Adds and drops of analyst coverage: Does the stock market overreact?

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January 28, 2007

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ABSTRACT

Sell-side analysts typically add coverage of firms that are more in demand by investors and have better operating performance, whereas they drop coverage of firms that score poorly on these dimensions. We document, however, that the stock market overreacts to adds and drops of coverage. Adds in one year are followed by worse returns the next year, whereas drops are followed by better returns. The increase-decrease spread from this reversal is about five percent on average, and the reversal persists even when size, turnover, institutional ownership, momentum, valuation, or risk are held fixed. We conclude that the stock market reads too much into analysts' coverage decisions and subsequently corrects itself.

1. Introduction

There are many reasons for brokerage analysts, so-called "sell-side" analysts, to add or drop research coverage of stocks in the industry they follow. Within their industry, analysts strive to cover the large capitalization firms that are of interest to most institutional investors as well as to identify up-and-coming firms (see O'Brien and Bhushan (1990)). Indeed, Jegadeesh, Kim, Krische, and Lee (2004) show that analysts tilt their recommendations towards glamour firms, i.e., firms with high market valuations, high trading volume, better past stock performance, etc. Analysts also help generate trading commissions by producing informative earnings estimates and investment recommendations thereby prompting institutions to trade. For example, Irvine (2003) finds that initiations of analyst coverage are followed by increases in liquidity.

Analysts also assist their bank's investment banking division by covering firms with prospects for securities issuance, M&A deals, restructurings, and the like. Analysts stimulate investor interest in these firms, which generates lucrative banking fees if the investment bank is chosen to intermediate these deals. In fact, as Michaely and Womack (1999) show, analysts may even be pressured by investment bankers into issuing favorable recommendations to firms that their bank has recently taken public. In sum, analysts' coverage decisions seem to cater to the market's demand for information as well as to generate trading commissions and investment banking fees.

Analysts' decisions to drop coverage of certain stocks stem from related causes. Analysts have finite resources and so they generally cannot cover all of the firms in their industry. For example, Boni and Womack (2006) show that the typical analyst covers 10 firms even though the typical industry has 177 firms. Therefore, an analyst's decision to add coverage of one firm tends to imply a decision to drop another firm. Generally speaking, analysts will add coverage of stocks about which they are bullish and drop coverage of stocks about which they are bearish (e.g., McNichols and O'Brien (1997)).

This study examines how the stock market reacts to changes in analyst coverage. Does firm value increase when analysts add coverage and decrease when they drop coverage? Does the market efficiently impound the information content of adds and drops or is there a subsequent return drift or reversal? We measure changes in coverage and returns over calendar years, which allows us to focus on the economics of changes in coverage. In the year before and the year of an increase in coverage, stock returns are relatively higher. In the year before and the year of a decrease in coverage, stock returns are relatively lower. Surprisingly, however, in the year after a change in coverage, returns reverse. Specifically, excess of market returns are -1.2 percent following adds of coverage and +3.5 percent following drops.

Why might this return reversal occur? It is relatively costly for analysts to add coverage of a stock because adding means reallocating scarce resources to covering the stock, perhaps partly at the expense of producing information about other stocks the analyst already covers. Similarly, dropping coverage means reallocating scarce resources to covering a new stock with its attendant setup costs. An analyst presumably only makes such drastic decisions if there is compelling new information prompting him into action. Whatever the source of such information, it is likely to be particularly value-relevant. In the case of such a structural break in the prospects of the firm, it would not be surprising if the stock market overshot the mark. Overreacting to a change in coverage necessarily means that returns must subsequently reverse.

Our evidence is consistent with this explanation. Simply put, analysts go where the action is. Analysts add coverage of firms that typically are more in demand by investors, and they drop coverage of firms that are less in demand by investors. Specifically, both the level of and the change in size, turnover, and institutional ownership are positively related to changes in coverage. Moreover, analysts add coverage of firms that typically have better operating performance, and they drop coverage of firms that are slipping. Specifically, both the level of and the change in profitability, growth, and investment are positively related to changes in coverage. With all this action going on, there is room enough for analysts to help rake in trading commissions and investment banking fees by producing information.

Of course, analysts' coverage decisions could simply be discrete proxies for size, turnover, institutional ownership, momentum, valuation, or risk effects. For instance, suppose that analysts add coverage of bigger firms and drop smaller firms, and suppose that bigger firms underperform smaller firms. By looking at changes in coverage and "discovering" that drops outperform adds the year after the change in coverage, we would simply be observing that smaller firms (drops) outperform bigger firms (adds). In other words, analysts may simply be piggybacking their add and drop decisions on market trends, inadvertently or otherwise. Further analysis suggests otherwise. We examine stock performance conditional on how analyst coverage changes (increases, no changes, or decreases) and size, turnover, institutional ownership, momentum, valuation (book-to-market), or risk (standard deviation of returns) quintiles. We find that even when we hold these conditioning variables fixed, the stock performance of firms for which analysts add coverage is at least as good as, if not substantially better than, the stock performance of drops in the year of the coverage decision. If anything, this suggests that analysts' own coverage decisions cause a market reaction in the same year.

However, conditional on a change in coverage this year and the aforementioned conditioning variables this year, stock performance next year is always better for drops than for adds. The increase-decrease spread is mostly unchanged in magnitude even when we hold our conditioning variables fixed (it ranges from 1.9 to 9.2 percentage points). Clearly, analysts' coverage decisions in a given year are associated with a market reaction in the same year that cannot be attributed to size, turnover, institutional ownership, momentum, valuation, or risk effects. Therefore, the market does seem to react to analysts' coverage decisions and in the right direction, but judging by the return reversal the following year, the market's contemporaneous reaction seems to be excessive. We run a battery of robustness checks and find that the return reversal in the year after a change in analyst coverage stands up to close scrutiny.

The rest of this paper is organized as follows. Section 2 outlines the sample selection and data sources. Section 3 explains why analysts add or drop coverage. Section 4 studies how the stock market reacts to adds and drops of analyst coverage. Section 5 performs robustness checks. Section 6 concludes.

2. Sample Selection and Data Sources

In this study, we examine how the number of analysts covering a firm changes across time and across firms. Typically, an analyst will at least provide one-year-ahead earnings estimates for the firms he covers whether or not he provides anything else. Accordingly, we assume that an analyst "covers" a firm if he provides a one-year-ahead earnings estimate for that firm. We extract the number of analysts providing earnings estimates ("analyst coverage") from the monthly I/B/E/S Summary History – Summary Statistics file every December, for every firm, as well as the corresponding mean earnings estimate and actual earnings. Our returns and operating performance statistics are measured over calendar years unless otherwise indicated. Since I/B/E/S earnings estimates only become widely available in 1983 and since our analysis requires one year of future returns data, we compute changes in analyst coverage for every year between 1984 and 2004 inclusive.

We extract the stock return, the corresponding CRSP value-weighted index return, closing stock price, shares outstanding, volume, exchange code, and share code from the CRSP monthly stock file for every firm, for every month. We merge our I/B/E/S and CRSP firms. Our final sample consists of all firm-years between 1984 and 2004 such that a given firm is covered by at least one analyst in both the current and previous years, has a mean monthly stock price greater than five dollars, and has a CRSP share code equal to 10, 11, or 12 (i.e., it is an operating company). Whenever we use any CRSP data, even if it is not for our sample firms, we always require that every firm have a share code equal to 10, 11, or 12. Similarly, we only use Compustat data for firms that meet the preceding requirement.

Since we study how changes in analyst coverage relate to firm characteristics, we extract operating performance data from the Compustat industrial annual files. We extract annual data on total assets (item #6), sales (item #12), operating income before depreciation (item #13), book value of equity (item #60), and capital expenditures (item #128). We obtain yearly NYSE capitalization decile breakpoints and factor returns from Ken French's website.[1] We extract from the CDA/Spectrum Institutional (13f) Holdings database, at the fourth quarter of every calendar year, for every firm, the number of institutional shareholders as well as the total number of institutions in the database. We extract from Securities Data Company data about when firms do equity offerings or acquire other firms.

