An Empirical Analysis of the Relation Between Corporate Financing Activities and Sell-Side Analyst Research*

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Abstract

We analyze the relation between corporate financing activities and sell-side analysts' investment research. We find that overoptimism in sell-side analysts' earnings forecasts, growth forecasts, stock recommendations and target prices is systematically related to corporate financing activities. Overoptimism is strongly related to both the amount of new financing and the type of financing instrument, but only weakly related to analyst investment banking affiliation. Our evidence is consistent with allegations that sell-side analysts' overoptimistic investment research causes new securities issuances to be temporarily overpriced.

Keywords: External financing; Sell-side analysts; Capital markets; Market efficiency.
JEL classification: G10, M4

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1. Introduction

Sell-side analysts have long faced allegations that pressures to generate investment banking business compromise the soundness of their investment research. Such allegations recently culminated in the landmark $1.4 billion settlement between the major securities firms and regulators.[1] Yet despite the practical significance of these allegations, the available evidence is largely restricted to anecdotes involving a small number of analysts. In this paper, we provide a comprehensive examination of the relation between corporate financing activities and sell-side analyst research. We provide evidence that sell-side analysts' forecasts and recommendations are most optimistic for firms that are issuing securities and least optimistic for firms that are repurchasing securities. Our analysis also shows that the relation between corporate financing activities and analyst research is pervasive. This relation is evident in analysts' short-term earnings forecasts, long-term earnings forecasts, stock recommendations and target prices and extends to corporate financing activities in both debt and equity markets.

Our findings have several implications. First, they provide strong and systematic evidence in support of allegations that sell-side analysts routinely generate overly optimistic stock research for firms that are issuing new securities. The economic significance of our results is striking. For example, we find that the target prices set by analysts are, on average, 70% too high for firms issuing securities versus only 20% too high for firms repurchasing securities. Moreover, we find that the nature overoptimism is tailored to the type of security being issued. Overoptimism for equity issues is greatest in long-term growth forecasts, while overoptimism for debt issues is greatest in short-term earnings forecasts.

[1] For details of the settlement, see "SEC Fact Sheet on Global Analyst Research Settlements" at http://www.sec.gov/news/speech/factsheet.htm and the "Joint Press Release" of the SEC, NYAG, NASAA, NASD and NYSE at http://www.sec.gov/news/press/2003-54.htm.

Second, our findings complement existing evidence of a systematic relation between corporate financing activities and future stock returns. Stock returns tend to be unusually low in the three years following securities issuances and unusually high in the three years following securities repurchases (see, e.g., Ritter, (2003); Richardson and Sloan, (2003)). Two features of our results suggest that these predictable future stock returns are attributable to temporary mispricing rather than risk. First, the predictable future stock returns are directly related to predictable biases in analysts' earnings forecasts. It appears that investors 'buy into' analysts' earnings and growth forecasts and are subsequently surprised by the predictable forecast errors. Second, we find that analysts set significantly higher future target prices for firms issuing securities than for firms repurchasing securities. If the lower future stock returns for issuing firms represent a lower risk premium, then we would expect analysts to set lower target prices for issuing firms (see, e.g., Healy and Palepu, 1990).

Third, our research complements and extends research examining whether affiliated analysts issue more favorable research reports than unaffiliated analysts (see, e.g., Dugar and Nathan, (1995); Lin and McNichols, (1998); Dechow, Hutton and Sloan, (2000); Michaely and Womack, (1999); Lin, McNichols, and O'Brien, (2003)). Affiliated analysts are defined as analysts working for firms having investment banking ties to the corporations that they cover. Collectively, these studies find some evidence that affiliated analysts issue more optimistic long-term growth forecasts and stock recommendations, but report mixed results for short-term earnings forecasts. Our research shows that external financing activity is more important than analyst affiliation in driving analyst optimism. In other words, analysts are overoptimistic about the future performance of issuers regardless of whether or not they have investment banking

affiliations with the issuers. The economic and statistical significance of our results are much stronger than the results for analyst affiliation.

There are two reasons why analysts may be overoptimistic about issuing firms even in the absence of underwriting affiliations. First, unaffiliated analysts may receive other benefits from hyping the prospects of issuers. Potential benefits include future investment banking business, brokerage business, and implicit or explicit side-payments from affiliated securities firms. For example, recent investigations by regulators document the practice of "research guarantees," whereby affiliated securities firms pay unaffiliated analysts for favorable research on issuers.[2] Second, sell-side analysts, along with investors and managers, may exhibit a form of investment hubris for issuing firms, whereby these parties are unwittingly overconfident about issuing firms' investment opportunities. The investment hubris hypothesis is developed and tested in more detail by Richardson and Sloan (2003). They show that the negative relation between external financing and future stock returns is driven by investments in real operating assets that fail to live up to expectations. The investment hubris explanation is also consistent with McNichols and O'Brien's (1997) finding that analysts selectively cover stocks whose future prospects they view most favorably. While this second explanation reflects more honorably on analysts' intentions, it does nothing to refute allegations that overoptimistic analysts research contributes to the temporary overpricing of issuers.

The remainder of the paper is organized as follows. The next section develops our motivation and research design. Section 3 describes our data and section 4 presents our empirical analysis. Statistical tests are presented in section 5 and section 6 concludes.

[2] See "Firms Had Research Ploy: Quiet Payments Among Rivals", *The Wall Street Journal*, April 30 2003, C1.

2. Motivation and research design

Sell-side analysts work for brokerage houses with the purported role of providing independent investment research to brokerage clients. The brokerage houses are typically owned by securities firms that also offer investment-banking services. This placement of research activities and investment banking activities in the same organization has led to allegations by investors and regulators that sell-side analysts promote the securities of current and potential investment banking clients.[3] Despite the practical significance of these alleged conflicts, there is relatively little systematic evidence on the extent to which overoptimism in sell-side research is related to corporate financing activities. In one of the few studies in this area, Rajan and Servaes (1997) find for a sample of firms from the 1980s that analysts are overoptimistic in their earnings forecasts following initial public offerings (IPOs) relative to a seasoned control sample.

We provide a comprehensive analysis of the relation between sell-side analyst research and corporate financing activities, extending Rajan and Servaes evidence in several respects. First, our sample includes all forms of external financing, including seasoned equity offerings and debt issuances. Second, because our sample is not restricted to IPOs, we are able to study analyst overoptimism in the period leading up to the issuance. Third, rather than selecting a random control sample, we explicitly identify a control sample of firms with the least need for additional external financing. Fourth, our analysis of analyst research includes stock recommendations and target prices in addition to earnings and growth forecasts. Fifth, we use a sample that includes recent years when conflicts were alleged to be the most severe. Overall, we

[3] For details of these cases, see "Wall Street Firms Settle Charges Over Research in $1.4 Billion Pact", *The Wall Street Journal*, April 29 2003, p. 1.

show that corporate financing activities have a much stronger and more pervasive impact on sell-side analyst research than has been documented by previous research.

Our study employs the framework introduced by Richardson and Sloan (2003) for measuring corporate financing activities. Richardson and Sloan use financial statement data to measure the net amount of external financing issued or repurchased in a given fiscal year. Their framework also allows the net external financing variable to be decomposed into net debt and net equity issues. The framework is straightforward to apply to large samples of data and provides a measure of the *net* magnitude of corporate financing activities. By allowing us to compare firms that are issuing the most new securities to those that are repurchasing the most securities, this framework readily facilitates an analysis of the extent to which corporate financing activities influence sell-side analysts' research.

Richardson and Sloan (2003) use their measure of external financing to examine the relation between corporate financing activities and future stock returns. They show that their measure of net external financing has a stronger relation with future stock returns than the narrower measures of external financing considered by earlier research. For example, they find that the stock returns of firms issuing the most new financing underperform the sample average by almost 20% over the next three years. Their results corroborate and extend previous research showing that security issuances tend to be followed by periods of underperformance. This pattern in returns is consistent with securities being temporarily overpriced around the time of securities issuances. A key goal of our study is to examine the extent to which this temporary overpricing can be tied to overly optimistic sell-side analyst research. We examine the same characteristics of sell-side research examined in previous research – short-term earnings forecasts, long-term growth forecasts and investment recommendations. In addition, we look at

one additional characteristic that has only recently become available in machine-readable form – target prices (see e.g., Brav and Lehavy, 2003). A target price represents an analyst's forecast of the price of the company's stock one year from the forecast date. As such, it provides a direct measure of the extent to which the analyst is claiming that the future prospects of the firm are not reflected in current stock price.

3. Data

Our sample represents the intersection of available external financing data, pricing data and analyst data. Data is extracted from several sources. Financial statement data are obtained from the Compustat annual files. Stock price and returns data are taken from the CRSP monthly returns files. Analyst data are obtained from both I/B/E/S and First Call. Earnings forecast data is extracted from the I/B/E/S summary files, and target price forecasts and stock recommendations are extracted from the First Call detail estimates files. The range of analyst data availability constrains the sample to the period from 1975 to 2000.

Following Richardson and Sloan (2003), net external financing is measured as

$$\Delta XFIN = \Delta EQUITY + \Delta DEBT,$$

where EQUITY represents the preferred and common shareholders' equity and DEBT represents total long-term debt (including amounts due within one year). There are 104,510 firm-year observations from 1975 to 2000 for which we have requisite financial statement and returns data before matching with analyst data.

ΔEQUITY and ΔDEBT are measured using information in the statement of cash flows.[4] ΔEQUITY is measured as the annual change in common and preferred equity measured as equity issuances (Compustat data item #108) minus equity repurchases (data item #115) minus dividends (data item #127). Compustat typically backfills data for newly public companies, so ΔEQUITY picks up both initial public offerings and seasoned equity offerings. ΔDEBT is similarly defined as the annual change in total long-term debt measured as long-term debt issuances (data item #111) minus long-term debt retirements (data item #114) plus the net change in notes payable (data item #301). ΔDEBT includes convertible debt, subordinated debt, notes payable, debentures, and capitalized lease obligations. We scale ΔXFIN, ΔEQUITY, and ΔDEBT by average total assets (data item #6) to express them as a proportion of firm size and we winsorize them at +/- 1 to minimize the influence of outliers. Specifically, if a variable is less (greater) than -1 (+1) we set that observation equal to -1 (+1).

The financial statement data is merged with CRSP stock returns data. We measure annual value-weighted market adjusted returns (AdjRET) with a four-month lag subsequent to the fiscal year in which ΔXFIN is measured (i.e., the return cumulation period commences at May 1, 1976 for a December 31, 1975 fiscal year). We are careful to include delisting returns to avoid any survivorship biases in our tests. Conditional on having the required financial statement and stock return data, a firm-year is retained only if it has data for at least one of our analyst variables. Requiring at least one analyst variable reduces the sample to 45,054 firm-year

[4] For years prior to 1988 (when the statement of cash flows was first required), we obtain equity and debt issuance and repurchase data from the working capital statement, cash statement by sources and uses of funds, or cash statement by activity. We also replicated all of our empirical tests using measures of external financing extracted from balance sheet computations of relevant equity and debt changes, providing inferences in agreement with those for the cash flow statement data.

observations, with varying availability for each of the analyst variables. Our sample is skewed toward larger firms.

The analyst variables represent monthly consensus amounts taken from either the I/B/E/S Summary Statistics files or computed using the First Call detail estimate files. We obtain forecasts of one-year ahead annual earnings per share, two-year ahead annual earnings per share, and long-term earnings growth from I/B/E/S. From First Call, we obtain one-year ahead target price forecasts and stock recommendations. The final month of the fiscal year in which external financing is measured is referred to as event month 0, and we track analyst data for each month from event months –35 through +40.[5] I/B/E/S provides the mean and median consensus computed as of the third Thursday of the month, and we obtain the mean consensus. Our First Call data includes individual analyst estimates, and we compute the mean consensus based on all analyst estimates issued during the month (i.e., we do not include outstanding estimates released in prior months to avoid problems of stale data).

From the analyst data, we construct seven variables of interest, which form the basis of our empirical tests. These variables are defined as follows:

FE1 One-year ahead forecast error, computed as the realized annual earnings per share for the upcoming year minus the corresponding monthly consensus forecast of this amount, all scaled by stock price as of the end of the forecast month, winsorized at +/- 1.

FE2 Two-year ahead forecast error, computed as the realized annual earnings per share for the year after the upcoming year minus the corresponding monthly consensus forecast of this amount, all scaled by stock price as of the end of the forecast month, winsorized at +/- 1.

