The Real Effects of Analyst Coverage

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Abstract

We study the causal effects of analyst coverage on corporate investment, financing, and payout policies. We hypothesize that a decrease in analyst coverage increases information asymmetry and thus increases the cost of capital; as a result, firms decrease investment, financing, and payouts. We use broker closures and broker mergers to identify changes in analyst coverage that are exogenous to corporate policies. Using a difference-in-differences approach, we find that firms that lose analyst coverage decrease investment and financing by 3.05 and 2.13 percentage points of total assets, respectively; firms also decrease payouts but by smaller magnitudes. We also find that these results are bigger for firms that are more financially constrained, with more product market competition, and with more information asymmetry.

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1. Introduction

A long line of literature finds that equity research analysts produce information that matters to investors and firms. The existing research focuses on the financial effects of analysts,[1] and there is a dearth of direct evidence on the real effects of analysts. This paper focuses on how analyst coverage affects firms' investment, financing, and payout policies. An almost insurmountable impediment to this research is the problem of causality: does analyst coverage cause corporate policies or vice versa? In this paper, we overcome this obstacle using two natural experiments to identify changes in analyst coverage that are exogenous to corporate policies.

We hypothesize that a decrease in analyst coverage increases information asymmetry. The increase in information asymmetry increases the cost of capital.[2] As a result, the profitability of projects decreases, so the optimal amount of investment decreases. Similarly, since the cost of external financing increases in absolute terms and the cost of internal financing decreases in relative terms, the optimal amount of external financing decreases and the optimal amount of payouts decreases. In summary, a decrease in analyst coverage decreases investment, financing, and payouts.

We examine the real effects of analyst coverage using broker closures and broker mergers as our two natural experiments like Kelly and Ljungqvist (2010) and Hong and Kacperczyk (2010), respectively. Both broker closures and broker mergers cause analysts to be

[1] Analysts increase the informational efficiency of markets through the research reports that they produce for investors (e.g., see Brennan, Jegadeesh, and Swaminathan (1993) and Brennan and Subrahmanyam (1995)). There is extensive evidence that analysts' reports also have an economically significant impact on stock prices (e.g., see Womack (1996), Barber, Lehavy, McNichols, and Trueman (2001), and Jegadeesh, Kim, Krische, and Lee (2004) for recommendations, and Givoly and Lakonishok (1979) and Stickel (1991) for earnings estimates). By producing information about the firms that they cover, analysts also monitor these firms (e.g., see Moyer, Chatfield, and Sisneros (1989) and Chung and Jo (1996)), and they increase the investor recognition of these firms (see Merton (1987)). Analysts sometimes issue biased analyst reports to investors (e.g., see Lin and McNichols (1998) and Michaely and Womack (1999)). However, analysts are generally incentivized to produce information that is valuable to investors (e.g., see Hong and Kubik (2003) and Mikhail, Walther, and Willis (1999)).

[2] E.g., see Stiglitz and Weiss (1981), Myers and Majluf (1984), Diamond (1985), Merton (1987), Lucas and McDonald (1990), Korajczyk, Lucas, and McDonald (1991), Korajczyk, Lucas, and McDonald (1992), Botosan (1997), and Easley and O'Hara (2004).

terminated and analyst coverage to decrease for the firms covered by these analysts. We identify such decreases in analyst coverage using broker disappearances in I/B/E/S. For broker mergers, we also require that both the target broker and the acquirer broker cover the firm before the merger and that exactly one of their analysts disappear. We use broker closures and broker mergers because the resulting decrease in analyst coverage is exogenous to corporate policies. It is highly improbable that brokers close their research divisions and terminate all of their analysts or that two brokers merge and terminate one of their two analysts because the terminated analysts anticipate specific corporate policies for the firms that they cover.

In our empirical tests, we use 49 broker closures and broker mergers between 1994 and 2008 that cause 2,303 firms to lose analyst coverage. We compare the changes in corporate policies of these treatment firms to those of control firms matched on size, book-to-market, momentum, industry, and analyst coverage. In doing so, we minimize the possibility that cross-sectional or time-series effects affect our results. We show that before the decrease in analyst coverage our treatment firms are similar to our control firms not just in terms of our matching variables but also in terms of corporate policy variables.

Proceeding to our main analysis, we find that our treatment firms respond to a decrease in analyst coverage by decreasing investment and financing by 3.05 and 2.13 percentage points of total assets, respectively, compared to our control firms. Capital expenditures decrease by 0.81 p.p., research and development expenditures by 0.68 p.p., and acquisitions expenditures by 0.88 p.p.. Similarly, firms that lose analyst coverage decrease equity issuance and debt issuance by 0.82 and 1.31 p.p., respectively, for a total decrease of 2.13 p.p.. At the same time, they decrease payouts by 0.35 percentage points: 0.30 p.p. through share repurchases and 0.05 p.p. through dividends. Overall, their debt and equity financing net of payouts to shareholders decreases by

1.78 p.p.. We also provide evidence to support the parallel trends assumption underlying our difference-in-differences approach: the corporate policies of our treatment and control firms only diverge from each other when analyst coverage decreases for our treatment firms.

Next, we examine how the real effects of analyst coverage depend on how costly the decrease in analyst coverage is to the firm. A decrease in analyst coverage increases information asymmetry and thus increases the cost of capital. We hypothesize that a decrease in analyst coverage is more costly for firms that are more financially constrained, with more product market competition, and with more information asymmetry. (Consider the following example for information asymmetry: the loss of one analyst causes a bigger increase in information asymmetry for a firm hitherto covered by five analysts than for a firm hitherto covered by twenty-five analysts because the information produced by one analyst is relatively more important for the former than for the latter.) Therefore, a decrease in analyst coverage causes a bigger decrease in investment, financing, and payouts for firms that are more financially constrained, with more product market competition, and with more information asymmetry.

We use several proxies to classify our firms as financially constrained or unconstrained: the total payout ratio, total assets, bonds rating status, and the cash flow-investment gap. We also use several proxies, both firm-level and industry-level, to classify our firms as engaging in high or low product market competition, including the firm's price-cost margin and the industry's price-cost margin among others. We likewise use several groups of proxies to classify our firms as having high or low information asymmetry: how much information is being produced about the firm (e.g., analyst coverage); the information content of the firm's stock price (e.g., price impact (see Amihud (2002)); the relative importance of investment opportunities compared to assets in place (e.g., investment); and the decrease in firm value caused by the decrease in

analyst coverage. We find that the real effects of analyst coverage are indeed bigger for firms that are more financially constrained, with more product market competition, and with more information asymmetry.

We contribute to the literature on analyst coverage and corporate policies specifically as well as the literature on information asymmetry and corporate policies generally. To our knowledge, ours is the first paper that shows that changes in analyst coverage cause changes in corporate policies. Ours is also one of the few papers that study analyst coverage and corporate policies comprehensively.[3] Finally, recent research has challenged the received wisdom that analysts affect stock prices. Loh and Stulz (2010) find that few analyst recommendation changes have an economically significant impact on stock prices, and Altınkılıç and Hansen (2009) and Altınkılıç, Balashov, and Hansen (2010), respectively, find that analysts' recommendation changes and earnings estimate changes have no price impact once contemporaneous information shocks are taken into account. We show that the information produced by analysts has economically significant real effects.

The rest of this paper is organized as follows. Section 2 presents the sample and data. Section 3 presents the main results. Section 4 presents additional results. Section 5 concludes.

2. Sample and Data

We construct our sample by identifying firms that lose analyst coverage because of broker closures and broker mergers. We then match these treatment firms to similar control firms. This allows us to estimate the difference-in-differences effect of a decrease in analyst

[3] To the best of our knowledge, only two other papers study analyst coverage and corporate policies. The more closely related paper, Doukas, Kim, and Pantzalis (2008), finds that firms with greater analyst coverage spend more on capital expenditures (but does not study research and development expenditures and acquisitions expenditures) and raise more total external financing (debt plus equity). The other paper, Chang, Dasgupta, and Hilary (2006), studies analyst coverage and capital structure but does not study investment and payouts at all nor does it directly study financing. Neither paper addresses the endogeneity of analyst coverage and corporate policies with a natural experiment like ours does.

coverage: the difference between the year after versus the year before and the difference between our treatment firms versus our control firms.

We use I/B/E/S to identify brokers that disappear between 1994 and 2008, and we determine broker closures using press releases and broker mergers using Securities Industry Association Yearbooks. We also use these two sources to identify broker disappearance dates. These dates do not always correspond to broker disappearance dates in I/B/E/S. Since we cannot reconcile the two when they differ, we instead measure most variables "before" the broker disappearance at three months before the broker disappearance date and "after" the broker disappearance at three months after. Hence the end of year -1 and the start of year +1 are actually separated by six months. For Compustat variables, we use six months before and six months after because Compustat data are annual data and we must avoid overlapping Compustat data in year -1 and year +1. Our list of 49 broker disappearances is similar to those of Kelly and Ljungqvist (2010) and Hong and Kacperczyk (2010) combined; any differences arise from our use of I/B/E/S data rather than the Reuters data used by Kelly and Ljungqvist (2010), and our use of a broader sample of broker mergers than used by Hong and Kacperczyk (2010).

