Corporate Governance, Analyst Following, and Firm Behavior[1]

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Abstract

Since Jensen and Meckling (1976), the finance literature has studied the role of institutions, boards, the takeover market and CEO compensation for mitigating agency costs. This paper examines the potential role of analysts and media as additional monitoring mechanisms. While some evidence suggests the presence of agency conflicts in analyst coverage, I argue that analysts serve as an important incentive device and help align the manager with shareholders. By making stock prices more informative, analyst coverage imposes discipline on misbehaving managers and rewards value creation, improving CEO incentives to undertake more optimal investment and financial policies. Further, I ask whether analysts act as complements or substitutes to corporate governance in their effects of firm performance and behavior. If analyst coverage aligns the manager with shareholders, the marginal benefit of more analyst following in presence of other governance mechanisms should be lower, and vice versa. This results in a partial substitution between analyst coverage and other forms of monitoring.

Empirically, after accounting for endogeneity, the effect of analyst following on firm performance and behavior is similar to the effect of corporate governance. Greater intensity and quality of analyst following contributes to higher profits, lower degree of diversification, M&A activity, and investment, lower leverage and more equity issuance, higher cash holdings, and less earnings management. Further, analyst following serves as a partial substitute for institutions and boards in its effects on performance and firm policies. Finally, business press coverage is a significant and positive determinant of firm performance, investment, cash and earnings management, serving as an additional monitoring device.

I. Introduction

Internal and external mechanisms of corporate governance traditionally include institutions, blockholders, boards of directors and the takeover market. Since they have an effect on performance and firm behavior, much attention has been paid to the nature of the effects and the relation between these governance mechanisms. This research proposes that securities analysts and media can serve as additional monitoring devices and act as alternatives to governance. I explore the effects of analyst coverage on firm behavior and shed light on the interaction between these and traditional governance mechanisms. I further consider whether media scrutiny contributes to better managerial incentives and affect firm policies.

Two theoretical perspectives are relevant to the study of analyst following and its influence on firm behavior. From the first perspective, analysts have an incentive to produce accurate forecasts to build their reputations, which influences their compensation. To achieve this goal, they obtain private signals and scrutinize public firm disclosures, thereby lowering information asymmetry and improving the informativeness of stock prices. A significant literature documents that analyst following leads to more earnings information reflected in stock prices and lower information asymmetry (e.g. Francis and Soffer (1997); Hong et al. (2000); Ayers and Freeman (2003); Piotroski, and Roulstone (2004)). Lang, Lins and Miller (2003) find that analysts are less likely to follow firms with poor corporate governance, and that the value improvement of analyst coverage is highest in countries with weak investor rights protections.

A second group of papers considers possible behavioral biases in analyst following, including herding, anti-herding, investment banking affiliation and optimism (e.g. Hong et al. (2000); O'Brien, McNichols, and Lin (2005); Clarke and Subramanian (2006); Bernhardt, Campello, and Kutsoati (2006) etc.). These papers have important implications for measuring the

quality of analyst following and the direction of the measurement bias. However, this work does not tell us whether high quality of analyst scrutiny can act as an additional monitoring device and whether it affects firm behavior once these biases are reflected in the measures of analyst coverage quality.

The issue at the core of this paper is the interaction between analyst following and internal as well as external mechanisms of corporate governance. The information role of analyst coverage can enhance the monitoring and discipline of traditional governance mechanisms. For example, if analysts collect and disseminate information about the quality of firm policies, the ability of institutions and board to discipline misbehavior and reward better policies is improved. In this way, information acquisition by analysts lowers the cost of monitoring and improves discipline by traditional governance mechanisms. This argument implies that the two are complements.

However, I argue that by making stock prices more informative, analyst coverage imposes a cost on value destroying managers and rewards better behavior through its effect on executive compensation and cost of capital. The ability of analysts to monitor the manager and the market discipline stemming from information revelation in earnings forecasts are independent of presence of institutions, board independence or the takeover market. Since both corporate governance and analyst following help improve incentives, the marginal impact of each monitoring device on managerial incentives and behavior is lower in presence of others. This argument predicts a substitution effect between analysts and governance. I put these hypotheses to test and find a substitution relation between corporate governance and analyst coverage in their firm behavior effects.

Finally, I ask whether media coverage affects firm behavior and compare it to the role

played by corporate governance mechanisms and analysts. Although media recognition, similarly to star CEO awards, may entrench managers, it is possible that media acts as an additional mechanism of scrutiny and reputation building. Indeed, emerging evidence finds a positive influence of media on market reactions to earnings announcements, reversal of governance violations executive compensation (Dyck and Zingales (2003); Core, Guay, and Larcker (2005); Dyck, Zingales, and Volchkova (2006); Dyck, Morse, and Zingales (2006)).

This paper contributes to existing work in several ways. First, in addition to analyzing the effect of analyst following on performance, I consider the influence of analyst coverage on firm policies. In this way, I am able to determine the sources of the positive firm value and performance impact of analyst coverage in terms of real firm decisions, such as investment, capital structure and cash policies. Second, I do not consider analyst coverage in a vacuum. I address a critical issue: is analyst following a substitute or complement to corporate governance? Third, I ask whether media following improves managerial incentives for firm value maximization and has an effect on firm behavior. I address these issues using multiple measurement and methodological improvements to account for behavioral biases in analyst coverage and endogeneity.

I find that analyst following helps improve profit margins and beneficially affects firm behavior. First, analyst coverage positively influences capital structure decisions of the firm and is associated with lower debt issuance, higher equity issuance and overall lower leverage. Second, analyst following lowers earnings management. Although my hypothesis assumes an information role of analysts, the results go beyond the pure information effect (I control for various measures of information asymmetry and media, which existing work shows produces and disseminates information). In particular, analyst monitoring is associated with lower volume

of acquisitions, less diversification, lower capital expenditure and R&D expenses, controlling for investment opportunities, financing constraints etc. Furthermore, I find that firms with higher analyst coverage retain more cash as they do not direct it to finance excessive investment projects and do not need to pre-commit through dividends and payout (John and Knyazeva (2006)). Importantly, I find that the benefits to firm performance and the firm behavior effects are nonlinear and concave in analyst following. This is intuitive since there is a limit to incentive alignment, improvement in incentives and information production.

Comparing the influence of analyst coverage on behavior with that of corporate governance, I find that the direction of the effect is similar. Further, mechanisms of internal corporate governance, namely blockholdings, institutional ownership, and board monitoring, have a more significant effect than the takeover market in most of my empirical regressions. This is not surprising as I am already including an alternative form of market scrutiny and discipline – analyst following. Importantly, I find a highly significant substitution effect between analyst coverage and institutional and board monitoring. This supports my hypothesis that analyst coverage serves as an alternative mechanism of monitoring the manager.

Finally, I consider the effects of press coverage on performance and firm behavior. Although the effects are weaker than those observed for analyst following, I document a positive association between media coverage and operating performance. In addition, media following induces greater caution in investment decisions, lower debt issuance, higher equity issuance, lower leverage and larger retention of cash. However, I see little significance of media coverage for the volume of acquisitions or earnings management.

The remainder of the paper is organized as follows. Section II presents hypotheses and empirical predictions. Section III discusses data, measurement, methodological issues and

treatment of endeavored endogeneity. Section IV discusses empirical findings. Section V discusses hypotheses and presents results on the effect of media. Section VI considers alternative explanations and tests robustness of the results. The final section concludes.

II. Literature and Hypotheses

A. Related Work

Most existing work on analyst following focuses on the information production aspect of analyst behavior and addresses the issue of analyst contribution to the production and dissemination of information. Some papers simply assume that analysts produce information and use analyst following as a measure of information asymmetry (e.g., Brennan and Subrahmanyam (1995); Krishnaswami and Subramaniam (1999)). This conjecture is supported by recent evidence that analysts produce and convey information to the market, including the findings that stock prices reflect more earnings-related information earlier (Lys and Sohn (1990); Francis and Soffer (1997); Hong et al. (2000); Elgers et al. (2001); Ayers and Freeman (2003); Piotroski, and Roulstone (2004)). At the same time, recent work has grown to question the information contribution of analysts and provides mixed evidence on several analyst behavioral biases: herding, anti-herding, optimism, brokerage conflict of interest and collusion with managers[2].

The effects of analyst following on firm performance and policies remains largely understudied. Recently, an international study has shown that analysts have a positive effect on firm value (Lang, Lins, and Miller (2004)). However, the paper does not consider the effects of analysts on managerial incentives or firm policies, and, instead, focuses on their information role. Further, the paper limits itself to the analysis of analyst following and family ownership and

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[2] Some examples are Stickel (1990), Trueman (1994), Lin and McNichols (1998), Michaely and Womack (1999), Cooper, Day, and Lewis (2000), Hong, Kubik, and Solomon (2000), Welch (2000), Lim (2001), Hong and Kubik (2003), O'Brien, McNichols, and Lin (2005), Jackson (2005), Chen and Jiang (2006), Clarke and Subramanian (2006), Chen, Francis, and Jiang (2006), Bernhardt, Campello, and Kutsoati (2006) etc.

does not take into account other governance mechanisms. Several recent papers (Chang, Dasgupta, and Hillary (2006); Yu (2006)) consider the effects of analysts on capital structure and earnings management. However, these studies consider only information asymmetry implications of analyst following and do not address the interaction of analyst following with various governance mechanisms.

This paper is also more generally related to a literature on the effect of corporate governance on firm performance and behavior, as well as the interaction of the various governance mechanisms. Most empirical evidence suggests that better governance contributes to higher profit margins and better policies (less investment, better performing M&A, (Gompers, Ishii, and Metrick (2001); Brown and Caylor (2006); Bebchuk, Cohen, and Ferrell (2005)). Related work on governance mechanisms focuses on interaction between internal and external mechanisms of governance (Gillan, Hartzell, and Starks (2003); Cremers and Nair (2005)). However, the latest research calls into question the causality of the link between governance and performance (Brick, Palia, and Wang (2005); Kim, Hubbard, and Palia (2004); Lehn, Patro and Zhao (2005); Core, Guay, and Rusticus (2006)).

Finally, some emerging literature has considered the possibility that media has an effect on the firm, particularly, on announcement effects, executive compensation and reversals of governance violations (Dyck and Zingales (2003); Core, Guay, and Larcker (2005); Dyck, Morse, and Zingales (2006); Dyck, Zingales, and Volchkova (2006), Nguyen-Dang (2006)). To the best of my knowledge, there has been no systematic analysis of the effects of media coverage on firm policies and its role compared with internal, external corporate governance and analyst following.

B. Hypotheses

In this paper, I study the effect of analyst following on firm policies and the inter-relation of internal and external corporate governance with analyst following.

First, consider the effect of analyst following on performance and firm behavior. I argue that analyst following affects managerial incentives and, thereby, influences firm performance and policies. The first component of the analyst following effect on incentives and behavior stems from analysts' role in information acquisition and monitoring. Since firm policies are relevant for future performance and part of analyst compensation relies on forecast precision, analysts have an incentive to analyze the effect of these policies on performance, particularly earnings. As a result, analysts elicit private signals and scrutinize firm disclosures in order to provide accurate earnings forecasts.

At the same time, analyst following provides for managerial discipline through two mechanisms. First, analyst following provides market discipline of value-destroying managers as exit by investors drives down shareholder price similar to the exit effect in Admati and Pfleiderer (2006). This leads to a decline in the value of executive compensation both in terms of bonuses and changes in the value of the executive's stock options and owned stock. It also raises the cost of capital to the firm, limiting the ability of the executive to finance 'pet' projects. Hence, analyst following acts as a magnifying lens of CEO behavior, allowing less informed shareholders to impose discipline on value destroying managers.

