)
Ln(market cap)	-0.036	-0.098***	-0.034	-0.071**	-0.087**
	(1.47)	(3.97)	(1.33)	(2.39)	(2.57)
Ln(B/M)	0.387***	0.412***	0.413***	0.393***	0.292***
	(9.20)	(10.36)	(9.64)	(8.81)	(5.54)
Ln(# analysts)	0.157**	0.166**	0.197***	0.277***	0.379***
	(2.29)	(2.40)	(2.71)	(3.62)	(4.46)
Avg prior qtr return	9.978***	9.807***	9.684***	11.453***	8.657***
	(23.73)	(22.20)	(20.92)	(18.00)	(13.42)
Bank mkt share	0.338	0.357	0.420	1.403**	0.701
	(0.70)	(0.68)	(0.84)	(2.10)	(1.09)
Ln(bank's # recs in industry)	-0.069***	-0.046**	-0.039	-0.031	0.015
	(2.90)	(2.00)	(1.63)	(1.00)	(0.49)
Ln(# firms covered)	0.397***	0.387***	0.379***	0.340***	0.301***
	(5.82)	(5.60)	(5.49)	(3.60)	(3.03)
Ln(analyst experience)	0.145***	0.149***	0.133***	0.159***	0.140***
	(7.03)	(7.32)	(6.29)	(6.60)	(5.75)
Settlement-affected bank	0.059	0.032	-0.004	-0.434***	-0.421***
	(0.53)	(0.29)	(0.04)	(3.25)	(3.18)
# observations	102706	102437	88148	73106	44924
Adj R-sq	0.1527	0.1510	0.1574	0.1840	0.1919
Analyst F.E & clus. by analyst	Yes	Yes	Yes	Yes	Yes

Table 5
Determinants of relative optimism: Star analyst as instrument for affiliation

Coefficients from the second stage of a two-stage estimation for the determinants of relative analyst optimism are reported. The first stage (unreported) is a probit model for the determinants of affiliation ($Affiliated_{ijt}$=1) with star analyst as the independent variable. *Affiliated*=1 when the analyst's bank was the lead- or co-manager for the firm's offering in the prior three years. Star analyst=1 when the analyst was ranked as an All-American (1st, 2nd, 3rd, or runner-up) in the prior October's *Institutional Investor* polls. The bank's industry market share of equity offering proceeds in the last three years, and the number of recommendations (recs) issued by the bank last year are added as control variables. The predicted probability of *Affiliated* is then used in the second stage which estimates the determinants of relative recs $RelRec_{ijt}$. $RelRec_{ijt}$ is the average outstanding quarter-end rec minus the median quarter-end consensus rec. Recs are from the I/B/E/S U.S. Detail File, and I code ratings using 5 for strong buy and 1 for sell, etc., so that higher ratings correspond to more optimism. Observations with less than three analysts per firm are excluded. Other variable definitions are in Table 3. Each column represents the estimation on a subsample of firm characteristics. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels respectively with signed *t*-statistics in parentheses. Estimations include analyst fixed effects and standard errors are clustered by analyst. The intercept term is not reported. Specifications involving *PoorGovCGQ* are for the period 2001-2006 since CGQ data is not available for the 1994-2000 period.