We construct a list of firms covered by brokers during the year before their disappearance dates as well as the analysts working for the brokers. For broker closures, we retain firms for which the analyst disappears from I/B/E/S during the year after the broker disappearance date. For broker mergers, we retain firms covered by both the target broker and the acquirer broker before the merger and for which exactly one of their analysts disappears; this eliminates the possibility that only one broker covers the firm before the merger and the analyst is terminated because he anticipates specific corporate policies for the firms that he covers (e.g., a decrease in investment, financing, and payouts).

We retain publicly traded U.S. operating firms that are not financials or utilities, that have been traded for at least one year before the broker disappearance date, and that have Compustat data both in year -1 and year +1. Since we use both treatment firms and control firms in our empirical analysis, we impose these restrictions on both groups of firms. We require candidate control firms to be in the same size tercile, book-to-market tercile, and momentum tercile as our treatment firms. If possible, we also require that candidate control firms have the same two-digit SIC code as our treatment firms; otherwise, we require that SIC code divisions be the same. We then retain candidate control firms that have the smallest difference in number of analysts to the corresponding treatment firms. Finally, we break any remaining ties based on the smallest differences in size, book-to-market, momentum, and total assets.[4] In summary, our treatment firms and control firms are matched by industry, size, book-to-market, momentum, and analyst coverage. Our matching is similar to that of Kelly and Ljungqvist (2010) and Hong and Kacperczyk (2010) except that we also match by industry to account for industry effects that explain corporate policies. Our sample comprises 2,303 observations.

Analyst data are from I/B/E/S, stock trading data are from CRSP, accounting data are from Compustat, institutional ownership data are from Thomson's 13f filings database. We winsorize all continuous variables at the 1st and 99th percentiles.

We use a difference-in-differences approach to ensure that the variation in analyst coverage and the variation in corporate policies is not caused by variation in some other variables that affect both analyst coverage and corporate policies. As long as our treatment firms and control firms are similar except for the decrease in analyst coverage for our treatment firms,

[4] To this end, we compute the difference between treatment firms and controls firms for each of size, book-to-market, and momentum. We compute the rank of the difference for each of these three variables, and we compute the total rank across all three variables. We retain candidate control firms that have the smallest total rank. If there are still any remaining ties, we repeat this procedure for total assets.

our approach ensures that the changes in corporate policies that we estimate are caused by changes in analyst coverage. In this case, we do not also have to control for cross-sectional and time-series effects that affect both analyst coverage and corporate policies.

A valid instrument must meet two conditions: relevance and exogeneity. We test the relevance condition by computing the decrease in analyst coverage for our sample firms. During the six months centered on the end of the broker disappearance month, analyst coverage of our treatment firms decreases by 1.13 analysts more than for our control firms (with a t-statistic of 10.21). Thus broker disappearances are associated with a decrease in analyst coverage of roughly one analyst. This is what we expect based on our sample construction. Although the exogeneity condition is inherently untestable, we summarize the evidence in the section on robustness tests that supports the argument that decreases in analyst coverage caused by broker disappearances are exogenous to corporate policies.

[Insert Figure 1 about here]

We examine the distribution in calendar time of brokers that disappear and firms that lose analyst coverage. Figure 1 presents these two distributions. Broker disappearances are relatively dispersed through time although there is some clustering in 2000 and there are no broker disappearances in 1995, 1996, 2003, and 2006. Firms that lose analyst coverage, on the other hand, are strongly clustered in time: 1,046 observations (45% of our sample) are in 2000 and 2002, and a further 850 observations (37% of our sample) are in 1997, 2007, and 2008. A small number of broker disappearances accounts for a large number of firms that lose analyst coverage: for example, Credit Suisse First Boston's acquisition of Donaldson, Lufkin & Jenrette in October 2000 accounts for 181 firms (8% of firms), and the top 15, 20, and 25 (of 49) brokers account for 79%, 89%, and 94%, respectively, of our firms. Our difference-in-differences approach ensures

that time-series effects cannot explain our results. However, we examine in the section on robustness tests our results separately for the small number of broker disappearances each of which causes a large number of firms to lose analyst coverage.

To compare how well our control firms match our treatment firms, we compute the mean, median, and standard deviation of our matching variables as well as total assets and our corporate policy variables. By construction, all of control firms have the same SIC code divisions as our treatment firms, and 85% of control firms have the same two-digit SIC code as our treatment firms. Hence our treatment firms and control firms are well matched by industry. The other matching variables are size, book-to-market, momentum, and analyst coverage. We examine corporate policy variables for investment, financing, and payouts. For investment, we use capital expenditures, research and development expenditures, acquisitions expenditures, and cash flow from investment. For financing, we use equity issuance, debt issuance, and cash flow from financing. For payouts, we use share repurchases and dividends. All corporate policy variables are scaled by total assets.

[Insert Table 1 about here]

Table 1 presents the results. Our treatment firms are very similar to our control firms during the year before the decrease in analyst coverage. This is the case not just for our matching variables but also for total assets and our corporate policy variables. Differences in our matching variables are economically small: treatment firms have slightly higher market capitalization than control firms, slightly higher book-to-market, slightly lower momentum, and slightly greater analyst coverage. The main difference in corporate policy variables is that treatment firms have lower cash flow from investment by roughly 1 percentage point because their research and development expenditures are higher by roughly 1 percentage point. Also, while treatment firms

issue roughly 0.5 percentage points more equity than control firms, they also repurchase more stock by the same amount, so net equity issuance is the same for our treatment and control firms. For the level of all other corporate policy variables, our treatment firms and control firms are similar.

3. Main Results

In this section, we examine the effect of analyst coverage on corporate policies. We begin with a graphical depiction of the evolution of analyst coverage and corporate policies during the years before and after the decrease in analyst coverage. Then we formally test whether the change in corporate policies caused by the decrease in analyst coverage is statistically significant. Throughout our analysis, we study the difference between treatment firms and control firms unless otherwise indicated.

[Insert Figure 2 about here]

Figure 2 presents the difference in analyst coverage and corporate policy variables between treatment firms and control firms during the three years before and the three years after the decrease in analyst coverage. Panel A presents analyst coverage, Panel B presents investment, and Panel C presents financing and payouts. Panel A shows that analyst coverage is roughly horizontal before and after the decrease in analyst coverage, and decreases by roughly one analyst between year -1 and year +1.

Similarly, Panel B shows that investment is roughly horizontal before year -1 and after year +1 and decreases mainly between year -1 and year +1. This is the case for all four of our investment variables.[5] Panel C paints a similar picture but financing is less well behaved than

[5] Although the negative of cash flow from investment increases in year +2 and decreases in year +3, it is clearly not driven by capital expenditures, research and development expenditures, and acquisitions expenditures. Instead, as a matter of accounting identity, it is driven by cash flows from the sum of sales of property, plant, and equipment,

investment. Equity issuance increases and decreases between year -3 and year -1 to end roughly unchanged over these three years; between year +1 to year +3, it is roughly horizontal. By contrast, debt is horizontal between year -3 and year -1; it increases and decreases to end roughly unchanged over these three years. Since cash flow from financing is roughly the sum of equity issuance and debt issuance, it exhibits an increase-decrease pattern during both three-year periods.[6] Overall, however, the main effect is a decrease between year -1 and year +1 in equity issuance, debt issuance, and cash flow from financing. Panel C also shows the evolution of payouts. Share repurchases are roughly horizontal before year -1 and after year +1, and they decrease slightly between year -1 and year +1. Patterns in dividends are harder to see because they are economically less significant by an order of magnitude, but they follow the same pattern as share repurchases.

Figure 2 also shows that the changes in corporate policies between year -1 and year +1 are not part of long-term trends in corporate policies but instead are changes that occur when analyst coverage decreases. This result supports the parallel trends assumption underlying our difference-in-differences approach.

Next, we formally test whether the change in corporate policies caused by the decrease in analyst coverage is statistically significant. For each of our corporate policy variables, we compute the mean change from year -1 to year +1 for our treatment firms (the treatment difference), our control firms (the control difference), and the difference between our treatment firms and control firms (the difference-in-differences). We focus on the mean difference-in-differences, and for this estimate we also compute the t-statistic.

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short-term financial investments, long-term financial investments, and other investments. Economically, cash flows from financial investments are the most significant.

[6] As a matter of accounting identity, cash flow from financing is the sum of cash flows from equity issuance, share repurchases, dividends, debt issuance, and other financing activities. Economically, cash flows from other financing activities are not significant.

[Insert Table 2 about here]

Table 2 presents the results. All of the mean difference-in-differences are economically and statistically significant. For investment, capital expenditures decrease by 0.81% of total assets, research and development expenditures by 0.68%, and acquisitions expenditures by 0.88% for a total decrease of 2.37% for these three investment variables. Cash flow from investment decreases by 3.05%. For financing, equity issuance decreases by 0.82% of total assets, and debt issuance decreases by 1.31% for total decrease of 2.13% for these two financing variables. Finally, for payouts, share repurchases decrease by 0.30% of total assets and dividends decrease by 0.05% of total assets.

The results are also economically significant in aggregate. Using mean total assets of $9,721 million from Table 1, we can compute the mean impact of changes in analyst coverage on corporate policy variables. The impact is economically significant. For investment, the mean decreases in capital expenditures, R&D expenditures, and acquisitions expenditures of 0.81%, 0.68%, and 0.88%, respectively, of total assets correspond to a mean decrease of $78.8, $66.1, and $85.5 million, respectively. In other words, for the average firm, these three components of investment together decrease by $230.4 million. For financing, the mean decreases in equity issuance and debt issuance of 0.82% and 1.31%, respectively, of total assets correspond to a mean decrease of $79.7 and $127.3 million, respectively. In other words, for the average firm, these two components of financing together decrease by $207.1 million. For payouts, the mean decreases in share repurchases and dividends are much smaller but still economically significant. Overall, the results confirm that analyst coverage has an economically significant impact on corporate policies.