Having discussed how analyst coverage may affect managerial incentives, I turn to the hypothesis on the interaction between corporate governance and analyst following in their effects on performance and firm behavior. Following existing work, I distinguish between internal governance mechanisms (institutions, blockholders and board), and external governance

(takeover market monitoring). Ultimately, I seek an answer to the following question: does analyst following serve as a substitute or complement to internal and external governance mechanisms?

I hypothesize that analyst following acts as a substitute to governance. Similar to institutions, boards and takeover raiders, analysts elicit private information and scrutinize managerial behavior. While the extent and nature of the generated private information may differ, the direction of the effect is the same: all these mechanisms produce and disseminate private information. Further, both analyst coverage and governance incur managerial discipline on value destroying managers, albeit through different mechanisms. While analyst discipline stems from the stock market, internal governance mechanisms punish misbehaving managers through turnover and compensation, while acquirers take over the company and dismiss the manager.

Since analyst coverage improves incentives for better behavior and firm value maximization through mechanisms independent of governance, I conjecture that analysts serve as an alternative to traditional internal governance. In presence of good governance, the value contribution of analyst following is limited since the manager is already performing close to optimality. The effect should also hold in reverse: in presence of better incentives from analyst scrutiny, the contribution of corporate governance mechanisms to value is lower.

However, existing work could suggest a complementarity between governance and analyst coverage. Some empirical studies document a mutually reinforcing link among various governance mechanisms. If analyst coverage also serves as a monitoring device, a similar argument would apply. For instance, additional information and stock price discipline of analysts lower the costs of board monitoring and enhance their ability to discipline the manager.

Ultimately, presence of a link between analysts and governance and its nature are empirical questions, which I investigate using the setup below.

III. Empirical Setup

In order to test my hypotheses, I regress a set of dependent variables against analyst coverage, governance, interaction terms and controls. I estimate the effect of analyst following, internal and external governance, and their interaction on firm policies:

$$Y_{i,t} = INT_{i,t} + EXT_{i,t} + AF_{i,t} + INT_{i,t} \times AF_{i,t} + EXT_{i,t} \times AF_{i,t} + C_{i,t} + \varepsilon_{i,t},$$

where Y is a dependent variable, capturing profitability, investment, cash and other firm behaviors; INT is a measure of internal governance; EXT is a measure of external governance; AF is analyst following and C are control variables. [I recognize the issues of endogeneity and account for the possible biases with instrumental variables, fixed effects and simultaneous equations models. I will discuss these issues in detail later in the paper.]

A. Data and Measurement

Performance and Firm Behavior

The measurement of dependent variables relies on Compustat and CRSP data. I follow the conventional literature in measuring performance through accounting returns computed as earnings before interest and taxes over total assets above the industry median, obtained from the Compustat database. In terms of firm policies, capital expenditure, capital expenditure plus R&D and acquisitions serve as the measures of firm investment.

Next, I consider capital structure decisions of the firm. First, my analyst following hypothesis suggests that analysts produce and disseminate information about firm behavior and managerial policies. If information asymmetry is lower, firms are more likely to use equity and not debt to cover the financing deficit. Hence, I consider three key components of capital

structure: net equity issuance, net debt issuance (computed as in Frank and Goyal 2003) and leverage (long-term debt over total assets).

Another aspect of firm behavior examined in this paper is cash policies and earnings management. I define cash as total cash holdings of the firm over total assets. Finally, I use cash-flow-based definition of accruals as a measure of earnings management. Collins and Hribar (2002) define accruals as income before extraordinary items minus the difference between net cash flow from operating activities and extraordinary items, discontinued operations. These values are then divided by lagged total assets. This variable reflects the differences between earnings and operating cash flows, at the same time accounting for the non-articulation bias [stemming from using consecutive year balance sheet indicators around non-articulation dates (Bergstresser and Philippon (2005))]. Interpretation of this variable is straightforward as greater values of accruals indicate more earnings management.

Governance, Analyst Following

The quality of analyst following is measured using both the number of analysts following the firm and an index of analyst following quality. First, the number of analysts following the firm captures the level of market scrutiny of firm performance and managerial behavior. Since analysts are rewarded partly for forecast precision (Lim (2001)), they have an incentive to collect private information and provide accurate forecasts regarding future firm earnings. As a result, greater analyst following would reflect the level of market following of the firm and managerial actions.

Second, I construct an aggregate index of analyst following, based on industry quartile rankings of firms along several dimensions. The first dimension is the intensity of market scrutiny (number of analysts). To account for the various behavioral biases, I include the second

component of the index – forecast error, defined as the difference between the consensus one-year ahead forecast of firm earnings and actual earnings per share. Since earnings forecasts are an important tool of information dissemination and reflect analysts' private information, higher forecast error would indicate poorer quality of analyst following. To account for the uncertainty in the generated information, I also use a measure of the difference in opinions – analyst agreement, defined as the ratio of the highest number of forecasts predicting an increase (decline) in one-year-ahead earnings forecasts and the total number of analyst forecasts.

Further, I gather data on median busyness of analysts covering a given firm. Similar to busy directors on the board, busy analysts are able to spend less effort and time on monitoring an individual firm in their coverage portfolio. As a result, busier analysts would elicit and generate less private information and rely instead on more publicly available signals about firm quality. The fourth component of the index is, therefore, the total number of stocks covered by a median analyst following the firm.

However, if busyness reflects coverage of multiple firms in the same industry, it contributes to industry specific experience and can enhance the quality of analyst monitoring. In light of this reasoning, I use two proxies for industry knowledge as index components: percent of analysts covering the firm with at least one other firm in their portfolio from the same industry and the number of other firms in the same industry covered by the firm's median analyst.

As a result, I obtain a firm-level measure of analyst coverage based on industry rankings of firms along the above dimensions. This aggregate index equally weighs firm rank in the industry along the several dimensions of analyst following: intensity of scrutiny (number of analysts), difference in opinions and uncertainty (agreement, forecast error), effort (busyness) and experience (industry experience). Using this variable, I account for the various behavioral

biases in analyst coverage and more adequately capture the extent of information acquisition and monitoring conducted by analysts.

I use several alternative measures of corporate governance. First, I include a measure of total ownership by institutions. Existing work suggests that institutions play an active role in monitoring managerial behavior and enhancing performance. Apart from information production, institutional shareholders can exit the company's stock, sending a signal of value destroying behavior to the market, or influence CEO compensation and turnover. Empirical work on activist institutions suggests that pension funds are the most aggressive shareholder activists (Guercio and Hawkins (1999)), while mutual funds are not as active at monitoring. Hence, I do not take into account ownership by banks, insurance companies, investment companies, managers and advisors.

Second, I use maximum ownership share of institutional blockholders. This variable reflects incentives of all institutions, which may have some information role without separating pension funds. Further, since this measure considers only stakes of institutional blockholders, I ensure that these owners have an incentive to use their superior information technology to monitor the firm.

Finally, I create an aggregate firm-level index of internal corporate governance. Similar to the analyst following index, this aggregate governance measure is constructed by ranking firms along several equally weighted dimensions. The first two dimensions are my earlier measures of governance: institutional ownership (as defined) and maximum stake of an institutional blockholder. Further, the index incorporates the importance of board monitoring for incentives and firm value maximization (Yermack (1996)). Hence, the third and fourth dimensions reflect board independence (% of independent directors on the board) and board size.

After ranking firms into four quartiles along each of the four governance dimensions by industry year, I add up the rankings to generate an index (from 1 to 14), with higher values indicating better governance quality. [Due to low correlations between index components, factor analysis was not a suitable mechanism of determining component weights].

To capture external corporate governance, I use an index of state anti-takeover laws (the G state subindex, see Gompers, Ishii and Metrick (2003)). Potential raiders screen firms to identify target companies, the value of which would increase after the takeover. The ultimate measure of discipline on a value destroying managers is a takeover, which typically leads to the firing of the CEO and future performance improvements. Existing work (Gompers, Ishii, and Metrick (2003); Bebchuk and Cohen (2004); Cremers and Nair (2005) etc.) examines the influence of anti-takeover provisions on performance and firm behavior. Since they make a takeover costlier and harder to execute, anti-takeover provisions serve as a means of entrenching the firm's management. However, introduction of firm-level anti-takeover provisions would be based on managers' private information of the manager in anticipation of future poor performance and potential takeover threats. This introduces endogeneity bias to estimation. To address this concern, I use state anti-takeover laws, which also serve to protect companies from takeovers but are not determined by firms' management.

Other Factors

In addition, I control for executive compensation, which affects managerial behavior and, ultimately firm performance[3]. As control variables, I include CEO stock ownership and the Black-Scholes value of CEO stock option grants adjusted by market value of the firm reported in Execucomp. However, I do recognize the endogeneity of incentive alignment and firm

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[3] For ex., see Morck, Shleifer, and Vishny (1988), Jensen and Murphy (1990a,b); Core and Larcker (2002); Hadlock and Lumer (1997); Huson, Parrino, and Starks (2001); Grinstein and Hribar (2004)

performance. When I exclude the measures, my results remain consistent and significant (not shown in tables).

I also account for information asymmetry and investment opportunities by including the market-to-book ratio, intangibles over total assets and annual sales growth as controls. Since financing constraint can affect the ability to invest in high quality investment projects, cash retention decisions and firm performance, I include asset size and excess cash holdings. Excess cash holdings are computed as the residual in the regression of cash holdings on logged assets, market to book ratios, bond ratings, indexes of anti-takeover provisions, cash flow and year dummies (Dittmar and Mahrt-Smith (2005)).

B. Methodology

Several important methodological issues need to be addressed with respect to the analysis of the effects of corporate governance, analyst following and firm performance and policies.

First, the corporate finance literature recognizes endogeneity of corporate governance and performance (e.g., Hermalin and Weisbach (2003); Kim, Hubbard, and Palia (2004); Brick, Palia, and Wang (2005); Chidambaran, Palia, and Zheng (2006)). If worse performance leads to changes in corporate governance (firing of the CEO, restructuring of the board, possible mergers), I would observe a negative or insignificant link between corporate governance and performance. However, institutional shareholders may self-select participation depending on firm performance and elect to acquire stakes of more profitable firms. Then, I would observe a positive link between corporate governance and performance, misattributed to the positive role of institutional monitoring on managerial behavior. If endogeneity of corporate governance is not addressed, regression estimation may produce misleading results.

Second, analyst following is endogenous to firm performance. In addition to the

hypothesized effect of analyst following on firm performance and policies, firm performance and policies influence the level and extent of analyst following. Larger firms which significantly underperform or outperform the industry attract more attention from investors and induce greater coverage by analysts (positive link, but driven by reverse causality). Similarly, firms undertaking multiple large (and, controlling for investment opportunities, excessive) acquisitions are likely to have more analyst coverage.

Finally, the existing literature on analyst following finds that forecasts are influenced by the quality of governance and entrenched managers (O'Brien and Bhushan (1990), Hutton (2003); Lang, Lins, and Miller (2004); Jensen and Murphy (2004)). At the same time, institutional shareholdings and board scrutiny are also affected by, among other factors, the presence and quality of analyst monitoring. In this case, the quality of corporate governance is endogenous to analyst following, hence, standard econometric methodology does not allow me to separate the two effects.