Independent variables	Dependent Variable: Relative recommendations			
	(1)	(2)	(3)	(4)
$\widehat{\text{Affiliated}}$	0.435*	0.742***	0.386	0.355
	(1.94)	(3.28)	(1.42)	(1.11)
Issued equity	-0.022***	-0.012**	-0.003	-0.011
	(3.85)	(1.97)	(0.45)	(1.07)
PoorGovGindex		0.014		0.004
		(1.63)		(0.26)
PoorGovGindex×$\widehat{\text{Affiliated}}$		-0.061		0.124
		(0.57)		(0.78)
HighDelta	-0.043***			-0.027**
	(5.16)			(2.03)
HighDelta×$\widehat{\text{Affiliated}}$	0.291***			0.274*
	(3.01)			(1.92)
PoorGovCGQ			-0.016	-0.035**
			(1.57)	(2.37)
PoorGovCGQ×$\widehat{\text{Affiliated}}$			0.003	0.181
			(0.02)	(1.05)
Institutional ownership	-0.037**	-0.029*	0.034**	0.015
	(2.15)	(1.70)	(2.00)	(0.52)
Ln(market cap)	0.000	-0.007**	0.011***	0.005
	(0.16)	(2.34)	(3.31)	(1.16)
Ln(B/M)	0.037***	0.035***	0.038***	0.028***
	(9.53)	(8.90)	(8.81)	(4.41)
Ln(# analysts)	0.084***	0.085***	0.093***	0.094***
	(12.42)	(12.38)	(11.84)	(8.53)
Avg prior qtr return	-0.057***	-0.032	0.054*	0.088*
	(2.62)	(1.37)	(1.65)	(1.76)
Bank mkt share	-0.471***	-0.563***	-0.214	-0.319*
	(3.49)	(4.14)	(1.27)	(1.74)
Ln(bank's # recs in industry)	-0.015***	-0.017***	-0.016***	-0.010
	(3.49)	(3.97)	(3.18)	(1.52)
Ln(# firms covered)	-0.034***	-0.039***	-0.027***	-0.036***
	(4.58)	(5.08)	(2.77)	(2.84)
Ln(analyst experience)	0.015***	0.014***	0.017***	0.015***
	(6.08)	(5.33)	(5.66)	(3.95)
Settlement-affected bank	-0.095***	-0.097***	-0.063***	-0.062***
	(7.16)	(7.55)	(5.16)	(4.39)
# observations	183125	183149	123758	75547
Adj R-sq	0.1584	0.1613	0.1728	0.2048

Table 6
Calendar-time portfolio returns of high delta and poor governance firms with and without affiliated analyst bias

This table reports calendar-time returns of high CEO delta firms (Panel A) and poor governance CGQ firms (Panel B) with or without post-offering affiliated analyst hype. This tests the selection explanation for affiliated analyst hype—i.e. affiliated analysts hype high delta firms' stock because they have private information about future stock price performance. At the start of each quarter, we form two portfolios, one that long stocks which have affiliated analyst hype, and another that longs stock without affiliated analyst bias. A firm-analyst-quarter has (does not have) affiliated analyst hype if its end of quarter $RelRec_{ijt}$ is positive (non-positive). These are perfect foresight, i.e. not tradable, portfolios since they require the knowledge of end-quarter $RelRec_{ijt}$ at the start of the quarter. The portfolios hold stocks starting January after the offering and tracks quarterly changes in affiliated analyst hype for 36 months. This corresponds to the years where $Affiliated_{ijt}$=1 in the earlier regressions. High delta firms are above median firms based on prior year CEO delta computed as in Core and Guay (2002). Reported returns are in percent and the monthly calendar time portfolios are from 1994-2006 for high delta firms and 2001-2006 for poor governance CGQ firms. R_p-R_f is the time-series average of portfolio returns in excess of the risk-free rate. Portfolio average returns are either equal-weighted or value-weighted. Coefficient estimates from regressing excess returns on the Fama and French (1993) three-factor model are also reported. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels respectively with the associated signed *t*-statistics in parentheses.

Portfolio	Rp-Rf	Coefficient estimates from Fama-French model				Adj R2	# Mths	Avg # stocks/mth
		Intercept	Rm-Rf	SMB	HML			
Panel A: High delta firms								
Equal-weighted returns								
Not Hyped	1.068*	0.208	1.423***	0.232***	-0.194**	0.863	156	249.7
	(1.84)	(0.92)	(7.04)	(3.70)	(-2.42)			
Hyped	0.893	0.070	1.368***	0.250***	-0.206**	0.858	156	186.7
	(1.58)	(0.31)	(6.17)	(4.01)	(-2.58)			
Hyped-Not	-0.174**	-0.138*	-0.054***	0.018	-0.012	0.037	156	436.5
	(-2.42)	(-1.86)	(-2.74)	(0.86)	(-0.46)			
Value-weighted returns								
Not Hyped	0.561	0.129	1.131***	-0.132***	-0.582***	0.888	156	249.7
	(1.10)	(0.72)	(2.74)	(-2.64)	(-9.09)			
Hyped	0.303	-0.179	1.133***	-0.128**	-0.474***	0.866	156	186.7
	(0.61)	(-0.94)	(2.63)	(-2.43)	(-7.02)			
Hyped-Not	-0.258**	-0.307***	0.001	0.004	0.108***	0.058	156	436.5
	(-2.38)	(-2.78)	(0.05)	(0.13)	(2.73)			
Panel B: Poor CGQ governance firms								
Equal-weighted returns								
Not Hyped	0.439	-0.286	1.768***	0.937***	-0.451***	0.886	72	421.8
	(0.38)	(-0.66)	(6.87)	(6.53)	(-2.94)			
Hyped	0.359	-0.338	1.771***	0.891***	-0.448***	0.898	72	287.8
	(0.31)	(-0.84)	(7.40)	(6.67)	(-3.14)			
Hyped-Not	-0.080	-0.052	0.003	-0.046	0.003	-0.023	72	709.7
	(-0.72)	(-0.42)	(0.09)	(-1.12)	(0.06)			
Value-weighted returns								
Not Hyped	-0.444	-0.533*	1.383***	0.220**	-0.505***	0.888	72	421.8
	(-0.52)	(-1.71)	(4.75)	(2.13)	(-4.58)			
Hyped	-0.598	-0.467	1.315***	0.150	-0.691***	0.862	72	287.8
	(-0.69)	(-1.33)	(3.48)	(1.29)	(-5.55)			
Hyped-Not	-0.154	0.065	-0.067*	-0.070	-0.185***	0.169	72	709.7
	(-1.15)	(0.49)	(-1.95)	(-1.58)	(-3.93)			

