Analyst Forecast Revisions and Noise in Stock Prices

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Abstract

Using a measure of price elasticity that we construct for individual stocks, we present evidence that for stocks with lower price elasticity: i) return-revision synchronicity is lower, suggesting that analysts understand the noise in returns, ii) a trading strategy that uses forecast revisions delivers higher abnormal returns, and iii) analysts with high return-revision synchronicity make less accurate forecasts relative to analysts with high return-revision synchronicity for stocks with higher price elasticity.

Preliminary draft – Please do not circulate or quote. All comments are welcome.

First draft: September 30, 2010

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I. Introduction

Stock price movements affect economic decisions by communicating news and creating opportunities for market participants. Stock returns can affect investment because they convey to managers information about future projects and/or because they affect the availability of financing (Morck, Shleifer, and Vishny 1990; Baker, Stein, and Wurgler 2003). Moreover, stock returns can influence corporate decisions such as equity issuance, mergers and acquisitions, and insider trading (Baker and Wurgler 2002; Khan, Kogan, and Serafeim 2010). Several papers document that stock returns might affect the output of research analysts' activity (Lys and Sohn 1990; McEwen and Hutton 1999; Jegadeesh, Kim, Krische and Lee 2004; Miller and Sedor 2010; Groysberg, Healy, Nohria and Serafeim 2010). Specifically, these prior studies suggest that analysts revise their forecasts of firm fundamentals (e.g., earnings) upwards after positive returns and downwards after negative returns. In this paper, we examine how the synchronicity between returns and revisions changes depending on how noisy returns are.

When stock price movements reflect news about changes in fundamentals, then these associations are economically rational. However, when stock prices move for reasons unrelated to fundamentals, these associations potentially diminish the value of analyst research. If analysts revise their forecasts based on noise in stock returns, then these forecasts will naturally be less accurate. Moreover, not adjusting for noise in stock returns casts doubt on whether analysts should be issuing investment recommendations and target prices that require an evaluation of stock market dynamics rather than solely forecasting the future earnings power of the firm.

Under the market efficiency paradigm, the demand curve for stocks is perfectly elastic (Modigliani and Miller 1958; Shleifer 1986). Downward sloping demand curves can arise from asymmetric information (Benveniste and Spindt 1989), limited investor attention (Merton 1987), lack of close substitutes (Wurgler and Zhuravskaya 2002), price pressure by institutional investors (Coval and Stafford 2007), or differences of opinion among investors (Hong and Stein 2007). The less elastic the demand curve of an individual firm the more probable it is that stock returns for this firm will reflect noise rather than changes in fundamentals. The primary price elasticity proxy we use in our analysis is the common component of two variables: the average daily absolute return over share turnover, and the percentage of non-institutional investors that hold the stock. The first variable reflects a large change in price if there is a demand or supply shock, implying an inelastic demand curve. Higher values of the second measure also reflect an inelastic demand curve. If a stock's institutional ownership is low, then the demand curve will be downward sloping. The reason for this is twofold. First, as fewer shares of the firm are available for lending, short selling is more difficult. Second, if there is a large change in the stock's demand or supply, institutional investors will not absorb the shock in demand or supply quickly. As in Gao and Ritter (2010), we suggest that firms dominated by retail investors with large price movements generated by low trading activity have low price elasticity resulting in noisier returns.

We show that stock returns explain more variation of revisions than previously documented (Stickel 1990). More importantly, we find strong evidence that analysts reduce the significance of returns when they revise their forecasts for stocks with noisy returns. This result holds when we examine one, two or three year EPS forecast revisions, or quarterly EPS forecast revisions. These results suggest that analysts are able to differentiate between stock price movements that reflect changes in fundamentals rather than noise and contribute to the literature that examines whether specific groups of market participants (e.g., hedge fund managers [Chen, Hansen, Hong and Stein 2009], corporate managers [Khan, Kogan, and Serafeim 2010]) are able to detect changes in prices that are not related to fundamentals.

Moreover, we find that a trading strategy that uses forecast revisions delivers higher abnormal returns for stocks with lower price elasticity. Both value-weighted and equal-weighted portfolios constructed by buying (selling) stocks with large upward (downward) revisions yield higher abnormal returns for stocks with lower demand elasticity. We find greater underreaction to forecast revisions for stocks with lower demand elasticity even for the quartile of largest firms where both long and short positions are easy to establish. This finding suggests that the market underreacts more to revisions for firms with low price elasticity and adds to the literature that documents undereaction to analyst forecast revisions

(Givoly and Lakonishok 1979; Brown, Foster and Noreen 1985; Klein 1990; Gleason and Lee 2003).

Finally, we document that lowering the importance of prior stock returns when revising forecasts is a sensible action for stocks with low demand elasticity. Analysts who rely heavily on stock prices when revising their forecasts for stocks with low demand elasticity make less accurate forecasts relative to analysts who rely heavily on stock prices when revising their forecasts for stocks with high demand elasticity. Moreover, we show that analysts characterized by high synchronicity between revisions and returns are more accurate on average. These results add to the literature on individual analyst performance (Clement 1999; Jacob, Lys and Neale 1999; Mikhail, Willis and Walther 2004; Horton and Serafeim 2009).

The rest of the paper proceeds as follows. Section II discusses the literature on forecast revisions. Section III summarizes the literature on noise in stock returns and presents our hypotheses. Section IV describes the data sources and variables we use. Section V presents the results about how synchronicity between returns and revisions changes depending on how noisy returns are. Section VI shows the results of the performance of forecast revisions by price elasticity portfolio. Section VII tests how return-revision synchronicity affects forecast accuracy by price elasticity portfolio. Section VIII discusses some robustness tests with an alternative price elasticity proxy. Section IX concludes.

II. Analyst Forecast Revisions

Studies have explored why forecasts are revised, focusing primarily on stock price movements before the revision. The overall conclusion from this line of research is that the sign and magnitude of forecast revisions are positively associated with the sign and magnitude of past stock returns (Givoly and Lakonishok 1979; Brown, Foster and Noreen 1985; Klein 1990), but the revisions do not fully incorporate the information in past stock returns (Lys and Sohn 1990; Abarbanell 1991). Abarbanell and Bushee (1997) examine whether analysts revise their forecasts by taking into account fundamental signals that predict future actual earnings growth. They find that analysts' forecast revisions incorporate the predictable mean reversion of earnings, changes in gross margins, changes in effective tax rate, and changes in the productivity of labor force. However, analysts' forecast revisions seemingly fail to reflect changes in inventory that are informative about future earnings growth. Furthermore, analysts seem to revise their forecasts subsequent to quarterly earnings announcements and other corporate events (Stickel 1989).