3. Explaining Why Analysts Add or Drop Coverage

[1] http://mba.tuck.dartmouth.edu/pages/faculty/ken.french/

Before we study how the stock market reacts to changes in analyst coverage, we examine how and why analysts choose to add or drop stocks. As a first step, we look at how analysts cover stocks that are of interest to institutional investors. For a typical year, 1994, Table I presents cross-tabulations of analyst coverage, market capitalization, and institutional ownership. As Panel A shows, the bigger is the firm, the greater is the number of analysts covering it. Panel B provides direct evidence on how analyst coverage is related to institutional ownership. The greater is the number of institutions owning a stock, the greater is the number of analysts covering it. However, there are a number of firms with relatively higher institutional ownership than their analyst coverage would suggest, i.e., institutions own stakes in firms that are relatively neglected by analysts. We claimed that institutions tend to hold stakes in bigger firms, and Panel C shows that this is indeed the case. The bigger is the firm, the greater is the number of institutions that own some of it. Once again, there are a number of firms with relatively higher institutional ownership than their market capitalization would suggest, i.e., institutions own stakes in firms that are relatively small.

These findings are certainly a consequence of the fact that analysts cover firms for which they can generate trading commission and investment banking fees. Such firms tend to be bigger firms and firms with more institutional shareholders. So how big is the typical firm covered by analysts? Figure 1 shows that the mean market capitalization of firms covered by analysts is in the fourth or fifth decile, a relative size that has held very steady over the years. By comparison, the mean market capitalization of S&P 500 firms, practically all of which are covered by analysts, is in the eight or ninth decile during most years. We stress that the distribution of analysts per firm size is stationary over time, so when we consider analyst coverage for firms of various sizes, we are considering the same level of information production during the 1980s as during the 2000s.

[Insert Table I about here]

[Insert Figure 1 about here]

Next, we look at how many analysts cover the typical firm. Figure 2 shows that the median firm is covered by about five or six analysts over the years, whereas the mean firm is covered by roughly seven to nine analysts. Though the distribution is skewed, it is rare for a firm to be covered by more than twenty analysts. By construction, every firm in our sample is covered by at least one analyst.

[Insert Figure 2 about here]

We now turn to the central topic of interest of this section, changes in analyst coverage. As Figure 3-A shows, the typical change in coverage is no change. Even large changes of coverage rarely involve more than four analysts or so. However, Figure 3-A hides the fact that there is actually quite a bit of adding and dropping going on every year. As Figure 3-B shows, there are relatively few firms over the years with no changes in coverage, ranging from roughly 22 to 32 percent. In fact, there is quite a flurry of adding and dropping going on every year.

[Insert Figure 3 about here]

Of course, since analyst coverage takes on a fairly small number of discrete values, we would expect that there is relatively little action in stocks covered by few analysts and much more action in stocks covered by many analysts. Figure 4 shows that this intuition is correct. Firms covered by eleven analysts, i.e., firms that are heavily covered, typically tend to gain or lose as many as four analysts from one year to the next, whereas firms covered by three analysts, i.e., firms that are somewhat neglected, typically tend to gain or lose no more than two analysts.

At the same time, even on an absolute basis, both densely and sparsely covered stocks experience sizeable changes in analyst coverage from year to year. The main takeaway is that the impact of an add or drop may depend on how many analysts cover the firm.

[Insert Figure 4 about here]

We now collect the insights we have gained thus far and examine changes in analyst coverage more thoroughly in a regression setting. We consider variables that seem to be intuitively related to analyst coverage. We have already confirmed that size and institutional ownership matter. Turnover seems like a good proxy for trading commissions. Past returns seem like a good proxy for firm prospects and hence opportunities to generate trading commissions and investment banking fees. Book-to-market would seem to be important but unclear as to direction since book-to-market may measure both growth opportunities and mispricing. Risk would also seem to be important, but it is not clear a priori what the direction of the relation should be. As risk increases, information production may become more valuable to investors but also more costly for analysts to produce. An analyst may discover a nugget that might either pan out and heighten the analyst's stature among institutional investors or crumble to naught along with the analyst's commitment of resources to coverage. Equity issuance and acquisitions seem like good proxies for investment banking prospects, which analysts accommodate by providing coverage. Finally, operating performance would seem to be related to analyst coverage since firms with better prospects, such as more profitable, faster growing, more intensively investing firms, tend to generate more business for financial services firms, both directly and via investors.

The details of the construction of our less obvious variables are as follows. To create turnover deciles, every year, for every exchange, we sort all CRSP firms with share code equal to 10, 11, or 12 into turnover deciles. We do so separately for the NYSE, AMEX, and NASDAQ because volume measurement differs substantially between exchanges. Institutional ownership is defined as the number of institutions that own a given stock in a given year scaled by the total number of institutions owning stocks that year. Change in institutional ownership is scaled by the total number of institutions owning stocks the previous year. Scaling is necessary because the number of institutions in our data source increases several fold during our sample period. Standard deviation is measured as the annualized standard deviation of monthly returns. Capitalization, turnover, and standard deviation deciles are created each year using all CRSP firms with share code equal to 10, 11, or 12. We winsorize the change in analyst coverage, the change in and the level of institutional ownership and raw returns at the 0.5 and 0.995 percentiles, and the change in and the level of book-to-market, return on equity, sales growth, and capital expenditures at the 1.25 and 98.75 percentiles.

We regress changes in analyst coverage on the lagged values of and changes in market capitalization, turnover decile, institutional ownership, excess of market returns, book-to-market, standard deviation decile, issued equity and acquired another firm dummy variables, return on assets, sales growth, and capital expenditures. Since our sample consists of a cross-section of firms across time, we implement a firm fixed effects regression. The Appendix explains why we choose firm fixed effects and describes this methodology.

[Insert Table II about here]

Table II presents the results, which are consistent with our intuition. Analysts add coverage of firms that have become bigger. They add coverage of firms that have high turnover and for which turnover has increased. The same is true for institutional ownership. Analysts add coverage of firms that had good stock performance in the previous year. They also add coverage of stocks that have higher valuations and for which valuations have increased. Somewhat oddly, analysts seem to add coverage of more risky stocks but drop coverage of stocks that have become more risky. Analysts also add coverage of firms that issue equity but whether or not firms acquire other firms does not appear to influence analysts' coverage decisions. Finally, analysts add coverage of firms with better operating performance as measured by higher profitability, faster growth, and greater investment intensity. Simply put, analysts go where the action is.

These results are also broadly consistent with Jegadeesh, Kim, Krische, and Lee (2004). They find that analysts tend to recommend glamour stocks, or, more specifically, stocks with higher turnover, greater momentum, higher valuations, faster growth, and greater investment intensity. Our results for changes in coverage mirror their results for recommendations.

4. How the Stock Market Reacts to Adds and Drops of Analyst Coverage

Adding and dropping coverage may provide particularly value-relevant information to the stock market above and beyond the firm characteristics that prompt add and drop decisions. It is relatively costly for analysts to add coverage of a stock because adding means reallocating scarce resources to covering the stock, perhaps partly at the expense of producing information about other stocks the analyst already covers. Similarly, dropping coverage means reallocating scarce resources to covering a new stock with its attendant setup costs. An analyst presumably only makes such drastic decisions if there is compelling new information prompting him into action. Ultimately, however, whether or not the market reacts to adds and drops of coverage (if at all) is an empirical matter.

To test this, we examine returns the year before, the year of, and the year after changes in analyst coverage. We provide sample mean excess of market returns by changes in coverage (increase, no change, and decrease). We also run firm fixed effects regressions using a factor model consisting of the Fama-French three factors plus a momentum factor. We first regress returns on dummy variables for adds and drops. We then regress returns on changes in analyst coverage, the natural logarithm of analyst coverage the previous year, and the interaction of the preceding two terms because the information content of changes may be depend on their relative rather than the absolute magnitude, a possibility raised by Figure 4. The informativeness, and hence market impact, of one analyst dropping a stock covered by twenty analysts is unlikely to be very much relative to one analyst dropping a stock covered by two analysts.