[5] This range spans 36 months prior to the end of the financing year and 36 months subsequent to the release of fiscal results for the financing year (i.e., typically within 4 months subsequent to fiscal year end).

LTG The forecast of long-term earnings growth, generally acknowledged to cover a five-year horizon [I/B/E/S 1999].

LTGerror LTG forecast error, computed as the realized long-term earnings growth rate minus the forecast long-term growth rate. Realized earnings growth is computed from the slope coefficient of an ordinary least squares regression of the natural logarithm of annual earnings per share on a time trend. The regressions require the availability of at least three realized annual earnings per share numbers (maximum of six).[6]

REC The stock recommendation, coded on a 1 to 5 point scale. We invert the standard coding of stock recommendations so that 1=strong sell, 2=sell, 3=hold, 4=buy, and 5=strong buy.

TP/P One-year ahead target price forecast relative to closing stock price as of the end of the target price forecast month.

TPerror Target price forecast error, computed as one plus the raw return over the target price forecast horizon, minus TP/P.

Table 1 shows the distribution of our sample across the different analyst variables. The sample size increases throughout the sample period, from 449 firms in 1975 to 2,732 firms in 1999. This increase is primarily the result of increasing sell-side coverage of firms over our sample period and increasing firm coverage by data providers such as First Call. There is a drop-off in the number of observations for the year 2000 because of our requirement that one-year ahead returns (with a four-month lag) and future earnings realizations for forecast error computations be available. For individual analyst variables, we have the most extensive coverage for FE1 (n=43,247), followed by LTG, which first appears in 1981 (n=31,592), and

[6] This methodology is also used by I/B/E/S (1999) and Dechow and Sloan (1997). We considered four alternative calculations of realized growth in calculating LTGerror. First, we computed a simple geometric average using current earnings per share and realized earnings per share at the five-year horizon. Second, we computed an arithmetic mean of realized annual earnings growth rates over the five-year horizon. Third, within our financing portfolios, we computed an aggregate portfolio-level simple geometric average using the aggregate of current earnings and the aggregate of earnings at the five-year horizon. Fourth, within our financing portfolios, we computed an aggregate portfolio-level arithmetic mean of realized annual earnings growth rates over the five-year horizon. Our results are robust across these alternative calculations of LTGerror.

FE2 (n=29,857). Relative to sample sizes for LTG, we have substantially less coverage for LTGerror (n=12,384), reflecting the data demands of computing the realized growth rate. We have limited coverage for REC (n=6,916), TP/P (n=4,845), and TPerror (n=4,845), reflecting the limited time that First Call has been tracking this data.

4. Empirical analysis

4.1 Descriptive statistics

Distributional statistics for our external financing and analyst variables are presented in panel A of table 2. The mean (median) level of the change in net external financing, ΔXFIN, is positive and equal to 6.3% (0.1%) of average total assets. Thus, the sample is characterized by a predominance of net issuances. Most of the action takes place in the equity category, with mean net issuances of 4.2% and a standard deviation of 19.9%. Debt financing plays a somewhat lesser role, with a mean of 2.1% and a standard deviation of 12.5%.

Market value (MV) is measured as of the end of the fiscal year in which financing activities are measured. Mean (median) MV of the sample firms is $1,587 ($211) million, significantly larger than the mean (median) of all Compustat firms over our sample period ($930 and $51 million, respectively, not tabulated). The relatively large market values of the sample firms reflect the selection bias inherent in requiring analyst coverage.

Recall that we obtain consensus amounts for all analyst variables from months –35 through +40 relative to the last month of the fiscal year in which external financing is measured ('month 0'). In table 2 and subsequent tables, we select month +4 as the point at which to measure the analyst variables. This point corresponds to the month in which we can be confident

that the analysts would have the financial statement information that we used to construct our measures of external financing.[7] Thus, FE1, the one year ahead forecast error, represents the forecast error for the year immediately following the measurement of the external financing variables, based on forecasts made four months into that year.

The bottom section of panel A in table 2 reports descriptive statistics for the analyst variables. All forecast error variables have negative means and medians, indicating that analysts tend to issue overoptimistic forecasts. For example, the mean forecast error for one-year ahead annual earnings (FE1) is –0.028 and the mean forecast error for two-year ahead annual earnings (FE2) is –0.036. Medians for FE1 and FE2 are also negative at –0.005 and –0.014, respectively. Consistent with Dechow and Sloan (1997), there is substantial optimism in long-term earnings forecasts (LTG). Mean (median) LTG is 17.5% (15.0%), while the mean (median) error in LTG (LTGerror) is –5.8%, (–4.7%).

The remaining analyst variables pertain to stock recommendations and target prices. Stock recommendation (REC) has a mean of 3.946 – approximating a 'buy' recommendation on the standard five-point scale (that prevailed during the 1990s). Similar to the average level of optimism characterizing REC, analysts also exhibit overall optimism in their target price forecasts relative to current trading price (TP/P). Mean (median) TP/P is 1.429 (1.300), indicating that analysts are forecasting price appreciation on the order of 30-40% over the following 12-month period. However, consistent with overoptimism in all other analyst variables, the error inherent in the target price forecasts (TPerror) is significantly negative, with a mean (median) of –0.327 (–0.310).[8]

[7] Of course, it is likely that analysts initially learn about a firm's external financing activities from other more timely sources, such as prospectuses, press releases and Form 10-Qs.

[8] The difference between mean TP/P of 1.429 and mean TPerror of –0.327 reflects the mean raw return for the sample observations with target price data (in 1996-2000) of 0.102 (not tabulated).

Panel B of table 2 presents a pairwise correlation matrix for our variables. The table presents both Pearson and Spearman correlations. Results are similar across both sets of correlations, so our discussion focuses on the Pearson correlations. Consistent with Richardson and Sloan (2003), the correlation between ΔEQUITY and ΔDEBT is slightly negative at –0.15, which is indicative of refinancing transactions between these two categories. Consistent with prior research documenting negative returns subsequent to securities issuances and positive returns subsequent to securities repurchases, the correlations between each of the three external financing variables and AdjRET are all negative. The correlations between ΔXFIN and the analyst variables are all consistent with greater overoptimism for issuers relative to repurchasers. For example, the correlations between ΔXFIN and FE1 (–0.03), FE2 (–0.07), LTGerror (–0.09) and TPerror (–0.16) respectively are all significantly negative, indicating that firms raising more external financing are more likely to have overoptimistic forecasts. Similarly, correlations with REC (0.13), and TP/P (0.25) are significantly positive, indicating that firms raising more external financing are more likely to receive positive investment recommendations and aggressive target prices. The corresponding correlations for the ΔEQUITY and ΔDEBT components of ΔXFIN generally mirror these correlations, although correlations for ΔDEBT are sometimes insignificant, particularly for the long-term growth and target price variables.

4.2 Stock returns subsequent to external financing activities

Table 3 provides portfolio returns for deciles formed on our measures of external financing. Three independent portfolio sorts are performed, corresponding to each of our external financing variables. In each year, firms are allocated to deciles based on the cross-

sectional distribution of ΔXFIN, ΔEQUITY, and ΔDEBT respectively.[9] One-year value-weighted market adjusted returns are cumulated beginning four months subsequent to the fiscal year end of the external financing year. Table 3 presents the pooled means of market-adjusted returns for each decile. To highlight the difference between issuers and repurchasers, we report hedge returns for long positions in the lowest decile (i.e., repurchasers) and short positions in the highest decile (i.e., issuers). T-tests for the significance of the hedge return are reported for each external financing portfolio sort. We also report supplemental Z-tests between the medians of the lowest and highest deciles.

The evidence in table 3 is consistent with results in Richardson and Sloan (2003), whose sample is not restricted to observations with analyst coverage. The portfolio results replicate the well-documented negative relation between external financing activities and future stock returns. Adjusted returns are positive for the lowest decile and negative for the highest decile across all three sorts. Hedge returns for ΔXFIN, ΔEQUITY, and ΔDEBT are 11.9%, 9.2%, and 7.0% respectively. All three are significantly different from zero at the 0.01 level.[10] Differences in medians (median returns are not reported) are also significant for all three sorts. Thus, even after limiting the sample to larger firms that are followed by sell-side analysts, we find a strong negative relation between levels of external financing and future stock returns. These returns are consistent with corporations, aided by their investment bankers, systematically issuing new securities at temporarily inflated prices.

[9] There were very few instances where 'ties' were of concern in forming portfolios (i.e., ΔDEBT=0). Thus, portfolios contain approximately equal numbers of observations, with only slight differences among portfolios 4, 5, and 6.

[10] We report market-adjusted returns using a value weighted market portfolio. The hedge return is robust to alternative calendar time return benchmarks such as size-adjusted returns and the 3 factor Fama and French model. For details see Richardson and Sloan (2003).

4.3 The relation between earnings forecasts and external financing activities

Figures 1 and 2 provide event-time plots of the analyst variables from months –35 through +40. We plot the mean level of the analyst variables for the top and bottom deciles of ΔXFIN respectively, with the top decile consisting of firms issuing the most new financing ('issuers') and the bottom decile consists of firms repurchasing the most existing financing ('repurchasers'). Recall that event month 0 is the final month of the fiscal year in which we measure ΔXFIN, so the shaded area in months –11 through 0 represent the period during which ΔXFIN is measured. Figure 1 includes variables related to earnings forecasts (FE1, FE2, LTG, and LTGerror); while figure 2 includes variables related to target prices and stock recommendations (AdjRET, REC, TP/P, and TPerror).

Panel A of figure 1 plots the one-year ahead forecast error (FE1). The plot reveals a distinct 'whipsaw' effect that repeats over twelve-month intervals. This effect is due to the gradual reduction in analyst overoptimism in response to interim earnings information between end-of-year earnings announcements, which typically occur 2 to 3 months after the fiscal year end. Thus, months –9 through +2 generally correspond to forecasts of annual earnings for the year in which we measure ΔXFIN. The systematic negative forecast errors for both issuers and repurchasers are consistent with the average optimism documented in prior research (see, e.g., Barefield and Comiskey, 1975). Contrasting issuers with repurchasers, the plot shows that in the period leading up to the external financing year, analysts are no more optimistic for issuers than for repurchasers. However, immediately following the external financing year, analysts become systematically more overoptimistic for the issuers relative to the repurchasers. In other words, analysts' earnings expectations are inflated relative to realizations for the periods immediately following the securities issuance year. This leads to a string of large negative forecast errors in

the three years following the issuance year. A similar phenomenon is evident in panel B for the two-year ahead forecast error (FE2). In the year leading up to the external financing year, forecasts for issuers are similar to forecasts for repurchasers. But beginning in the offering year, forecasts are systematically more overoptimistic for the issuers. Note that the affect is accelerated by a year two-year ahead forecasts, because it takes one more year for the forecast errors to be realized.

Panel C presents the average long-term earnings growth forecast (LTG) for the issuing and repurchasing portfolios. The plot reveals the unsurprising fact that issuers are characterized by much higher levels of expected growth than repurchasers (see e.g., Rajan and Servaes, 1997). The plot shows that LTG forecasts peak at just over 30% for issuers, while LTG forecasts are relatively steady at approximately 15% for repurchasers. Moreover, the peak in the LTG forecasts for issuers coincides with the end of the external financing year. To gauge the extent to which the higher levels of expected growth for the issuers reflects overoptimism versus rational expectations, panel D plots the error in the LTG forecasts (LTGerror).[11] Consistent with Dechow and Sloan (1997), panel D documents pervasive overoptimism in analysts' LTG forecasts (i.e., consistently negative LTGerror for both issuers and repurchasers). But more importantly for this study, the degree of overoptimism is greater for issuers and peaks in the external financing year. In other words, the run-up in LTG around the external financing year that we see in Panel C is never actually realized. It simply reflects overoptimism in sell-side forecasts that coincides exactly with the year in which these firms obtain additional financing.

[11] Consistent with the sample sizes shown in tables 1 and 2, the sample size drops significantly between panels C and D due to data requirements necessary to compute actual realized growth in the five years following the LTG forecasts.