Interestingly, an analyst's forecast revision can be partially predicted by forecast revisions made by other analysts between the previous and the forthcoming forecast and the deviation between an analyst's previous forecast and the consensus forecast calculated at the time of the previous forecast (Stickel 1990). These associations suggest that analysts revise forecasts by incorporating information in forecast revisions of other analysts, and that they have incentives to revise their forecasts whenever their outstanding forecasts are farther away from the consensus forecast.

Whether there is a causal effect of stock prices on forecasts remains an open question. However, an association between returns and revisions can be observed, as analysts take into account stock returns when they revise their forecasts. Alternatively, it could be that returns and revisions are driven by a third factor that affects both in the same direction, as could be the case with corporate announcement. Experimental research designs have been used to better isolate the causal effect of returns on revisions. McEwen and Hunton (1999) conduct a study where analysts prepare earnings forecasts. Approximately 98% of the analysts in the study accessed stock price information prior to making their forecasts. Miller and Sedor (2010) perform an experiment and a follow-up survey. They find that prices influence forecasts when prices imply future earnings that diverge from analysts' expectations and when uncertainty about future earnings is high.

III. News and Noise in Stock Returns

There is a long literature examining whether stock returns signal news about fundamentals or whether they also reflect noise generated by institutional frictions or psychological factors. Forces that inhibit market efficiency include informational and transaction costs (Stoll 2000), heterogeneous beliefs about fundamental value (Bagwell 1992), noise trader sentiment risk

(De Long et al. 1990), short-sales constraints (Chen, Hong, and Stein 2002), absence of close substitutes (Wurgler and Zhuravskaya 2002), and agency costs in delegated fund management (Shleifer and Vishny 1997).

Under the market efficiency paradigm, where stock price movements reflect changes in fundamentals, the demand curve for stocks is perfectly elastic. Downward sloping demand curves can arise from asymmetric information (Benveniste and Spindt 1989), limited investor attention (Merton 1987), lack of close substitutes (Wurgler and Zhuravskaya 2002), price pressure by institutional investors (Coval and Stafford 2007), or differences of opinion among investors (Hong and Stein 2007). Recently, there have been attempts to measure the elasticity of demand for individual stocks (Gao and Ritter 2010). Price movements of stocks with lower demand elasticity are more likely to reflect a mix of news and noise, while price movements of stocks with high demand elasticity are more likely to reflect only news.

Using measures of demand elasticity for each stock, we empirically test three hypotheses. First, do analysts understand the noise in stock returns thereby lowering the importance of prior stock returns when revising their forecasts for stocks with low demand elasticity? Second, if analysts understand the noise in stock returns, then a trading strategy that uses forecast revisions should deliver higher abnormal returns for stocks with lower demand elasticity. Finally, if lowering the importance of prior stock returns when revising forecasts is a sensible action for stocks with low demand elasticity then, analysts who rely heavily on stock prices when revising their forecasts for stocks with low demand elasticity should make less accurate forecasts relative to analysts who rely heavily on stock prices when revising their forecasts for stocks with high demand elasticity.

IV. Sample Data and Descriptive Statistics

Our analysis is based on analyst forecasts of annual and quarterly earnings obtained from I/B/E/S for the sample period from 1993 to 2007. Returns are from CRSP. Institutional ownership data is constructed from Thomson Reuters' CDA/Spectrum Institutional (13f) Holdings database. We limit our sample to U.S. firms only. We eliminate observations for which no revision is made. We also drop observations for which the revision interval is less than one day or greater than one year. We further drop observations where the analyst code making the forecast is classified as covering more than 100 firms during a given year, as this likely reflects coding errors. These procedures yield a final sample of 2,803,847 revision observations. Descriptive statistics for revisions are shown in Table I, Panel A. Descriptive statistics for other variables of interest are shown in Table I, Panel B. All variables are winsorized at the 1st and 99th percentiles.

RevYear1 is the revision of EPS for year 1 by analyst *i* for firm *j* at time *t*. *RevYear1* equals the earnings forecast for year 1 by analyst *i* for firm *j* at time *t* less the prior earnings forecast for year 1 by analyst *i* for firm *j* at time *t*-1 scaled by the absolute value of the prior earnings forecast for year 1 by analyst *i* for firm *j* at time *t*-1:

$$RevYear1_{ijt} = \frac{EarningsForecastY1_{ijt} - EarningsForecastY1_{ij,t-1}}{|EarningsForecastY1_{ij,t-1}|}.$$

The mean revision for year 1 is -3.4% while the median is -0.4%, indicating a slight left skewness in the distribution.

RevYear2 is the revision of EPS for year 2 by analyst *i* for firm *j* at time *t*. *RevYear2* equals the earnings forecast for year 2 by analyst *i* for firm *j* at time *t* less the prior earnings forecast for year 2 by analyst *i* for firm *j* at time *t-1* scaled by the absolute value of the prior earnings forecast for year 2 by analyst *i* for firm *j* at time *t*-1:

$$RevYear2_{ijt} = \frac{EarningsForecastY2_{ijt} - EarningsForecastY2_{ij,t-1}}{|EarningsForecastY2_{ij,t-1}|}.$$

The mean revision for year 2 is -2.8% while the median is -0.5%. All other revisions are similarly defined. The mean revision for year 3 is -1.0% while the median is 0.1%. The mean revision for quarter 1 of year 1 is -9.5% and the median is -3.8%. The mean revision for quarter 2 of year 1 is -7.4% and the median is -3.2%. The mean revision for quarter 3 of year 1 is -5.1% and the median is -2.1%. The mean revision for quarter 4 of year 1 is -3.6% and the median is -1.4%.

FirmSize is the natural log of the average market capitalization of firm *j* over the quarter ended prior to time *t* : $FirmSize_j = ln\left(\frac{1}{D}\sum_{d=1}^{D} Shares\ Outstanding_{jd} \cdot Average\ Share\ Price_{jd}\right)$, where *D* is the number of days in the quarter ended prior to time *t*. As shown in Panel B of

Table 1, the mean firm size for *RevYear1* observations is \$2.67 million and the median is \$2.66 million.