[Insert Table III about here]

Table III presents the results. Consistent with Table II, returns in the year before and the year of changes in coverage are relatively higher for adds than for drops. However, we now learn that returns the following year reverse, with relatively lower returns for adds than for drops. The increase-decrease spread using excess of market returns the year after a change in coverage is -3.5-1.2=-4.7 percent on average, i.e., returns are 4.7 percentage points lower for drops than for adds (Panel A). Including firm fixed effects and using a factor model of returns, the spread is about 5.2 percentage points (Panel B). The results are similar when we also take into account how many analysts already cover the firm (Panel C). If one analyst adds coverage of a firm with average analyst coverage,[2] returns the following year after are 3.2 percentage points lower. A one-standard deviation increase in analyst coverage (2.26 analysts) is associated with 7.2 percentage points lower returns next year. In summary, there is a pronounced return reversal in the year after analysts add or drop coverage.

Strictly speaking, there need not be anything irrational about returns being relatively higher for adds than for drops the year before and the year of a change in analyst coverage and

[2] The mean of the natural logarithm of the number of analysts covering a stock is 1.60, or about five analysts.

relatively lower for adds than for drops the year after. We can think of analyst coverage as a proxy for investor recognition as in Merton (1987). Suppose that investors only include a firm in their portfolio choice problem if they know about it, not all firms are known to all investors, and thus higher "investor recognition" lowers the cost of capital. Merton (1987)'s model of capital market equilibrium with incomplete information builds on this scenario, and it predicts exactly the relations between changes in analyst coverage and returns that we do in fact document.

Unfortunately, it seems theoretically hard to disentangle the investor recognition and market overreaction explanations. If investor recognition is itself a risk factor, then the excess returns we document may simple arise because we do not properly adjust raw returns. On the other hand, investor recognition is an abstract concept. We are not aware of any theoretical work that would allow us to test whether or not our excess returns are sufficiently small to be explained by changes in investor recognition. A skeptic of investor recognition may reasonably claim that investor recognition is simply a plug for any hole we find in our asset pricing models. In any case, we are convinced that the size, book-to-market, and momentum factors are strongly correlated with investor recognition, and any further excess returns, especially on the order of five percent, are difficult to explain by investor recognition alone.

We can provide some simple evidence supporting market overreaction on another front. If the market (for whatever reason) believes analysts' expectations, and analysts' expectations are relatively more optimistic for adds than for drops, then the market's reaction to adds will be too high relative to drops. Analysts' earnings estimates may be too high relative to actual earnings, but as long as the market does not adjust for the higher optimism of adds relative to drops, the market will overreact to adds relative to drops. Therefore, we test whether analysts' earnings estimates are relatively more optimistic for adds than for drops. To do this, we calculate the mean and median bias in earnings estimates for increases, no changes, and decreases of coverage. We winsorize the bias at the 1.25 and 98.75 percentiles.

[Insert Table IV about here]

Table IV presents the results. Note that there is an optimism bias in analysts' earnings estimates regardless of change in coverage, but it is relative bias that matters. The bias is in fact higher for adds than for drops, as we would expect if the market overreacts. If this reflects the market's expectations for adds relative to drops, then it is no surprise that the market seems to overreact in response to changes in analyst coverage and subsequently corrects itself.

We now turn our attention to the possibility that the market reactions in the year of and the year after changes in analyst coverage are simply size, turnover, institutional ownership, momentum, valuation, or risk effects rather than the result of changes in analyst coverage. After all, we have found that market capitalization, turnover, institutional ownership, returns, book-to-market, and standard deviation of returns all explain changes in analyst coverage (Table II). In their turn, analysts may use these effects to guide their add and drop decisions. These effects alone, rather than changes in analyst coverage, may be associated with mispricing that is eventually corrected. We investigate this possibility by grouping together firms with similar size, turnover, institutional ownership, momentum, valuation, or risk, and then testing whether or not adds continue to outperform drops when analysts make their coverage decisions but subsequently underperform.

We create our groupings of firms as follows. For size, we create market capitalization quintiles using NYSE firms. For turnover, which we define as the mean of the ratio of total monthly volume divided by month-end shares outstanding, we create turnover quintiles separately by exchange and then pool quintiles across exchanges. For institutional ownership, we create quintiles using the number of institutional shareholders. For momentum, we create quintiles using raw stock returns. For valuation, we use book-to-market of equity defined as usual. When creating book-to-market a given calendar year, we use Compustat data from the latest fiscal year ended sometime during the year up to September 30th of the calendar year in question. For risk, we create quintiles using the annualized standard deviation of monthly returns. All quintiles are created each year using all CRSP firms with share code equal to 10, 11, or 12. The institutional ownership and accounting data availability requirements are also imposed as needed.

Finally, we sort all firms into three changes in analyst coverage groups and the various quintiles, and we calculate mean excess of market returns within each category. For institutional ownership, there are very few observations in the bottom two quintiles. Other than this notable exception, there are at least one thousand observations in each cell for the other five variables, and any concentration in particular cells does not appear to be systematic within or across panels. Also, the number of observations, and hence mean excess of market returns for changes in analyst coverage, may differ from panel to panel because of data availability.

[Insert Table V about here]

Table V presents the results. Two findings are striking. First, even when we hold size, turnover, institutional ownership, momentum, valuation, or risk fixed, the stock performance of firms for which analysts add coverage is at least as good as, if not better, than the performance of drops in the year of the coverage decision. This suggests that analysts' own coverage decisions cause a market reaction in the year of the change in coverage. Second, even when we hold the aforementioned conditioning variables fixed, adds always have relative better stock performance than drops in the year after the change in coverage. In fact, the increase-decrease spread ranges from 1.9 to 9.2 percent.

A few pointers are in order. The magnitude of the spread is monotonically decreasing in firm size, both in the year of a change in coverage and the year after. This is consistent with the "average" change being relatively larger for smaller firms, which are covered by fewer analysts than larger firms. Also, only for the bottom two quintiles of institutional ownership is the increase-decrease spread not significant, and, as we have mentioned, these quintiles have very few observations. Moreover, following Lakonishok, Shleifer, and Vishny (1994), use cash flow-to-price and sales growth as valuation measures in addition to book-to-market. We define cash flow to price as operating income before depreciation divided by market capitalization. We only use strictly positive cash flow-to-price ratios. We define sales growth as the geometric mean growth rate of sales over the last five years. The results for cash flow-to-price and sales growth are the same as for book-to-market, though we do not report them for expositional simplicity.

At any rate, size, turnover, institutional ownership, momentum, valuation, or risk effects do not explain the return reversal following changes in analyst coverage. We briefly address the question of why returns the year after a change in coverage are of different magnitudes for adds and drops. Excess of market returns are -1.2 percent on average the year after adds whereas they are +3.5 percent on average after drops. We offer a simple explanation for the difference in magnitudes. Drops may be relatively more costly than adds for an analyst. If an analyst drops a stock, he cannot generate trading commissions from the institutional owners of the stock, nor can he help to win an investment banking mandate. By contrast, if an analyst adds coverage of a stock, he bears the costs of information production but the managers of the firm, institutional owners of the stock, and the investment banking department are all happy. Moreover, conflicts of interest may motivate adds of coverage but not drops. In any case, if drops are clearer signals than adds, then the market's negative reaction to drops will be greater. Insofar as the market overreacts more, the subsequent positive reversal following drops of coverage will be greater.

5. Robustness Checks

We perform a series of robustness checks of our finding that returns reverse following changes in analyst coverage. We wish to show that our result is a genuine economic phenomenon rather than an empirical artifact. Our basic strategy is to replicate Panel C of Table III in various incarnations.

First, we test whether or not the return reversal is robust to controlling for analyst attention. Our motivation here is that firms covered by more analysts should be less subject to mispricing. We create quintiles of analyst coverage each year using our sample firms. We define relative change in analyst coverage as change in the number of analysts covering a firm scaled by the number of analysts covering the firm the previous year. We winsorize the relative change in analyst coverage at the 1.25 and 98.75 percentiles. We then test whether or not, within a given coverage quintile, relative change in coverage one year is negatively related to returns the next year.