Two features of the results in figure 1 deserve elaboration. First, the overoptimism for issuers looks like it is carefully structured so that that none of it will be revealed until about a year after the securities issuance. The overoptimism for FE1 begins in month +2 (2 months after the issuance year) and so will not be revealed until earnings for the post-issuance period is reported. The overoptimism for FE2 begins around month –10 (2 months into the issuance year), but since this forecast also relates to earnings in the post-issuance period, it will not be revealed until earnings for the post-issuance period is reported. We conjecture that this lag between the issuance year and the earnings disappointments is driven by costs associated with reporting bad news immediately following a securities issuance. Shareholder lawsuits are more likely if bad news is reported within a year of a securities issuance. Also, lock-up agreements that restrict insiders from selling securities are typically still in effect within 180 calendar days of the securities issuance. By delaying the earnings disappointments until about a year after the securities issuance, these potential costs are mitigated. This delay is consistent with the result that operating performance and stock returns start to decline about 6 to 12 months after seasoned equity offerings (see, e.g., Loughran and Ritter, 1995, 1997).

The second interesting feature of the results in figure 1 is that the differentials in the degree of overoptimism between issuers and repurchasers substantially exceed the differentials previously documented for an affiliated versus unaffiliated analysts partition. For example, Lin and McNichols (1998) find no evidence of differentials for FE1 and FE2 and only a small differential averaging less than 1% for LTG. In contrast, we document large differentials for all three variables. For example, LTGerror averages about -5% for repurchasers versus about –13% for issuers during the issuance year, an average differential of about 8%. The key determinant of overoptimism in analysts' forecasts is the extent to which the firm is issuing new securities.

Analyst affiliation is relatively unimportant, a result that we will confirm for our sample in section 5.3.

4.4 The relation of recommendations and target prices to external financing activities

Panel A of figure 2 plots annual market adjusted stock returns for the three years before through the three years after the external financing year. This plot provides a useful benchmark for evaluating the investment recommendations and target prices. The results mirror those already documented in Richardson and Sloan (2003). The issuers experience positive abnormal returns in the three years leading up to the issuing year, and negative abnormal returns in the three years following the issuing year. If analysts were to anticipate this performance and advise investors accordingly, we would expect them to issue relatively optimistic recommendations and target prices from month -36 through to about month –12 and relatively pessimistic recommendations and target prices from month –11 forward. In contrast, we see that recommendations peak in months –11 through +4 and target prices peak in months +1 through +12. Analysts issue their most optimistic recommendations and target prices right around the time of the securities issuances, even though the stocks tend to underperform immediately following this period. This point is made more evident in panel D, where we report the target price errors (the difference between the target price and the realized price expressed as a percent of the starting price). Target prices are most overoptimistic compared to realized prices in months –4 through +12. This pattern is consistent with sell-side analysts attempting to promote the stock of issuing firms by touting unrealistically high target prices in the period surrounding and immediately following their securities issuances.

4.5 Equity versus debt financing

Figures 1 and 2 present plots based on our measure of total net external financing, which combines both debt and equity financing. Figures 3 through 6 replicate the plots in figures 1 and 2, after decomposing this measure into the net change in equity financing and the net change in debt financing. Figures 3 and 4 present plots for the extreme deciles of equity issuers and repurchasers, while figures 5 and 6 present plots for the extreme deciles of debt issuers and repurchasers. A comparison of panels A and B of figures 3 and 5 indicates that the properties of the short-term earnings forecast errors are very different for equity versus debt. In figure 3, we see that analysts are consistently overoptimistic for equity issuers relative to equity repurchasers. In contrast, figure 5 reveals that analysts are relatively less overoptimistic for debt issuers in the period leading up to year 0, and then relatively more overoptimistic in the period following year 0. In other words, firms issuing debt deliver relatively good earnings performance in the period leading up to the issuance year, but relatively disappointing performance thereafter. Debt issuances appear to be timed to coincide with the period in which analysts are most overoptimistic about the issuers' short-term earnings prospects.

Panels C and D of figures 3 and 5 also reveal differences between the long-term growth forecasts of debt versus equity issuers. It appears that all of the overoptimism in long-term growth forecasts that we saw in figure 1 is driven by equity issuances. Panels C and D of table 3 mirror the patterns in table 1, but we see no evidence of such patterns in table 5. Thus, while analysts' overoptimism for debt issuers is restricted to short term earnings forecasts, their overoptimism for equity securities is concentrated in long-term growth forecasts.

Figures 4 and 6 plot the investment recommendation and target price variables for equity issuers and debt issuers. The message from these figures corroborates the findings discussed

above for the long-term growth forecasts. The equity issuers in table 4 exhibit a systematic pattern of relatively overoptimistic recommendations and target prices. In contrast, figure 6 reveals no obvious differences in the level of overoptimism in recommendations and target prices for debt issuers. The general picture that emerges is that analysts are overoptimistic for short-term earnings prospects of debt issuers, while they are overoptimistic for long-term growth potential and forecasted price appreciation of equity issuers. This pattern is consistent with the incentives of the issuing corporations and their investment bankers in selling these deals. The upside to debt securities is limited to the promised schedule of fixed payments on the debt. By exaggerating the short-term earnings prospects of debt issuers, sell-side analysts can reduce the perceived credit risk of these securities. In contrast, the upside to equity securities lies in the long-term growth potential of the underlying firms. By exaggerating the long-term growth potential of equity issuers, sell-side analysts can increase the perceived upside of these securities and sell them at higher prices.

5. Statistical Tests

5.1 Portfolio tests

The plots in figures 1 through 6 reveal economically significant differences in the degree of overoptimism in analyst research for issuers versus repurchasers. Table 4 provides tests that speak to the statistical significance of these results. The table reports the means of each of the analyst variables across decile portfolios formed on the ranks of the external financing variables. Also reported is the mean difference between the lowest portfolio (the repurchasers) and the highest portfolio (the issuers). Statistical tests are conducted using a t-statistic (Z-statistic) of the

null hypothesis that the mean (median) difference is equal to zero. The analyst variables tabulated in table 4 are all measured 4 months after the fiscal year end in which the external financing variable is measured. This is the point in time at which we can be confident that the financing information in this variable would have been available to both analysts and investors.

Panel A reports results for the total net external financing variable, ΔXFIN. All of the regularities discussed in the plots are statistically significant. In particular, the forecast errors FE1, FE2 and LTGerror are all significantly more negative for the highest portfolio and the recommendations (REC) and target prices (TP/P) are all significantly more positive for the highest portfolio. Inspection of portfolios 2 through 9 shows that each of the analyst variables has an almost monotonic relation across portfolios. Thus, the degree of overoptimism in analysts' forecasts is closely tied to the magnitude of the external financing activities.

Panel B reports results for the change in equity financing. The results closely mirror those in panel A and confirm the statistical significance of the relations observed in the plots. It is particularly notable that there is even stronger evidence of overoptimism in LTGerror, REC and TP/P for equity financing than we see in panel A for total financing. This is consistent with our earlier conjecture that analysts focus on hyping the long-term growth prospects and target prices of equity issuers. These variables provide the most direct and effective means for temporarily inflating the prices at which new equity securities can be issued.

Finally, panel C reports results for the change in debt financing. These results are generally weaker than the results in panels A and B for total financing and equity financing. However, there is still statistically significant evidence of greater overoptimism for the issuers in the short-term earnings forecasts, FE1 and FE2. This is consistent with our earlier conjecture that analysts focus on hyping short-term earnings expectations for debt issuers. The primary

factor for hyping the price at which debt can be issued is the perceived credit risk of the issue. By issuing overoptimistic expectations of short-term earnings, analysts might create the impression that the issuer has a strong earnings stream that can be used to make the promised payments on the debt. Since debtholders do not share in upside success of the firm beyond receiving their promised payments, there is little benefit to hyping long-term growth prospects of debt issuers. In fact, since long-term growth can drain operating cash flow and increase firm risk, it could even be viewed negatively by debtholders. Overall, the results in table 4 confirm the statistical significance of the key regularities that we observe in plots 1 through 6.

5.2 Regression tests

Table 5 supplements the statistical tests in table 4 with tests based on regression analysis. We estimate the following regression:

$$\text{Analyst Variable} = \alpha + \beta\text{External Financing Variable} + \varepsilon.$$

Each of our seven analyst variables (FE1, FE2, LTG, LTGerror, REC, TP/P, and TPerror) is used as the dependent variable, while each of our three external financing variables (ΔXFIN, ΔEQUITY, and ΔDEBT) is used as the independent variable. Thus, we report results for a total of 21 regression analyses. To make interpretation of the coefficients more intuitive, the right-hand side variables are transformed to ranks based on decile allocations taking on values between 0 and 1 (i.e., {decile rank –1}/9). Following the Fama-MacBeth (1973) procedure, regressions are estimated annually for each combination of analyst and external financing variable, and we report mean coefficients and R^2s. T-statistics are based on the standard error of the annual coefficient estimates adjusted for autocorrelation using the adjustment factor in Abarbanell and Bernard (2000). Because there is varying availability of the analyst variables

across years, we also report the total number of annual regressions (maximum of 26) and the number of annual coefficient estimates that are significant at the 0.01 level (maximum equals the number of annual regressions).

The regression analysis helps to demonstrate the robustness of our results in two ways. First, by using data from the entire sample rather than just the extreme portfolios, the regressions provide more efficient estimates. Second, by using the Fama-MacBeth and Abarbanell-Bernard techniques, we mitigate concerns that our statistical tests are overstated due to cross-sectional or temporal dependencies in the data (temporal dependencies are particularly important for LTG and LTGError). Moreover, the Fama-Macbeth procedure equal-weights these time series observations and may therefore understate statistical significance (see, e.g., Loughran and Ritter, 2000).

The first set of columns in table 5 present the results of regressions for the total net external financing variable, ΔXFIN. Results are consistent with those in table 4 for all analyst variables, though the coefficient on TP/P is barely statistically significant at conventional levels. The insignificance of the mean annual coefficient on TP/P is due to the fact that we only have four degrees of freedom to assess statistical significance using the Fama-MacBeth procedure. While statistically insignificant the regression suggests strong economic significance. More importantly, however, the coefficient on TPerror is statistically significant, indicating error in these forecasts is significantly more negative for net issuers than net repurchasers. In all five annual regressions, the coefficient on TPerror is significant. The mean intercept and coefficient in this regression, of –0.107 and –0.468 respectively, indicate that the result is also economically significant. Realized price falls short of target price by an average of only 10.7% for low financing firms versus 57.5% (i.e., 10.7%+46.8%) for high financing firms.

The second set of columns in table 5 present regressions for the change in equity financing. The results generally mirror those for the total net external financing variable. In fact, the ΔEQUITY portfolio results appear somewhat stronger for LTG, LTGerror, TP/P, and TPerror, as reflected by higher mean regression R^2s and some higher numbers of annual regressions with significant coefficients. Finally, the third set of columns in table 5 reports results for the change in debt financing variable. The results are consistent with the portfolio tests. There is evidence that the degree of overoptimism is increasing in the amount of additional debt financing for the short–term earnings forecasts, FE1 and FE2. However, there is no evidence that overoptimism is increasing in debt financing for long-term earnings growth forecasts, stock recommendations, or target prices.

5.3 Tests conditioning on analyst affiliation

As mentioned in the introduction, prior research on the relation between analyst research and corporate financing activities has concentrated on the role of analyst affiliation. In contrast, our results document a direct relation between analyst research and corporate financing activities without regard to analyst affiliation. The magnitude of the differences in analyst overoptimism for net issuers and net repurchasers that we document is much larger than the differences in analyst overoptimism for affiliated and unaffiliated analysts documented in prior research. To more directly benchmark the optimism associated with external financing against that associated with analyst affiliation, we also examine the relative levels of analyst over-optimism between affiliated and unaffiliated analysts.

For our sample firms, we identify the lead and co-lead underwriters on all external financing transactions during the sample period based on debt and equity issuance data from

Securities Data Corporation. We then partition analysts in our sample based on whether their brokerages are affiliated with specific financing transactions. We adopt the simple classification rule that any financing transaction taking place within a fiscal year classifies analysts at lead and co-lead brokerages as being 'affiliated.' The absence of a financing transaction in which the analysts' brokerage was a lead or co-lead underwriter classifies the analyst as 'unaffiliated.' All forecasts and recommendations made by the analyst within the fiscal year are deemed affiliated or unaffiliated based on the analysts' affiliation classification for that year. We can only perform this analysis for the recommendations and target price variables, because analysts' employer brokerages are only identified on our First Call data (i.e., recommendations and target prices) but not our I/B/E/S data (i.e., earnings forecasts and long-term growth projections).