MktAdjRet is the market adjusted return for firm *j*. *MktAdjRet* equals the accumulated return for firm *j* from time *t*-1 to time *t* less the value weighted market return from time *t*-1 to time *t*: $MktAdjRet_{j,t-1,t} = R_{j,t-1,t} - R_{M,t-1,t}$.

The mean market adjusted return for *RevYear1* observations is -0.3% and the median is -0.5%.

Δ*ConsForecast* is the change in consensus forecast. defined as the difference between the consensus forecast at time τ for firm *j* and the consensus forecast at time τ-1 for firm *j*, where time τ is the closest consensus date forecast prior to time *t* but after time *t*-1 and time τ-1 is the closest consensus forecast to time τ that is after time *t*-1, scaled by the absolute value of the consensus forecast at time τ -1 for firm *j* :$\Delta ConsForecast_{jt} = \frac{ConsForecast_{j\tau} - ConsForecast_{j,\tau-1}}{|ConsForecast_{j,\tau-1}|}$.

The mean change in consensus forecast for *RevYear1* observations is -0.4% and the median is 0.0%.

Deviation is defined as the consensus forecast at time τ -2 for firm *j*, where τ -2 is the closest consensus forecast date prior to *t*-1 but after *t*-2, less the earnings forecast by analyst *i* for firm *j* at time *t-1* scaled by the absolute value of the earnings forecast by analyst *i* for firm *j* at time *t*-1: $Deviation_{ijt} = \frac{ConsForecast_{j\tau-2} - EarningsForecast_{ij,t-1}}{|EarningsForecast_{ij,t-1}|}$.

The mean deviation for *RevYear1* observations is 1.7%. The median is 0.0%.

Δ*QtrEarnings* is the seasonally adjusted changed in quarterly earnings. Δ*QtrEarnings* equals the actual quarterly earnings announcement at time τ for firm *j*, where time τ is prior to time *t* but after time *t*-1 for quarter *q* of year *y*, less the actual quarterly earnings for firm *j* for quarter *q* of year *y*-1, scaled by the absolute value of the actual quarterly earnings for firm *j* for quarter *q* of year *y*-1: $\Delta QtrEarnings_{jtqy} = \frac{QtrEarnings_{j\tau,qy} - QtrEarnings_{j\tau,qy-1}}{|QtrEarnings_{j\tau,qy-1}|}$.

The mean change in quarterly earnings for *RevYear1* observations is 7.4%. The median is 0.0%.

DemElastic is a proxy for the price elasticity of firm *j*'s stock. We estimate our proxy using principal component analysis of two measures used in Gao and Ritter (2010). The first measure, A_1, is the natural log of the average daily inverse price elasticity over the quarter prior to time *t*: $A_1 = ln\left(\frac{1}{D}\sum_{d=1}^{D}\frac{Absolute\ Raw\ Return_{jd}}{(Number\ of\ Shares\ Traded_{jd}/Number\ Shares\ Outstanding_{jt})}\right)$ where *D* is the number of days in the quarter ended prior to time *t*. We take the natural log to control for the presence of outliers. The second measure is the stock's non-institutional ownership: $A_2 = 100\% \cdot (1 - Institutional\ Ownership\ Fraction_{jt})$.

The institutional ownership fraction is defined as the ratio of long institutional positions divided by the number of shares outstanding for firm *j* at the end of the quarter ended prior to time *t*. A_1 and A_2 are positively correlated (0.43). The principal component (*DemElastic*) of the two variables explains 72% of the total variance and has an eigenvalue of 1.43. The second eigenvalue has a value of 0.57. Therefore, we do not use it. For *RevYear1* observations, the mean *DemElastic* is -1.45. The median is -1.59.

V. Noisy Returns and Forecast Revisions

In order to assess the effect of stock returns on forecast revisions, we estimate regressions of forecast revisions on market-adjusted stock returns.[1] Table II, Panel A shows that stock returns have an economically significant association with forecast revisions. Dependent variables include year one, two and three annual forecasts and four quarterly forecasts for year one. Stock returns explain 6.6% to 10.4% of the variation in forecast revisions.

We expect that the explanatory power of returns for revisions is greater for smaller stocks rather than for larger stocks.[2] Larger firms have a richer information environment, with news being released almost every day. Therefore, it is more likely that analysts will revise their forecast because of new information that is released close to the forecast revision and that is not already impounded in the stock price. Furthermore, analysts are more likely to spend additional time analyzing larger firms, as these firms generate more investment banking and brokerage business. Higher effort to acquire private information also decreases the

[1] We also used raw or industry-adjusted stock returns. Using these alternative stocks return measures produced nearly identical results.
[2] Stickel (1990) reports some evidence supporting this hypothesis although is not the focus of his paper.

association between stock returns and revisions. Given that the price elasticity measure is correlated with firm size (-0.29), we want to ensure that the effect we document is not driven by firm size. Panels B-E confirm this prediction. Both the magnitude of the estimated coefficients and the adjusted R-squared decrease monotonically as the firm size quartile increases. The explanatory power of the model for the quartile of smallest firms is 50 percent higher than the explanatory power for the quartile of largest firms.

In Table III, Panel A, we include interaction terms between stock returns and price elasticity and between stock returns and firm size. The interaction term between inverse price elasticity (*DemElastic*) and market-adjusted stock returns is negative and significant across all specifications, indicating that analysts place lower weight on stock returns when revising forecasts for firms with noisier stock returns. Evaluating the effect of *DemElastic* at the median firm size suggests that increasing *DemElastic* by one standard deviation decreases the coefficient on stock returns by 15% (from 0.26 to 0.22). Moreover, consistent with our expectations, analysts lower the importance of stock returns when revising forecasts for larger firms. The coefficients on the interaction term between firm size and stock return are negative and significant across all specifications.

Table III, Panel B reports the results of estimating the effect of a fuller set of revision determinants. We include the change in consensus forecasts for firm *j* between time *t*-1 and time *t*, and the difference between consensus forecast at time *t*-1 and individual analyst forecast at time t-1 (Stickel 1990). The first variable captures information in other analyst forecasts within the revision period. The second variable, *Deviation*, reflects pressure on analysts to bring their forecasts in line with the consensus forecast. We also include seasonally adjusted change in actual quarterly earnings if there is an actual quarterly earnings announcement within the revision period. We expect all three variables to load with a positive and significant coefficient. Results are consistent with this prediction. Moreover, the interaction term between *DemElastic* and market-adjusted returns continues to have a negative and significant coefficient. The interaction term between *DemElastic* and Δ*ConsForecast* loads with a positive and significant coefficient suggesting that, for stocks with noisier stock returns, analysts place more weight on the information conveyed by other analyst forecasts.