[Insert Table VII about here]

Panel A of Table VII presents the results. Clearly, the return reversal persists within coverage quintiles. We also replicate Panel C of Table III except that we split change in coverage by whether the firm is NYSE-listed or not. We do likewise for S&P 500 and non-S&P 500 firms. Though not reported, the results indicate that the return reversal persists except that it is smaller in magnitude for NYSE than non-NYSE firms and for S&P 500 firms than for non-S&P 500 firms, as we would expect. We also test whether the return reversal is a seasoning effect by excluding all firms that have not been listed for at least five years. Though not reported, the results are the same.

Second, we examine how long the return reversal persists after changes in analyst coverage. To this end, we replicate Panel C of Table III using returns one, two, and three years into the future. Panel B of Table VII shows that whereas returns one year into the future are about 3.2 percentage points lower if one analyst adds coverage of the stock, returns two and three years into the future are still are 2.2 and 1.3 percentage points lower as well. The return reversal does persist for several years.

Third, we test whether or not the return reversal is a statistical artifact arising from the negative autocorrelation of returns. It is possible that higher returns one year are followed by lower returns the next, and analysts' coverage decisions simply monkey contemporaneous returns. To this end, we replicate Panel C of Table III but separately for even and odd years thereby necessarily destroying any mechanical relation between adjacent years. Panel C of Table VII shows that the return reversal persists.

Fourth, we examine how delistings relate to the return reversal. We use CRSP delisting dates and codes to determine which firms were delisted during the year after a change in analyst coverage. We classify firms as "bankrupt" if their reason for delisting is given as "dropped" or "liquidation" and as "acquired" if their reason for delisting is given as "exchange" or "merger". 3,915 of our sample firms delist, 3,506 because they are acquired and a mere 409 because they go bankrupt. Hence our delistings are really mostly acquisitions. Moreover, there is not much predictability of delistings to speak of. Of all firm-years for which analysts add coverage, delistings occur in 5.0 percent of the following firm-years, whereas for drops the figure is 6.8

percent. In any event, we replicate Panel C of Table III excluding all firm-years where we know that the firm will delist the following year. Though not reported, the results are unchanged.

We conclude that the return reversal following changes in analyst coverage is a genuine economic phenomenon.

6. Conclusion

We examine how the stock market reacts to changes in analyst coverage. In the year before and the year of an increase in coverage, stock returns are relatively higher. In the year before and the year of a decrease in coverage, stock returns are relatively lower. However, in the year after a change in coverage, returns reverse, generating an increase-decrease spread of five percent in magnitude.

Our evidence suggests that the stock market overreacts to changes in analyst coverage and subsequently corrects itself. Since it is relatively costly for analysts to add and drop coverage of stocks, they presumably only make such drastic decisions as adding or dropping coverage if there is compelling new information prompting them into action. Thus the information associated with changes in analyst coverage should generate a market reaction, a reaction that may not only be pronounced but also overdone. Overreacting to a change in coverage necessarily means that returns must subsequently reverse.

We do in fact find that analysts typically add coverage of firms that are more in demand by investors and have better operating performance, whereas they drop coverage of firms that score poorly on these dimensions. Thus there is plenty of action going on when analysts add or drop coverage, which makes it more likely that the market may get the direction right but not the magnitude. Of course, analysts' coverage decisions could simply be discrete proxies for size, turnover, institutional ownership, momentum, valuation, or risk effects. Analysts may simply be piggybacking their add and drop decisions on market trends. Further analysis suggests otherwise. We find that even when we these conditioning variables fixed, the stock performance of firms for which analysts add coverage is at least as good as, if not substantially better than, the performance of drops in the year of the coverage decision. However, conditional on a change in coverage this year and the other aforementioned conditioning variables this year, stock performance next year is always better for drops than for adds.

Clearly, analysts' coverage decisions in a given year are associated with a market reaction the same year that cannot be attributed to size, turnover, institutional ownership, momentum, valuation, or risk effects. Therefore, the market does seem to react to analysts' coverage decisions and in the right direction, but judging by the return reversal the following year, the market's contemporaneous reaction seems to be excessive. We conclude that the stock market overreacts to changes in analyst coverage.

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Appendix. Fixed Effects Regressions

Our sample consists of a cross-section of firms across time, so it constitutes an unbalanced panel. We can approach our data in the familiar linear regression setting, $y_{it} = \alpha + X_{it}\beta + v_i + \varepsilon_{it}$, where, for each individual *i*, we have multiple observations, one for each time period *t*. In our application, we examine the effect of change in analyst coverage across time for a given firm and for multiple firms, so the impact of change in analyst coverage on returns may be different from firm to firm (e.g., riskier firms may have higher returns). With observations on each individual at different time periods, the residual may be a compound residual with an individual specific component $v_i + \varepsilon_{it}$, where ε_{it} is the least squares residual and v_i is a residual that is constant across time and specific to individual *i*.

For this reason, we take the fairly general approach of implementing a firm fixed effects model. Specifically, we run ordinary least squares regressions on the equation $y_{it} - \bar{y}_i + \bar{\bar{y}} = \alpha + \left(X_{it} - \bar{X}_i + \bar{\bar{X}}\right)\beta + \bar{v} + \left(\varepsilon_{it} - \bar{\varepsilon}_i + \bar{\bar{\varepsilon}}\right)$, where $\bar{y}_i = \left(1/T_i\right) \times \sum_{t=1}^{T_i} y_{it}$, $\bar{\bar{y}} = \left(1/NT_i\right) \times \sum_{i=1}^{N} \sum_{t=1}^{T_i} y_{it}$, and $\bar{X}_i$, $\bar{\bar{X}}$, $\bar{v}$, $\bar{\varepsilon}_i$, and $\bar{\bar{\varepsilon}}$ are analogously defined. This yields the same coefficient estimates as running an ordinary least squares regression on $y_{it} = \alpha + X_{it}\beta + v_i + \varepsilon_{it}$, i.e., on $y_{it} = \alpha + X_{it}\beta + \varepsilon_{it}$ plus firm dummy variables. The standard errors from ordinary least squares and firm fixed effects are identical after adjusting for the extra *N-1* estimated firm means. The within R^2s from fixed effects ("within" firms, as opposed to "between" firms and "overall") are identical to the ordinary least squares R^2s. Since with fixed effects we are estimating, among other things, one mean per firm, we can only include other regressors that are not constant across time. The correlation between $\bar{X}_i$ and v_i is zero since v_i is fixed by assumption. While fixed effects always give consistent estimates, they may not be efficient relative to random effects. However, the Hausman test for the equality of the coefficients from fixed and random effects indicates that random effects are not appropriate (p-value 0.0000), so we stick to fixed effects.

Table I
Analyst Coverage and Firm Characteristics

This table presents cross-tabulations of the number of analysts covering a firm, market capitalization, and the number of institutions owning a stock, each sorted into quintiles. The sample consists of all firms in 1994 such that a given firm is covered by at least one analyst in both 1993 and 1994, has a mean monthly stock price greater than five dollars, and has a CRSP share code equal to 10, 11, or 12. For ease of interpretation, results for a single representative year, 1994, are presented.