Table 7
Bank winning next mandate and firm CEO selling stock: Comparing high delta firms with and without affiliated analyst bias

This table reports possible benefits to banks for hyping the stock of high CEO delta firms and the possible benefits to CEOs in taking advantage of this hype. Panel A reports the probability that a high CEO delta firm issues equity again within from years [2,5] after the offering year. Banks that hype in Panel A are those whose analyst's $Relrec_{ijt}$ is positive in the first year after the offering, i.e., not overlapping with the period where the next offering is measured. Panel B reports the average CEO net stock sales after a stock offering. With data from Thomson Financial's Insider Filings, net stock sales is the CEO's stock sales (trancode S) minus purchases (P), expressed in number of shares, scaled by the CRSP prior-December total shares outstanding. The averages reported are based on analyst-firm-year observations. Banks that hype in Panel B are those whose average $Relrec_{ijt}$ is positive in the three years after the offering, i.e., contemporaneous to the time period where insider trading is measured. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels respectively with the associated signed *t*-statistics (two proportion *z*-statistic for Panel A) in parentheses.

Panel A: Bank winning next mandate

Portfolio group	Probability that firm has another offering in next 4 yrs	Conditional on firm having another offering		
		Bank wins mandate again	Bank wins as lead mgr	Bank wins as co mgr
Banks that hype	9.8%	66.7%	31.0%	35.7%
Banks that don't hype	9.2%	36.7%	16.3%	20.4%
Hype minus Don't	0.6%	29.9%	14.6%	15.3%
	(0.98)	(2.82)***	(3.01)***	(2.65)***

Panel B: Net sales minus purchases of stock by firm CEO (as percentage of shares outstanding)

Portfolio group	Year 1 after offering	Year 1 to 3 after offering
Banks that hyped firm stock	0.818***	0.599***
	(9.90)	(7.89)
Banks that don't hype	0.647***	0.429***
	(10.64)	(8.15)
Hype minus Don't	0.172**	0.170***
	(2.41)	(2.66)

Figure 1
Affiliated analyst bias around equity issue

Only firms-years associated with an equity issue around a [-3,5] year window are included. An analyst's relative recommendation (rec) is his quarter-end outstanding rec minus the median quarter-end consensus rec. The analyst's quarter-end relative recs are averaged for the firm-year. The graphs plot for the typical firm-year, the average affiliated analyst bias, which is the relative rec of affiliated analysts minus the average relative rec of unaffiliated analysts. Affiliated analysts are those whose banks were lead- or co-managers in the IPO or SEO. Red broken lines denote firms with the identified firm characteristic hypothesized to affect affiliated analyst optimism and black lines denote all other firms. The top left graph identifies poorly governed firms proxied by a Gompers et al. (2003) G-index score ≥10. The top right graph identifies firms whose CEOs whose compensation have high delta (highest tercile of CEO delta) where delta is computed as in Core and Guay (2002). The bottommost graph identifies firms in the lowest tercile of industry CGQ index score (where data is available only from 2001 onwards). Recs are from the I/B/E/S U.S. Detail File From 1994-2006, ratings are reversed (i.e., 5 for strong buy and 1 for sell, etc.) so that higher ratings indicate more optimism.