VI. Investment Value of Forecast Revisions by Price Elasticity Portfolio

If analysts are able to detect stock price movements that are not related to changes in fundamentals and, therefore, lower the importance they place on stock returns when revising their earnings forecasts, then the value of their information intermediation function will be higher for stocks with noisy stock returns. For these stocks, analyst forecast revisions will provide a more accurate measure of changes in firm fundamentals compared to the signal generated by stock returns relative to other stocks. As a result, forecast revisions for stocks with low price elasticity will better predict future stock returns. To test this hypothesis, we create portfolios that buy (sell) for each year and price elasticity quartile, stocks in the top (bottom) 5% of revisions and hold these stocks for one year. Similar to Gleason and Lee (2003), we consider changes in individual, rather than consensus, analyst earnings forecasts.

Table IV shows the performance of the four price elasticity portfolios using both value and equal weighting. We use both the value-weighted market index and Fama-French (1997) industry indices as benchmarks. The performance of the trading strategy increases monotonically across the portfolios. Most of the abnormal performance is concentrated in portfolios three and four for stocks with low price elasticity. The performance of the fourth portfolio is close to 10% annually, while the performance of the first portfolios is close to zero. The average firm size, measured by average market capitalization over a calendar year, in each portfolio is 1.2 billion for portfolios 1 and 2, 0.9 billion for portfolio 3 and 0.3 billion for portfolio 4.

Prior research has found that the investment value of forecast revisions is higher for smaller firms (Gleason and Lee 2003; Zhang 2006). To disentangle the firm size and noise in stock returns effects, we construct portfolios across price elasticity quartiles, within firm size quartiles. Table IV reports the performance of the high (portfolio 1) and low (portfolio 4) price elasticity portfolios for small, small-medium, medium-large, and large firms. Across all partitions, the results are consistent. The performance of the low price elasticity portfolios is better. For small firms, portfolio 4 outperforms portfolio 1 by close to 10% or 6% using market and industry adjusted returns respectively. Average firm size is 0.3 billion for portfolio 1 and 0.2 billion for portfolio 4. For small-medium firms portfolio 4 outperforms portfolio 1 by close to 10% or 7% using market and industry adjusted returns respectively. Average firm size is 1 billion for portfolio 1 and 0.9 billion for portfolio 4. For medium-large firms, portfolio 4 outperforms portfolio 1 by 2 to 8% depending on the specification. Average firm size is 2.9 billion for portfolios 1 and 4. For large firms, portfolio 4 outperforms portfolio 1 by 0.25% to 7% depending on the specification. Average firm size is 9 billion for portfolio 1 and 19 billion for portfolio 4.

VII. Effect of Stock Return-Forecast Revision Synchronicity on Forecast Accuracy

Analysts may differ on how much they lower the importance of stock returns in revising forecasts. Examining individual analyst data allow us to identify the impact of stock return-forecast revision synchronicity on analyst performance. We measure performance by comparing the analyst's absolute forecast error to the average absolute forecast error of other analysts following the same stock during the same period (Clement 1999). We expect that analysts that place high importance on stock returns when revising their forecasts will exhibit progressively lower accuracy when they forecast earnings of firms with more noisy stock returns. In other words, the association between stock return-forecast revision synchronicity and forecast accuracy will be moderated by demand elasticity.

We construct a measure of stock return-forecast revision synchronicity by calculating the correlation between forecast revisions and stock returns (*RevReturnSynch*). The measure is calculated separately for each individual analyst, year and price elasticity quartile. We require at least eight observations to calculate reliably the measure. The higher the correlation the more an analyst relies on stock returns when revising her forecasts. The variable is calculated for 54,534 unique individual analyst, year and price elasticity quartiles. Mean and median values of *RevReturnSynch* are 0.29 and 0.32 respectively. The standard deviation is 0.30, indicating that there is substantial variation across analysts, and 85 percent of the observations take a positive value. Average *RevReturnSynch* decreases monotonically as one moves across price elasticity quartiles from a high of 0.35 for portfolio 1 (high price elasticity) to 0.25 for portfolio 4 (low price elasticity), consistent with the results in Table III.

To mitigate the effect of other factors that might affect forecast accuracy, we follow the methodology in Clement (1999) by adjusting all dependent and independent variables for firm and year effects. From each variable, the mean value for each firm-year is subtracted. As additional control variables, we include forecast horizon, number of firms followed by an analyst, the size of brokerage house in which an analyst is employed, and years of firm-specific experience.

The results in Table V show that analysts whose revisions co-move more with stock returns make more accurate forecasts. The coefficients on *RevReturnSynch* are negative and significant. This is true across all four portfolios of firms constructed based on price elasticity. However, the effect of *RevReturnSynch* decreases for firms with noisier stock returns. The regression coefficient for *RevReturnSynch* is -0.069 for price elasticity portfolios 1 and 2, -0.057 for portfolio 3 and -0.039 for portfolio 4. This suggests that moving from the 10^{th} percentile of *RevReturnSynch* to the 90^{th} percentile of *RevReturnSynch* decreases the absolute forecast error by 4.2% for portfolios 1 and 2, by 3.5% for portfolio 3, and only by 1.8% for portfolio 4. These estimates for portfolios 1 and 4 are statistically different at the 1 percent level of significance. The estimates are economically larger than the estimates on numbers of firms followed (-2%), firm-specific experience (-1.7%), and brokerage house size (-3%). The most important determinant of accuracy is forecast horizon. Relative absolute forecast errors increase at the rate of 0.5% per day.[3]

VIII. Robustness to an Alternative Price Elasticity Measure

As a robustness check, we create an alternative proxy for price elasticity of firm *j*'s stock, *DemElasticB*. We estimate the alternative proxy using principal component analysis of two measures used in Gao and Ritter (2010) and a third used in Wurgler and Zhurvskaya (2002). As before, the first measure, A_1, is the natural log of the average daily inverse price elasticity over the quarter prior to time *t*. The second measure is the stock's non-institutional ownership. The institutional ownership fraction is defined as the ratio of long institutional positions divided by the number of shares outstanding for firm *j* at the end of the quarter ended prior to time *t*. The third measure, A_3, is an arbitrage risk measure where A_3 is the

[3] Clement (1999) reports similar economic estimates for number of firms followed and firm-specific experience. In his sample, relative absolute forecast errors increase at the rate of 0.35% per day.

variance of the market and industry model OLS regression residuals estimated over year *t*: $(R_{it} - R_{ft}) = \alpha + \beta(R_{Mt} - R_{ft}) + g(R_{INDt} - R_{ft}) + \varepsilon_t$.