My empirical methodology addresses these concerns. In the regression analysis below, I combine fixed effects with instrumental variable estimation. I recognize the problem of finding instruments that help explain corporate governance levels and yet are unrelated to performance and behavior; nevertheless, I am able to identify several measures that fit the relevance and excludability criteria. In the first set of tests, I instrument for corporate governance and use industry-level proxies for analyst coverage in addition to fixed effects. Next, I instrument directly for both governance and analyst coverage with fixed effects. Finally, I use two stage least squares, which allows me to regress analysts and governance on a set of exogenous variables, performance and each other. In this way, I am able to directly consider presence of reverse causality in the first stage results.

The first instrument is the corporate governance premium, defined as the difference in market-to-book ratio of firms with high and low quality of corporate governance (based on industry median quality anti-takeover provisions, institutional ownership and the internal governance index as defined above). The corporate governance premium captures the market demand for corporate governance, which evokes shareholder pressure for corporate governance reform if it is particularly important for firm valuation (Knyazeva (2006)). At the same time, it does not have direct links to the bottom line or firm behaviors apart from firm governance (since the premium reflects the value the market places on better governance).

Next, I use industry median state anti-takeover provisions index as an instrument for corporate governance. Since the index captures provisions that are state-level, a manager cannot directly change this index (aside from determining the state of incorporation). Further, when measured at an industry median level, it captures the overall industry scrutiny by the takeover markets and the industry median governance quality. At the same time, it should have little effect on individual firm investment, cost cutting, payout decisions or firm performance.

One of the instruments for analyst coverage is analyst coverage premium. Similarly to the premium for corporate governance, this measure captures market demand for analyst monitoring. I compute the premium as the difference in market values of firms above and below the industry median quality of analyst coverage (measured as the number of analysts and analyst following index).

Industry level analyst scrutiny affects the likelihood of firm level analyst following. In particular, analyst information improves with industry-specific experience and knowledge of related firms, increasing the likelihood that a given analyst would cover several firms in the industry. Even if an analyst does not cover a firm in the same industry, low information

asymmetry in the industry lowers the cost of information acquisition by analysts for other firms in the industry. Hence, I include two measures of analyst following (number of analysts and quartile-based index of forecast error, agreement and coverage) on the industry level.

I also take into account firm geographical location in New York, Illinois and California (binary variable). Malloy 2005 finds geography to be an important determinant of the precision of analyst scrutiny and a significant determinant of underwriter bias. In particular, the paper finds that geographically closer analysts produce more accurate forecasts, have a greater impact on stock prices and exhibit lower bias stemming from underwriter affiliation. At the same time, geography is unrelated to firm policies or operating performance, fulfilling the excludability criterion.

In addition, regulation Fair Disclosure, introduced in 2000, forbade selective disclosure of information to analysts. Existing work (Barron, Kim, Lim, and Stevens 1998; Heflin, Subramanyam and Zhang 2003) has found that introduction of regulation FD has not lead to more precise forecasts and lower uncertainty. As a result of the reforms, analysts began acquiring more idiosyncratic information to replace the lost private information previously obtained from managers. To compensate the higher effort, the coverage of firms with many analysts has decreased, while coverage of less followed firms has risen since the introduction of regulation FD. Thus, existing literature has documented a highly significant impact of regulation FD on quality of analyst coverage. In light of this, I account for time effects to incorporate this exogenous variation in analyst coverage.

Further, large firms are more likely to be covered by analysts due to the higher number of investors eliciting information and the greater visibility of the stock. In order to capture this effect, I use firm rank by asset size in the industry as one of the instruments. Since the largest

firms in their respective industries are more likely to be followed by analysts and be followed more closely, I expect a positive link between this instrument and analyst coverage.

Finally, I combine instrumental variables with fixed effects estimation to account for the nature of my panel dataset and firm effects. Empirically, corporate governance measures are highly robust and change little over time, particularly for anti-takeover defenses, board structure and the presence of blockholders on the board. Hence, including firm effects in my specification addresses endogeneity of governance and performance.

Apart from fixed effects instrumental variables estimation, I also present results of simultaneous equations estimation. This allows identification strategy allows me to test not only the relation between governance and analysts in their firm behavior effects, but also the self-selection of analyst coverage and governance mechanisms. Another advantage of this approach is that I do not need to rely on excludability and relevance of instruments. The results of this estimation serve as an additional robustness check on my main methodology and provide further support of my findings.

In addition, I use state anti-takeover provisions index instead of the firm-level index of external governance (Gompers, Ishii and Metrick (2003)). Since this index is measured on the level of state laws and the sample includes many years after the firm is created and chooses the state of incorporation, this ensures exogeneity of my external governance measure. However, since firms choose their state of incorporation when they enter into the sample, some endogeneity is still possible. To control for it, one of my tables also uses an endogeneity correction for the state anti-takeover law index.

C. Sample

Since dependent variables are measures of firm performance and policies, I construct the sample

based on firms in the Compustat and CRSP universes. I merge the two with the IRRC Governance, IRRC Directors and Thomson Financial databases (to obtain governance measures) and extract analyst following measures from IBES summary and IBES detail databases. Finally, I use the Execucomp database to obtain measures of executive compensation, in particular, CEO ownership and Black-Scholes value of executive option grants. I exclude utilities, financials and firm with assets below USD20mln.

I obtain a sample of 1379 firms and 8928 observations from 1992 through 2004, with varying data availability for my dependent variables. In terms of governance levels, a median firm in the sample has an 18.9% institutional ownership stake and is incorporated in a state with one state takeover law. With respect to analyst following, a representative firm in my sample (in IBES database) has between 10 and 11 analysts, 77% of which agree on the direction of the next year earnings. Importantly, I see little variation in analyst agreement in my sample (12% difference between the top and bottom quartile). Further, univariate test results suggest insignificant relation between analyst agreement and governance (not shown in tables). These indicate that agreement is less likely indicative of herding (which would be more common for more obscure firms with poor governance, worse disclosure and earnings manipulations) and appears to be a good measure of market scrutiny. My hand collected sample of press coverage indicates that a representative firm is covered by 3 publications in top business newspapers and journals a year, with the top quartile indicator at 10 news reports per year. The distribution of press coverage is right-tailed, which motivates my use of logged press coverage in regression analysis.

**** TABLE 1 here ****

IV. Results

A. Performance Effects

I proceed to test my hypotheses regarding analyst following, internal and external corporate governance mechanisms on performance. Using two-step instrumental variables estimation, I use accounting returns to gauge performance improvements from analyst scrutiny and governance. Empirically, I find a strongly significant association between corporate governance and performance, as shown in Table 2. Columns I and II present results of ROA regressions with institutional ownership and institutional blockholdings as measures of internal corporate governance. Contrary to recent work on endogeneity, internal corporate governance is associated with strongly higher returns on assets after I control for endogeneity. The main effects suggest that a 10% increase in the value of institutional ownership is associated with a 1.7% rise in industry adjusted ROA. Importantly, controlling for corporate governance, analyst following exhibits strong significance. The number of analysts tracking the firm also appears to be strongly significant with 10 additional analysts bringing an increase in industry-adjusted accounting returns of up to 3.0%. While it is possible that analysts are more likely to follow larger, more successful firms, I have accounted for potential endogeneity by using industry-level analyst scrutiny to measure analyst coverage. Hence, I interpret these results to suggest direct causality between analyst scrutiny and firm performance. At the same time, the index of takeover provisions does not enter significantly. This lends credibility to my initial conjecture that not only is analyst following an efficient mechanism of market monitoring, it may operate more strongly than the takeover market.

Finally, the negative sign and significance of the interaction term suggests that analyst following lowers the strongly positive effect of internal corporate governance and vice versa,

with the estimate of -0.017. This supports my hypothesis that analyst following acts as another governance mechanism and partially mitigates the positive effects of internal governance. Notably, this effect appears entirely insignificant for takeover market monitoring.

The estimates of the effect of CEO stock ownership are inconsistent for the specifications of accounting returns regressions. Partial evidence suggests that higher stock ownership and options value are associated with poorer firm performance, indicating managerial entrenchment. However, significance is not robust in various specifications. If I include the square term of the stock ownership, no significance is obtained (not shown in tables). The signs on control variables are consistent with findings in existing literature. Higher investment opportunities, measured by market-to-book ratio and better past performance, are associated with higher accounting returns. At the same time, lack of financing constraint (higher excess cash) is associated with better firm performance.

**** TABLE 2 here ****

B. Firm Behavior Effects

Investment

Next, I turn to the analysis of firm policies to examine further the mechanisms through which analyst following and governance may affect performance. The free cash flow and empire building hypotheses propose that firms with more severe agency conflicts would invest in suboptimal projects to satisfy managerial preferences for higher compensation and running large firms (Lang, Stulz, and Walkling (1991); Blanchard, Lopez-de-Silanes, and Shleifer (1994); Morck, Shleifer, and Vishny (1990); Harford (1999); Stein (2003) etc.). Most recently, Gompers, Ishii, and Metrick (2003) document that firms with more anti-takeover provisions exhibit greater investment.

In line with this literature, I find that stronger corporate governance is negatively associated with corporate investment and volume of acquisitions. Table 3 presents the results of regression estimation, using capital expenditure, capital expenditure plus R&D, acquisitions and diversification as dependent variables. As shown in columns 2 and 3 of the table, 10% increase in ownership by institutions (excluding mutual funds, banks or investment advisors) is associated with a 1.2% lower capital expenditure plus R&D and a 1.5% lower volume of acquisitions. The analyst following effect is also negative and strongly significant, while monitoring by the takeover market is, once again, insignificant. Importantly, I confirm my earlier finding on the substitution between analyst coverage and governance with the estimates on the interaction term. In particular, the negative effect of institutional ownership on investment is partially lowered by presence of analyst following.

Control variables have expected signs. Investment opportunities measured through the market-to-book ratio appear to be significant predictors of firm investment, with estimates of 0.29 and 0.35 and significance levels of 1%. Excess cash holdings enter with a negative sign. Since they represent actual cash holdings, rather than cash flow, the estimate is consistent with existing work – managers, who prefer to hold excess cash, do not invest their free cash flow and use it to create a cash cushion. I also find a positive correlation between past and present capital expenditure.

Since I am accounting for firm-level investment opportunities, financial constraints and other firm-level determinants of investment, I argue that larger investment is indicative of overinvestment. As an additional test, I split the sample into subsamples by market-to-book ratios and free cash flow (not shown in tables). I find that the negative effect of governance and analyst coverage on investment stems mainly from firms with low investment opportunities and

high free cash flow. Further, existing work finds that most acquisitions are value destroying. Since the negative effect of institutional and market monitoring is also present for volume of acquisitions, this lends further support to my interpretation of the results.

Finally, existing work documents a significant diversification discount. To aid in interpretation of results on investment, I use a measure of diversification (the total number of business segments in industries other than the overall firm's 3-digit SIC code industry) as the dependent variable. The results of regression estimation are presented in the last column of Table 3. Consistent with earlier results on investment and acquisitions, I find that governance and analyst coverage have a significant and negative effect on diversification, and that they act as substitutes in their effect.

**** TABLE 3 here ****

Capital Structure

The effect of corporate governance on capital structure choices has been actively debated in existing theoretical and empirical work. Entrenched managers may avoid debt due to the increased level of scrutiny from debt-holders, which lowers the manager's private benefits (Berger, Ofek, and Yermack (1997)). Alternatively, less entrenched managers may have better disclosure and less earnings management, providing for less information asymmetry and adverse selection and lowering the cost of equity. While both governance effects are possible, I am most interested in the influence of analyst following on firm behavior. Since analyst following lowers the information asymmetry, the pecking order theory suggests greater preference towards equity compared with debt issuance.