We also briefly examine the impact of analyst coverage on capital structure. Table 2 shows that equity issuance decreases by 0.82% of total assets, share repurchases by 0.30%, so net equity issuance decreases by 0.52%; net debt issuance decreases by a larger 1.31% of total assets, so net equity issuance relative to net debt issuance appears to be 0.79% greater (i.e., leverage decreases). This would at first appear to be evidence against pecking order theory: firms appear to be using relatively less sources of financing that have lower costs of information asymmetry (relatively less debt than equity). However, in untabulated results, we also find that cash decreases by 0.84% as firms use up internal financing, which suffers from less information asymmetry costs than both debt and equity. The net effect is that capital structure is essentially unchanged, consistent with the static tradeoff theory of capital structure but inconsistent with the pecking order theory of capital structure (cf. Chang, Dasgupta, and Hilary (2006)).

4. Additional Results

In this section, we examine how the real effects of analyst coverage depend on how costly the decrease in analyst coverage is to the firm. We hypothesize that a decrease in analyst coverage is more mostly for firms that are more financially constrained, with more product market competition, and with more information asymmetry. We present our hypotheses, tests, and results in the next three subsections. In the fourth subsection, we perform robustness tests of our main results.

4.1. The Real Effects of Analyst Coverage Conditional upon Financial Constraints

First, we examine how the real effects of analyst coverage depend on the financial constraints of the firm. Like Fazzari, Hubbard, and Petersen (1988), we assume that information asymmetry is a type of financial constraint. A decrease in analyst coverage increases information asymmetry and thus increases the cost of capital. We hypothesize that the resulting effect on

firms' investment, financing, and payout policies should be bigger for firms that are more financially constrained, i.e., firms that are more financially constrained change their corporate policies more than firms that are less financially constrained. We condition upon proxies for financial constraints and test whether the real effects of analyst coverage are bigger for firms that are more financially constrained.

We use proxies for financial constraints that are standard in the literature: the total payout ratio (e.g., Fazzari, Hubbard, and Petersen (1988)), total assets (e.g., Gilchrist and Himmelberg (1995) and Hadlock and Pierce (2010)), and bonds rating status (e.g., Whited (1992), Kashyap, Lamont, and Stein (1994), and Gilchrist and Himmelberg (1995)).[7] We compute these variables and classify firms as financially constrained or not like Almeida, Campello, and Weisbach (2004) and Denis and Sibilkov (2010). Specifically, we classify firms in the bottom three deciles of the total payout ratio (the ratio of dividends plus share repurchases to operating income) as constrained and firms in the top three deciles as unconstrained. We classify firms in the bottom three deciles of total assets as constrained and firms in the top three deciles as unconstrained. We classify firms that have long-term debt but no bond rating as constrained, and otherwise we classify them as unconstrained.

We also use another proxy for financial constraints: the cash flow-investment gap (i.e., cash flow minus investment). At one extreme, a firm with less cash flow than investment (i.e., a negative gap) must finance its investments externally. At the other extreme, a firm with more cash flow than investment (i.e., a positive gap) can finance its investment internally. The negative gap firm is more sensitive to the cost of capital than the positive gap firm, i.e., it is more financially constrained. In response to an increase in the cost of capital caused by the decrease in

[7] These proxies are arguably exogenous compared to the constituent proxies of the index of financial constraints proposed by Kaplan and Zingales (1997).

analyst coverage, the negative gap firm should decrease investment, financing, and payouts by more than the positive gap firm. We compute the cash flow-investment gap as cash flow minus investment all divided by total assets. For cash flow, we use net income before extraordinary items plus depreciation and amortization. For investment, we use the sum of capital expenditures, research and development expenditures, and acquisitions expenditures. We classify firms in the bottom half of the cash flow-investment gap as constrained, and otherwise we classify them as unconstrained.

We measure all of our conditioning variables using only treatment firms, and we measure them during the year before the decrease in analyst coverage. As in Table 2, we compute the mean difference-in-differences change for each of our corporate policy variables (i.e., the difference between the year after versus the year before and the difference between our treatment firms versus our control firms). We also compute the mean difference-in-differences change for the change in cash holdings to examine whether more financially constrained firms increase their internal financing.

[Insert Table 3 about here]

Table 3 presents the results. The real effects of analyst coverage are bigger for firms that are financially constrained. This is the case whether we proxy for financial constraints using the total payout ratio (Panel A), total assets (Panel B), bond rating status (Panel C), or the cash flow-investment gap (Panel D). We also use commercial paper rating status as a proxy for financial constraints (e.g., Calomiris, Himmelberg, and Wachtel (1995)), and we find the same results (not tabulated).[8]

[8] Following Almeida, Campello, and Weisbach (2004) and Denis and Sibilkov (2010), we classify firms that have short-term debt but no commercial paper rating as constrained, and otherwise we classify them as unconstrained.

The difference between constrained and unconstrained firms is always statistically significant for cash flow from investment and for cash flow from financing, and it is generally significant for the individual components of investment and financing. The difference for payouts is mixed. The decrease in the change in cash holdings is also bigger for constrained than unconstrained firms (except for the cash flow-investment gap), which suggests that more financially constrained firms increase their internal financing in response to an increase in information asymmetry caused by a decrease in analyst coverage. Overall, the real effects of analyst coverage are bigger for financially constrained firms.

We also examine whether the decrease in analyst coverage causes financial constraints to increase. In so doing, we enter the debate about how investment depends on financing: whether the cash flow sensitivity of investment depends on the cost of internal versus external financing (e.g., see Fazzari, Hubbard, and Petersen (1988), Hoshi, Kashyap, and Scharfstein (1991), Gilchrist and Himmelberg (1995), and Cleary (1999)). Since a decrease in analyst coverage increases financial constraints, the cash flow sensitivity of investment should increase.

We also wade into the debate about how investment depends on stock prices. The early evidence suggests that investment is not very sensitive to mispricing after accounting for fundamentals (e.g., Morck, Shleifer, and Vishny (1990) and Blanchard, Rhee, and Summers (1993)). Some of the more recent evidence suggests that investment is sensitive to mispricing (e.g., Gilchrist, Himmelberg, and Huberman (2005)), especially if the firm is financially constrained (e.g., Baker, Stein, and Wurgler (2003)). Other more recent evidence supports the earlier evidence (e.g., Chen, Goldstein, and Jiang (2007)). We are agnostic about the price sensitivity of investment.

We use decreases in analyst coverage to test whether the cash flow sensitivity of investment increases because of an increase in financial constraints. Our paper is one of the few that use an exogenous change in financial constraints (Lamont (1997) is another notable exception). We pool together treatment firms and control firms the year before and the year after the decrease in analyst coverage, and we run a standard regression of investment on cash flow and the stock price. For investment, we use capital expenditures scaled by lagged total assets; for cash flow, we use operating income plus depreciation scaled by lagged total assets; and for the stock price, we use the lagged market-to-book ratio of the firm. We test whether the difference-in-differences change for cash flow sensitivity and price sensitivity is significantly different from zero (i.e., the difference between the year after versus the year before and the difference between our treatment firms versus our control firms).

[Insert Table 4 about here]

Table 4 presents the results. A decrease in analyst coverage causes a significant increase in the cash flow sensitivity of investment (with a p-value of 0.015), but it does not cause a significant change in the price sensitivity of investment. While the results suggest that investment is not sensitive to price, measured market-to-book may simply be a very noisy proxy for marginal Q, and the theory argues that it is marginal that should matter for investment (see Erickson and Whited (2000)). In summary, our results suggest that the decrease in analyst coverage causes financial constraints to increase.

4.2. The Real Effects of Analyst Coverage Conditional upon Product Market Competition

Second, we examine how the real effects of analyst coverage depend on the product market competition faced by the firm. A decrease in analyst coverage increases information asymmetry and thus increases the cost of capital. We hypothesize that the resulting effect on

firms' investment, financing, and payout policies should be bigger for firms with more product market competition. For example, the increase in external financing costs decreases profitability relatively more for firms with thin profit margins than firms with fat profit margins; since they have less internal financing from their cash flows, firms with thin profit margins must decrease investment, external financing, and payouts by more than firms with fat profit margins. We condition upon proxies for product market competition and test whether the real effects of analyst coverage are bigger for firms with more product market competition.

We use two versions of a proxy for product market competition that is standard in the literature: the price-cost margin (e.g., see Aghion, Bloom, Blundell, Griffith, and Howitt (2005), Gaspar and Massa (2006), and Peress (2010)), which is also known as the Lerner index (see Lerner (1934)). A higher price-cost margin proxies for more product market competition. Our two versions of this proxy are the firm's price-cost margin and the industry's price-cost margin. We compute the latter as the mean price-cost margin of the firm's industry where industry is defined based on two-digit SIC codes. Both versions of the price-cost margin have their advantages: the firm's price-cost margin is a more precise measure of the firm's pricing power, but the industry's price-cost margin is more exogenous to the firm's corporate policies. We classify firms as engaging in high or low product market competition based on the value of the product market competition proxy for the firm relative to the median value. We measure both of our conditioning variables using only treatment firms, and we measure them during the year before the decrease in analyst coverage. As in Table 2, we compute the mean difference-in-differences change for each of our corporate policy variables (i.e., the difference between the year after versus the year before and the difference between our treatment firms versus our control firms).