In Table VI, Panel A, we include interaction terms between stock returns and price elasticity and between stock returns and firm size. The interaction term between inverse price elasticity (*DemElasticB*) and market-adjusted stock returns is again negative and significant across all specifications, indicating that analysts place lower weight on stock returns when revising forecasts for firms with noisier stock returns. The coefficients on the interaction term between firm size and stock return are negative and significant across all specifications, indicating that, consistent with our expectations, analysts lower the importance of stock returns when revising forecasts for larger firms.

Table VI, Panel B reports the results of estimating the effect of a fuller set of revision determinants. Consistent with our prediction, Δ*ConsForecast*, *Deviation*, and Δ*QtrEarnings* again load with a positive and significant coefficient when using an alternative measure of inverse price elasticity. Moreover, the interaction term between *DemElasticB* and *MktAdjRet* continues to have a negative and significant coefficient. The interaction term between *DemElastic* and Δ*ConsForecast* loads with a positive and significant coefficient, further suggesting that, for stocks with noisier stock returns, analysts place more weight on the information conveyed by other analyst forecasts.

IX. Conclusion

Using a merged dataset of analyst forecasts and stock returns for the period from 1993 to 2007, we test whether noisy stock returns affect revisions of future earnings expectations. In our tests, we do not attempt to distinguish between the passive and the active informant hypothesis of stock returns. Under the passive informant hypothesis, stock returns are correlated with signals that analysts receive that affect their forecast revisions. Under the active informant hypothesis, analysts observe stock returns and change their forecasts as a result of these stock returns. Independent of the two hypotheses, we provide evidence that is consistent with our conclusion that, on average, analysts are able to distinguish between price movements that are more likely related to changes in fundamentals as opposed to movements that are related to noise.

Moreover, we document that analyst revisions have more investment value for stocks with lower price elasticity and therefore noise in returns. We show that, even for large stocks where the costs of trading both on the long and short side are low, revisions have investment value, as they can predict future returns. Therefore, analysts perform an important information intermediation function for stocks with noisy returns, but the market seems to react slowly to the information in the revisions.

Finally, we show that the return-revision synchronicity varies not only at the firm level but also at the analyst level. Of 54,534 analyst-year-price elasticity quartile observations, approximately 13,000 observations exhibit a synchronicity of more than 0.5 and another 13,000 observations exhibit a synchronicity of less than 0.1. We test the effect of return-revision synchronicity on forecast accuracy and find that, on average, analysts with higher synchronicity make more accurate forecasts. However, this effect is reduced substantially for firms with low price elasticity.

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Table I

Descriptive Statistics

This table reports descriptive statistics for 2,803,847 analyst earnings forecast revision observations from 1993 to 2007. Forecast characteristics are derived from detailed I/B/E/S data. Returns are derived from CRSP data. The price elasticity proxy is derived from data obtained from CRSP and Thomson Reuters' CDA/Spectrum Institutional (13f) Holdings database. We restrict the sample to U.S. firms only. We further restrict our sample to observations for which 1) the revision interval is greater than one day and less than one year and 2) the number of firms covered by an analyst during a given years exceeds 100. Descriptive statistics for revisions are shown in Panel A. Descriptive statistics for other variables of interest for *RevYear1*are shown in Panel B. All variables are winsorized at the 1st and 99th percentiles.

Panel A: Revisions						
Revision	No. of Revisions	Mean	St. Dev.	25th Per.	Median	75th Per.
RevYear1	1,037,302	-0.034	0.250	-0.0635	-0.004	0.036
RevYear2	847,962	-0.028	0.238	-0.0729	-0.005	0.042
RevYear3	120,297	-0.010	0.240	-0.0541	0.001	0.045
RevQtr1	303,138	-0.095	0.353	-0.1819	-0.038	0.050
RevQtr2	205,607	-0.074	0.326	-0.1510	-0.032	0.043
RevQtr3	160,961	-0.051	0.300	-0.1148	-0.021	0.048
RevQtr4	128,580	-0.036	0.283	-0.0968	-0.014	0.053
Panel B: Other Variables: RevYear1						
FirmSize	1,037,302	14.441	1.802	13.176	14.366	15.677
MktAdjRet	1,037,302	-0.003	0.178	-0.083	-0.005	0.072
Δ*ConsForecast*	1,037,302	-0.004	0.181	0.000	0.000	0.002
Deviation	1,037,302	0.017	0.243	-0.037	0.000	0.041
Δ*QtrEarnings*	1,037,302	0.074	0.403	0.000	0.000	0.174
DemElastic	1,037,302	-1.450	0.830	-2.109	-1.588	-0.970