I use similar methodology to Frank and Goyal (2003), examining net debt and equity issuance using their set of controls. Results of the estimation appear in Table 4. Accounting for

endogeneity, I find that the quality corporate governance is associated with lower leverage, less debt and higher equity issues. In short, better monitored managers prefer less debt and more equity, which is consistent with better governed firms revealing more accurate information. This induces less information asymmetry, meaning more equity according to the pecking order theory. The effect appears particularly significant for internal corporate governance, while state anti-takeover laws do not enter significantly.

Importantly, market scrutiny from analysts also has a negative effect on debt issuance and a positive effect on net equity issuance. This is in line with my hypothesis that analysts gather private information and disseminate it to the market, decreasing information asymmetry and allowing firms to raise more equity. The effect is highly statistically and economically significant. For instance, a 10% increase in institutional ownership is associated with a 3.3% higher net equity issuance, 3.4% lower net debt issuance and a 2.6% lower leverage. As before, I observe partial mitigation of these effects when both corporate governance and market scrutiny by analysts are present. The interaction terms are significant for internal governance, suggesting some degree of substitution between the internal and external monitoring (stemming from similarity in information production and discipline functions).

Other variables enter with expected signs. The financing deficit has a positive effect on debt and equity issuance, indicating that a greater need for capital is partially offset by the use of external funds. Changes in the market-to-book ratio are negatively associated with debt and positively associated with equity issuance. Net debt issuance is also mean reverting, consistent with partial adjustment model and suggesting that firms raising large amounts of capital in the debt markets are less likely to borrow in the future. I find that market-to-book ratios are associated with lower leverage.

**** TABLE 4 here ****

Cash Policies

One of the important issues, highly related to effects on performance and investment, is the influence of analyst following and governance on cash policies of the firm. Existing work has not resolved the issue of governance effects on cash, as empirical studies yield contradictory results. Good governance should raise the level of cash holdings, since better managers do not direct it into suboptimal investments (empire building) and do not use it as a pre-commitment device (Harford, Mansi, and Maxwell (2004); John and Knyazeva (2006); Dittmar and Mahrt-Smith (2006)). However, cash can serve to entrench a manager and be used for increased compensation, perquisite consumption and returns, while investors are unable to force managers to disgorge excess cash. This argument would imply a negative association between governance and cash holdings (Dittmar, Mahrt-Smith, and Servaes (2003)).

My earlier evidence on the effect of governance and analysts on cash flows and investment lends credibility to the first hypothesis. The prediction is, thus, that higher levels of institutional, board and analyst scrutiny is associated with higher cash holdings. As shown in Table 5, both institutional ownership and board independence are associated with more cash holdings: a 10% increase in institutional ownership is associated with a 2.3% increase in cash holdings over total assets. At the same time, analyst following is positively and significantly related to cash holdings, with an additional analyst covering the firm associated with a rise in reserves worth 0.5% of total assets. An important consideration when interpreting of this coefficient on analyst following is the lack of firms not covered by analysts from this analysis. Hence, I am not considering firms without any analyst coverage and the result does not give an estimate of the effect of introduction of the first analyst (the effect would likely be stronger and

larger in magnitude). A partial substitution effect between institutional and analyst monitoring also appears, consistent with earlier results.

Earnings Management

Finally, I turn to information policies of the firm and the effect of managerial monitoring on earnings management. The key prediction is that, similar to governance, analyst scrutiny should lower earnings management. Consistent with existing evidence on information production and behavior effects of analyst following (most recently, Yu (2006)), I find analyst coverage is associated with lower accruals. Moreover, I find once again that institutional monitoring acts as a substitute to analyst scrutiny, while takeover market monitoring has a limited effect.

**** TABLE 5 here ****

So far, I find a strong beneficial effect of analyst following on profitability, firm investment, capital structure decisions, cash and earnings management. I investigate whether the benefits of analyst following are nonlinear in analyst coverage. Since the distribution of analysts is right-tailed, it is intuitive to use the logged number of analysts as a measure of analyst scrutiny. Estimation results are presented in Table 6. The main results continue hold: both internal governance and analyst coverage are associated with better performance and policies, and the two mechanisms appear to be substitutes in their effects.

**** TABLE 6 here ****

As an additional test to the nonlinearity hypothesis, I add a square term for analyst following. In all the key regressions - cash flows, acquisitions, equity and debt issuance, cash and earnings management - I find that analyst coverage effect is non-linear. In particular, the sign on the squared term in the regressions is opposite to the effect of analyst coverage itself, though the magnitudes are much smaller. For example, in the ROA regression, the coefficient on

the number of analysts is 0.79, while the squared term enters at 1% significance level with a coefficient of -0.016.

In sum, I find evidence consistent with the hypothesis that by producing information, analysts help improve incentives and align the manager with shareholders. Since analyst scrutiny acts as a monitoring device, analysts act as a partial substitute to internal governance in their effects on performance and policies. Finally, the benefits of analyst following are nonlinear (concave) in analyst coverage.

V. The Role of Media

A competing explanation of my results is the attention span hypothesis. According to this view, analyst following is not associated with information acquisition, but proxies for visibility of firms. If stocks covered by media and analysts are acquired more often by uninformed investors, then my results could capture the newsworthiness of certain firms. In this case, inclusion of a measure of media coverage would eliminate the analyst following effect. However, I argue that media coverage serves as an additional, if weaker, check on the manager and should help improve firm behavior.

In this section, I investigate whether media directly influences managerial behavior. Recent evidence suggests that media has an information production role, with media spin affecting earnings announcement effects and investigative journalists serving as whistleblowers on corporate fraud (Dyck and Zingales (2003); Dyck, Morse, and Zingales (2006), Bushee et al. (2006)). Further, media undoubtedly plays a role in the dissemination of private information to uninformed and unsophisticated investors. Although exit from such investors may or may not directly affect stock prices, media coverage has another mechanism of affecting firm behavior: reputation. I hypothesize that reputation becomes a more significant component in managerial

utility maximization in presence of media scrutiny, with bad publicity lowering the value of private benefits. One of the most recent studies in the area suggests that media may also play a role in reversing governance violations (Dyck, Zingales, and Volchkova (2006)).

In order to test the media monitoring hypothesis, I hand collect a dataset on media coverage for my sample. From Factiva, I record the number of articles published in the Wall Street Journal, Financial Times, Business Week, New York Times, and Economist that mention the firm name in the title or lead paragraph for a given year. Out of these, I exclude republished news, articles devoted to sports, obituaries and calendars, as they are unrelated to firm performance or managerial actions. Hence, I obtain a proxy for the intensity of press coverage of a given firm, which reflects the media scrutiny of the manager and firm performance.

Two important empirical considerations need to be taken into account. First, this measure does not distinguish between positive and negative news coverage, considering only the overall intensity of media monitoring. Second, there is apparent endogeneity of media coverage to firm performance, executive compensation and governance quality. In particular, Core, Guay, and Larcker (2005) document that negative media coverage occurs more often with respect to executives with large excess cash compensation and option exercises. Further, the paper finds that negative publicity on executive compensation is more common for larger and badly performing firms. Press coverage is expected to be greater for poorly performing firms, which would lead to a negative relation between press coverage and performance / behaviors.

To account for endogeneity, I use the instrumental variables approach with clustered errors. In addition to earlier instruments for governance and analyst coverage, I use geography as an instrument of media coverage since it affects the probability of publication in a major news media, but not firm behavior. Further, I use relative firm rank in the industry based on asset size.

Finally, I introduce a press coverage premium, computed as the difference in asset weighted market-to-book ratios of firms with press coverage above and below the industry year median (similar to the governance premiums).

In results shown in Table 7, I find that accounting for press coverage does not eliminate the effect of analyst following on profitability or firm policies. In particular, analyst coverage remains significantly associated with higher industry adjusted ROA, lower capital expenditure and acquisitions, higher equity issuance and lower debt issuance, more cash and lower accruals. Importantly, the partial substitution effect between institutions and analyst coverage remains as well. Hence, I am confident that the analyst following effect is due to information acquisition and not self-selection into newsworthy firms heavily covered by media.

Moreover, the results suggest that media may serve as an additional monitoring mechanism with respect to profitability and managerial behavior. First, press coverage enters significantly in cash flow regressions, with the coefficient estimate of 4.4% on the natural log of press coverage in industry-adjusted ROA regressions. Second, in addition to performance effects, the investment policy of the firm appears partly affected by press coverage. In particular, higher media scrutiny is associated with lower investment, which lends support to my hypothesis and suggests monitoring and reputation effects of media. Similar to governance and analyst following, media scrutiny is also associated with higher equity issuance, lower debt issuance and higher cash holdings.

Interestingly, the effect of press coverage on acquisitions is insignificant, which is likely driven by the type of measurement I use. In particular, acquisitions attract a large amount of press coverage regardless of deal quality or managerial entrenchment. Similarly, earnings announcements are regularly covered by the press regardless of the extent of earnings

management by the firm. Since my variable is simply the number of articles, it would not capture positive or negative nature of the story, and instead, reflects the overall amount of coverage.

**** TABLE 7 here ****

VI. Alternative Explanations and Robustness

I use the measure of institutional shareholder ownership to capture superior monitoring and aggressive shareholder activism. However, this interpretation relies on the assumption that institutions have incentives to monitor. A potential concern with this measure is the inclusion of institutional holders of small ownership stakes, who have low incentives or high costs of monitoring (Shleifer and Vishny (1986); Cremers and Nair (2005)). In order to account for this, I use an alternative variable for internal governance, defined as the maximum share of institutional blockholder with an ownership stake in excess of 5%. The data are obtained from Thomson Financial. As evident from Table 6, the paper's key findings are unaffected by using this variable in place of percentage of institutional ownership. Although the significance on blockholders is somewhat weaker, it retains consistent signs and enters most of the regressions significantly together with analyst following and the blockholder – analyst interactions.

A potential measurement issue related to the quality of analyst following is the precision of forecasts of affiliated analysts and potential collusion with managers of target firms. Conflicts of interest and collusion in analyst following have been targeted by introduction of regulation Fair Disclosure (FD), which limited the ability of managers to selectively disclose information to various analysts. Since this paper uses regulation FD as one of the important instruments of analyst following, part of the issue is already addressed.

However, recent work documents that affiliated analysts are optimistically biased in their forecasts when faced with investment banking pressure and are faster to upgrade, but slower to

downgrade (O'Brien, McNichols, and Lin (2005)). At the same time, Ljunqvist et al. (2005) find that while analyst forecasts are positively associated with brokerage and investment banking conflicts of interest, they are negatively related with the presence of institutions. Since institutions affect performance ratings of analysts, the paper argues that presence of institutional investors enhances quality of analyst following (implying a complementarity, not substitution between the two). Most recently, Cowen, Groysberg, and Healy (2006) find that analyst recommendations are less optimistic if research is funded through underwriting and trading due to analyst reputation concerns.

In order to account for potential conflicts of interest involved in public placements, I conduct a robustness check on the sample excluding any observations with public equity or debt issues in the same or following year using data obtained from SDC. As shown in Table VIII, the results are consistent with earlier findings. I also exclude observations for years with positive acquisition activity, as analyst coverage may be capturing a temporary increase in forecasts due to the significant of an M&A deal. Once again, the findings (not shown in tables) are unaffected. **** TABLE 8 here ****

So far, my main measure of analyst following has been based upon the number of analysts following the firm. However, if analyst forecasts are uninformative about future firm performance, the number of analysts does not help lower information asymmetry or enhance stock market discipline. Hence, I use an alternative measure based upon the standard deviation of analyst forecasts.