Figure 7 and table 6 provide the results of our supplemental analysis. In figure 7, we plot the mean stock recommendations (panel A) and target price forecast errors (panel B) for the top quintile of our external financing variable, ΔXFIN. We choose the top quintile, because our earlier portfolio tests (see table 4) document extensive analyst overoptimism for the top two deciles of ΔXFIN. The plots indicate that an analyst's status as affiliated results in slightly more optimism in some of the event-months surrounding the offering. However, the spread between the affiliated and unaffiliated partition is clearly minor compared with the spread between the largest net issuers and repurchasers shown in figure 2, panels B and D.

To measure the statistical significance of the difference in analyst optimism between affiliated and unaffiliated analysts' recommendations and target prices, we replicate the regression results in table 5, but use individual analyst data rather than consensus and include an indicator variable for whether the recommendation or target price is from an affiliated analyst and an interaction term for this indicator variable and ΔXFIN. The results appear in table 6.

Overall, the coefficients on ΔXFIN in both the recommendations and target price error regressions are statistically significant and similar to the results in table 5. However, the coefficients on the affiliation indicator variables and the interaction terms are all insignificant. These results support the notion that it is the level of financing activity that dominates affiliation status as the more important determinant of analyst overoptimism.

6. Conclusion

We provide evidence of a strong relation between corporate financing activities and overoptimism in sell-side analyst research. Analysts are most overoptimistic for firms issuing new securities and least overoptimistic for firms repurchasing existing securities. Moreover, our evidence indicates that overoptimism is tailored to the type of security being issued. The upside in equity is unlimited and is driven primarily by long-term earnings growth. Accordingly, overoptimism is concentrated in long-term growth forecasts, stock recommendations, and target prices for equity issuers. The upside in debt is limited to the promised debt repayments and the main concern for debt instruments is credit risk. Accordingly, overoptimism is concentrated in short-term earnings forecasts for debt issuers.

Our evidence supports allegations that sell-side analysts succumb to investment banking pressures and routinely hype the prospects of firms issuing new securities. Our evidence is also consistent with investors being misled by analysts' overoptimistic research. Stock prices are temporarily inflated around the time of securities issuances and then systematically under perform as analyst overoptimism is realized through subsequent earnings announcements. It appears that analyst overoptimism contributes to significant inefficiencies in capital markets, leading to the misallocation of capital. Furthermore, our analysis suggests that the key

determinant of over-optimism in analysts' forecasts is the extent to which the firm is issuing new securities – analyst affiliation is of second order importance. Recent research by Bradley, Jordan and Ritter (2003) examining initiation of analyst coverage following initial public offerings provides complimentary evidence.

While our results appear to confirm the worst fears of regulators, there is a less cynical interpretation of our results. This is the 'investment hubris' interpretation described in Richardson and Sloan (2003). Under this interpretation, analysts, along with investors and managers, are unwittingly overconfident about issuing firms' future prospects. Analysts are most likely to initiate and maintain coverage of a stock if they think that the stock has good prospects. This leads to a self-selection bias, whereby analysts with the most optimistic views on a stock tend to cover the stock. McNichols and O'Brien (1997) provide evidence in support of this 'self-selection' hypothesis. One shortcoming of this hypothesis is that it also requires a good deal of naïveté on the part of analysts. Sophisticated analysts should interpret the announcement of a securities issuance as a sign that their forecasts are overoptimistic and revise them downward. In reality, however, overoptimism actually becomes even greater in the months immediately following the issuance period. It is also worth noting that this interpretation does not change our basic conclusion that investors who rely on analysts' research will be steered toward issuers that subsequently underperform. It simply attributes analysts' behavior to naïveté rather than to dishonesty arising from investment banking pressures.

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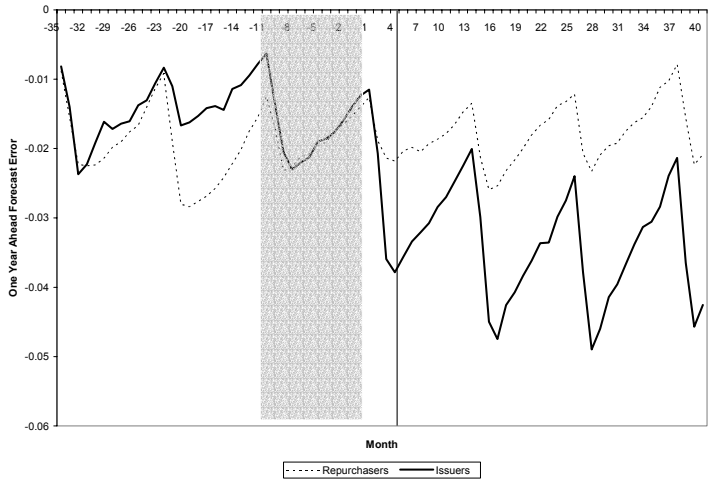
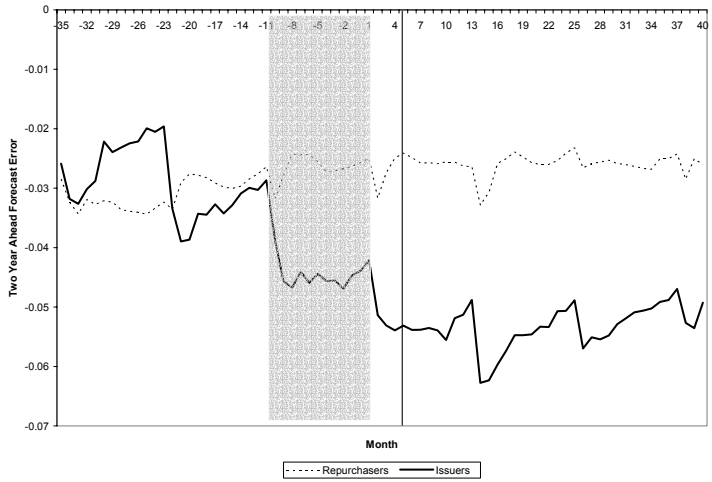
Figure 1
Sell-side analyst short term and long term earnings forecasts
for net external financing deciles

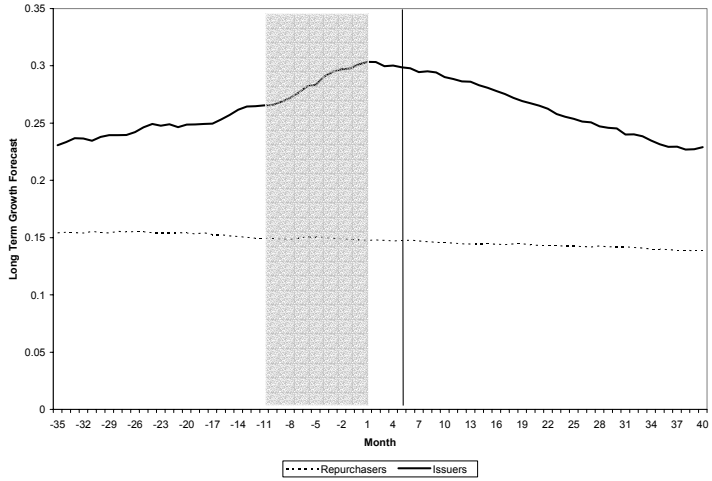
Panel A: Year Ahead Forecast Error (FE1)



Panel B: Two Years Ahead Forecast Error (FE2)



Panel C: Long Term Growth Forecasts (LTG)



Panel D: Long Term Growth Forecast Error (LTGerror)

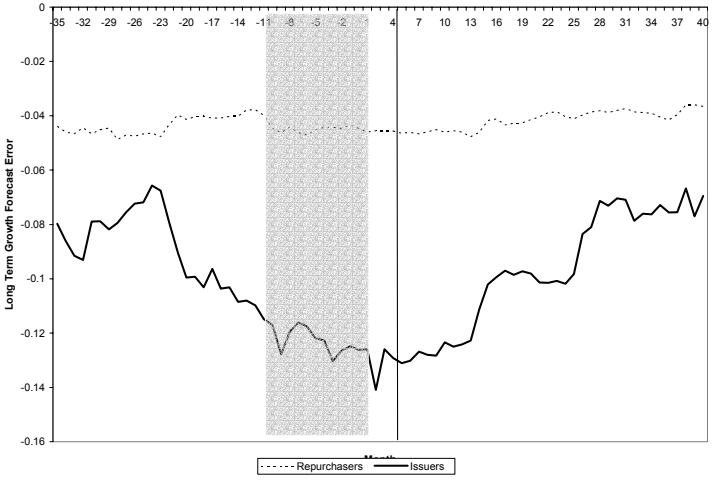
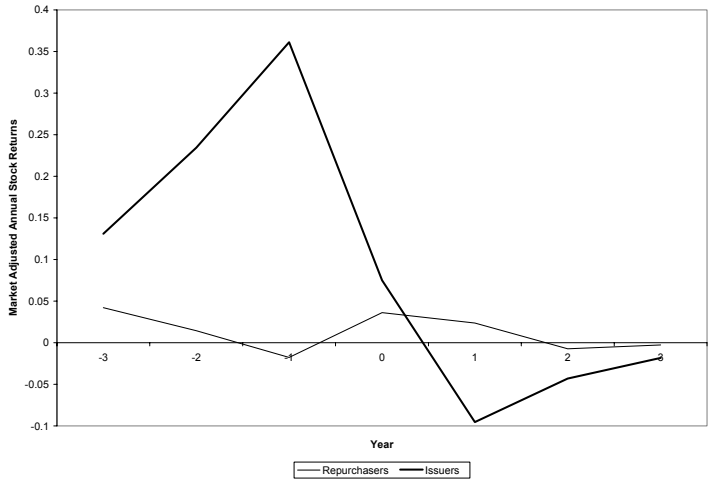
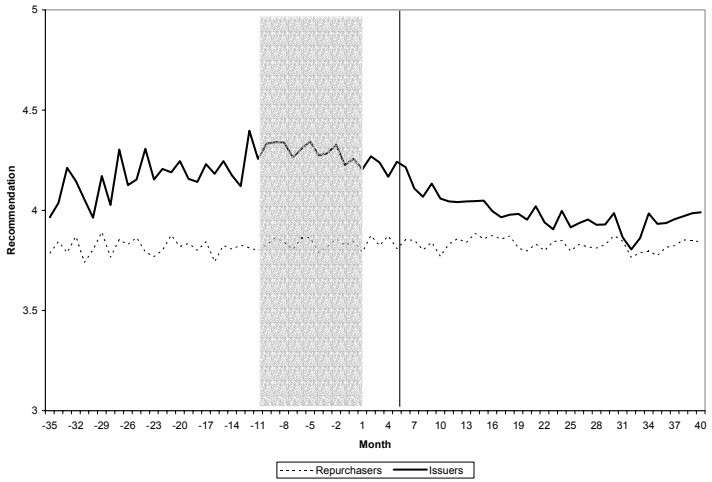


Figure 2
Sell-side analyst stock recommendations and target prices for net external financing deciles

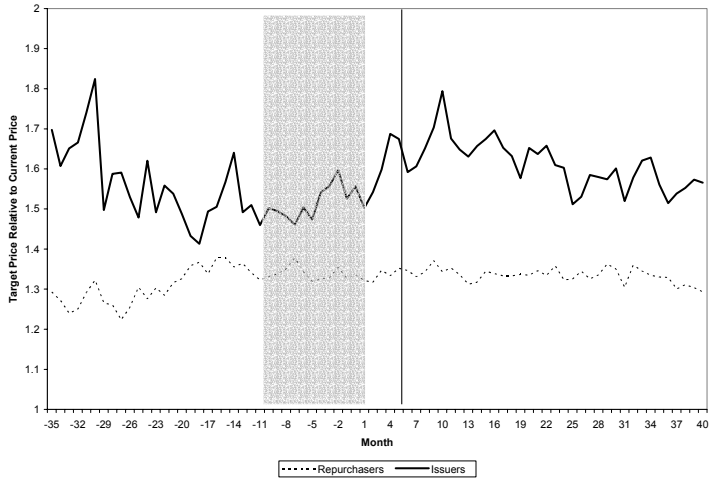
Panel A: Market Adjusted Annual Stock Returns (AdjRET)



Panel B: Stock Recommendations (REC)



Panel C: Target Price Relative to Current Price (TP/P)



Panel D: Target Price Error (TPerror)