[Insert Table 5 about here]

Table 5 presents the results. The real effects of analyst coverage are bigger for firms with more product market competition whether we use a firm-level proxy (Panel A) or an industry level proxy (Panel B). Panel A presents the results for the firm's price-cost margin as our proxy. We also use the firm's market share as a proxy for product market competition at the firm level, and we find the same results (not tabulated). Panel B presents the results for the industry's price-cost margin as our proxy. We also use several additional proxies for product market competition at the industry level: the Herfindahl-Hirschman index of the industry; its two components, namely, the mean market share of firms in the industry and the number of firms in the industry; and the four-firm concentration ratio of the industry (the sum of the market shares of the four firms with the highest market shares) (e.g., see Gaspar and Massa (2006) and Giroud and Mueller (2010)). We find the same results with these additional industry-level proxies (not tabulated).

The difference between firms with low and high product market competition is always statistically significant for cash flow from investment and for cash flow from financing, and it is generally significant for the individual components of investment and financing. The difference for payouts is generally economically and statistically less significant. The difference for share repurchases is not statistically significant. Dividends decrease both for the firm-level and industry-level proxies, but the decrease is only statistically significant at the firm-level. Overall, the real effects of analyst coverage are bigger for firms with more product market competition.

4.3. The Real Effects of Analyst Coverage Conditional upon Information Asymmetry

Third, we examine how the real effects of analyst coverage depend on the information asymmetry of the firm. We hypothesize that a decrease in analyst coverage by one analyst causes

a bigger increase in information asymmetry for firms with high information asymmetry than for firms with low information asymmetry. For example, the loss of one analyst causes a bigger increase in information asymmetry for a firm hitherto covered by five analysts than for a firm hitherto covered by twenty-five analysts because the information produced by one analyst is relatively more important for the former than for the latter. Consequently, the disappearance of an analyst should have a bigger impact on the corporate policies for the firm with high information asymmetry than the firm with low information asymmetry. We condition upon proxies for information asymmetry and test whether the real effects of analyst coverage are bigger for firms with more information asymmetry.

We use several proxies for information asymmetry. The first proxy, analyst coverage, captures how much information is being produced about the firm. The second proxy, price impact, captures the information content of the firm's stock price. The third proxy, investment, captures the relative importance of investment opportunities compared to assets in place for the firm. Finally, the fourth proxy, the market reaction to the decrease in analyst coverage, directly captures the decrease in firm value caused by the decrease in analyst coverage.

We compute price impact as the mean daily ratio of absolute stock returns to the dollar value of trading volume (see Amihud (2002)). For investment, we use the sum of capital expenditures, research and development expenditures, and acquisitions expenditures all divided by total assets. As for the market reaction, we use the treatment firm's return minus the control firm's return. We measure all but one of our conditioning variables using only treatment firms, and we measure them during the year before the decrease in analyst coverage; the exception is the market reaction to the decrease in analyst coverage, which we measure using treatment firms minus control firms and we do this during the six months centered on the broker disappearance

date. We classify firms as having high or low information asymmetry based on the value of the information asymmetry proxy for the firm relative to the median value. As in Table 2, we compute the mean difference-in-differences change for each of our corporate policy variables (i.e., the difference between the year after versus the year before and the difference between our treatment firms versus our control firms).

[Insert Table 6 about here]

Table 6 presents the results. The real effects of analyst coverage are bigger for firms about which there is less information being produced (Panel A), firms with less informative stock prices (Panel B), firms with relative more investment opportunities than assets in place (Panel C), and firms for which the decrease in analyst coverage causes a bigger decrease in firm value (Panel D).

Panel A presents the results for analyst coverage as our proxy for information production. Panel B presents the results for price impact as our proxy for stock price informativeness. We also use turnover and earnings surprises as proxies, and we find the same results (not tabulated).[9] Panel C presents the results for investment as our proxy for investment opportunities versus assets in place. The results are also the same for capital expenditures, research and development expenditures, and acquisitions expenditures individually as well as for the sum of capital expenditures and research and development expenditures. We also use asset tangibility and age as proxies, and we find the same results (not tabulated).[10] Panel D presents results using the decrease in firm value caused by the decrease in analyst coverage.

[9] We compute earnings surprises as the mean absolute value of the market reaction to earnings announcements. We compute the market reaction as the excess return during the three days centered on the firm's earnings announcement date. We use raw returns minus market returns to compute excess returns. We use the market reaction to the firm's previous four earnings announcements to compute the mean absolute value of the market reaction.

[10] We compute asset tangibility as the ratio of property, plant, and equipment to total assets. We compute age as the number of years that the firm has been publicly traded.

All panels consistently show that the real effects of analyst coverage are bigger for firms about which there is less information being produced. The difference between firms with high and low information asymmetry is always statistically significant for cash flow from investment and for cash flow from financing, and it is generally significant for the individual components of investment and financing. The difference for payouts is much smaller in economic magnitude and is not generally statistically significant (except for share repurchases in Panel D). In summary, the decrease in investment and financing caused by a decrease in analyst coverage is bigger for firms with more information asymmetry.

Another natural proxy for information asymmetry is whether the analyst that disappears is a star analyst according to the annual Institutional Investor magazine ranking of analysts. If star analysts produce more information, then the disappearance of a star analyst causes a bigger increase in information asymmetry than the disappearance of a non-star analyst. Unfortunately, virtually none of our observations are associated with terminated analysts that are stars. While it is not surprising that other brokers inevitably hire the star analysts of brokers that disappear, it makes it difficult for us to condition upon star analyst status.

Instead, we consider whether the broker that employs the analyst that disappears is a leading broker according to Institutional Investor magazine. While 42% of our observations are associated with brokers that disappear that are leading brokers, leading broker status is a more noisy proxy than star analyst status. Moreover, leading brokers are associated with substantially bigger firms than non-leading brokers. The mean market capitalization and analyst coverage of our sample firms associated with leading brokers is $23,221 million and 20.8 analysts whereas the corresponding figures are $12,891 million and 17.9 analysts for firms associated with non-leading brokers. The corresponding medians are $5,843 million and 20 analysts versus $1,873

million and 17 analysts. Leading broker status is thus a proxy for low information asymmetry rather than high (our average treatment firm has a market capitalization of $16,120 million on average is covered by 19.2 analysts). Put another way, by conditioning upon whether the broker that disappears is a leading broker, we are conditioning upon whether there remain many other economic agents that produce information. We redo Table 2 for leading brokers and non-leading brokers (results not tabulated). Indeed, we find that the real effects of analyst coverage are bigger for firms for which the analyst that disappears is associated with a leading broker.

4.4. Robustness Tests

We reiterate that we examine the real effects of analyst coverage using changes in analyst coverage that are exogenous to changes in corporate policies. Decreases in analyst coverage from broker closures and broker mergers must be exogenous unless the terminated analysts anticipate specific corporate policies for the firms that they cover. Other studies that use broker closures and brokers mergers provide evidence that these two natural experiments are indeed exogenous. Kelly and Ljungqvist (2010) find that decreases in analyst coverage caused by exogenous broker closures are not associated with a negative earnings surprise after the decrease in coverage. This is inconsistent with broker closures being caused by the terminated analysts anticipating underperformance for the firms that they cover. Similarly, Hong and Kacperczyk (2010) find that the one of two analysts terminated after a broker merger does not have a greater earnings estimate bias.

We also perform numerous robustness tests of our results. We begin by examining our results separately for the small number of broker disappearances each of which causes a large number of firms to lose analyst coverage. This is important because Figure 1 shows that firms that lose analyst coverage are strongly clustered in time. We perform two analyses to this end.

First, we collapse our observations by broker to avoid giving more weight to broker disappearances that cause a large number of firms to lose analyst coverage. For each broker, we use the mean change for each of our corporate policy variables. We redo Table 2 for the top 15, 20, and 25 brokers ranked by the number of firms that lose analyst coverage, which account for 1,829 firms, 2,057 firms, and 2,174 firms (79%, 89%, and 94% our sample), respectively. The results are the same. Second, we redo Table 2 for each of the top 25 brokers separately. Once again, the results are the same. These two analyses suggest that our result are not driven by the small number of broker disappearances each of which causes a large number of firms to lose analyst coverage.

We also consider whether our results are driven by life cycle differences between our treatment firms and control firms. Suppose that the analysts in our sample are terminated because the firms that they cover are about to begin to terminally decline. Furthermore, suppose that this is the case only for our treatment firms, not our control firms; in other words, our treatment firms and control firms are not properly matched. Then the changes in corporate policies that we attribute to changes in analyst coverage are actually attributable to firm life cycle effects. We test this explanation by computing the ages of our treatment firms and control firms where age is measured as the number of years since the firm became a publicly traded firm. We find that the mean and median age is 22.6 years 14.6 years for our treatment firms versus 22.8 years and 14.6 years for our control firms. This suggests that our results are not driven by life cycle differences.