Analyst agreement is defined as percent of analysts producing the forecasts with the same direction of change in earnings (increase or decrease). This measure reflects the difference in opinion and, hence, the degree of information asymmetry about the firm. The interpretation is the

higher the analyst agreement, the better the quality of analyst following of the firm. One could argue that presence of analyst disagreement on future earnings may reflect inherent uncertainty of firm cash flows and not poor analyst following. I do not believe this creates a significant bias in my analysis. When I control for firm or industry median firm risk on the right hand side of the second stage, the results remain unaffected.

In empirical tests (not shown in tables), analyst agreement exhibits a strong positive association with accounting returns, lending support to my conjecture that agreement indicates greater scrutiny. In line with earlier findings, this measure of analyst following is found to decrease the effects of internal corporate governance, as indicated by the oppositely signed and significant coefficient estimate on the interaction term in performance and policy regressions.

Existing empirical work suggests that board monitoring may serve as an important mechanism of corporate governance. Further, the number of analysts or analyst agreement may capture herding of analysts in their earnings forecasts, which does not improving information production or scrutiny of managerial behavior. Behavioral biases in analyst forecasts, including optimism, affiliation and other biases driven by career concerns would be reflected in the forecast error, but not the intensity of scrutiny. Therefore, I include aggregate indexes of internal governance and analyst following quality in regression estimation to check for robustness of my results. In addition, I use the endogeneity correction for both corporate governance and analyst following, instrumenting directly for the two effects. In this way, I correct for endogeneity of internal corporate governance, analyst following and interaction terms with internal and external governance in the first step, while predicting firm behavior in the second step (external governance itself is measured as a state law index and is, therefore, exogenous). The results are presented in Table IX. The results continue to hold, particularly in the profitability, acquisitions

and capital structure regressions and are consistent with earlier findings.

**** TABLE 9 here ****

Finally, I use an alternative identification strategy to account for endogeneity of governance, analyst coverage and firm behaviors. Simultaneous equation estimation produces results of performance and behavior estimation in addition to coefficient estimates of analysts in governance regressions and vice versa. As shown in Panel A of Table 10, the results remain strong and consistent in all but the cash holdings regression. Using the aggregate governance and analyst following indexes, I find that both are associated with higher profits, lower investment, acquisitions and diversification, higher preference towards equity compared with debt issuance and less earnings management. Importantly, the partial substitution effect between internal governance and market scrutiny through analysts appears significant.

Unlike instrumental variable estimation, this approach provides estimates of the direct effect of analyst coverage on governance and vice versa. In this respect, there are two hypotheses. According to first view, analysts select to cover firms with better governance as they are easier to monitor, while institutions and independent directors participate in firms with lower information asymmetries. This view suggests a positive link between analysts and governance. However, the marginal contribution of analysts or activist institutional shareholders is lowest for better monitored firms. Hence, the competing hypothesis is that the market demands greater coverage of opaque and poorly governed firms, while institutions, like takeover raiders, seek out poorly scrutinized and value destroying managers.

Panels B and C of Table 10 show results of first step estimation in the simultaneous equations framework. Results across all of the regressions indicate significant and positive dual association between quality of analyst monitoring and internal corporate governance. Further, the

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effect is present in both directions as institutions self-select to companies with better analyst coverage and vice versa.

**** TABLE 10 here ****

VII. Conclusions

In this paper, I investigate how analyst following affects performance and firm policies, and how it interacts with institutional, board and takeover market monitoring. I argued that analyst coverage and media serve as additional monitoring devices and help improve managerial incentives for better behavior.

Empirical methodology used in the paper (fixed effects instrumental variable estimation with clustered errors) explicitly recognizes and addresses the endogeneity of analyst following, corporate governance and firm behavior. I use industry median analyst following measures and the state takeover law index (external governance) to account for endogeneity. The instruments include market demand for governance, industry takeover protections, regulation FD, industry median analyst coverage and analyst following index and industry median risk.

I find that analyst following has a similar effect as governance upon firm behavior, as it is associated with higher accounting returns, lower investment and M&A, more net equity and less net debt issues, higher cash holdings, better voluntary disclosure and less earnings management. Further, the positive effect of analyst following is nonlinear. I also find that analyst following serves as a partial substitute to internal corporate governance mechanisms, but is a superior form of market scrutiny when compared to the effects of the takeover market.

I examine the role of press coverage as an additional monitoring device and reputation building mechanism. I find that controlling for press coverage does not eliminate the effect of corporate governance or analyst scrutiny on firm behavior. Due to its monitoring role, press

coverage itself acts as a significant determinant of performance, investment behavior, cash policies and earnings management.

I conduct a large number of tests to ensure correct interpretation and robustness of the findings. These include using alternative measures of internal governance (institutional blockholdings, aggregate governance index) and analyst following (difference in opinion, aggregate analyst following index), eliminating sure winners to account for self-selection and including firms with no analyst following. The paper accounts for the possible conflicts of interest relating to investment banking by excluding firms with public debt and equity issues in this or the following years, as well as by using an aggregate measure of analyst following quality. I use several identification approaches, including industry median proxies, fixed effects, instrumental variable estimation and simultaneous equations estimation. None of these changes alters the paper's main results and interpretations.

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Appendix A. Variable definitions.

Dependent variables

ROA
Ratio of earnings before interest and taxes (#178) to total assets (#6), multiplied by 100 and adjusted by the industry median (using 3-digit SIC codes). Source: Compustat [a]

Capital expenditures
Ratio of capital expenditures (#128) to total assets (#6), multiplied by 100. Source: Compustat [a]

Capital expenditures and R&D
Ratio of capital expenditures (#128) and R&D (#) to total assets (#6), multiplied by 100. Source: Compustat [a]

Acquisitions
Ratio of acquisitions (# 129) to total assets (#6), multiplied by 100. Source: Compustat [a]

Number of segments
The total number of diversified business segments with 3-digit SIC code different from the firm 3-digit SIC code. Source: Compustat (Segments) [a]

Net equity issues
Ratio of net equity issues (computed as sale of common and preferred stock (#108) minus purchase of common and preferred stock (#115)) to total assets (#6) minus current liabilities (#5). Source: Compustat [a]

Net debt issues
Ratio of net debt issues (computed as long-term debt issuance (#111) minus long term debt reduction (#114)) to total assets (#6) minus current liabilities (#5). Source: Compustat [a]

Leverage
Ratio of total long term debt (# 9) to total assets (#6) minus current liabilities (#5). Source: Compustat [a]

Cash Holdings
Ratio of cash (# 162) to total assets (#6) minus total cash (#162) Source: Compustat [a]

Accruals
Ratio of income before extraordinary items (#123) minus net cash flow from operating activities (#308) plus extraordinary items and discontinued operations (#124) to total assets (#6). Source: Compustat [a]

Independent variables

Institutional ownership
Ownership stake (%) belonging to institutions other than banks, insurance companies, investment companies and managers, investment advisors. Source: Thomson Financials [b]

Institutional blockholder share
Dummy variable for presence of an institutional blockholder with an ownership stake of 10% or more. Source: Thomson Financials

Internal governance index
An index based on quartile rankings of firms along the following dimensions: institutional ownership (see above), institutional blockholder share (see above), percent of independent directors on the board, board size. Industries defined based on 3 digit SIC codes. Source: I/B/E/S summary database

G state index
Takeover protections index based on the sum of 6 state laws: anti-greenmail, business combination, cash-out, directors' duties, fair price and control share acquisition laws (Gompers-Ishii-Metrick 2003). Higher values indicate worse external governance. Source: IRRC Governance [c]

Number of analysts
The number of one-year-ahead analyst forecasts of annual earnings per share. Measured at firm and industry median levels, based on 3 digit SIC codes. Source: I/B/E/S summary database

Analyst agreement
The ratio between the number of analysts predicting the same direction of change in one-year ahead earnings (increase, decrease) over the total number of analyst forecasts. Measured at firm and industry median levels, based on 3 digit SIC codes. Source: I/B/E/S summary database

Analyst following index
An index based on quartile rankings of firms along the following dimensions: number of analysts; the difference between the one-year ahead consensus forecast and actual earnings;

	analyst agreement (defined above); busyness of a median analyst (total number of firms covered); number of other firms in the same industry covered by median analyst; percent of analysts covering at least one other firm in the same industry. Industries defined based on 3 digit SIC codes. Source: I/B/E/S summary database
Press coverage	Natural log of the number of articles with firm name in title or lead paragraph, published in the New York Times, Financial Times, Wall Street Journal, Business Week or Economist (excluding re-published news, sports, obituaries and calendars). Source: Factiva.
CEO stock ownership, %	Percentage stake of the CEO in the firm shares outstanding. Source: Execucomp
CEO option grants	Ratio of the (Black-Scholes) value of CEO annual stock option grants to firm market value (item #25, number of shares outstanding time item #199, share price at fiscal year-end, minus item #60, book value of common equity, plus item #6, book value of total assets), as above. Source: Execucomp, Compustat [a]
Excess cash holdings	Residual from the regression of cash over sales on asset size, cash flow, net working capital, bond rating, capital expenditure and dividends, market-to-book, total institutional ownership, G index, percent of outsider ownership and board size. Ordinary least squares, robust standard errors. (Dittmar, Mahrt-Smith 2004) Source: Compustat, IRRC Directors, IRRC governance [a b c]
Market-to-book	Ratio of MKTVAL, firm market value (item #25, number of shares outstanding times item #199, share price at fiscal year-end, minus item #60, book value of common equity, plus item #6, book value of total assets) to the book value of total assets (item #6). Source: Compustat [a]
Growth of sales	Relative change in net sales (#12) from the previous period. Source: Compustat [a]
Financing deficit	The sum of cash dividends, investments, change in working capital, internal cash flow. Computed using the exact Frank and Goyal (2003) specification. Source: Compustat
Size	Natural log of book value of total assets (#6). Source: Compustat [a]
Change in tangibles	Change in the ratio of property, plants, and equipment (item #8) to the book value of total assets (item #6). Source: Compustat [a]
Change in ROA	Change in firm-level earnings before interest and taxes over total assets, %. Source: Compustat [a]
ROA (industry)	Ratio of earnings before interest and taxes (#13) to total assets (#6), multiplied by 100. Measured at industry median, based on 3-digit SIC codes. Included as a control in the first stage of IV estimation. Source: Compustat [a]
Market-to-book (industry)	Industry median ratio of MKTVAL, firm market value (item #25, number of shares outstanding time item #199, share price at fiscal year-end, minus item #60, book value of common equity, plus item #6, book value of total assets) to the book value of total assets (item #6). Source: Compustat [a]
Size (industry)	Natural log of book value of total assets (#6). Measured at industry median, based on 3-digit SIC codes. Included as a control in the first stage of IV estimation. Source: Compustat [a]
Growth of sales (industry)	Relative change in net sales (#12) from the previous period. Measured at industry median, based on 3-digit SIC codes. Included as a control in the first stage of IV estimation. Source: Compustat [a]