Notes: RevYear1 is the revision of EPS for year 1 by analyst *i* for firm *j* at time *t*. *RevYear1* equals the earnings forecast for year 1 by analyst *i* for firm *j* at time *t* less the prior earnings forecast for year 1 by analyst *i* for firm *j* at time *t*-1 scaled by the absolute value of the prior earnings forecast for year 1 by analyst *i* for firm *j* at time *t*-1. *RevYear2* is the revision of EPS for year 2 by analyst *i* for firm *j* at time *t*. *RevYear2* equals the earnings forecast for year 2 by analyst *i* for firm *j* at time *t* less the prior earnings forecast for year 2 by analyst *i* for firm *j* at time *t-1* scaled by the absolute value of the prior earnings forecast for year 2 by analyst *i* for firm *j* at time *t*-1. *RevYear3* is the revision of EPS for year 3 by analyst *i* for firm *j* at time *t*. *RevYear3* equals earnings forecast for year 3 by analyst *i* for firm *j* at time *t* less the prior earnings forecast for year 3 by analyst *i* for firm *j* at time *t*-1 scaled by the absolute value of the prior earnings forecast for year 3 by analyst *i* for firm *j* at time *t*-1. *RevQtr1* is the revision of EPS for the first quarter of year 1 by analyst *i* for firm *j* at time *t*. *RevQtr1* equals the earnings forecast for the first quarter of year 1 by analyst *i* for firm *j* at time *t* less the prior earnings forecast for the first quarter of year 1 by analyst *i* for firm *j* at time *t*-1 scaled by the absolute value of the prior earnings forecast for the first quarter of year 1 by analyst *i* for firm *j* at time *t*-1. *RevQtr2* is the revision of EPS for the second quarter of year 1 by analyst *i* for firm *j* at time *t*. *RevQtr2* equals the earnings forecast for the second quarter of year 1 by analyst *i* for firm *j* at time *t* less the prior earnings forecast for the second quarter of year 1 by analyst *i* for firm *j* at time *t*-1 scaled by the absolute value of the prior earnings forecast for the second quarter of year 1 by analyst *i* for firm *j* at time *t*-1. *RevQtr3* is the revision of EPS for the third quarter of year 1 by analyst *i* for firm *j* at time *t*. *RevQtr3* equals the earnings forecast for the third quarter of year 1 by analyst *i* for firm *j* at time *t* less the prior earnings forecast for the third quarter of year 1 by analyst *i* for firm *j* at time *t*-1 scaled by the absolute value of the prior earnings forecast for the third quarter of year 1 by analyst *i* for firm *j* at time *t*-1. *RevQtr4* is the revision of EPS for the third quarter of year 1 by analyst *i* for firm *j* at time *t*. *RevQtr4* equals the earnings forecast for the fourth quarter of year 1 by analyst *i* for firm *j* at time *t* less the prior earnings forecast for the fourth quarter of year 1 by analyst *i* for firm *j* at time *t*-1 scaled by the absolute value of the prior earnings forecast for the fourth quarter of year 1 by analyst *i* for firm *j* at time *t*-1. *FirmSize* is the natural log of the average market capitalization of firm *j* over the quarter ended prior to time *t*. *MktAdjRet* is the market adjusted return for firm *j*. *MktAdjRet* equals the accumulated return for firm *j* from time *t*-1 to time *t* less the value weighted market return from time *t*-1 to time *t*. Δ*ConsForecast* is the change in consensus forecast. defined as the difference between the consensus forecast at time τ for firm *j* and the consensus forecast at time τ-1 for firm *j*, where time τ is the closest consensus date forecast prior to time *t* but after time *t*-1 and time τ-1 is the closest consensus forecast to time τ that is after time *t*-1, scaled by the absolute value of the consensus forecast at time τ -1 for firm *j*. *Deviation* is defined as the consensus forecast at time τ -2 for firm *j*, where τ -2 is the closest consensus forecast date prior to *t*-1 but after *t*-2, less the earnings forecast by analyst *i* for firm *j* at time *t-1* scaled by the absolute value of the earnings forecast by analyst *i* for firm *j* at time *t*-1. Δ*QtrEarnings* is the seasonally adjusted changed in quarterly earnings. Δ*QtrEarnings* equals the actual quarterly earnings announcement at time τ for firm *j*, where time τ is prior to time *t* but after time *t*-1 for quarter *q* of year *y*, less the actual quarterly earnings for firm *j* for quarter *q* of year *y*-1, scaled by the absolute value of the actual quarterly earnings for firm *j* for quarter *q* of year *y*-1. *DemElastic* is a proxy for the price elasticity of firm *j*'s stock. We estimate our proxy using principal component analysis of two measures used in Gao and Ritter (2010). The first measure, A_1, is the natural log of the average daily inverse price elasticity over the quarter prior to time *t*: $A_1 = ln\left(\frac{1}{D}\sum_{d=1}^{D}\frac{Absolute\ Raw\ Return_{jd}}{(Number\ of\ Shares\ Traded_{jd}/Number\ Shares\ Outstanding_{jt})}\right)$, where *D* is the number of days in the quarter ended prior to time *t*. We take the natural log to control for the presence of outliers. The second measure is the stock's non-institutional ownership: $A_2 = 100\% \cdot \left(1 - Institutional\ Ownership\ Fraction_{jt}\right)$. The institutional ownership fraction is defined as the ratio of long institutional positions divided by the number of shares outstanding for firm *j* at the end of the quarter ended prior to time *t*.

Table II

Association between Returns and Revisions

This table reports regression results for 2,803,847 analyst earnings forecast revision observations from 1993 to 2007. Forecast characteristics are derived from detailed I/B/E/S data. Returns are derived from CRSP data. The price elasticity proxy is derived from data obtained from CRSP and Thomson Reuters' CDA/Spectrum Institutional (13f) Holdings database. We restrict the sample to U.S. firms only. We further restrict our sample to observations for which 1) the revision interval is greater than one day and less than one year and 2) the number of firms covered by an analyst during a given years exceeds 100. Panel A shows the regression results for all firms, while Panels A-D show the regression results by firm size quartile. All variables are winsorized at the 1st and 99th percentiles.