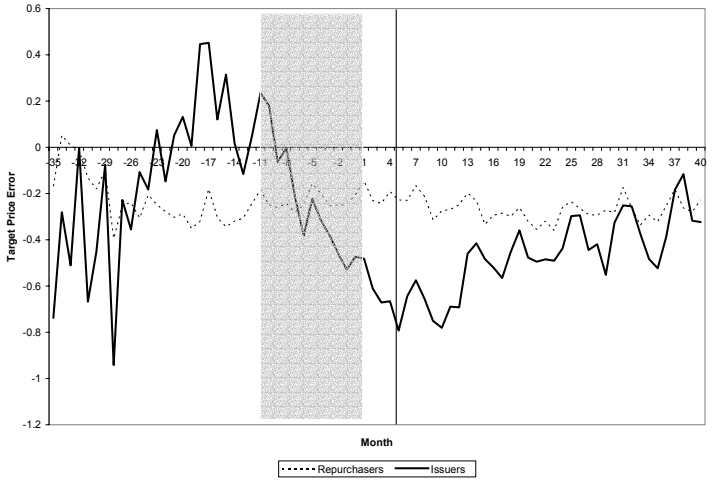
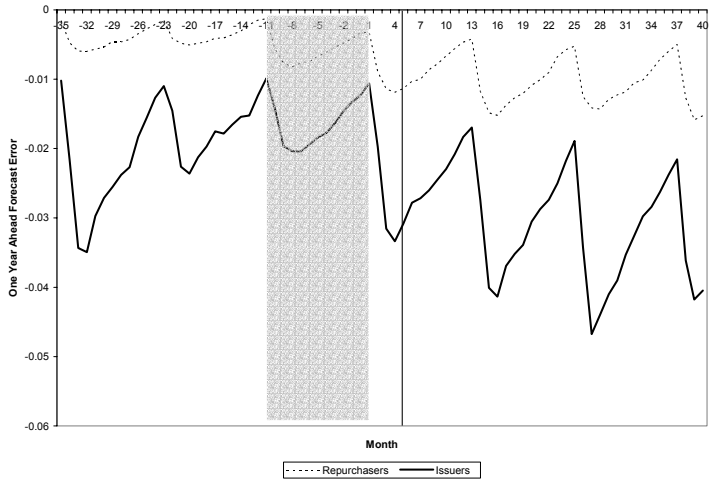
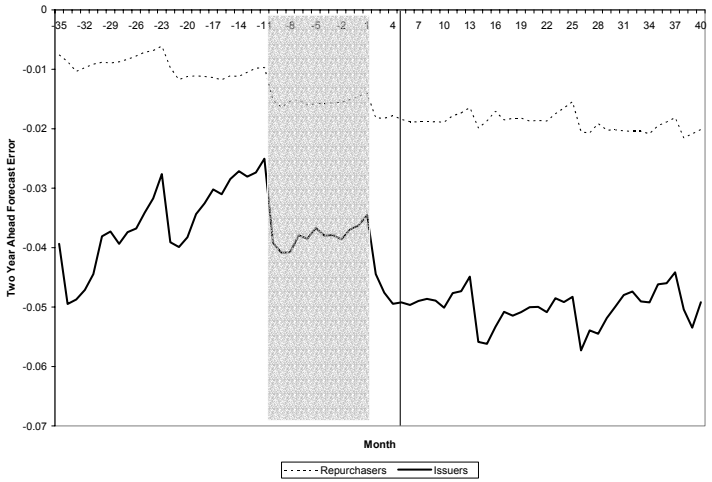


Figure 3
Sell-side analyst short term and long term earnings forecasts
for external financing (equity only) deciles

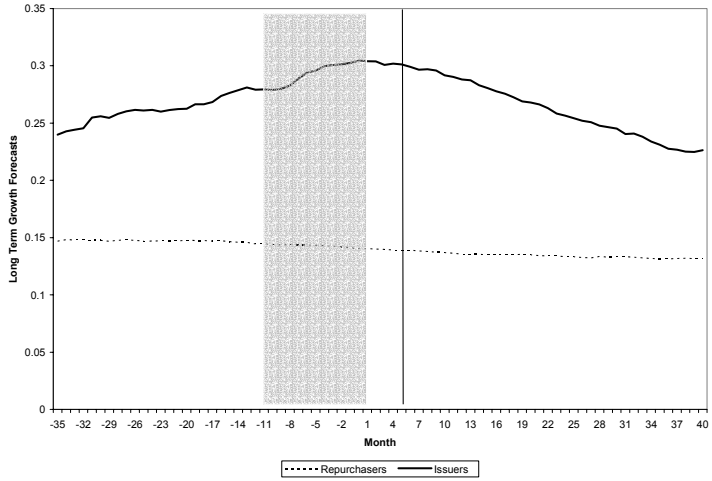
Panel A: Year Ahead Forecast Error (FE1)



Panel B: Two Years Ahead Forecast Error (FE2)



Panel C: Long Term Growth Forecasts (LTG)



Panel D: Long Term Growth Forecast Error (LTGerror)

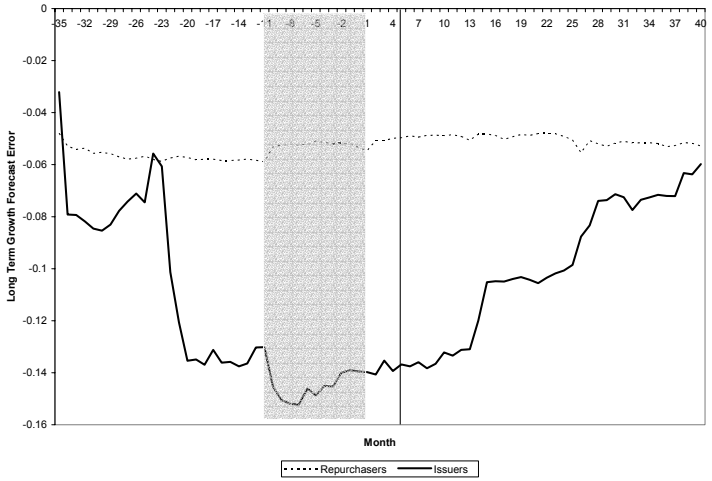
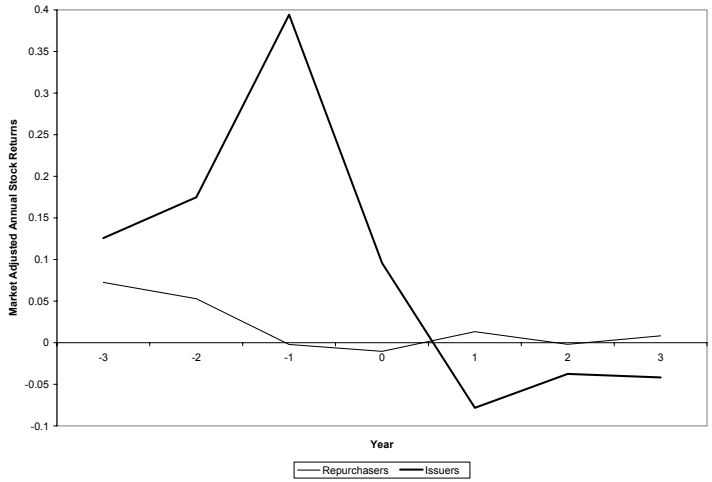
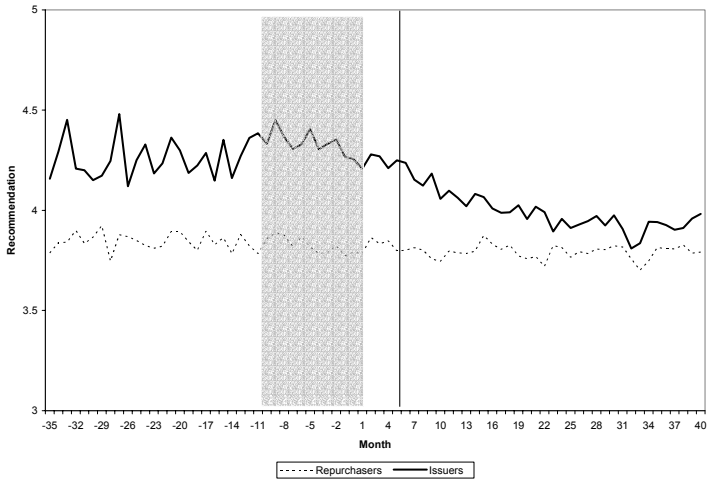


Figure 4
Sell-side analyst stock recommendations and target prices
for external financing (equity only) deciles

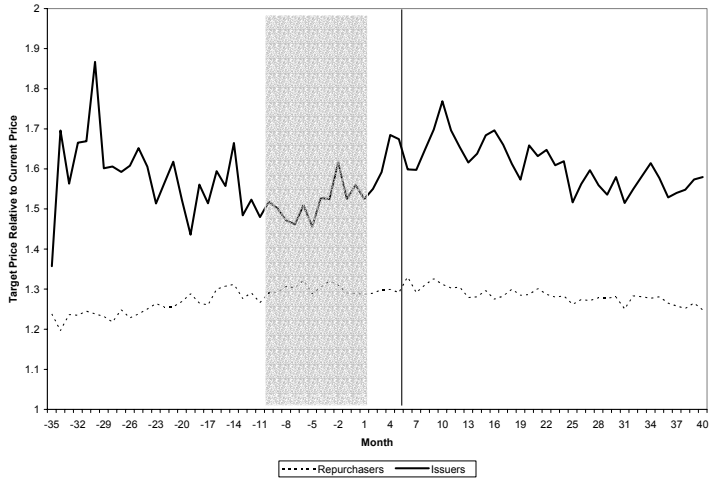
Panel A: Market Adjusted Annual Stock Returns (AdjRET)



Panel B: Stock Recommendations (REC)



Panel C: Target Price Relative to Current Price (TP/P)



Panel D: Target Price Error (TPerror)

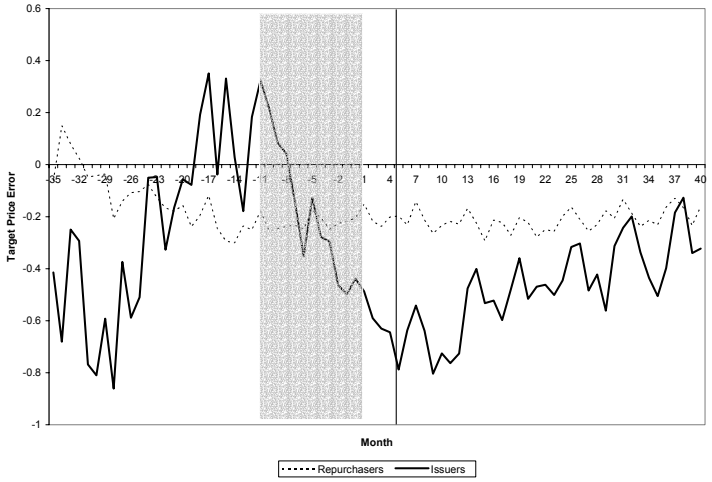
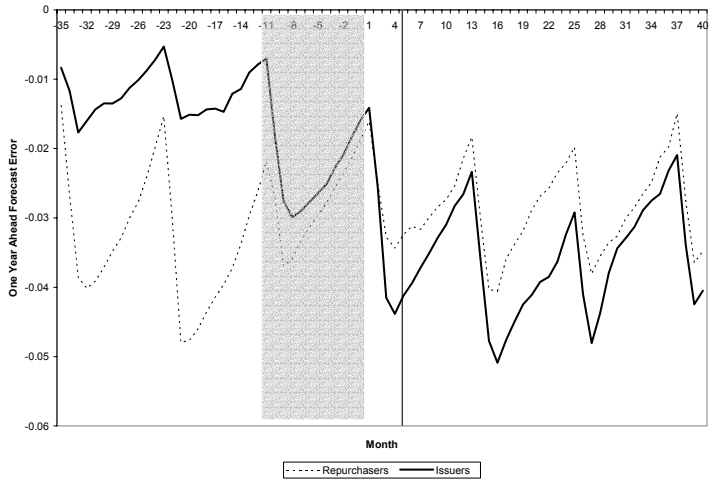
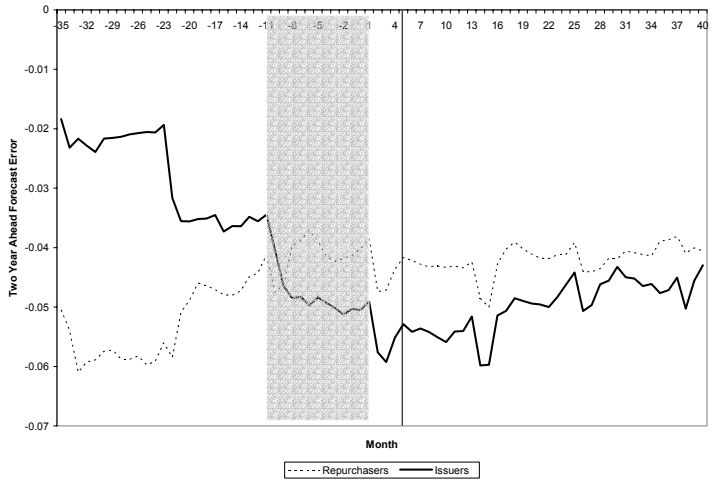