Panel A: Number of firms by analyst coverage quintile and market capitalization quintile, 1994 only

Analyst coverage quintile	Market cap quintile 1	2	3	4	5	Median number of analysts per quintile
1	541	146	25	8		2
2	355	209	59	10		3
3	132	245	136	49	6	6
4	23	127	203	167	41	10
5	1	9	80	176	314	20
Median cap per quintile	74.8	237.7	603.8	1,411.6	4,954.0	

Panel B: Number of firms by analyst coverage quintile and institutional ownership quintile, 1994 only

Analyst coverage quintile	Institutional ownership quintile 1	2	3	4	5	Median number of analysts per quintile
1	12	125	297	250	36	2
2	1	44	171	334	83	3
3	1	5	52	297	213	6
4			8	127	426	10
5				6	574	20
Median number of inst. per quintile	3	7	15	33	106	

Panel C: Number of firms by institutional ownership quintile and market capitalization quintile, 1994 only

Inst. ownership quintile	Market cap quintile 1	2	3	4	5	Median number of inst. per quintile
1	11	2	1			3
2	170	2	1	1		7
3	489	37	2			15
4	381	511	100	20	2	33
5	1	184	399	389	359	106
Median cap per quintile	74.8	237.7	603.8	1,411.6	4,954.0	

Table II
Calendar Year Regression Explaining Changes in Analyst Coverage

This table presents a calendar year firm fixed effects regression of the change in analyst coverage on variables that explain the change in coverage. The sample consists of all firm-years between 1984 and 2004 such that a given firm is covered by at least one analyst in both the current and previous years, has a mean monthly stock price greater than five dollars, and has a CRSP share code equal to 10, 11, or 12. Capitalization deciles are created each year using NYSE firms. Turnover decile for a given firm is measured relative to other firms listed on the same exchange as the firm. Institutional ownership is defined as the number of institutions that own a given stock in a given year scaled by the total number of institutions owning stocks that year. Change in institutional ownership is scaled by the total number of institutions owning stocks the previous year. Standard deviation is measured as the annualized standard deviation of monthly returns. The equity issuance and acquisition variables are dummy variables. Turnover and standard deviation deciles are created each year using all CRSP firms with share code equal to 10, 11, or 12. ***, **, and * indicate statistical significance at 1%, 5%, and 10%, respectively.

	Δ*number of analysts this year*	
	b	se(b)
capitalization decile last year	-0.017	(1.06)
Δ*capitalization decile this year*	0.087***	(4.60)
turnover decile last year	0.027***	(2.98)
Δ*turnover decile this year*	0.057***	(6.40)
institutional ownership last year	1.305***	(2.75)
Δ*institutional ownership this year*	20.389***	(25.04)
excess of market return last year	0.322***	(13.89)
excess of market return this year	-0.010	(0.37)
book-to-market last year	-0.342***	(5.29)
Δ*book-to-market this year*	-0.832***	(10.50)
standard deviation decile last year	0.030***	(2.90)
Δ*standard deviation decile this year*	-0.015**	(1.99)
issued equity last year	0.639***	(17.79)
issued equity this year	0.521***	(12.06)
acquired another firm last year	0.030	(0.81)
acquired another firm this year	-0.030	(0.83)
return on assets last year	2.501***	(13.08)
Δ*return on assets this year*	2.155***	(13.35)
sales growth last year	0.619***	(12.23)
Δ*sales growth this year*	0.396***	(9.20)
capex last year	2.699***	(7.46)
Δ*capex this year*	1.987***	(5.98)
Constant	-0.563***	(5.32)
Number of firm-years	47,631	
Number of firms	7,782	
R^2	0.107	

Table III
Calendar Year Returns Conditional on Changes in Analyst Coverage

This table presents excess returns last year, this year, and next year conditional on changes in analyst coverage this year. The sample consists of all firm-years between 1984 and 2004 such that a given firm is covered by at least one analyst in both the current and previous years, has a mean monthly stock price greater than five dollars, and has a CRSP share code equal to 10, 11, or 12. Panel A presents mean excess of market returns. Panels B and C use firm fixed effects regressions and a factor model consisting of the Fama-French three factors plus a momentum factor. Standard errors are adjusted for clustering by firm. ***, **, and * indicate statistical significance at 1%, 5%, and 10%, respectively.

Panel A: Mean excess of market returns conditional on changes in analyst coverage this year

Change in analyst coverage	R_i-R_m last year	R_i-R_m this year	R_i-R_m next year
Increase	21.1%	9.9%	-1.2%
No change	5.9%	2.1%	-0.1%
Decrease	-2.7%	-4.3%	3.5%
Increase-decrease return spread	23.8%	14.2%	-4.7%
t-statistic for H_0: increase - decrease = 0	40.90***	27.65***	9.69***
Number of firm-years	59,607	59,607	59,607

Panel B: Regressions of returns on dummies for changes in analyst coverage this year

	R_i-R_f last year		R_i-R_f this year		R_i-R_f next year	
	b	se(b)	b	se(b)	b	se(b)
$\Delta coverage_t > 0$	0.123***	(18.98)	0.038***	(6.30)	-0.038***	(7.02)
$\Delta coverage_t < 0$	-0.069***	(10.34)	-0.081***	(12.84)	0.014**	(2.52)
R_m-R_f	0.968***	(58.53)	0.938***	(59.28)	0.888***	(62.21)
SMB	0.797***	(37.10)	0.657***	(32.63)	0.552***	(30.54)
HML	0.238***	(13.08)	0.295***	(17.11)	0.328***	(21.22)
UML	0.148***	(6.98)	0.020	(1.01)	-0.034*	(1.89)
Constant	0.028***	(4.62)	0.030***	(5.12)	0.009*	(1.67)
Number of firm-years	59,607		59,607		59,607	
Number of firms	9,666		9,666		9,666	
R^2	0.126		0.116		0.111	

Panel C: Alternative regressions of returns on changes in analyst coverage this year and analyst coverage last year

	R_i-R_f last year		R_i-R_f this year		R_i-R_f next year	
	b	se(b)	b	se(b)	b	se(b)
$\Delta coverage_t$	0.089***	(27.83)	0.027***	(9.05)	-0.059***	(22.06)
$ln(coverage_{t-1})$	-0.000	(0.03)	-0.173***	(33.44)	-0.150***	(32.08)
$\Delta coverage_t \times ln(coverage_{t-1})$	-0.022***	(17.17)	-0.008***	(6.97)	0.017***	(15.32)
R_m-R_f	0.964***	(58.60)	0.939***	(60.21)	0.878***	(62.15)
SMB	0.813***	(38.00)	0.661***	(33.31)	0.555***	(31.01)
HML	0.230***	(12.67)	0.272***	(16.06)	0.322***	(21.10)
UML	0.163***	(7.71)	0.018	(0.89)	-0.027	(1.52)
Number of firm-years	59,607		59,607		59,607	
Number of firms	9,666		9,666		9,666	
R^2	0.136		0.142		0.130	

Table IV
Calendar Year Bias In Analysts' Earnings Estimates Conditional on Changes in Analyst Coverage

This table presents sample means and medians for the bias in analysts' earnings estimates this year conditional on changes in analyst coverage this year. The sample consists of all firm-years between 1984 and 2004 such that a given firm is covered by at least one analyst in both the current and previous years, has a mean monthly stock price greater than five dollars, and has a CRSP share code equal to 10, 11, or 12. Standard errors are adjusted for clustering by firm. ***, **, and * indicate statistical significance at 1%, 5%, and 10%, respectively.

Change in analyst coverage	$(EPS_{expected}-EPS_{actual})/EPS_{actual}$	
	Mean	Median
Increase	9.1%	0.5%
No change	5.2%	0.0%
Decrease	4.7%	0.4%
	t-statistic	Z-statistic
H_0: increase - decrease = 0	2.91***	2.20**
Number of firm-years	49,905	

Table V
Calendar Year Returns Conditional on Changes in Analyst Coverage and Size, Turnover, or Institutional Ownership

This table presents mean excess of market returns this year and next year condition on changes in analyst coverage groups this year and market capitalization, turnover, or institutional ownership quintiles this year. The sample consists of all firm-years between 1984 and 2004 such that a given firm is covered by at least one analyst in both the current and previous years, has a mean monthly stock price greater than five dollars, and has a CRSP share code equal to 10, 11, or 12. Standard errors are adjusted for clustering by firm. Pairs indicated by a, b, and c are statistically significantly different at 1%, 5%, and 10%, respectively.