Finally, we reiterate that our results are not driven by long-term trends in corporate policies. Figure 2 shows that the changes in corporate policies between year -1 and year +1 occur when analyst coverage decrease; these changes in corporate policies are not part of long-term

trends before year -1 or after year +1. This result supports the parallel trends assumption underlying our difference-in-differences approach.

5. Conclusion

In this paper, we study the causal effects of analyst coverage on firms' investment, financing, and payout policies. We hypothesize that a decrease in analyst coverage increases information asymmetry and thus increases the cost of capital. Consequently, the profitability of projects decreases, so the optimal amount of investment decreases. Similarly, since the cost of external financing increases in absolute terms and the cost of internal financing decreases in relative terms, the optimal amount of external financing decreases and the optimal amount of payouts decreases. In summary, a decrease in analyst coverage decreases investment, financing, and payouts.

In our empirical analysis, we use two natural experiments to identify changes in analyst coverage that are exogenous to corporate policies: broker closures and broker mergers. It is highly improbable that brokers close their research divisions and terminate all of their analysts or that two brokers merge and terminate one of their combine two analysts because their analysts anticipate specific corporate policies for the firms that they cover. For our sample, we use 2,303 firms that lose analyst coverage because of 49 broker closures and broker mergers between 1994 and 2008. We compare the changes in corporate policies of these treatment firms to those of control firms matched on size, book-to-market, momentum, industry, and analyst coverage. We find that firms that lose analyst coverage decrease investment and financing by 3.05 and 2.13 percentage points of total assets, respectively; firms also decrease payouts but by smaller magnitudes.

We also examine how the real effects of analyst coverage depend on how costly the decrease in analyst coverage is to the firm. We hypothesize that a decrease in analyst coverage is more costly for firms that are more financially constrained, with more product market competition, and with more information asymmetry. Using numerous proxies for each of these conditional analyses, we find that the decrease in investment, financing, and payouts is indeed bigger for firms that are more financially constrained, with more product market competition, and with more information asymmetry. Overall, our results show that analysts have economically significant effects firms' investment, financing, and payout policies.

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Table 1
Descriptive Statistics

This table presents descriptive statistics that compare treatment firms and control firms. The sample comprises 2,303 observations of firms that lose analyst coverage between 1994 and 2008 because of broker closures and broker mergers. Treatment firms are matched to control firms by industry, size, book-to-market, momentum, and analyst coverage. Both groups of firms are publicly traded U.S. operating firms, are not financials or utilities, and have been traded for at least one year. Corporate policy variables are scaled by total assets.

	Mean		Median		Standard deviation	
	Treatment firms	Control firms	Treatment firms	Control firms	Treatment firms	Control firms
Matching variables						
Market capitalization ($M)	16,120	14,422	3,304	2,919	34,753	34,109
Book-to-market	0.559	0.498	0.349	0.343	0.690	0.511
Momentum	6.13%	8.71%	-0.27%	0.39%	55.77%	54.09%
Number of analysts	19.2	16.6	18.0	16.0	9.7	9.6
Other variables						
Total assets ($M)	9,721	7,915	2,390	1,877	21,134	17,261
Investment variables						
Capital expenditures	6.23%	5.89%	4.66%	4.43%	5.33%	5.18%
Research and development expenditures	4.33%	3.36%	0.71%	0.44%	6.86%	5.12%
Acquisitions expenditures	2.32%	2.37%	0.00%	0.00%	5.20%	5.15%
Negative cash flow from investment	13.55%	12.21%	10.58%	10.20%	12.76%	10.70%
Financing variables						
Equity issuance	3.84%	3.33%	0.85%	0.74%	10.18%	8.39%
Share repurchases	3.01%	2.51%	0.24%	0.16%	5.58%	4.33%
Dividends	1.02%	1.06%	0.00%	0.00%	1.64%	1.76%
Debt issuance	1.70%	1.48%	0.00%	0.00%	7.42%	6.78%
Cash flow from financing	2.62%	2.29%	0.46%	0.15%	13.87%	11.59%

Table 2
The Effect of a Decrease in Analyst Coverage on Corporate Policies

This table presents the mean change in corporate policies caused by a decrease in analyst coverage. The sample comprises 2,303 observations of firms that lose analyst coverage between 1994 and 2008 because of broker closures and broker mergers. Treatment firms are matched to control firms by industry, size, book-to-market, momentum, and analyst coverage. Both groups of firms are publicly traded U.S. operating firms, are not financials or utilities, and have been traded for at least one year. For each corporate policy variable, the mean change from the year before the decrease in analyst coverage to the year after is computed for treatment firms (the treatment difference), control firms (the control difference), and the difference between treatment firms and control firms (the difference-in-differences). Corporate policy variables are scaled by total assets. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels, respectively.

	Mean change in corporate policies			
	Treatment firms	Control firms	Difference	t-statistic
Investment				
Capital expenditures	0.10%	0.88%	-0.81%***	-6.28
Research and development expenditures	0.30%	0.99%	-0.68%***	-6.62
Acquisitions expenditures	0.08%	1.11%	-0.88%***	-3.39
Negative cash flow from investment	-0.31%	-3.32%	-3.05%***	-5.98
Financing				
Equity issuance	-1.63%	-0.83%	-0.82%***	-2.68
Share repurchases	0.16%	0.44%	-0.30%*	-1.77
Dividends	0.13%	0.16%	-0.05%**	-2.26
Debt issuance	-0.21%	1.11%	-1.31%***	-3.63
Cash flow from financing	-2.09%	0.05%	-2.13%***	-4.24

Table 3
The Effect of a Decrease in Analyst Coverage on Corporate Policies Conditional upon Financial Constraints

This table presents the mean change in corporate policies caused by a decrease in analyst coverage conditional upon financial constraints. The sample comprises 2,303 observations of firms that lose analyst coverage between 1994 and 2008 because of broker closures and broker mergers. Treatment firms are matched to control firms by industry, size, book-to-market, momentum, and analyst coverage. Both groups of firms are publicly traded U.S. operating firms, are not financials or utilities, and have been traded for at least one year. For each corporate policy variable, the mean change from the year before the decrease in analyst coverage to the year after is computed for the difference between treatment firms and control firms. Corporate policy variables are scaled by total assets. Firms in the bottom three deciles of the total payout ratio (the ratio of dividends plus share repurchases to operating income) are classified as constrained and firms in the top three deciles as unconstrained. Firms in the bottom three deciles of total assets are classified as constrained and firms in the top three deciles as unconstrained. Firms that have long-term debt but no bond rating are classified as constrained, and otherwise they are classified as unconstrained. Firms in the bottom half of the cash flow-investment gap (cash flow minus investment all divided by total assets) are classified as constrained, and otherwise they are classified as unconstrained. All conditioning variables are measured using only treatment firms, and they are measured during the year before the decrease in analyst coverage. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels, respectively.

Panel A: Conditional upon Total Payout Ratio at Year -1						
	Low total payout ratio		High total payout ratio		Low minus high	
	Mean	t-statistic	Mean	t-statistic	Mean	t-statistic
Investment						
Capital expenditures	-1.28%***	-4.71	-0.65%***	-3.59	-0.63%*	-1.92
Research and development expenditures	-1.10%***	-4.05	-0.63%***	-4.51	-0.46%	-1.51
Acquisitions expenditures	-1.12%**	-2.15	-0.78%*	-1.66	-0.34%	-0.48
Negative cash flow from investment	-6.67%***	-5.86	-1.06%	-1.23	-5.61%***	-3.92
Financing						
Equity issuance	-3.43%***	-4.30	0.41%	1.33	-3.84%***	-4.44
Share repurchases	0.60%***	2.68	-3.16%***	-7.52	3.76%***	7.97
Dividends	-0.03%	-0.94	-0.14%***	-2.84	0.12%**	2.01
Debt issuance	-2.06%***	-2.89	-1.32%**	-2.02	-0.73%	-0.76
Cash flow from financing	-6.92%***	-6.11	2.18%***	2.87	-9.10%***	-6.65
Change in cash holdings	-2.44%**	-2.44	0.03%	0.06	-2.48%**	-2.15

Panel B: Conditional upon Total Assets at Year -1						
	Low total assets		High total assets		Low minus high	
	Mean	t-statistic	Mean	t-statistic	Mean	t-statistic
Investment						
Capital expenditures	-0.84%***	-3.25	-0.67%***	-3.53	-0.17%	-0.53
Research and development expenditures	-1.09%***	-4.02	-0.66%***	-5.48	-0.42%	-1.43
Acquisitions expenditures	-1.34%**	-2.36	-1.05%***	-2.75	-0.28%	-0.41
Negative cash flow from investment	-6.01%***	-4.94	-1.79%***	-2.79	-4.22%***	-3.07
Financing						
Equity issuance	-3.22%***	-3.61	0.26%	1.18	-3.48%***	-3.79
Share repurchases	-0.83%***	-2.69	0.01%	0.03	-0.84%**	-2.04
Dividends	-0.03%	-0.77	0.00%	0.04	-0.03%	-0.55
Debt issuance	-2.19%***	-2.84	-0.74%	-1.47	-1.45%	-1.58
Cash flow from financing	-4.90%***	-4.00	-0.77%	-1.25	-4.13%***	-3.01
Change in cash holdings	-2.21%**	-2.06	-0.56%	-1.41	-1.65%	-1.44
Panel C: Conditional upon Bond Rating at Year -1						
	No bond rating		Bond rating		No rating minus rating	
	Mean	t-statistic	Mean	t-statistic	Mean	t-statistic
Investment						
Capital expenditures	-1.06%***	-4.00	-0.71%***	-4.75	-0.35%	-1.32
Research and development expenditures	-1.00%***	-3.85	-0.58%***	-5.67	-0.42%*	-1.84
Acquisitions expenditures	-0.40%	-0.73	-1.11%***	-3.80	0.71%	1.32
Negative cash flow from investment	-4.56%***	-4.11	-2.56%***	-4.53	-2.00%*	-1.87
Financing						
Equity issuance	-2.90%***	-3.73	-0.08%	-0.27	-2.82%***	-4.12
Share repurchases	-0.95%***	-3.04	-0.08%	-0.37	-0.88%***	-2.60
Dividends	-0.02%	-0.54	-0.06%**	-2.22	0.04%	0.87
Debt issuance	-2.25%***	-2.89	-0.97%**	-2.43	-1.27%*	-1.69
Cash flow from financing	-4.64%***	-4.18	-1.21%**	-2.22	-3.43%***	-3.24
Change in cash holdings	-2.03%**	-2.19	-0.39%	-0.93	-1.64%*	-1.92