Instruments

External governance premium	Premium for good external corporate governance. Computed as the log of the asset-weighted market-to-book ratio of firms with high external corporate governance minus asset-weighted market-to-book ratio of firms with bad external governance (above and below the sample median of the G index). The measure is similar to the dividend premium in Baker and Wurgler (2004). Defined at the 2-digit SIC – year level, with missing values replaced with 1-digit SIC – year level premium. Source: Compustat[a]
Institutional ownership	Premium for high institutional ownership. Computed as the log of the asset-weighted market-

premium	to-book ratio of firms with high institutional ownership minus asset-weighted market-to-book ratio of firms with low ownership (above and below the sample median). Institutional ownership is the total ownership stake of institutional holders excluding banks, insurance companies, investment companies and managers, investment advisors. The premium is defined at the 2-digit SIC – year level, with missing values replaced with 1-digit SIC – year level premium. Source: Compustat[a]
Internal governance premium	Premium for high internal governance. Computed as the log of the asset-weighted market-to-book ratio of firms with high internal governance index minus asset-weighted market-to-book ratio of firms with low internal governance (above and below the sample median). Internal governance index is constructed as described above. The premium is defined at the 2-digit SIC – year level, with missing values replaced with 1-digit SIC – year level premium. Source: Compustat[a]
Analyst quality premium	Premium for high quality of analyst scrutiny. Computed as the log of the asset-weighted market-to-book ratio of firms with high analyst following quality minus asset-weighted market-to-book ratio of firms with low analyst coverage quality (above and below the sample median). Analyst following index is constructed as described above. The premium is defined at the 2-digit SIC – year level, with missing values replaced with 1-digit SIC – year level premium. Source: Compustat[a]
Press coverage premium	Premium for high press coverage. Computed as the log of the asset-weighted market-to-book ratio of firms with high press coverage minus asset-weighted market-to-book ratio of firms with low press coverage (above and below the sample median). The measure of press coverage is defined above. The premium is defined at the 2-digit SIC – year level, with missing values replaced with 1-digit SIC – year level premium. Source: Compustat[a]
Asset rank in the industry	Relative rank in the industry based on logged asset size in a 3-digit SIC code industry, computed by firm year. Source: Compustat[a]
Risk (industry)	Moving standard deviation of excess returns (defined as return including dividends minus value-weighted CRSP return including dividends) defined over up to 12 quarters (the current fiscal years and two previous fiscal years), computed for each year and three-digit SIC industry code. Source: CRSP monthly.
G state index (industry)	G state index of anti-takeover protections (Gompers, Ishii and Metrick 2003). Measured at the industry median, based on 3 digit SIC codes. Source: IRRC Governance [a] [b] [c]
Regulation FD	Binary variable for the year of the introduction of regulation Fair Disclosure (2000).
Geography	Dummy variables for firm location in the state of New York, Illinois and California

[a] Compustat items #9, #33, #115, #127, #128 set to 0 if missing, following Frank and Goyal (2003). Item #46 (R&D) set to 0 if missing.

[b] Investor Responsibility Research Center (IRRC) Directors data set. Early years (1992-1995) filled in using the values for 1996, the earliest available year.

[c] Investor Responsibility Research Center (IRRC) Governance data set. Gap years (1992, 1994, 1996, 1997, 1999, 2001, 2003) were filled in using the closest value or the average of the two closest values for IRRC years (1993, 1995, 1998, 2000, 2002).

Table 1. Descriptive statistics.

Descriptive statistics based on the sample consists of 8928 firm-year observations from 1992 to 2004.
ROA is the industry adjusted return on assets. Other variables are capital expenditure over total assets, %; capital expenditure plus R&D expense over total assets, %; volume of acquisitions over total assets, %. Net equity issues and net debt issues over total assets, % are computed following Frank and Goyal (2003). Leverage is percent of book value of long term debt over total assets. Cash holdings are total cash holdings over total assets minus total cash, %. Accruals are computed as income before extraordinary items minus net cash flow from operating activities plus extraordinary items and discontinued operations (% of total assets). Institutional ownership is the ownership stake (%) belonging to institutions other than banks, insurance companies, investment companies and managers, investment advisors. Share of institutional blockholdings is the maximum ownership stake by an institutional blockholder of 5% or more. Internal governance index is a quartile-based index, incorporating institutional ownership (above), share of institutional blockholdings (above), percent of independent directors on the board and board size. G state subindex is the 6-provision index of state anti-takeover laws, based on Gompers, Ishii and Metrick (2003). Number of analysts is the number of analysts following a median firm in the industry. Analyst agreement is the ratio between the number of analysts predicting the same direction of change in one-year ahead earnings (increase, decrease) and the total number of analyst forecasts. Analyst following index is a quartile-based index, incorporating number of analysts (above, analyst agreement (above), forecast error (difference between the one-year ahead consensus forecast and actual reported earnings per share), busyness (number of stocks followed by a median analyst tracking the firm) and industry experience. CEO stock ownership and CEO Black Scholes value of option grants are both scaled by market value of the firm and capture CEO incentives. Press coverage is the number of articles in the Wall Street Journal, New York Times, Financial Times, Business Week, Economist covering the firm. Market premiums for external governance, institutional ownership, internal governance index, analyst following quality and press coverage computed as the difference in market values of firms above and below the median of governance quality, analyst and press coverage. Regulation FD accounts for time effects after 2000. Geography is a dummy for firm incorporation in NY, IL, or CA. Asset rank in the industry is relative rank of a company based on asset size in a 3 digit SIC code industry. Industry risk is the industry median moving standard deviation of stock returns.

Variable	N	Mean	Median	St. dev
Panel A. Firm Performance and Policies				
ROA	8928	0.613	0.019	8.740
Capital expenditure	8928	6.138	4.878	4.975
Capital expenditure, R&D	8928	9.413	7.551	7.303
Acquisitions	8928	2.544	0.000	5.626
Net equity issues	8369	-1.404	0.000	12.328
Net debt issues	8246	1.696	0.000	17.150
Leverage	8679	25.223	23.954	21.377
Cash holdings	8777	9.939	4.431	14.830
Accruals	8926	-6.105	-5.522	8.069
Panel B. Governance, Analysts and Media				
Institutional ownership	8928	27.548	18.960	24.478
Share of institutional blockholdings	8928	8.356	8.362	5.484
Internal Governance index	8814	9.972	10.000	2.426
G state subindex	8928	1.739	1.000	1.270
Number of analysts	8779	11.702	9.750	8.234
Analyst agreement	8700	76.552	76.923	15.009
Analyst following index	8119	15.014	15.000	3.154
Press coverage	8899	11.893	3.000	29.878
CEO stock ownership, %	8928	2.605	0.312	6.370
CEO stock option grants	8928	0.118	0.036	0.341
Panel C. Instruments				
External governance premium	8928	0.064	0.050	0.778
Institutional ownership premium	8928	0.561	0.553	1.647
Internal governance premium	8928	-0.255	-0.815	3.033
Analyst quality premium	8928	-0.094	-0.133	0.990
Regulation FD	8928	0.423	0.000	0.494
Geography	8928	0.284	0.000	0.451
Asset rank in the industry	8928	11.436	5.000	17.199
Press coverage premium	8928	0.279	0.216	0.722
Industry risk	8917	0.112	0.106	0.040

Table 2. Regression results: performance.

Fixed effects instrumental variables estimation, robust standard errors in parentheses. The dependent variable is industry adjusted return on assets (%).

The internal corporate governance (ICG) measures include: Column I - institutional ownership (the total ownership stake (%) belonging to institutions other than banks, insurance companies, investment companies, managers and investment advisors). Column II – institutional blockholder share (share of institutional ownership by an owner with a stake of 5% or more).

G state index is the 6-provision index of state anti-takeover laws, based on Gompers, Ishii and Metrick (2003). Number of analysts is the number of analysts following a median firm in the industry. The interaction terms between institutions, takeover laws and analyst following are included on the right-hand side. CEO stock ownership and CEO Black Scholes value of option grants are both scaled by market value of the firm and capture CEO incentives. Market-to-book ratio is computed as the ratio of market over book value of assets. Excess cash holdings are excess cash, computed following Dittmar and Mahrt-Smith (2005). Asset size, time and lagged dependent variable controls are also included.

Variables in the first stage of instrumental variables estimation include the external governance premium, dummy variable for the year of regulation FD, industry G state index, industry median: ROA, MTB, asset size, growth of sales; year dummies.

Variable	I		II	
Internal corporate governance (ICG)	0.166	***	2.749	***
	(.02)		(.62)	
Number of analysts (NA)	0.296	***	1.571	***
	(.05)		(.39)	
Interaction (ICG x NA)	-0.017	***	-0.225	***
	(.00)		(.05)	
G state subindex (GS)	-0.116		-2.443	***
	(.32)		(.71)	
Interaction (GS x NA)	-0.012		0.106	**
	(.01)		(.05)	
Market-to-book	1.958	***	1.940	***
	(.12)		(.14)	
Excess cash holdings	9.563	***	9.802	***
	(1.02)		(1.13)	
Assets	0.275		0.756	
	(.27)		(.50)	
CEO stock ownership (%)	0.014		0.029	
	(.02)		(.03)	
CEO stock option grants	-0.434		-0.693	**
	(.36)		(.32)	
Past ROA	0.343	***	0.377	***
	(.02)		(.03)	
Number of obs	8566		8584	

Table 3. Regression results: investment.

Fixed effects instrumental variables estimation , robust standard errors in parentheses. Dependent variables are: capital expenditure over total assets, %; capital expenditure plus R&D over total assets, %, volume of acquisitions over total assets, %, number of business segments outside the company's 3-digit SIC code.

Institutional ownership is the total ownership stake (%) belonging to institutions other than banks, insurance companies, investment companies, managers and investment advisors. G state index is the 6-provision index of state anti-takeover laws, based on Gompers, Ishii and Metrick (2003). Number of analysts is the number of analysts following a median firm in the industry. The interaction terms between institutions and state takeover laws with analyst following are included on the right-hand side. CEO stock ownership and CEO Black Scholes value of option grants are both scaled by market value of the firm and capture CEO incentives. Market-to-book ratio is computed as the ratio of market over book value of assets. Excess cash holdings are excess cash, computed following Dittmar and Mahrt-Smith (2005). Asset size, time and lagged dependent variable controls are also included.

Variables in the first stage of instrumental variables estimation include the external governance premium, industry median index of state anti-takeover laws, dummy variable for year of regulation FD, industry median ROA, MTB, asset size, growth of sales; year dummies.

Variable	Capital expenditure		Capital expenditure, R&D		Acquisitions		Number of Segments	
Institutional ownership (IO)	-0.090	***	-0.118	***	-0.152	***	-0.007	***
	(.01)		(.01)		(.02)		(.00)	
Number of analysts (NA)	-0.146	***	-0.204	***	-0.294	***	-0.002	
	(.03)		(.04)		(.06)		(.01)	
Interaction (IO x NA)	0.007	***	0.009	***	0.013	***	0.001	***
	(.00)		(.00)		(.00)		(.00)	
G state subindex (GS)	-0.394	*	-0.450	*	-0.203		0.104	
	(.21)		(.26)		(.42)		(.07)	
Interaction (GS x NA)	0.013		0.024	**	0.003		-0.004	**
	(.01)		(.01)		(.02)		(.00)	
Market-to-book	0.300	***	0.357	***	-0.154	**	-0.030	***
	(.05)		(.08)		(.07)		(.01)	
Excess cash holdings	-2.147	***	-4.464	***	-3.930	***	-0.075	
	(.36)		(.55)		(.61)		(.07)	
Assets	-0.442	***	-1.932	***	2.250	***	0.121	***
	(.13)		(.22)		(.25)		(.03)	
CEO stock ownership (%)	-0.010		-0.018		0.006		0.003	
	(.01)		(.01)		(.02)		(.00)	
CEO stock option grants	-0.152		-0.098		0.195		-0.002	
	(.14)		(.21)		(.26)		(.01)	
Past capital expenditure	0.095	***						
	(.01)							
Past capital expenditure, R&D			0.043	***	0.007		0.001	
			(.01)		(.01)		(.00)	
Past acquisitions					1.070			
					(1.34)			
Past number of segments							0.599	***
							(.02)	
Time	Yes		Yes		Yes		Yes	
Number of obs	9125		9125		9054		5708	

Table 4. Regression results: capital structure.