Panel A: Returns conditional on changes in analyst coverage this year and quintiles of market capitalization this year

Change in analyst	R_i-R_m this year						R_i-R_m next year					
coverage	Q1	Q2	Q3	Q4	Q5	Mean	Q1	Q2	Q3	Q4	Q5	Mean
Increase	8.9[a]	12.8[a]	10.6[a]	8.3[a]	7.4	9.9	-2.6[a]	-1.3[a]	-1.1[a]	0.5[a]	-0.1[a]	-1.2
No change	0.0	3.3	5.3	5.0	5.4	2.1	-0.4	-0.2	-0.2	2.2	0.2	-0.1
Decrease	-12.6[a]	-5.4[a]	-1.4[a]	2.2[a]	3.7	-4.4	3.8[a]	3.8[a]	3.2[a]	4.2[a]	1.8[a]	3.5
Increase - decrease	21.5	18.2	12.0	6.1	3.7		-6.4	-5.1	-4.3	-3.7	-1.9	
Number of firm-years						59,607						59,607

Panel B: Returns conditional on changes in analyst coverage this year and quintiles of turnover this year

Change in analyst	R_i-R_m this year						R_i-R_m next year					
coverage	Q1	Q2	Q3	Q4	Q5	Mean	Q1	Q2	Q3	Q4	Q5	Mean
Increase	1.5[a]	3.5[a]	5.5[a]	10.5[a]	17.4[a]	9.9	1.4[c]	1.7[a]	0.2[a]	-1.7[a]	-3.8[b]	-1.2
No change	-1.1	-1.2	2.4	3.8	7.2	2.1	3.7	3.2	0.8	-2.0	-7.8	-0.1
Decrease	-3.6[a]	-2.9[a]	-3.5[a]	-4.8[a]	-6.4[a]	-4.4	3.7[c]	5.8[a]	4.7[a]	3.2[a]	0.4[b]	3.5
Increase - decrease	5.1	6.4	9.0	15.3	23.8		-2.3	-4.1	-4.5	-4.9	-4.2	
Number of firm-years						59,599						59,599

Panel C: Returns conditional on changes in analyst coverage this year and quintiles of institutional ownership this year

Change in analyst	R_i-R_m this year						R_i-R_m next year					
coverage	Q1	Q2	Q3	Q4	Q5	Mean	Q1	Q2	Q3	Q4	Q5	Mean
Increase	-2.2	-2.9[a]	1.7[a]	10.0[a]	12.9[a]	9.9	-9.2	1.4	-1.1[a]	-2.4[a]	-0.5[a]	-1.2
No change	-6.1	-3.3	-1.7	3.5	7.5	2.1	2.6	2.3	-0.2	-1.5	0.1	-0.1
Decrease	-9.4	-17.7[a]	-15.2[a]	-8.4[a]	2.8[a]	-4.4	-0.4	4.8	5.5[a]	3.6[a]	2.6[a]	3.5
Increase - decrease	7.2	14.8	16.9	18.4	10.1		-8.8	-3.4	-6.6	-6.0	-3.1	
Number of firm-years						59,607						59,607

Table VI
Calendar Year Returns Conditional on Changes in Analyst Coverage and Momentum, Valuation, or Risk

This table presents mean excess of market returns this year and next year conditional on three changes in analyst coverage groups this year and returns, book-to-market, or standard deviation of returns quintiles this year. The sample consists of all firm-years between 1984 and 2004 such that a given firm is covered by at least one analyst in both the current and previous years, has a mean monthly stock price greater than five dollars, and has a CRSP share code equal to 10, 11, or 12. Standard errors are adjusted for clustering by firm. Pairs indicated by a, b, and c are statistically significantly different at 1%, 5%, and 10%, respectively.

Panel A: Returns conditional on changes in analyst coverage this year and quintiles of returns this year

Change in analyst coverage	R_i-R_m this year						R_i-R_m next year					
	Q1	Q2	Q3	Q4	Q5	Mean	Q1	Q2	Q3	Q4	Q5	Mean
Increase	-60.4[a]	-31.1[b]	-9.2	13.9	78.9[a]	9.9	-8.1[a]	-2.7[a]	-0.7[a]	-0.2[a]	1.4[a]	-1.2
No change	-63.2	-32.7	-9.9	13.4	75.2	2.1	-10.4	-1.5	1.2	3.3	1.7	-0.1
Decrease	-64.9[a]	-31.8[b]	-9.1	14.1	71.1[a]	-4.4	-0.9[a]	4.7[a]	3.8[a]	4.7[a]	3.9[a]	3.5
Increase - decrease	4.5	0.7	-0.1	-0.2	7.8		-7.2	-7.4	-4.5	-4.9	-2.5	
Number of firm-years						59,607						59,607

Panel B: Returns conditional on changes in analyst coverage this year and quintiles of book-to-market this year

Change in analyst coverage	R_i-R_m this year						R_i-R_m next year					
	Q1	Q2	Q3	Q4	Q5	Mean	Q1	Q2	Q3	Q4	Q5	Mean
Increase	41.9[a]	9.9	-1.6[a]	-10.5[a]	-26.5[a]	10.0	-3.8[a]	-1.1[a]	0.6[a]	1.4[a]	-1.8[a]	-1.0
No change	37.6	12.7	1.6	-10.2	-29.1	2.2	-3.9	-2.3	2.2	2.0	0.3	0.1
Decrease	26.9[a]	10.7	-4.5[a]	-16.6[a]	-36.2[a]	-4.2	-0.1[a]	2.5[a]	4.2[a]	5.9[a]	4.0[a]	3.6
Increase - decrease	15.0	-0.8	2.9	6.1	9.7		-3.7	-3.6	-3.6	-4.5	-5.8	
Number of firm-years						57,508						57,508

Panel C: Returns conditional on changes in analyst coverage this year and quintiles of standard deviation this year

Change in analyst coverage	R_i-R_m this year						R_i-R_m next year					
	Q1	Q2	Q3	Q4	Q5	Mean	Q1	Q2	Q3	Q4	Q5	Mean
Increase	3.8[a]	7.2[a]	9.7[a]	16.0[a]	24.2[a]	9.9	2.0[a]	1.4[a]	-2.0[a]	-4.2[a]	-9.9[b]	-1.2
No change	-0.2	0.9	1.9	2.4	16.9	2.1	3.9	1.6	-0.7	-5.0	-10.7	-0.1
Decrease	0.2[a]	-2.1[a]	-6.7[a]	-12.8[a]	-4.6[a]	-4.4	4.1[a]	5.4[a]	3.4[a]	0.6[a]	-0.7[b]	3.5
Increase - decrease	3.6	9.3	16.4	28.8	28.8		-2.1	-4.0	-5.4	-4.8	-9.2	
Number of firm-years						59,607						59,607

Table VII
Robustness Checks

This table presents variations on the regressions in Table III.C. Relative change in analyst coverage is defined as the change in analyst coverage scaled by the number of analysts covering the firm the previous year. Coefficient estimates for R_m-R_f, *SMB*, *HML*, and *UMD* are not reported for expositional simplicity.

Panel A: Calendar year regressions of returns next year on relative changes in analyst coverage this year by quintiles of analyst coverage last year

	$R_{i,t+1}$-$R_{f,t+1}$									
	Least covered Quintile 1		2		3		4		Most covered Quintile 5	
	b	se(b)	b	se(b)	b	se(b)	b	se(b)	b	se(b)
$\Delta coverage_t/coverage_{t-1}$	-0.056***	(8.82)	-0.166***	(11.64)	-0.170***	(11.14)	-0.202***	(10.70)	-0.099***	(4.68)
Constant	0.010	(1.12)	0.022**	(2.00)	-0.013	(1.39)	0.013	(1.53)	0.005	(0.75)
Number of firm-years	15,739		10,354		11,302		11,077		11,135	
Number of firms	6,083		4,722		4,403		3,188		1,724	
R^2	0.121		0.153		0.131		0.136		0.125	

Panel B: Calendar year regressions of returns one, two, and three years into the future on changes in analyst coverage this year

	$R_{i,t+1}$-$R_{f,t+1}$		$R_{i,t+2}$-$R_{f,t+2}$		$R_{i,t+3}$-$R_{f,t+3}$	
	b	se(b)	b	se(b)	b	se(b)
$\Delta coverage_t$	-0.059***	(22.06)	-0.041***	(13.31)	-0.028***	(8.59)
$ln(coverage_{t-1})$	-0.150***	(32.08)	-0.095***	(17.76)	-0.071***	(12.06)
$\Delta coverage_t \times ln(coverage_{t-1})$	0.017***	(15.32)	0.012***	(9.90)	0.009***	(6.52)
Constant	0.252***	(29.17)	0.178***	(18.22)	0.141***	(13.22)
Number of firm-years	59,607		53,020		46,887	
Number of firms	9,666		8,730		7,769	
R^2	0.130		0.118		0.114	