Panel D: Conditional upon Cash Flow-Investment Gap at Year -1						
	Low gap		High gap		Low minus high	
	Mean	t-statistic	Mean	t-statistic	Mean	t-statistic
Investment						
Capital expenditures	-1.47%***	-6.98	-0.16%	-1.10	-1.31%***	-5.06
Research and development expenditures	-1.04%***	-5.67	-0.32%***	-3.26	-0.72%***	-3.47
Acquisitions expenditures	-2.52%***	-6.29	0.78%**	2.36	-3.31%***	-6.36
Negative cash flow from investment	-6.96%***	-8.51	0.68%	1.13	-7.64%***	-7.53
Financing						
Equity issuance	-1.83%***	-3.31	0.04%	0.16	-1.87%***	-3.02
Share repurchases	-0.02%	-0.11	-0.60%**	-2.16	0.58%*	1.68
Dividends	-0.08%***	-2.94	-0.02%	-0.49	-0.07%	-1.55
Debt issuance	-3.39%***	-6.00	0.68%	1.51	-4.06%***	-5.63
Cash flow from financing	-5.66%***	-6.96	1.20%**	2.07	-6.87%***	-6.87
Change in cash holdings	-0.89%	-1.30	-0.78%*	-1.87	-0.10%	-0.13

Table 4
The Effect of a Decrease in Analyst Coverage on the Cash Flow Sensitivity and Q Sensitivity of Investment

This table presents a standard regression of investment on cash flow and the stock price. The sample comprises 2,303 observations of firms that lose analyst coverage between 1994 and 2008 because of broker closures and broker mergers. Treatment firms are matched to control firms by industry, size, book-to-market, momentum, and analyst coverage. Both groups of firms are publicly traded U.S. operating firms, are not financials or utilities, and have been traded for at least one year. Treatment firms and control firms the year before and the year after the decrease in analyst coverage are pooled together. Investment is capital expenditures scaled by lagged total assets. Cash flow is operating income plus depreciation scaled by lagged total assets. The stock price is the lagged market-to-book ratio of the firm. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels, respectively. Below each coefficient estimate is its corresponding t-statistic in parentheses.

	$CAPEX_t/TA_{t-1}$
CF_t/TA_{t-1} for treatment firms at year -1 (A)	0.0853***
	(5.62)
CF_t/TA_{t-1} for treatment firms at year +1 (B)	0.1180***
	(9.65)
CF_t/TA_{t-1} for control firms at year -1 (C)	0.1277***
	(8.31)
CF_t/TA_{t-1} for control firms at year +1 (D)	0.0908***
	(6.46)
Q_{t-1} for treatment firms at year -1 (E)	0.0035***
	(5.42)
Q_{t-1} for treatment firms at year +1 (F)	0.0028***
	(3.15)
Q_{t-1} for control firms at year -1 (G)	0.0020***
	(2.78)
Q_{t-1} for control firms at year +1 (H)	0.0017**
	(2.31)
Treatment firms at year -1 dummy	0.0083**
	(2.52)
Treatment firms at year +1 dummy	-0.0069**
	(-2.22)
Control firms at year -1 dummy	0.0056
	(1.58)
Constant	0.0569***
	(24.95)
Observations	8,987
Adjusted R^2	0.072
Cash flow sensitivity	
Tests of [(B)-(A)]-[(D)-(C)]=0	
F-statistic	5.96
p-value	0.015
Q sensitivity	
Tests of [(F)-(E)]-[(H)-(G)]=0	
F-statistic	0.06
p-value	0.813

Table 5
The Effect of a Decrease in Analyst Coverage on Corporate Policies Conditional upon Product Market Competition

This table presents the mean change in corporate policies caused by a decrease in analyst coverage conditional upon product market competition. The sample comprises 2,303 observations of firms that lose analyst coverage between 1994 and 2008 because of broker closures and broker mergers. Treatment firms are matched to control firms by industry, size, book-to-market, momentum, and analyst coverage. Both groups of firms are publicly traded U.S. operating firms, are not financials or utilities, and have been traded for at least one year. For each corporate policy variable, the mean change from the year before the decrease in analyst coverage to the year after is computed for the difference between treatment firms and control firms. Corporate policy variables are scaled by total assets. The firm's price-cost margin is the firm's operating margin. The industry's price-cost margin is the industry mean price-cost margin. Firms are classified as having high or low product market competition based on the value of the product market competition proxy for the firm relative to the median value. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels, respectively.

Panel A: Conditional upon the Firm's Price-Cost Margin at Year -1						
	Low price-cost margin		High price-cost margin		Low minus high	
	Mean	t-statistic	Mean	t-statistic	Mean	t-statistic
Investment						
Capital expenditures	-1.20%***	-6.59	-0.41%**	-2.25	-0.78%***	-3.03
Research and development expenditures	-0.98%***	-6.06	-0.38%***	-3.07	-0.60%***	-2.93
Acquisitions expenditures	-0.60%	-1.64	-1.19%***	-3.15	0.59%	1.13
Negative cash flow from investment	-3.94%***	-5.27	-2.05%***	-2.96	-1.89%*	-1.85
Financing						
Equity issuance	-1.82%***	-3.44	0.19%	0.62	-2.01%***	-3.28
Share repurchases	-0.20%	-0.91	-0.41%	-1.54	0.21%	0.61
Dividends	-0.09%***	-3.15	-0.01%	-0.23	-0.08%*	-1.95
Debt issuance	-1.53%***	-3.00	-1.15%**	-2.23	-0.38%	-0.52
Cash flow from financing	-3.43%***	-4.44	-0.85%	-1.33	-2.58%***	-2.58
Panel B: Conditional upon the Industry's Price-Cost Margin at Year -1						
	Low price-cost margin		High price-cost margin		Low minus high	
	Mean	t-statistic	Mean	t-statistic	Mean	t-statistic
Investment						
Capital expenditures	-1.06%***	-5.63	-0.60%***	-3.24	-0.46%*	-1.75
Research and development expenditures	-1.23%***	-6.18	-0.19%**	-2.44	-1.03%***	-4.84
Acquisitions expenditures	-1.18%***	-2.99	-0.66%*	-1.82	-0.53%	-0.98
Negative cash flow from investment	-4.84%***	-5.55	-1.59%***	-2.76	-3.25%***	-3.10
Financing						
Equity issuance	-1.51%***	-2.72	-0.26%	-0.84	-1.25%**	-1.97
Share repurchases	-0.12%	-0.49	-0.44%*	-1.74	0.33%	0.94
Dividends	-0.06%**	-2.06	-0.03%	-1.13	-0.02%	-0.59
Debt issuance	-1.80%***	-3.21	-1.11%**	-2.31	-0.69%	-0.94
Cash flow from financing	-3.50%***	-4.15	-1.14%*	-1.94	-2.36%**	-2.29

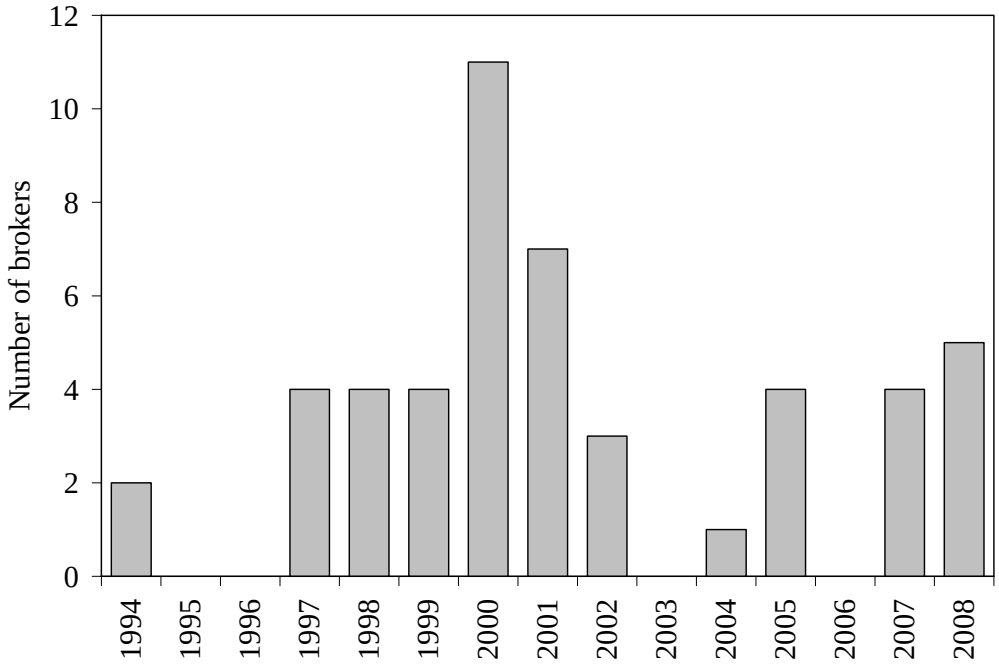
Table 6
The Effect of a Decrease in Analyst Coverage on Corporate Policies Conditional upon Information Asymmetry