Figure 5
Sell-side analyst short term and long term earnings forecasts
for external financing (debt only) deciles

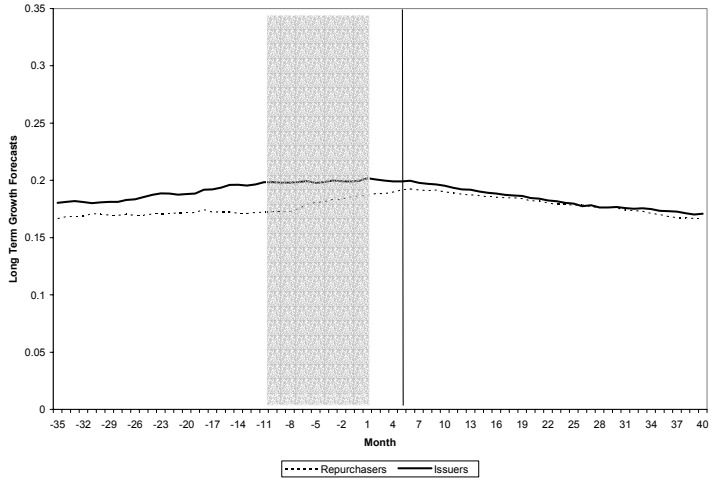
Panel A: Year Ahead Forecast Error (FE1)



Panel B: Two Years Ahead Forecast Error (FE2)



Panel C: Long Term Growth Forecasts (LTG)



Panel D: Long Term Growth Forecast Error (LTGerror)

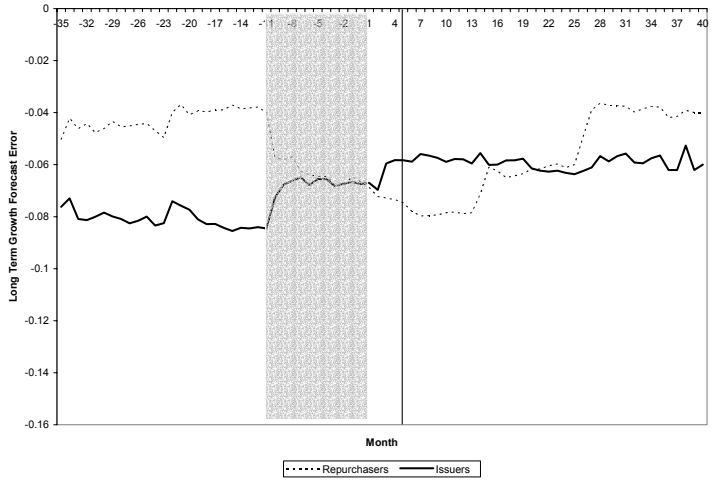
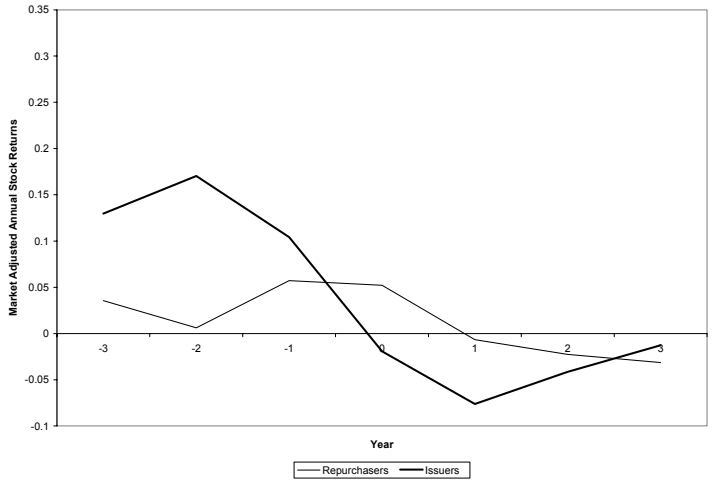
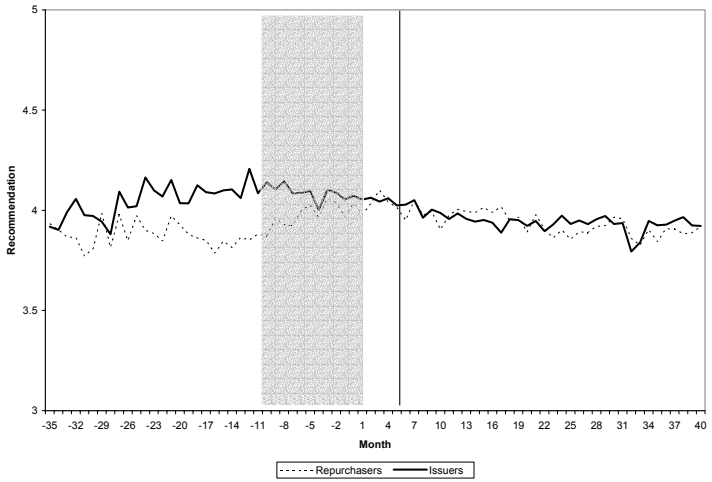


Figure 6
Sell-side analyst stock recommendations and target prices for external financing (debt only) deciles

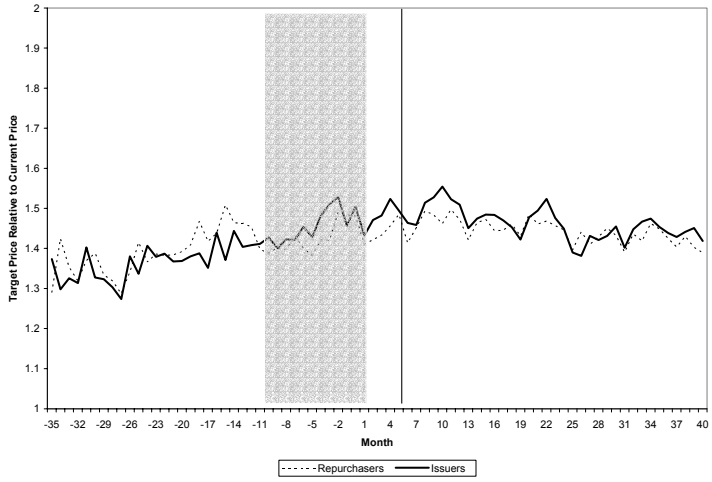
Panel A: Market Adjusted Annual Stock Returns (AdjRET)



Panel B: Stock Recommendations (REC)



Panel C: Target Price Relative to Current Price (TP/P)



Panel D: Target Price Error (TPerror)

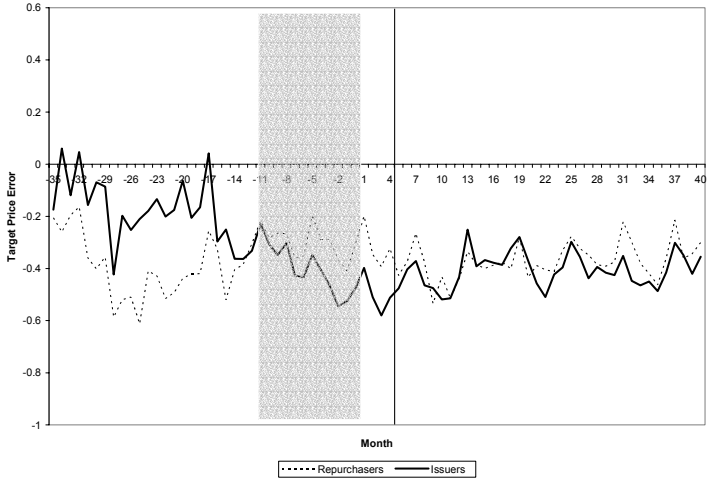
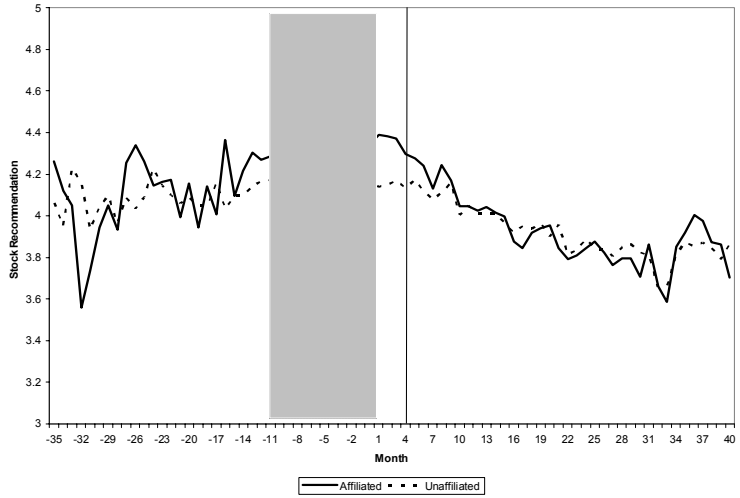


Figure 7
Affiliated vs. unaffiliated sell-side analyst stock recommendations and target prices for net external financing portfolios

Panel A: Stock Recommendations (REC)



Panel B: Target Price Error (TPerror)

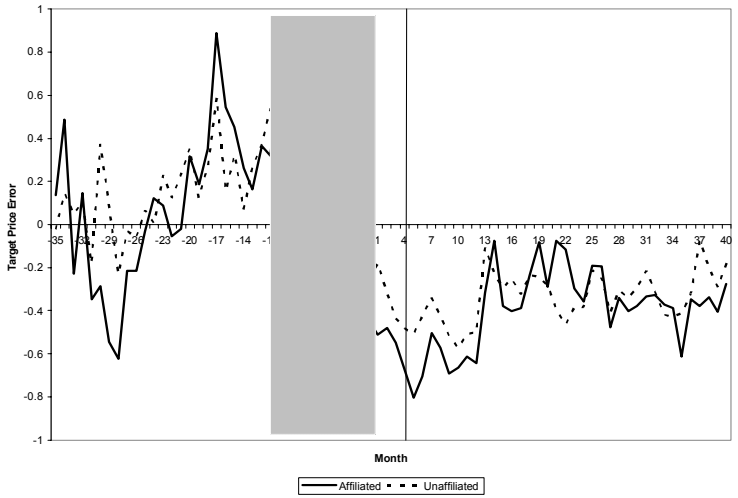


TABLE 1
Data availability for measures of sell-side analyst behavior through time

	Sell-side analyst variable							
Year	**FE1**	**FE2**	**LTG**	**LTGerror**	**REC**	**TP/P**	**TPerror**	**Total**
1975	446	114	0	0	0	0	0	449
1976	626	204	0	0	0	0	0	628
1977	780	383	0	0	0	0	0	783
1978	1,111	439	0	0	0	0	0	1,113
1979	1,132	551	0	0	0	0	0	1,142
1980	1,145	645	0	0	0	0	0	1,153
1981	1,145	667	713	459	0	0	0	1,149
1982	1,201	708	1,038	595	0	0	0	1,223
1983	1,455	955	1,236	693	0	0	0	1,484
1984	1,549	944	1,290	688	0	0	0	1,592
1985	1,466	929	1,213	655	0	0	0	1,517
1986	1,483	1,001	1,297	730	0	0	0	1,586
1987	1,538	1,015	1,246	782	0	0	0	1,584
1988	1,663	1,165	1,322	890	0	0	0	1,723
1989	1,750	1,243	1,398	931	0	0	0	1,818
1990	1,773	1,336	1,458	941	0	0	0	1,818
1991	1,914	1,476	1,562	961	0	0	0	1,952
1992	2,184	1,688	1,785	1,007	0	0	0	2,252
1993	2,429	1,931	1,963	1,044	632	0	0	2,513
1994	2,637	2,087	2,159	1,034	633	0	0	2,745
1995	2,785	2,158	2,344	974	785	0	0	2,921
1996	2,871	2,233	2,513	0	1,063	668	668	3,036
1997	2,864	2,182	2,533	0	1,168	1,365	1,365	3,050
1998	2,646	1,979	2,416	0	1,278	1,333	1,333	2,867
1999	2,458	1,814	2,275	0	1,235	1,367	1,367	2,732
2000	196	10	191	0	122	112	112	224
	43,247	29,857	31,952	12,384	6,916	4,845	4,845	45,054

This table presents annual sample sizes for each analyst variable. FE1 is the one-year ahead forecast error, computed as the realized annual earnings per share for the coming year minus the corresponding monthly consensus forecast of this amount, all scaled by stock price as of the end of the forecast month, winsorized at +/- 1. FE2 is the two-year ahead forecast error, computed as the realized annual earnings per share for next year minus the corresponding monthly consensus forecast of this amount, all scaled by stock price as of the end of the forecast month, winsorized at +/- 1. LTG is the forecast of long-term earnings growth, generally acknowledged to cover a five-year horizon [I/B/E/S 1999]. LTGerror is the LTG forecast error, computed as the realized long-term earnings growth rate minus the forecast long-term growth rate. Realized earnings growth is computed from the slope coefficient of an ordinary least squares regression of the natural logarithm of annual earnings per share on a time trend. The regressions require the availability of at least three realized annual earnings per share numbers (maximum of six). REC is the stock recommendation, coded on a 1 to 5 point scale. We invert the standard coding of stock recommendations so that 1=strong sell, 2=sell, 3=hold, 4=buy, and 5=strong buy. TP/P is the one-year ahead target price forecast relative to closing stock price as of the end of the target price forecast month. TPerror is target price forecast error, computed as one plus the raw return over the target price forecast horizon, minus TP/P.