Fixed effects instrumental variables estimation , robust standard errors in parentheses. Dependent variables are: net equity issues over total assets, %, net debt issues over total assets, %, book leverage, %.

Institutional ownership is the ownership stake (%) belonging to institutions other than banks, insurance companies, investment companies and managers, investment advisors. G state index is the 6-provision index of state anti-takeover laws, based on Gompers, Ishii and Metrick (2003). Number of analysts is the number of analysts following a median firm in the industry. The interaction terms between institutions and state takeover laws with analyst following are included on the right-hand side. CEO stock ownership and CEO Black Scholes value of option grants are both scaled by market value of the firm and capture CEO incentives.

Financing deficit is a measure of financing need by the firm, computed based on Frank and Goyal (2003). Market-to-book ratio is computed as the ratio of market over book value of assets. Growth of sales is the one year growth rate of total sales. Excess cash holdings are excess cash, computed following Dittmar and Mahrt-Smith (2005). Change in tangibles and ROA are used as controls pursuant to Frank and Goyal (2003). Asset size, time and lagged dependent variable controls are also included.

Variables in the first stage of instrumental variables estimation include the external governance premium, industry median index of state anti-takeover laws, dummy variable for year of regulation FD, industry median ROA, MTB, asset size, growth of sales; year dummies.

Variable	Net equity issuance		Net debt issuance		Leverage	
Institutional ownership (IO)	0.332	***	-0.338	***	-0.256	***
	(.04)		(.04)		(.04)	
Number of analysts (NA)	0.449	***	-0.445	***	-0.761	***
	(.11)		(.12)		(.14)	
Interaction (IO x NA)	-0.030	***	0.030	***	0.030	***
	(.00)		(.00)		(.00)	
G state subindex (GS)	-0.843		0.499		-0.397	
	(.62)		(.64)		(.74)	
Interaction (GS x NA)	0.086	**	-0.080	**	-0.052	
	(.03)		(.03)		(.04)	
Market-to-book					-1.466	***
					(.23)	
Excess cash holdings	1.778		-2.619		-11.382	***
	(2.39)		(2.66)		(2.27)	
Assets	0.679		-0.419		1.006	
	(.91)		(.91)		(.72)	
CEO stock ownership (%)	-0.029		0.051		0.038	
	(.03)		(.04)		(.05)	
CEO stock option grants	1.296		-1.456		0.765	
	(1.83)		(1.97)		(.69)	
Financing deficit	0.255	**	0.731	***	0.090	*
	(.12)		(.12)		(.05)	
Change in market-to-book	0.557	**	-0.559	**		
	(.22)		(.24)			
Growth of sales	4.773	**	-4.685	**	-1.007	
	(2.13)		(2.15)		(1.13)	

Change in intangibles	-13.531 ***	13.712 ***	
	(3.54)	(3.62)	
Change in ROA	0.014	-0.005	
	(.05)	(.06)	
Past equity issuance	-0.047		
	(.06)		
Past debt issuance		-0.080 ***	
		(.03)	
Past ROA			-0.151 ***
			(.04)
Time	Yes	Yes	Yes
Number of obs	7993	7676	8382

Table 5. Regression results: cash and earnings management.

Fixed effects instrumental variables estimation, robust standard errors in parentheses. Dependent variables are: cash holdings over total assets, %, accruals over total assets, %.

Institutional ownership is the ownership stake (%) belonging to institutions other than banks, insurance companies, investment companies and managers, investment advisors. G state index is the 6-provision index of state anti-takeover laws, based on Gompers, Ishii and Metrick (2003). Number of analysts is the number of analysts following a median firm in the industry. The interaction terms between institutions and state takeover laws with analyst following are included on the right-hand side. CEO stock ownership and CEO Black Scholes value of option grants are both scaled by market value of the firm and capture CEO incentives.

Market-to-book ratio is computed as the ratio of market over book value of assets. Excess cash holdings are excess cash, computed following Dittmar and Mahrt-Smith (2005). Asset size, time and lagged dependent variable controls are also included.

Variables in the first stage of instrumental variables estimation include the external governance premium, industry median index of state anti-takeover laws, dummy variable for year of regulation FD, industry median ROA, MTB, asset size, growth of sales; year dummies.

Variable	Cash holdings		Accruals	
Institutional ownership (IO)	0.234	***	-0.164	***
	(.03)		(.02)	
Number of analysts (NA)	0.535	***	-0.364	***
	(.09)		(.07)	
Interaction (IO x NA)	-0.025	***	0.019	***
	(.00)		(.00)	
G state subindex (GS)	0.013		-0.574	
	(.60)		(.47)	
Interaction (GS x NA)	0.014		-0.010	
	(.02)		(.02)	
Market-to-book	0.750	***	0.545	***
	(.22)		(.16)	
Assets	-0.427		-0.506	
	(.49)		(.36)	
CEO stock ownership (%)	0.001		-0.002	
	(.03)		(.03)	
CEO stock option grants	-0.436		-1.383	**
	(.46)		(.57)	
Growth of sales	-1.075	*	1.264	**
	(.56)		(.55)	
Past ROA	-0.025		0.007	
	(.03)		(.02)	
Time	Yes		Yes	
Number of obs	8564		8712	

Table 6. Robustness: institutional blockholders, log number of analysts.

Fixed effects instrumental variables estimation, robust standard errors in parentheses. Dependent variables are: industry adjusted return on assets (%), capital expenditure plus R&D over total assets (%), volume of acquisitions over total assets (%), net equity issues over total assets (%), net debt issues over total assets (%), book leverage (%), cash holdings over total assets (%), accruals over total assets (%).

Institutional blockholder share is a share of institutional ownership by an owner with a stake of 5% or more. G state index is the 6-provision index of state anti-takeover laws, based on Gompers, Ishii and Metrick (2003). Log number of analysts is log of the number of analysts following a median firm in the industry. The interaction term between blockholders and analysts is included on the right-hand side.

Other controls include the same variables as used in earlier regressions for the same dependent variables:

CEO stock ownership and CEO Black Scholes value of option grants are both scaled by market value of the firm and capture CEO incentives. Market-to-book ratio is computed as the ratio of market over book value of assets. Excess cash holdings are excess cash, computed following Dittmar and Mahrt-Smith (2005). Growth of sales is the one year growth rate of total sales. Financing deficit is a measure of financing need by the firm. Change in tangibles, ROA and market-to-book are used as controls pursuant to Frank and Goyal (2003). Asset size, time and lagged dependent variable controls are also included. Instruments include corporate governance premium, index of state anti-takeover laws, dummy variable for year of regulation FD, controlling for time effects.

Variable	ROA		Capital expenditure, R&D		Acquisitions		Net equity issues		Net debt issues		Cash holdings		Accruals	
Institutional blockholder share (IB)	3.088	***	-3.783	***	-4.037	***	9.441	***	-10.841	***	3.145		-1.167	***
	(1.04)		(.85)		(.98)		(2.18)		(2.26)		(2.06)		(.99)	
Log number of analysts (LNA)	11.856	***	-14.197	***	-14.606	***	29.373	***	-33.477	***	19.213	***	-3.070	
	(3.24)		(2.91)		(3.15)		(6.80)		(7.62)		(6.18)		(2.80)	
Interaction (IB x LNA)	-1.722	***	1.935	***	2.013	***	-4.390	***	4.833	***	-2.593	***	0.506	
	(.42)		(.36)		(.40)		(.90)		(.95)		(.83)		(.39)	
G state subindex (GS)	-4.281	***	4.027	***	4.850	***	-14.361	***	13.866	***	-5.911	**	0.757	
	(1.41)		(1.30)		(1.45)		(3.46)		(3.51)		(2.78)		(1.22)	
Interaction (GS x LNA)	1.346	**	-1.387	**	-1.698	***	5.403	***	-4.913	***	2.185	**	-0.551	
	(.56)		(.55)		(.59)		(1.40)		(1.45)		(1.05)		(.43)	
Number of obs	8732		9156		9085		8011		7694		8582		8730	

Table 7. Media following.

Fixed effects instrumental variables estimation, robust standard errors in parentheses. Dependent variables are: industry adjusted return on assets (%), capital expenditure plus R&D over total assets (%), volume of acquisitions over total assets (%), net equity issues over total assets (%), net debt issues over total assets (%), book leverage (%), cash holdings over total assets (%), accruals over total assets (%).

Institutions are the ownership stake (%) belonging to institutions other than banks, insurance companies, investment companies and managers, investment advisors. G state index is the 6-provision index of state anti-takeover laws, based on Gompers, Ishii and Metrick (2003). Number of analysts is the number of analysts following a median firm in the industry. The interaction term between institutions and analyst following is included on the right-hand side. Media following is the logged number of newspaper articles in Financial Times, New York Times, Wall Street Journal, Business Week, Economist covering the firm in a given year, scaled by total assets.

Other controls include the same variables as used in earlier regressions for the same dependent variables: CEO stock ownership and CEO Black Scholes value of option grants are both scaled by market value of the firm and capture CEO incentives. Market-to-book ratio is computed as the ratio of market over book value of assets. Excess cash holdings are excess cash, computed following Dittmar and Mahrt-Smith (2005). Growth of sales is the one year growth rate of total sales. Financing deficit is a measure of financing need by the firm. Change in tangibles, ROA and market-to-book are used as controls pursuant to Frank and Goyal (2003). Asset size, time and lagged dependent variable controls are also included.

Variables in the first stage of instrumental variables estimation include the firm industry rank by asset size, press coverage premium, institutional ownership premium, industry state median anti-takeover laws, dummy variable for year of regulation FD, industry median ROA, MTB, asset size, growth of sales; year dummies. The sample excludes firms with stock returns in the top industry quartile for two consecutive years ("sure winners").

Variable	ROA		Capital expenditure, R&D		Acquisitions		Net equity issues		Net debt issues		Cash holdings		Accruals	
Institutional ownership (IO)	0.319	***	-0.128	***	-0.134	***	0.435	***	-0.447	***	0.236	***	-0.193	***
	(.03)		(.02)		(.03)		(.07)		(.07)		(.04)		(.04)	
Number of analysts (NA)	0.507	***	-0.166	***	-0.255	***	0.604	***	-0.592	***	0.436	***	-0.436	***
	(.09)		(.05)		(.08)		(.16)		(.17)		(.11)		(.10)	
Interaction (IO x NA)	-0.028	***	0.009	***	0.012	***	-0.039	***	0.039	***	-0.024	***	0.021	***
	(.00)		(.00)		(.00)		(.01)		(.01)		(.00)		(.00)	
G state subindex (GS)	-0.482		-0.371		0.212		-2.469	**	2.225	**	-0.021		0.655	
	(.70)		(.42)		(.57)		(1.03)		(1.03)		(.81)		(.70)	
Interaction (GS x NA)	-0.024		-0.002		-0.005		0.082	**	-0.071	*	0.022		0.001	
	(.02)		(.01)		(.02)		(.04)		(.04)		(.03)		(.03)	
Press coverage	4.417	***	-1.738	***	0.747		3.129	**	-3.310	**	2.328	**	-0.576	
	(.87)		(.52)		(.76)		(1.49)		(1.41)		(1.15)		(.96)	
Number of obs	5781		5824		5789		5239		5048		5661		5780	

Table 8. Robustness: brokerage.