$$Rev_{ijt} = \alpha_0 + \alpha_1 MktAdjRet_{ijt-1,t} + \varepsilon_{ijt}$$

Dependent Variable	*RevYear1*	*RevYear2*	*RevYear3*	*RevQtr1*	*RevQtr2*	*RevQtr3*	*RevQtr4*
Panel A: All firms							
Intercept	-0.033**	-0.026**	-0.01	-0.082**	-0.061**	-0.041**	-0.028**
	(-30.108)	(-29.506)	(-7.511)	(-30.920)	(-24.205)	(-18.701)	(-14.838)
MktAdjRet	0.361**	0.397**	0.396**	0.718**	0.636**	0.567**	0.516**
	(67.299)	(72.756)	(41.287)	(57.833)	(52.765)	(46.773)	(43.107)
Adj. R-squared	0.066	0.093	0.072	0.099	0.104	0.100	0.096
Observations	1,037,302	847,962	120,297	303,138	205,607	160,961	128,580
Panel B: Small firms							
Intercept	-0.073**	-0.062**	-0.045**	-0.164**	-0.122**	-0.084**	-0.059**
	(-42.322)	(-41.102)	(-15.336)	(-39.972)	(-32.042)	(-22.958)	(-17.755)
MktAdjRet	0.418**	0.458**	0.419**	0.767**	0.672**	0.612**	0.574**
	(61.048)	(66.585)	(26.694)	(47.906)	(42.508)	(39.339)	(35.101)
Adj. R-squared	0.076	0.104	0.073	0.115	0.114	0.109	0.108
Observations	271,709	212,222	25,937	64,889	48,654	39,020	31,949
Panel C: Small-medium firms							
Intercept	-0.029**	-0.022**	-0.007**	-0.088**	-0.060**	-0.037**	-0.023**
	(-15.013)	(-14.494)	(-2.855)	(-20.566)	(-15.401)	(-10.604)	(-7.044)
MktAdjRet	0.325**	0.359**	0.374**	0.680**	0.609**	0.532**	0.465**
	(35.573)	(38.558)	(21.371)	(34.012)	(28.884)	(23.933)	(22.596)
Adj. R-squared	0.060	0.084	0.065	0.092	0.095	0.091	0.082
Observations	260,957	213,153	26,957	74,169	51,151	39,911	31,917
Panel D: Medium-large firms							
Intercept	-0.019**	-0.014**	-0.002	-0.062**	-0.046**	-0.031**	-0.020**
	(-8.704)	(-8.819)	(-0.689)	(-13.650)	(-9.856)	(-7.065)	(-5.179)
MktAdjRet	0.288**	0.340**	0.366**	0.606**	0.555**	0.509**	0.478**
	(20.553)	(24.724)	(22.661)	(18.780)	(20.154)	(15.539)	(14.316)
Adj. R-squared	0.046	0.076	0.063	0.068	0.079	0.081	0.082
Observations	255,819	213,770	30,947	79,935	53,553	41,562	32,851

Table II (continued)

Panel E: Large firms							
Intercept	-0.004**	-0.004*	0.008**	-0.032**	-0.021**	-0.013**	-0.009**
	(-2.839)	(-2.523)*	(4.464)	(-7.302)	(-4.403)	(-3.298)	(-2.666)
MktAdjRet	0.256**	0.289**	0.332**	0.559**	0.513**	0.461**	0.405**
	(18.377)	(19.401)	(19.085)	(16.329)	(13.377)	(12.396)	(11.555)
Adj. R-squared	0.045	0.067	0.068	0.064	0.079	0.080	0.075
Observations	248,817	208,817	36,456	84,145	52,249	40,468	31,863

*Significant at the 5% level.

**Significant at the 1% level.

T-statistics (shown in parentheses) are calculated using clustered standard errors at the firm level.

Notes: RevYear1 is the revision of EPS for year 1 by analyst *i* for firm *j* at time *t*. *RevYear1* equals the earnings forecast for year 1 by analyst *i* for firm *j* at time *t* less the prior earnings forecast for year 1 by analyst *i* for firm *j* at time *t*-1 scaled by the absolute value of the prior earnings forecast for year 1 by analyst *i* for firm *j* at time *t*-1. *RevYear2* is the revision of EPS for year 2 by analyst *i* for firm *j* at time *t*. *RevYear2* equals the earnings forecast for year 2 by analyst *i* for firm *j* at time *t* less the prior earnings forecast for year 2 by analyst *i* for firm *j* at time *t-1* scaled by the absolute value of the prior earnings forecast for year 2 by analyst *i* for firm *j* at time *t*-1. *RevYear3* is the revision of EPS for year 3 by analyst *i* for firm *j* at time *t*. *RevYear3* equals earnings forecast for year 3 by analyst *i* for firm *j* at time *t* less the prior earnings forecast for year 3 by analyst *i* for firm *j* at time *t*-1 scaled by the absolute value of the prior earnings forecast for year 3 by analyst *i* for firm *j* at time *t*-1. *RevQtr1* is the revision of EPS for the first quarter of year 1 by analyst *i* for firm *j* at time *t*. *RevQtr1* equals the earnings forecast for the first quarter of year 1 by analyst *i* for firm *j* at time *t* less the prior earnings forecast for the first quarter of year 1 by analyst *i* for firm *j* at time *t*-1 scaled by the absolute value of the prior earnings forecast for the first quarter of year 1 by analyst *i* for firm *j* at time *t*-1. *RevQtr2* is the revision of EPS for the second quarter of year 1 by analyst *i* for firm *j* at time *t*. *RevQtr2* equals the earnings forecast for the second quarter of year 1 by analyst *i* for firm *j* at time *t* less the prior earnings forecast for the second quarter of year 1 by analyst *i* for firm *j* at time *t*-1 scaled by the absolute value of the prior earnings forecast for the second quarter of year 1 by analyst *i* for firm *j* at time *t*-1. *RevQtr3* is the revision of EPS for the third quarter of year 1 by analyst *i* for firm *j* at time *t*. *RevQtr3* equals the earnings forecast for the third quarter of year 1 by analyst *i* for firm *j* at time *t* less the prior earnings forecast for the third quarter of year 1 by analyst *i* for firm *j* at time *t*-1 scaled by the absolute value of the prior earnings forecast for the third quarter of year 1 by analyst *i* for firm *j* at time *t*-1. *RevQtr4* is the revision of EPS for the third quarter of year 1 by analyst *i* for firm *j* at time *t*. *RevQtr4* equals the earnings forecast for the fourth quarter of year 1 by analyst *i* for firm *j* at time *t* less the prior earnings forecast for the fourth quarter of year 1 by analyst *i* for firm *j* at time *t*-1 scaled by the absolute value of the prior earnings forecast for the fourth quarter of year 1 by analyst *i* for firm *j* at time *t*-1. *FirmSize* is the natural log of the average market capitalization of firm *j* over the quarter ended prior to time *t*. *MktAdjRet* is the market adjusted return for firm *j*. *MktAdjRet* equals the accumulated return for firm *j* from time *t*-1 to time *t* less the value weighted market return from time *t*-1 to time *t*.

Table III

Association between Returns and Revisions

This table reports regression results for analyst earnings forecast revision observations from 1993 to 2007. Forecast characteristics are derived from detailed I/B/E/S data. Returns are derived from CRSP data. The price elasticity proxy is derived from data obtained from CRSP and Thomson Reuters' CDA/Spectrum Institutional (13f) Holdings database. We restrict the sample to U.S. firms only. We further restrict our sample to observations for which 1) the revision interval is greater than one day and less than one year and 2) the number of firms covered by an analyst during a given years exceeds 100. Panel A shows the regression results using a simple model. Panel B shows the regression results using the full model. All variables are winsorized at the 1st and 99th percentiles.