This table presents the mean change in corporate policies caused by a decrease in analyst coverage conditional upon information asymmetry. The sample comprises 2,303 observations of firms that lose analyst coverage between 1994 and 2008 because of broker closures and broker mergers. Treatment firms are matched to control firms by industry, size, book-to-market, momentum, and analyst coverage. Both groups of firms are publicly traded U.S. operating firms, are not financials or utilities, and have been traded for at least one year. For each corporate policy variable, the mean change from the year before the decrease in analyst coverage to the year after is computed for the difference between treatment firms and control firms. Corporate policy variables are scaled by total assets. Price impact is computed as the mean daily ratio of absolute stock returns to the dollar value of trading volume. Investment is computed as the sum of capital expenditures, research and development expenditures, and acquisitions expenditures. The market reaction is computed as the treatment firm's return minus the control firm's return. With one exception, all conditioning variables are measured using only treatment firms, and they are measured during the year before the decrease in analyst coverage. The exception is the market reaction to the decrease in analyst coverage, which is measured using treatment firms minus control firms and this is done during the six months centered on the broker disappearance date. Firms are classified as having high or low information asymmetry based on the value of the information asymmetry proxy for the firm relative to the median value. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels, respectively.

Panel A: Conditional upon Analyst Coverage at Year -1						
	Low analyst coverage		High analyst coverage		Low minus high	
	Mean	t-statistic	Mean	t-statistic	Mean	t-statistic
Investment						
Capital expenditures	-0.83%***	-4.30	-0.80%***	-4.63	-0.03%	-0.12
Research and development expenditures	-0.99%***	-6.32	-0.37%***	-2.77	-0.62%***	-3.00
Acquisitions expenditures	-1.05%***	-2.67	-0.71%**	-2.09	-0.34%	-0.66
Negative cash flow from investment	-4.19%***	-5.35	-1.87%***	-2.89	-2.32%**	-2.28
Financing						
Equity issuance	-1.39%***	-2.70	-0.23%	-0.72	-1.16%*	-1.89
Share repurchases	-0.45%**	-2.03	-0.15%	-0.58	-0.30%	-0.86
Dividends	-0.06%**	-1.98	-0.03%	-1.16	-0.03%	-0.73
Debt issuance	-2.26%***	-4.04	-0.33%	-0.72	-1.93%***	-2.68
Cash flow from financing	-3.39%***	-4.26	-0.84%	-1.39	-2.55%**	-2.55
Panel B: Conditional upon Price Impact at Year -1						
	High price impact		Low price impact		High minus low	
	Mean	t-statistic	Mean	t-statistic	Mean	t-statistic
Investment						
Capital expenditures	-1.20%***	-5.73	-0.43%***	-2.82	-0.77%***	-2.99
Research and development expenditures	-0.96%***	-5.85	-0.41%***	-3.27	-0.55%***	-2.65
Acquisitions expenditures	-0.91%**	-2.24	-0.85%***	-2.63	-0.06%	-0.11
Negative cash flow from investment	-4.43%***	-5.39	-1.68%***	-2.78	-2.75%***	-2.70
Financing						
Equity issuance	-1.95%***	-3.44	0.30%	1.23	-2.24%***	-3.65
Share repurchases	-0.25%	-1.18	-0.36%	-1.33	0.12%	0.34
Dividends	-0.08%***	-2.66	-0.02%	-0.57	-0.06%	-1.45
Debt issuance	-1.75%***	-3.09	-0.87%*	-1.94	-0.88%	-1.21
Cash flow from financing	-3.83%***	-4.62	-0.45%	-0.80	-3.38%***	-3.37

Panel C: Conditional upon Investment at Year -1						
	High investment		Low investment		High minus low	
	Mean	t-statistic	Mean	t-statistic	Mean	t-statistic
Investment						
Capital expenditures	-1.64%***	-7.89	0.01%	0.04	-1.65%***	-6.41
Research and development expenditures	-1.15%***	-6.32	-0.21%**	-2.10	-0.94%***	-4.54
Acquisitions expenditures	-3.03%***	-7.92	1.30%***	3.75	-4.33%***	-8.39
Negative cash flow from investment	-7.21%***	-9.19	0.97%	1.51	-8.17%***	-8.08
Financing						
Equity issuance	-1.66%***	-3.32	-0.11%	-0.31	-1.55%**	-2.51
Share repurchases	-0.27%	-1.11	-0.36%	-1.45	0.09%	0.25
Dividends	-0.05%*	-1.78	-0.05%	-1.49	0.00%	0.01
Debt issuance	-3.37%***	-6.36	0.70%	1.44	-4.08%***	-5.66
Cash flow from financing	-5.00%***	-6.58	0.61%	0.93	-5.60%***	-5.59
Panel D: Conditional upon Market Reaction from Month -3 to Month +3						
	Low market reaction		High market reaction		Low minus high	
	Mean	t-statistic	Mean	t-statistic	Mean	t-statistic
Investment						
Capital expenditures	-1.33%***	-7.52	-0.30%	-1.59	-1.03%***	-3.99
Research and development expenditures	-0.71%***	-4.73	-0.66%***	-4.63	-0.05%	-0.22
Acquisitions expenditures	-1.22%***	-3.19	-0.55%	-1.55	-0.67%	-1.28
Negative cash flow from investment	-5.95%***	-8.28	-0.15%	-0.21	-5.80%***	-5.73
Financing						
Equity issuance	-2.43%***	-5.38	0.78%*	1.88	-3.21%***	-5.24
Share repurchases	-0.83%***	-3.37	0.22%	0.94	-1.05%***	-3.08
Dividends	-0.07%**	-2.31	-0.02%	-0.85	-0.05%	-1.09
Debt issuance	-1.97%***	-3.72	-0.65%	-1.32	-1.33%*	-1.84
Cash flow from financing	-3.90%***	-5.36	-0.35%	-0.51	-3.55%***	-3.55