Panel C: Calendar year regressions of returns next year on changes in analyst coverage this year by even and odd years separately

	$R_{i,t+1}$-$R_{f,t+1}$ for even years only		$R_{i,t+1}$-$R_{f,t+1}$ for odd years only	
	b	se(b)	b	se(b)
$\Delta coverage_t$	-0.059***	(13.76)	-0.058***	(14.95)
$ln(coverage_{t-1})$	-0.154***	(22.57)	-0.154***	(24.26)
$\Delta coverage_t \times ln(coverage_{t-1})$	0.015***	(8.90)	0.017***	(10.69)
Constant	0.272***	(20.25)	0.249***	(20.39)
Number of firm-years	30,935		28,672	
Number of firms	8,885		8,541	
R^2	0.106		0.130	

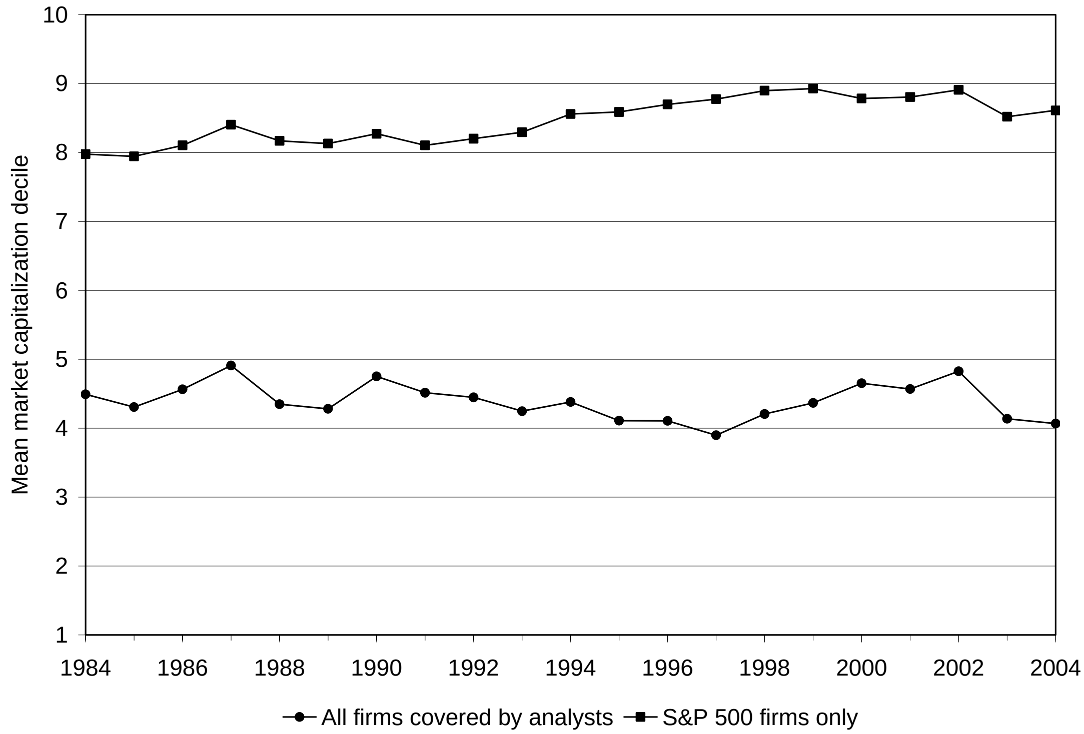

Figure 1. Size of the typical firm covered by analysts by year. The sample consists of all firm-years between 1984 and 2004 such that a given firm is covered by at least one analyst in both the current and previous years, has a mean monthly stock price greater than five dollars, and has a CRSP share code equal to 10, 11, or 12.

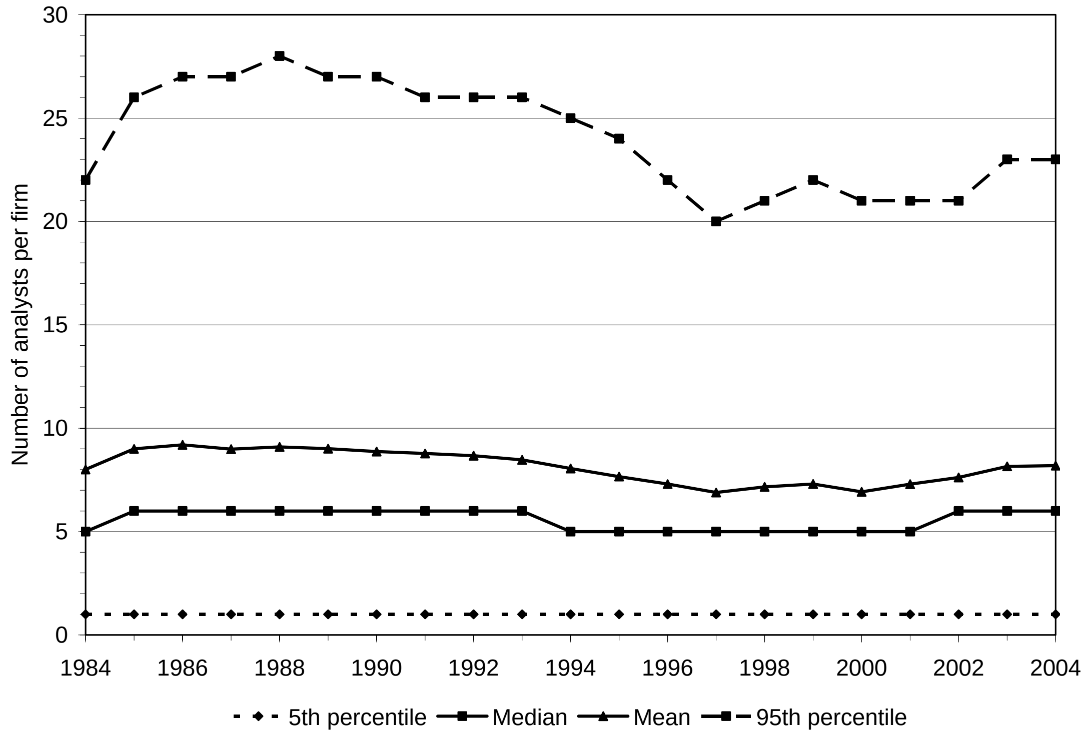

Figure 2. Distribution of the number of analysts covering each firm by year. The sample consists of all firm-years between 1984 and 2004 such that a given firm is covered by at least one analyst in both the current and previous years, has a mean monthly stock price greater than five dollars, and has a CRSP share code equal to 10, 11, or 12.