Fixed effects instrumental variables estimation, robust standard errors in parentheses. Dependent variables are: industry adjusted return on assets (%), capital expenditure plus R&D over total assets (%), volume of acquisitions over total assets (%), net equity issues over total assets (%), net debt issues over total assets (%), book leverage (%), cash holdings over total assets (%), accruals over total assets (%).

Institutions are the ownership stake (%) belonging to institutions other than banks, insurance companies, investment companies and managers, investment advisors. G state index is the 6-provision index of state anti-takeover laws, based on Gompers, Ishii and Metrick (2003). Number of analysts is the number of analysts following a median firm in the industry. The interaction term between institutions and analyst following is included on the right-hand side.

Other controls include the same variables as used in earlier regressions for the same dependent variables:

CEO stock ownership and CEO Black Scholes value of option grants are scaled by market value of the firm and capture CEO incentives. Market-to-book ratio is computed as the ratio of market over book value of assets. Excess cash holdings are excess cash, computed following Dittmar and Mahrt-Smith (2005). Growth of sales is the one year growth rate of total sales. Financing deficit is a measure of financing need by the firm. Change in tangibles, ROA and market-to-book are used as controls pursuant to Frank and Goyal (2003). Asset size, time and lagged dependent variable controls are also included.

Variables in the first stage of instrumental variables estimation include external governance premium, industry state median anti-takeover laws, dummy variable for year of regulation FD, industry median ROA, MTB, asset size, growth of sales, year dummies.

Variable	ROA		Capital expenditure, R&D		Acquisitions		Net equity issues		Net debt issues		Cash holdings		Accruals	
Institutional ownership (IO)	0.243	***	-0.124	***	-0.143	***	0.326	***	-0.343	***	0.239	***	-0.179	***
	(.02)		(.02)		(.02)		(.05)		(.05)		(.04)		(.03)	
Number of analyst (NA)	0.396	***	-0.261	***	-0.318	***	0.425	***	-0.413	***	0.463	***	-0.366	***
	(.08)		(.05)		(.08)		(.14)		(.14)		(.12)		(.09)	
Interaction (IO x NA)	-0.024	***	0.010	***	0.014	***	-0.031	***	0.032	***	-0.027	***	0.020	***
	(.00)		(.00)		(.00)		(.01)		(.01)		(.00)		(.00)	
G state subindex (GS)	-0.300		-0.355		-0.214		-1.140	*	0.844		-0.682		-0.487	
	(.40)		(.27)		(.48)		(.68)		(.72)		(.66)		(.51)	
Interaction (GS x NA)	0.012		0.014		0.002		0.135	***	-0.129	***	0.083	**	-0.041	
	(.02)		(.01)		(.02)		(.04)		(.04)		(.03)		(.03)	
Number of obs	6708		7112		7056		6236		5919		6621		6707	

Table 9. Robustness: endogeneity of analyst following and corporate governance - AF and CG indexes. [a]

Variable	ROA	Capital expenditure, R&D	Acquisitions	Net equity issues	Net debt issues	Cash holdings	Accruals
Internal governance index (IGI)	14.048 ***	-5.141 **	-9.044 **	36.213 ***	-31.031 ***	-1.593	0.664
	(4.43)	(2.55)	(4.06)	(10.05)	(8.89)	(5.80)	(4.40)
Analyst following index (AFI)	8.114 ***	-2.410	-5.582 **	22.628 ***	-19.435 ***	-2.960	-0.750
	(2.82)	(1.62)	(2.60)	(6.63)	(5.76)	(3.73)	(2.81)
Interaction (IGI x AFI)	-0.841 ***	0.232	0.597 **	-2.340 ***	2.016 ***	0.345	0.083
	(.30)	(.17)	(.27)	(.69)	(.60)	(.39)	(.29)
G state subindex	-1.472	-9.765 ***	-5.056	33.008 **	-17.022	-5.573	-6.580
	(4.31)	(2.99)	(4.03)	(14.12)	(10.55)	(6.80)	(4.34)
CEO stock ownership (%)	-0.002	0.011	-0.054	0.160	-0.034	0.084	-0.005
	(.06)	(.04)	(.05)	(.14)	(.12)	(.08)	(.06)
CEO stock ownership squared (%)	0.000	0.000	0.001	-0.003	0.000	-0.003	-0.001
	(.00)	(.00)	(.00)	(.00)	(.00)	(.00)	(.00)
CEO stock option grants	-0.704	0.161	0.612 *	-2.663 **	2.252 **	-0.799	-1.061 *
	(.45)	(.29)	(.35)	(1.19)	(1.04)	(.62)	(.60)
Time	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N	7770	8297	8235	7281	6975	7770	7910

Table 10. Robustness: simultaneous equations model

Table presents results of simultaneous equation estimation of firm behavior and performance, internal corporate governance, analyst following, interaction term, and external governance.
[a] Dependent variables are: industry adjusted return on assets (%), capital expenditure plus R&D over total assets (%), volume of acquisitions over total assets (%), net equity issues over total assets (%), net debt issues over total assets (%), book leverage (%), cash holdings over total assets (%), accruals over total assets (%). Internal governance index (IGI) is a quartile-based index of governance quality, assigning equal weights to components: presence of a 10% institutional blockholder, pension fund ownership, board independence and board size. Analyst following index (AFI) is a quartile-based index of analyst following quality, assigning equal weights to components: number of analysts, forecast error, analyst agreement, busyness of analysts, industry-specific experience of analysts. Controls include the following variables (not shown in the table). Market-to-book ratio is computed as the ratio of market over book value of assets. Excess cash holdings are excess cash, computed following Dittmar and Mahrt-Smith (2005). Growth of sales is the one year growth rate of total sales. Financing deficit is a measure of financing need by the firm. Change in tangibles, ROA and market-to-book are used as controls pursuant to Frank and Goyal (2003). Size, year, lagged dependent variables and Fama-French industry controls are also included.
[b] Dependent variable is the internal governance index (IGI, defined as above). The internal governance premium is computed as the difference in value-weighted market-to-book ratios of firms with the internal governance index above and below the sample median. Time effects from Sarbanes-Oxley are accounted for with the dummy for all observations in 2002 and onwards. Industry G state subindex captures median industry governance. Analyst following index is defined as above. Dependent variables in the second step are also included.
[c] Dependent variable is the analyst following index (AFI, defined as above). The analyst quality premium is computed as the difference in value-weighted market-to-book ratios of firms with the internal governance index above and below the sample median. Time effects from regulation FD are accounted for with the dummy for all observations in 2000 and onwards. Industry number of analysts and industry analyst following captures median industry analyst following. Industry G state subindex measures external governance, while the internal governance index (IGI) is computed as described above. Dependent variables in the second step are also included.

First step estimation also predicts external governance, defined as the G state subindex from Gompers, Ishii and Metrick (2003). The external governance premium is computed as the difference in value-weighted market-to-book ratios of firms with the G index above and below the sample median (Gompers, Ishii and Metrick (2003)). Time effects from Sarbanes-Oxley reform are accounted for with the dummy for all observations in 2002 and onwards. Industry G state subindex measures external governance, while the internal governance index (IGI) is computed as described above. Dependent variables in the second step are also included .

Panel A. Second Step Estimation [a]																
Variable	ROA		Capital expenditure, R&D		Acquisitions		Number of segments		Net equity issues		Net debt issues		Cash holdings		Accruals	
Internal governance index (IGI)	10.591	***	-3.368		-13.456	***	-1.017	**	27.659	***	-26.118	**	-2.528		-16.495	***
	(3.33)		(2.12)		(3.40)		(.43)		(8.34)		(10.86)		(6.01)		(5.07)	
Analyst following index (AFI)	5.008	**	-3.729	**	-9.397	***	-0.710	**	21.861	***	-20.354	***	-5.358		-10.571	***
	(2.27)		(1.46)		(2.35)		(.28)		(5.73)		(7.27)		(4.11)		(3.47)	
Interaction (IGI x AFI)	-0.530	**	0.349	**	0.966	***	0.073	**	-2.234	***	2.084	***	0.497		1.095	***
	(.23)		(.15)		(.24)		(.03)		(.59)		(.75)		(.42)		(.36)	
G state subindex	0.197		0.041		-0.208		-0.019		-0.037		0.106		-0.393		-0.049	
	(.17)		(.12)		(.17)		(.02)		(.40)		(.40)		(.33)		(.22)	

Variable	ROA		Capital expenditure, R&D		Acquisitions		Number of segments		Net equity issues		Net debt issues		Cash holdings		Accruals	
Panel B. First Step Estimation : Internal Governance Index [b]																
Internal governance premium	0.013	***	0.012	***	0.010	***	0.014	***	0.013	***	0.013	***	0.012	***	0.010	***
	(.00)		(.00)		(.00)		(.00)		(.00)		(.00)		(.00)		(.00)	
Sarbanes-Oxley	0.300	***	0.116	**	0.043		0.283		0.040		0.092		0.036		0.003	
	(.06)		(.05)		(.06)		(.39)		(.06)		(.06)		(.05)		(.06)	
Industry G state subindex	-0.150	***	-0.167	***	-0.175	***	-0.095	**	-0.159	***	-0.160	***	-0.014		-0.118	***
	(.04)		(.04)		(.04)		(.04)		(.04)		(.04)		(.04)		(.04)	
Analyst following index	0.133	***	0.185	***	0.155	***	0.167	***	0.132	***	0.131	***	0.125	***	0.181	***
	(.01)		(.01)		(.01)		(.01)		(.01)		(.01)		(.01)		(.01)	
Panel C. First Step Estimation : Analyst Following Index [c,d]																
Analyst quality premium	0.093	***	0.087	***	0.087	***	0.047	*	0.086	***	0.097	***	0.087	***	0.089	***
	(.03)		(.02)		(.03)		(.03)		(.03)		(.03)		(.03)		(.02)	
Regulation FD	-0.193	***	-0.242	***	-0.178	***	-0.110		-0.124	**	-0.169	***	-0.144	***	-0.005	
	(.05)		(.05)		(.05)		(.08)		(.06)		(.06)		(.06)		(.06)	
Industry number of analysts	-0.046	***	-0.050	***	-0.052	***	-0.042	***	-0.051	***	-0.053	***	-0.040	***	-0.049	***
	(.01)		(.01)		(.01)		(.01)		(.01)		(.01)		(.01)		(.01)	
Industry analyst following index	0.526	***	0.490	***	0.502	***	0.537	***	0.529	***	0.527	***	0.527	***	0.485	***
	(.01)		(.01)		(.01)		(.01)		(.01)		(.01)		(.01)		(.01)	
Industry G state subindex	0.196	***	0.202	***	0.212	***	0.157	***	0.196	***	0.183	***	0.169	***	0.168	***
	(.04)		(.04)		(.04)		(.04)		(.04)		(.04)		(.04)		(.04)	
Internal governance index	0.397	***	0.441	***	0.422	***	0.337	***	0.362	***	0.336	***	0.467	***	0.482	***
	(.01)		(.01)		(.01)		(.01)		(.01)		(.01)		(.01)		(.01)	
N	7927		8396		8335		5173		7447		7146		7927		8048	