Panel A: The distribution in calendar time of brokers that disappear



Panel B: The distribution in calendar time of firms that lose analyst coverage

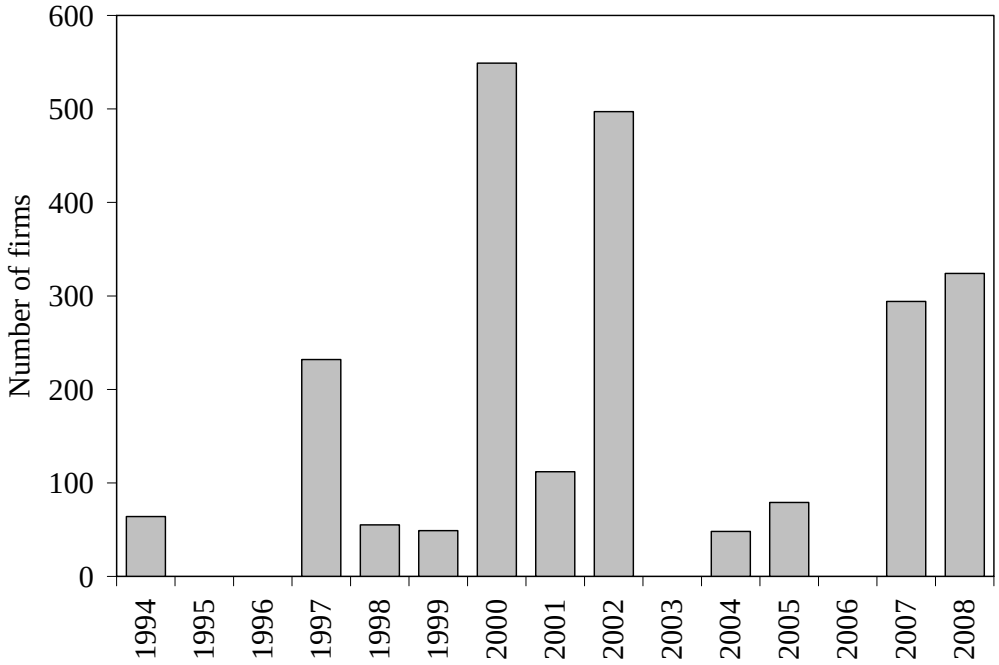
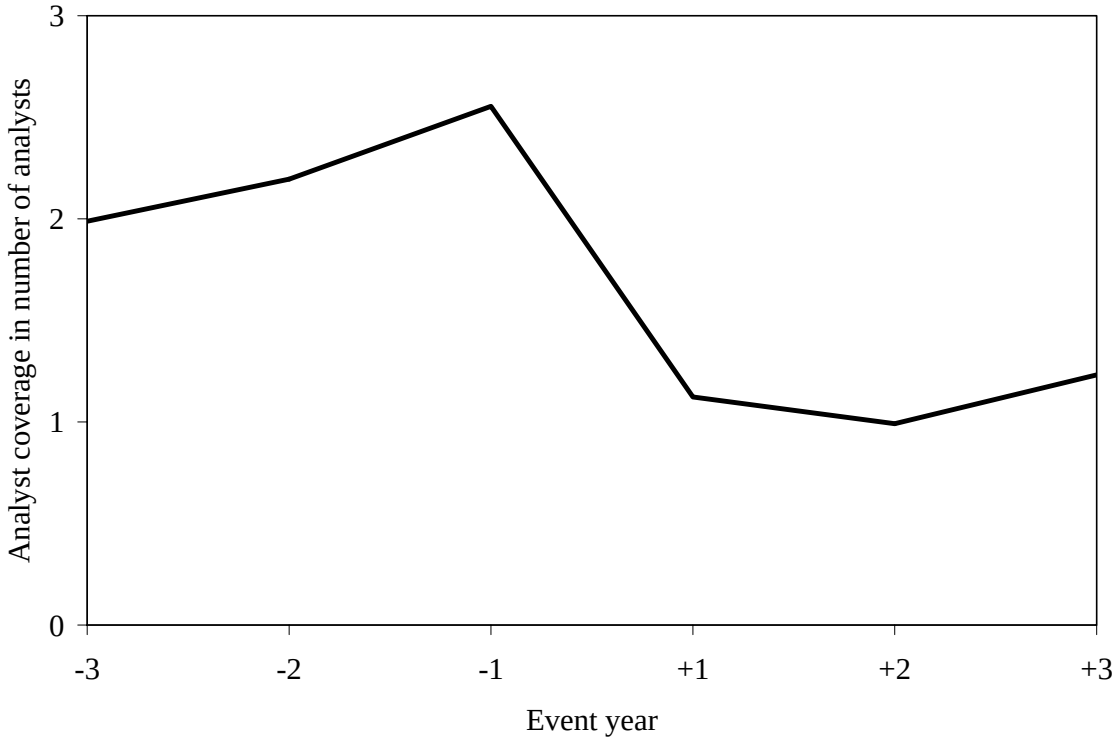
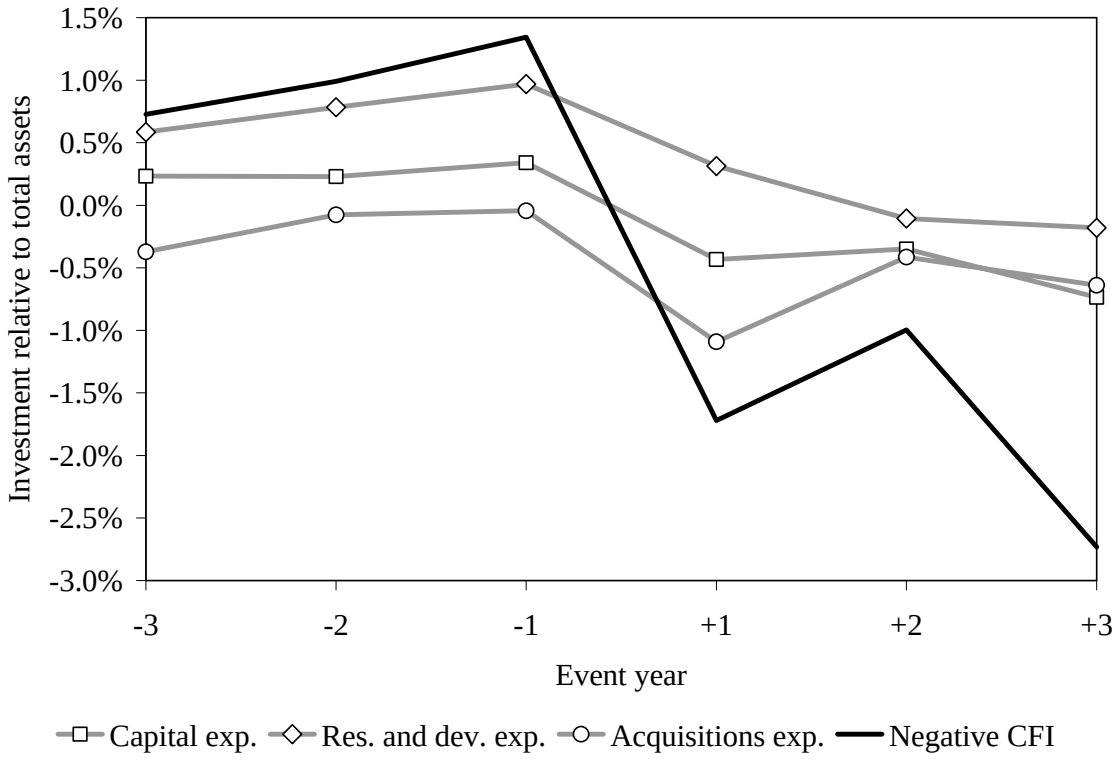


Figure 1. The distribution in calendar time of brokers that disappear and firms that lose analyst coverage. This figure presents the distribution of brokers and firms in the sample in calendar time. The sample comprises 2,303 observations of firms that lose analyst coverage between 1994 and 2008 because of broker closures and broker mergers. Treatment firms are matched to control firms by industry, size, book-to-market, momentum, and analyst coverage. Both groups of firms are publicly traded U.S. operating firms, are not financials or utilities, and have been traded for at least one year.

Panel A: Mean difference between treatment firms and control firms in analyst coverage in event time



Panel B: Mean difference between treatment firms and control firms in investment in event time



Panel C: Mean difference between treatment firms and control firms in financing in event time

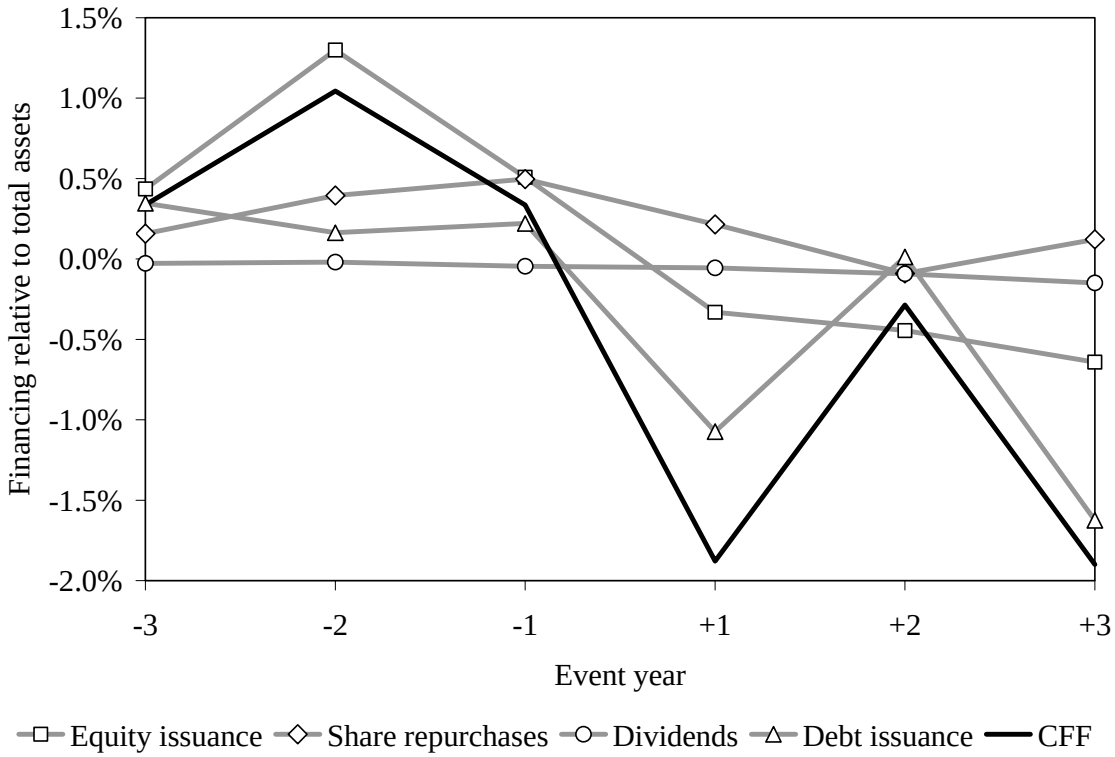


Figure 2. Mean difference between treatment firms and control firms in analyst coverage, investment, and financing in event time. This figure presents the difference in analyst coverage and corporate policy variables between treatment firms and control firms during the three years before and the three years after the decrease in analyst coverage. The sample comprises 2,303 observations of firms that lose analyst coverage between 1994 and 2008 because of broker closures and broker mergers. Treatment firms are matched to control firms by industry, size, book-to-market, momentum, and analyst coverage. Both groups of firms are publicly traded U.S. operating firms, are not financials or utilities, and have been traded for at least one year. Panel A presents analyst coverage. Panel B presents investment: capital expenditures, research and development expenditures, acquisitions expenditures, and negative cash flow from investment. Panel C presents financing: equity issuance, share repurchases, dividends, debt issuance, and cash flow from financing. Corporate policy variables are scaled by total assets.