Figure 3-A: Distribution of changes in analyst coverage

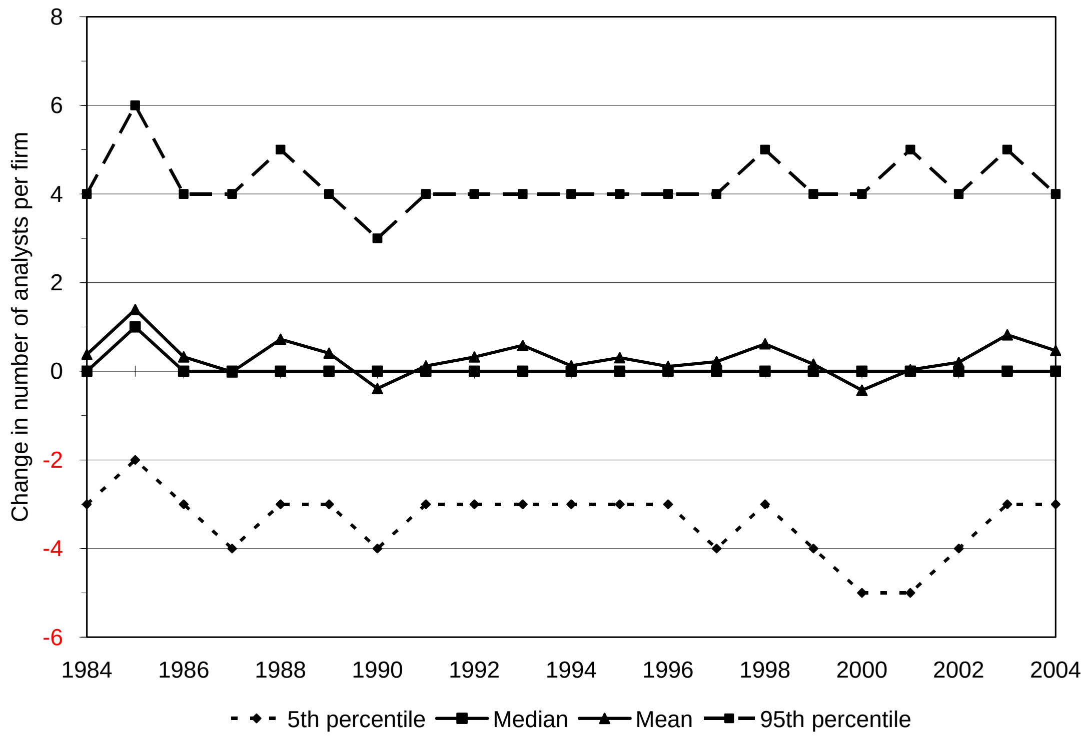

Figure 3-B: Relative percentage of changes in analyst coverage

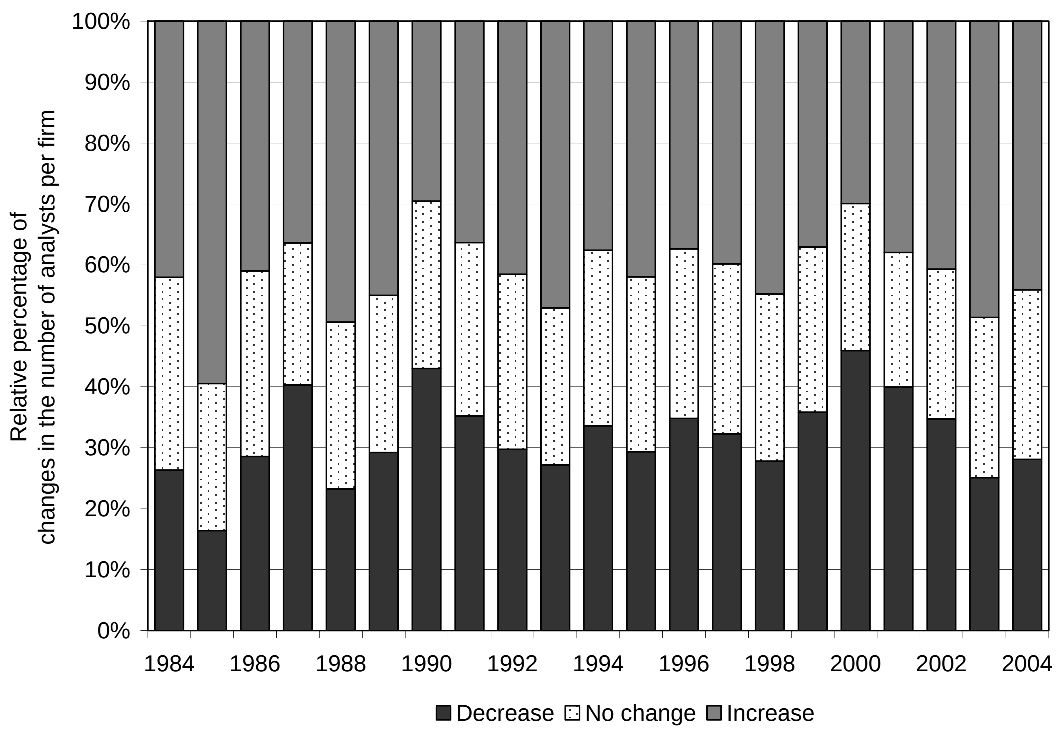

Figure 3. Summary statistics for changes in analyst coverage by year. The sample consists of all firm-years between 1984 and 2004 such that a given firm is covered by at least one analyst in both the current and previous years, has a mean monthly stock price greater than five dollars, and has a CRSP share code equal to 10, 11, or 12.

Figure 4-A: Number of analysts covering a firm this year if 3 analysts covered the firm last year

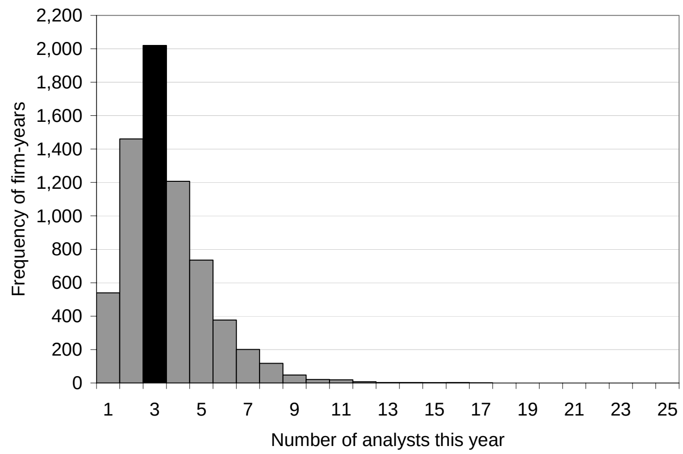

Figure 4-B: Number of analysts covering a firm this year if 5 analysts covered the firm last year

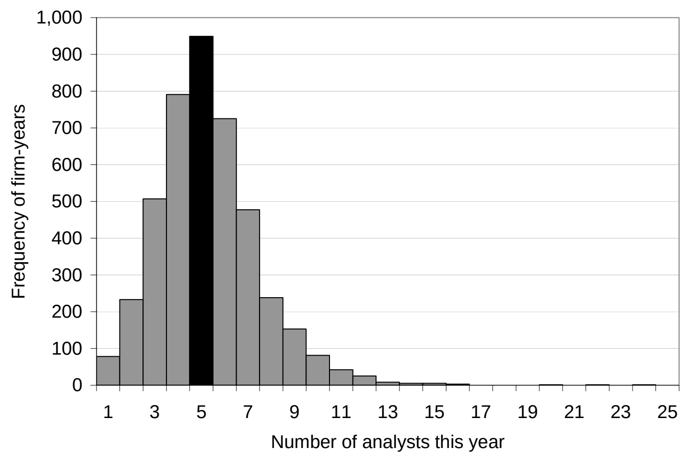

Figure 4-C: Number of analysts covering a firm this year if 11 analysts covered the firm last year

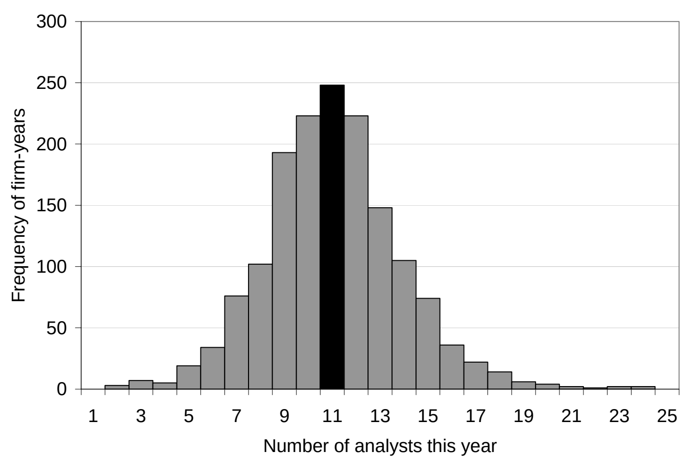

Figure 4. Number of analysts covering a firm this year conditional on how many analysts covered the firm last year. The sample consists of all firm-years between 1984 and 2004 such that a given firm is covered by at least one analyst in both the current and previous years, has a mean monthly stock price greater than five dollars, and has a CRSP share code equal to 10, 11, or 12. 3, 5, and 11 analysts are the 25^{th}, 50^{th}, and 75^{th} percentiles of the distribution of the number of analyst per firm, respectively.