TABLE 2
Descriptive statistics for external financing variables and analyst variables

Panel A: Distributional properties

Variable	N	Mean	Standard Deviation	Q1	Median	Q3
ΔXFIN	45,054	0.063	0.217	-0.037	0.001	0.079
ΔEQUITY	45,054	0.042	0.199	-0.025	-0.003	0.010
ΔDEBT	45,054	0.021	0.125	-0.018	0.000	0.046
AdjRET	45,054	-0.009	0.572	-0.306	-0.074	0.175
MV	45,054	1587	8469	71	211	775
FE1	43,247	-0.028	0.105	-0.032	-0.005	0.004
FE2	29,857	-0.036	0.105	-0.052	-0.014	0.004
LTG	31,952	0.175	0.108	0.110	0.150	0.205
LTGerror	12,384	-0.058	0.209	-0.159	-0.047	0.034
REC	6,916	3.946	0.803	3.000	4.000	5.000
TP/P	4,845	1.429	0.447	1.162	1.300	1.542
TPerror	4,845	-0.327	0.910	-0.752	-0.310	0.056

TABLE 2 (cont.)
Descriptive statistics for external financing variables and analyst variables

Panel B: Correlations (Pearson above diagonal, Spearman below)

	ΔXFIN	ΔEQUITY	ΔDEBT	FE1	FE2	LTG	LTGerror	REC	TP/P	TPerror	AdjRET	MV
ΔXFIN		0.83	0.41	-0.03	-0.07	0.45	-0.09	0.13	0.25	-0.16	-0.07	-0.11
		45,054	45,054	43,247	29,857	31,952	12,384	6,916	4,845	4,844	45,054	45,054
ΔEQUITY	0.61		-0.15	-0.02	-0.05	0.46	-0.11	0.13	0.24	-0.15	-0.05	-0.23
	45,054		45,054	43,247	29,857	31,952	12,384	6,916	4,845	4,844	45,054	45,054
ΔDEBT	0.58	-0.09		-0.03	-0.04	0.04	*0.00*	*0.02*	0.04	-0.05	-0.04	0.05
	45,054	45,054		43,247	29,857	31,952	12,384	6,916	4,845	4,844	45,054	45,054
FE1	-0.10	-0.08	-0.06		0.49	*-0.01*	-0.21	0.09	-0.15	0.15	0.29	0.20
	43,247	43,247	43,247		29,660	30,561	12,249	6,464	4,648	4,647	43,247	43,247
FE2	-0.13	-0.12	-0.05	0.61		-0.05	-0.08	0.06	-0.20	0.27	0.41	0.20
	29,857	29,857	29,857	29,660		24,054	10,629	5,818	4,161	4,160	29,857	29,857
LTG	0.36	0.50	*-0.00*	-0.05	-0.09		-0.26	0.20	0.29	-0.13	-0.12	-0.24
	31,952	31,952	31,952	30,561	24,054		12,384	6,152	4,475	4,474	31,952	31,952
LTGerror	-0.08	-0.10	*-0.01*	-0.16	*-0.01*	-0.25		-0.10	n/a	n/a	0.11	0.03
	12,384	12,384	12,384	12,249	10,629	12,384		1,401			12,384	12,384
REC	0.13	0.16	*0.01*	0.11	0.05	0.23	-0.10		0.15	-0.06	*0.00*	-0.05
	6,916	6,916	6,916	6,464	5,818	6,152	1,401		3,150	3,149	6,916	6,916
TP/P	0.23	0.27	*0.00*	-0.14	-0.24	0.32	n/a	0.08		-0.55	-0.12	-0.30
	4845	4,845	4,845	4,648	4,161	4,475		3,150		4,844	4,845	4,845
TPerror	-0.21	-0.19	-0.04	0.32	0.48	-0.19	n/a	-0.05	-0.59		0.70	0.20
	4,844	4,844	4,844	4,647	4,160	4,474		3,149	4,844		4,844	4,844
AdjRET	-0.14	-0.14	-0.04	0.14	0.21	-0.02	0.09	*0.01*	-0.04	0.73		0.03
	45,054	45,054	45,054	43,247	29,857	31,952	12,384	6,916	4,845	4,844		45,054
MV	-0.05	-0.06	*-0.00*	0.04	0.05	-0.05	0.02	*0.00*	-0.08	*0.02*	*-0.00*	
	45,054	45,054	45,054	43,247	29,857	31,952	12,384	6,916	4,845	4,844	45,054	

Panel A of this table presents descriptive statistics for the external financing variables, analyst variables, as well as stock returns and market value. Annual sample sizes for each analyst variable. ΔXFIN = ΔEQUITY + ΔDEBT, where ΔXFIN refers to net change in external financing, ΔEQUITY is measured as the annual change in common and preferred equity measured as equity issuances (Compustat data item #108) minus equity repurchases (data item #115) minus dividends (data item #127), and ΔDEBT is similarly defined as the annual change in total long-term debt measured as long-term debt issuances (data item #111) minus long-term debt retirements (data item #114) plus the net change in notes payable (data item #301). ΔXFIN, ΔEQUITY, and ΔDEBT are scaled by average total assets (data item #6) and winsorized at +/- 1. FE1 is the one-year ahead forecast error, computed as the realized annual earnings per share for the coming year minus the corresponding monthly consensus forecast of this amount, all scaled by stock price as of the end of the forecast month, winsorized at +/- 1. FE2 is the two-year ahead forecast error, computed as the realized annual earnings per share for next year minus the corresponding monthly consensus forecast of this amount, all scaled by stock price as of the end of the forecast month, winsorized at +/- 1. LTG is the forecast of long-term earnings growth, generally acknowledged to cover a five-year horizon [I/B/E/S 1999]. LTGerror is the LTG forecast error, computed as the realized long-term earnings growth rate minus the forecast long-term growth rate. Realized earnings growth is computed from the slope coefficient of an ordinary least squares regression of the natural logarithm of annual earnings per share on a time trend. The regressions require the availability of at least three realized annual earnings per share numbers (maximum of six). REC is the stock recommendation, coded on a 1 to 5 point scale. We invert the standard coding of stock recommendations so that 1=strong sell, 2=sell, 3=hold, 4=buy, and 5=strong buy. TP/P is the one-year ahead target price forecast relative to closing stock price as of the end of the target price forecast month. TPerror is target price forecast error, computed as one plus the raw return over the target price forecast horizon, minus TP/P. AdjRET is the value-weighted market adjusted return for the one-year period beginning with a four-month lag after the XFIN year (i.e., May 1, 1976 for a December 31, 1975 fiscal year). MV is market value of equity, measured as of the end of the XFIN year.

Panel B presents univariate correlations among the variables. Correlations reported in italics are not significant at the 0.01 level. The number of observations with data available to calculate correlations is reported below correlation coefficients. Correlations for which there is no data available to calculate correlations are denoted as n/a.

TABLE 3
Future market adjusted stock returns across external financing portfolios

Portfolio	Variable					
	ΔXFIN		ΔEQUITY		ΔDEBT	
	N	Mean	N	Mean	N	Mean
LOW	4494	0.024	4494	0.013	4494	-0.007
2	4504	0.015	4504	-0.006	4504	0.018
3	4512	0.018	4512	-0.005	4512	0.008
4	4501	0.010	4507	0.000	4377	0.011
5	4510	0.031	4659	0.000	4665	0.014
6	4511	0.021	4359	0.002	4507	-0.001
7	4510	-0.021	4546	-0.002	4483	-0.013
8	4509	-0.038	4454	0.004	4509	-0.018
9	4507	-0.062	4523	-0.025	4507	-0.034
HIGH	4496	-0.095	4496	-0.078	4496	-0.076
Hedge Return		0.119		0.092		0.070
t-statistic		9.0***		7.2***		5.6***
Z-statistic		16.5***		17.1***		4.5***

This table presents mean market-adjusted stock returns for deciles formed based on the level of external financing measures. In each year, observations are allocated to deciles based on the level of the external financing variables, and the table presents the results of the pooled decile observations. Test statistics compare the mean (median, not tabulated) portfolio return across low and high portfolios for the t (Z) statistic. ΔXFIN = ΔEQUITY + ΔDEBT, where ΔXFIN refers to net change in external financing, ΔEQUITY is measured as the annual change in common and preferred equity measured as equity issuances (Compustat data item #108) minus equity repurchases (data item #115) minus dividends (data item #127), and ΔDEBT is similarly defined as the annual change in total long-term debt measured as long-term debt issuances (data item #111) minus long-term debt retirements (data item #114) plus the net change in notes payable (data item #301). ΔXFIN, ΔEQUITY, and ΔDEBT are scaled by average total assets (data item #6) and winsorized at +/- 1. The stock returns (AdjRET) equal the value-weighted market adjusted return for the one-year period beginning with a four-month lag after the XFIN year (i.e., May 1, 1976 for a December 31, 1975 fiscal year).

* / ** / *** indicates significance at the 0.10 / 0.05 / 0.01 level.

TABLE 4
Properties of sell-side analyst forecasts and stock recommendations across external financing portfolios

Panel A: Total external financing (ΔXFIN)

Portfolio	Sell-side analyst variable						
	FE1	FE2	LTG	LTGerror	REC	TP/P	TPerror
LOW	-0.022	-0.025	0.147	-0.046	3.872	1.334	-0.192
2	-0.019	-0.025	0.137	-0.044	3.828	1.327	-0.220
3	-0.020	-0.025	0.136	-0.052	3.829	1.344	-0.224
4	-0.022	-0.030	0.146	-0.039	3.831	1.352	-0.231
5	-0.026	-0.033	0.170	-0.053	3.934	1.400	-0.273
6	-0.028	-0.035	0.178	-0.065	3.936	1.421	-0.202
7	-0.029	-0.036	0.173	-0.058	3.971	1.440	-0.381
8	-0.037	-0.043	0.179	-0.054	3.991	1.453	-0.400
9	-0.041	-0.052	0.205	-0.077	4.160	1.548	-0.514
HIGH	-0.038	-0.054	0.300	-0.129	4.167	1.687	-0.666
Portfolio Difference	-0.016	-0.029	0.153	-0.084	0.296	0.354	-0.474
t-statistic	-6.5***	-10.0***	44.9***	-7.6***	6.7***	11.2***	-6.8***
Z-statistic	-14.2***	-16.0***	44.2***	-7.4***	7.0***	11.6***	-11.8***

Panel B: Equity financing (ΔEQUITY)

Portfolio	Sell-side analyst variable						
	FE1	FE2	LTG	LTGerror	REC	TP/P	TPerror
LOW	-0.012	-0.018	0.139	-0.050	3.847	1.299	-0.201
2	-0.012	-0.019	0.120	-0.048	3.779	1.302	-0.219
3	-0.016	-0.024	0.121	-0.043	3.766	1.310	-0.209
4	-0.020	-0.032	0.137	-0.028	3.871	1.368	-0.269
5	-0.032	-0.039	0.154	-0.041	3.929	1.412	-0.363
6	-0.042	-0.043	0.173	-0.051	3.981	1.506	-0.436
7	-0.042	-0.047	0.196	-0.064	4.047	1.476	-0.371
8	-0.041	-0.048	0.219	-0.083	4.010	1.507	-0.305
9	-0.032	-0.046	0.223	-0.086	4.143	1.516	-0.367
HIGH	-0.033	-0.049	0.302	-0.139	4.210	1.685	-0.644
Portfolio Difference	-0.021	-0.032	0.163	-0.089	0.362	0.385	-0.443
t-statistic	-11.7***	-13.8***	48.8***	-8.6***	8.7***	12.6***	-6.5***
Z-statistic	-12.3***	-17.8***	49.3***	-9.4***	8.7***	12.5***	-10.9***

TABLE 4 (cont.)
Properties of sell-side analyst forecasts and stock recommendations across external financing portfolios

Panel C: Debt financing (ΔDEBT)

Portfolio	Sell-side analyst variable						
	FE1	FE2	LTG	LTGerror	REC	TP/P	TPerror
LOW	-0.034	-0.044	0.190	-0.073	4.041	1.456	-0.324
2	-0.027	-0.035	0.168	-0.054	3.949	1.417	-0.242
3	-0.024	-0.033	0.170	-0.045	3.907	1.439	-0.335
4	-0.021	-0.029	0.179	-0.053	3.926	1.445	-0.306
5	-0.021	-0.030	0.202	-0.072	3.991	1.509	-0.325
6	-0.022	-0.028	0.178	-0.070	3.898	1.396	-0.326
7	-0.024	-0.032	0.150	-0.051	3.875	1.338	-0.256
8	-0.027	-0.033	0.149	-0.049	3.854	1.354	-0.310
9	-0.038	-0.041	0.165	-0.055	3.980	1.411	-0.343
HIGH	-0.044	-0.055	0.199	-0.058	4.060	1.524	-0.512
Portfolio Difference	-0.009	-0.011	0.009	0.015	0.018	0.068	-0.189
t-statistic	-3.3**	-3.3**	3.6**	1.4	0.4	2.0**	-3.1**
Z-statistic	-8.1***	-6.1***	-2.9	1.1	-0.2	-2.1	2.9

This table presents means of analyst variables across deciles formed based on the level of external financing measures. In each year, observations are allocated to deciles based on the level of the external financing variables, and the table presents the results of the pooled decile observations. Test statistics compare the means (medians, not tabulated) across low and high portfolios. ΔXFIN = ΔEQUITY + ΔDEBT, where ΔXFIN refers to net change in external financing, ΔEQUITY is measured as the annual change in common and preferred equity measured as equity issuances (Compustat data item #108) minus equity repurchases (data item #115) minus dividends (data item #127), and ΔDEBT is similarly defined as the annual change in total long-term debt measured as long-term debt issuances (data item #111) minus long-term debt retirements (data item #114) plus the net change in notes payable (data item #301). ΔXFIN, ΔEQUITY, and ΔDEBT are scaled by average total assets (data item #6) and winsorized at +/- 1. FE1 is the one-year ahead forecast error, computed as the realized annual earnings per share for the coming year minus the corresponding monthly consensus forecast of this amount, all scaled by stock price as of the end of the forecast month, winsorized at +/- 1. FE2 is the two-year ahead forecast error, computed as the realized annual earnings per share for next year minus the corresponding monthly consensus forecast of this amount, all scaled by stock price as of the end of the forecast month, winsorized at +/- 1. LTG is the forecast of long-term earnings growth, generally acknowledged to cover a five-year horizon [I/B/E/S 1999]. LTGerror is the LTG forecast error, computed as the realized long-term earnings growth rate minus the forecast long-term growth rate. Realized earnings growth is computed from the slope coefficient of an ordinary least squares regression of the natural logarithm of annual earnings per share on a time trend. The regressions require the availability of at least three realized annual earnings per share numbers (maximum of six). REC is the stock recommendation, coded on a 1 to 5 point scale. We invert the standard coding of stock recommendations so that 1=strong sell, 2=sell, 3=hold, 4=buy, and 5=strong buy. TP/P is the one-year ahead target price forecast relative to closing stock price as of the end of the target price forecast month. TPerror is target price forecast error, computed as one plus the raw return over the target price forecast horizon, minus TP/P. The analyst variables are all measured 4 months after the fiscal year end in which the external financing variable is measured.

* / ** / *** indicates significance at the 0.10 / 0.05 / 0.01 level, 1-tailed test.

TABLE 5
OLS regressions of sell-side analyst forecasts and stock recommendations on external financing activity.

Analyst Variable = α +β External Financing Variable +ε

Analyst Variable	# Annual Regressions	Mean #Obs. Per Year	External financing variable											
			ΔXFIN				ΔEQUITY				ΔDEBT			
			α	β	Adj.R^2	# Years Signif.	α	β	Adj.R^2	# Years Signif.	α	β	Adj.R^2	# Years Signif.
FE1	26	1,663	-0.018 (-3.7)	-0.022 (-5.1)	0.005	22	-0.014 (-6.3)	-0.029 (-4.3)	0.008	20	-0.023 (-4.2)	-0.010 (-2.9)	0.001	16
FE2	26	1,194	-0.021 (-2.9)	-0.029 (-11.4)	0.009	20	-0.019 (-4.1)	-0.034 (-5.1)	0.013	19	-0.030 (-3.5)	-0.010 (-2.1)	0.003	14
LTG	20	1,597	0.120 (52.5)	0.106 (6.0)	0.113	20	0.102 (45.7)	0.144 (7.0)	0.207	20	0.174 (13.8)	-0.005 (-1.1)	0.001	2
LTGerror	15	825	-0.037 (-2.6)	-0.050 (-5.8)	0.006	10	-0.031 (-2.6)	-0.068 (-6.0)	0.012	13	-0.061 (-4.0)	0.003 (-0.3)	0.001	2
REC	8	865	3.769 (82.5)	0.321 (12.6)	0.015	8	3.735 (72.8)	0.407 (10.2)	0.028	8	3.938 (135.6)	-0.024 (-0.8)	-0.001	0
TP/P	5	969	1.254 (33.9)	0.385 (1.0)	0.086	5	1.235 (29.9)	0.437 (1.0)	0.122	5	1.463 (8.6)	-0.039 (-1.0)	0.000	1
TPerror	5	969	-0.107 (-1.4)	-0.468 (-2.7)	0.042	5	-0.127 (-1.3)	-0.438 (-1.4)	0.065	5	-0.307 (-2.2)	-0.057 (-0.5)	0.002	1

This table presents the results of Fama-MacBeth regressions of analyst variables on external financing measures. The right-hand side reflects decile rankings of each external financing measure, with decile ranks transformed to a 0-1 interval (i.e., [decile rank–1]/9). In each year, observations are allocated to deciles based on the level of the external financing variables. For each analyst variable, the table presents the number of annual regressions, the mean number of observations per year, the mean coefficient estimates and R^2, and the number of annual regressions in which the coefficient on the external financing variable is significant. The t-statistics (reported in parentheses below coefficient estimates) are based on the standard error of the coefficient estimates across the annual regressions,

adjusted for autocorrelation in the annual coefficient estimates based on an assumed AR(1) autocorrelation structure. Standard errors are multiplied by an adjustment factor, $\sqrt{\frac{(1+\phi)}{(1-\phi)}\frac{2\phi(1-\phi^n)}{n(1-\phi)^2}}$, where n is the number of annual regressions and ϕ is the first-order autocorrelation of the annual coefficient estimates.

ΔXFIN = ΔEQUITY + ΔDEBT, where ΔXFIN refers to net change in external financing, ΔEQUITY is measured as the annual change in common and preferred equity measured as equity issuances (Compustat data item #108) minus equity repurchases (data item #115) minus dividends (data item #127), and ΔDEBT is similarly defined as the annual change in total long-term debt measured as long-term debt issuances (data item #111) minus long-term debt retirements (data item #114) plus the net change in notes payable (data item #301). ΔXFIN, ΔEQUITY, and ΔDEBT are scaled by average total assets (data item #6) and winsorized at +/- 1. FE1 is the one-year ahead forecast error, computed as the realized annual earnings per share for the coming year minus the corresponding monthly consensus forecast of this amount, all scaled by stock price as of the end of the forecast month, winsorized at +/- 1. FE2 is the two-year ahead forecast error, computed as the realized annual earnings per share for next year minus the corresponding monthly consensus forecast of this amount, all scaled by stock price as of the end of the forecast month, winsorized at +/- 1. LTG is the forecast of long-term earnings growth, generally acknowledged to cover a five-year horizon [I/B/E/S 1999]. LTGerror is the LTG forecast error, computed as the realized long-term earnings growth rate minus the forecast long-term growth rate. Realized earnings growth is computed from the slope coefficient of an ordinary least squares regression of the natural logarithm of annual earnings per share on a time trend. The regressions require the availability of at least three realized annual earnings per share numbers (maximum of six). REC is the stock recommendation, coded on a 1 to 5 point scale. We invert the standard coding of stock recommendations so that 1=strong sell, 2=sell, 3=hold, 4=buy, and 5=strong buy. TP/P is the one-year ahead target price forecast relative to closing stock price as of the end of the target price forecast month. TPerror is target price forecast error, computed as one plus the raw return over the target price forecast horizon, minus TP/P. The analyst variables are all measured 4 months after the fiscal year end in which the external financing variable is measured.

T-statistics are reported in parentheses below coefficient estimates.

TABLE 6
OLS regressions of sell-side analysts' stock recommendations and target price errors on external financing activity and analyst affiliation

$$Analyst\ Variable = \gamma_0 + \gamma_1 Affiliated + \gamma_2 \Delta XFIN + \gamma_3 Affiliated*\Delta XFIN + \varepsilon$$

	Number of Years	Mean N per Year	γ_0	γ_1	γ_2	γ_3	Adj. R^2	# Years γ_2 Signif.	# Years γ_3 Signif.
REC	8	1,121	3.752 (66.9)	0.230 (1.1)	0.365 (9.6)	-0.128 (-0.9)	0.027	8	1
TPerror	5	1,373	-0.067 (-0.9)	0.089 (0.7)	-0.538 (-2.5)	-0.208 (-1.2)	0.074	4	1

This table presents the results of Fama-MacBeth regressions of analyst variables on the net external financing measure and an interaction term for whether the forecast was issued by an affiliated analyst. The right-hand side reflects quintile rankings of the net external financing measure, with quintile ranks transformed to a 0-1 interval (i.e., [quintile rank–1]/5). For all individual analyst data, we compute the firm-specific mean of all recommendations and target price forecast errors by year for all affiliated analysts and separately for all unaffiliated analysts. In each year, firms are allocated to quintiles based on the level of net external financing. For recommendations and target price forecast errors, the table presents the number of annual regressions, the mean number of observations per year, the mean coefficient estimates and R^2, and the number of annual regressions in which the coefficients on the external financing variable and the interaction of the external financing variable and analyst affiliation are significant. The t-statistics (reported in parentheses below coefficient estimates) are based on the standard error of the coefficient estimates across the annual regressions, adjusted for autocorrelation in the annual coefficient estimates based on an assumed AR(1) autocorrelation structure. Standard errors are multiplied by an adjustment factor, $\sqrt{\frac{(1+\phi)}{(1-\phi)}\frac{2\phi(1-\phi^n)}{n(1-\phi)^2}}$, where n is the number of annual regressions and ϕ is the first-order autocorrelation of the annual coefficient estimates.

$\Delta XFIN = \Delta EQUITY + \Delta DEBT$, where $\Delta XFIN$ refers to net change in external financing, $\Delta EQUITY$ is measured as the annual change in common and preferred equity measured as equity issuances (Compustat data item #108) minus equity repurchases (data item #115) minus dividends (data item #127), and $\Delta DEBT$ is similarly defined as the annual change in total long-term debt measured as long-term debt issuances (data item #111) minus long-term debt retirements (data item #114) plus the net change in notes payable (data item #301). $\Delta XFIN$ is scaled by average total assets (data item #6) and winsorized at +/- 1. REC is the stock recommendation, coded on a 1 to 5 point scale. We invert the standard coding of stock recommendations so that 1=strong sell, 2=sell, 3=hold, 4=buy, and

5=strong buy. TPerror is target price forecast error, computed as one plus the raw return over the target price forecast horizon, minus TP/P. The analyst variables are all measured 4 months after the fiscal year end in which the external financing variable is measured.
T-statistics are reported in parentheses below coefficient estimates.