Dependent Variable	*RevYear1*	*RevYear2*	*RevYear3*	*RevQtr1*	*RevQtr2*	*RevQtr3*	*RevQtr4*
Panel A: Simple Model	$Rev_{ijt} = \alpha_0 + \alpha_1 MktAdjRet_{jt,t-1} + \alpha_2 DemElastic_{jt} + \alpha_3 MktAdjRet_{j,t-1,t} \times DemElastic_{jt} + \alpha_4 FirmSize_{jt} + \alpha_5 MktAdjRet_{jt,t-1} \times FirmSize_{jt} + \varepsilon_{ijt}$						
Intercept	-0.251**	-0.207**	-0.167**	-0.494**	-0.388**	-0.269**	-0.186**
	(-0.007)	(-0.006)	(-0.010)	(-0.017)	(-0.017)	(-0.015)	(-0.013)
MktAdjRet	0.905**	0.917**	0.653**	1.318**	1.013**	0.924**	0.912**
	(21.581)	(21.751)	(9.780)	(13.682)	(10.202)	(9.392)	(9.445)
DemElastic	-0.007**	-0.006**	-0.003*	-0.019**	-0.016**	-0.014**	-0.011**
	(-6.128)	(-6.962)	(-2.076)	(-7.212)	(-6.703)	(-6.518)	(-5.693)
MktAdjRet x DemElastic	-0.047**	-0.046**	-0.051**	-0.099**	-0.083**	-0.052**	-0.048**
	(-7.837)	(-7.779)	(-4.519)	(-7.103)	(-6.093)	(-3.684)	(-3.485)
FirmSize	0.014**	0.012**	0.010**	0.026**	0.020**	0.014**	0.009**
	(26.502)	(25.156)	(14.779)	(20.768)	(16.758)	(13.096)	(10.303)
MktAdjRet x FirmSize	-0.046**	-0.043**	-0.025**	-0.057**	-0.039**	-0.033**	-0.035**
	(-13.366)	(-12.811)	(-5.057)	(-7.330)	(-4.840)	(-4.150)	(-4.531)
Adj. R-squared	0.082	0.106	0.08	0.123	0.121	0.111	0.103
Observations	1,037,302	847,962	120,297	303,138	205,607	160,961	128,580

Table III (continued)

Panel B: Full Model	$Rev_{ijt} = \alpha_0 + \alpha_1 MktAdjRet_{jt,t-1} + \alpha_2 DemElastic_{jt} + \alpha_3 MktAdjRet_{j,t-1,t} \times DemElastic_{jt} + \alpha_4 FirmSize_{jt} + \alpha_5 \Delta ConsForecast_{jt} + \alpha_6 Deviation_{ijt} + \alpha_7 \Delta QtrEarnings_{jt} + \alpha_8 MktAdjRet_{j,t-1,t} \times FirmSize_{jt} + \alpha_9 DemElastic_{jt} \times \Delta ConsForecast_{jt} + \alpha_{10} DemElastic_{jt} \times Deviation_{ijt} + \alpha_{11} DemElastic_{jt} \times \Delta QtrEarnings_{jt} + \alpha_{12} FirmSize_{ijt} \times \Delta ConsForecast_{jt} + \alpha_{13} FirmSize_{jt} \times Deviation_{ijt} + \alpha_{14} FirmSize_{jt} \times \Delta QtrEarnings_{jt} + \varepsilon_{ijt}$						
Intercept	-0.222**	-0.194**	-0.163**	-0.486**	-0.389**	-0.274**	-0.199**
	(32.744)	(32.557)	(16.953)	(29.286)	(24.508)	(18.998)	(15.461)
MktAdjRet	0.731**	0.804**	0.650**	1.297**	1.000**	0.920**	0.893**
	(19.817)	(21.274)	(9.849)	(13.803)	(10.612)	(9.634)	(9.546)
DemElastic	0.000	-0.002*	-0.002	-0.016**	-0.013**	-0.011**	-0.010**
	(0.437)	(2.243)	(1.296)	(6.362)	(5.560)	(5.502)	(4.970)
MktAdjRet x DemElastic	-0.047**	-0.046**	-0.051**	-0.097**	-0.084**	-0.053**	-0.048**
	(8.679)	(8.414)	(4.743)	(7.124)	(6.283)	(3.840)	(3.519)
FirmSize	0.012**	0.011**	0.010**	0.025**	0.020**	0.014**	0.010**
	(24.293)	(23.979)	(14.713)	(20.660)	(17.279)	(13.474)	(11.008)
Δ*ConsForecast*	0.343**	0.167**	-0.037	0.343**	0.272**	0.247**	0.269**
	(6.794)**	(2.996)	(0.329)	(4.798)	(3.318)	(2.901)	(3.091)
Deviation	0.124**	0.105**	0.051	0.085	0.116*	0.194**	0.212**
	(2.968)**	(2.979)	(0.898)	(1.437)	(2.058)	(3.340)	(3.322)
Δ*QtrEarnings*	0.309**	0.202**	0.173**	0.233**	0.248**	0.203**	0.120*
	(18.224)	(13.961)	(6.456)	(4.677)	(4.663)	(3.954)	(2.335)
MktAdjRet x FirmSize	-0.037**	-0.040**	-0.027**	-0.058**	-0.040**	-0.035**	-0.035**
	(12.564)	(13.266)	(5.729)	(7.645)	(5.291)	(4.507)	(4.722)
DemElastic x Δ*ConsForecast*	0.040**	0.024**	0.034*	0.034**	0.023*	0.029*	0.035**
	(5.354)	(3.069)	(2.125)	(3.291)	(2.088)	(2.256)	(2.710)
DemElastic x Deviation	0.009	0.019**	0.032**	0.024**	0.012	0.022*	0.021*
	(1.626)	(4.185)	(3.847)	(2.860)	(1.500)	(2.531)	(2.197)
DemElastic x Δ*QtrEarnings*	0.003	0.007**	0.010**	0.015	0.005	0.010	0.008
	(1.297)	(3.137)	(2.743)	(1.785)	(0.542)	(1.149)	(0.881)

Table III (continued)

FirmSize x ΔConsForecast	0.013**	0.023**	0.026**	0.007	0.007	0.008	0.006
	(3.098)	(5.129)	(2.968)	(1.319)	(1.155)	(1.259)	(0.856)
FirmSize x Deviation	0.012**	0.013**	0.014**	0.016**	0.010*	0.004	0.003
	(3.572)	(4.720)	(3.301)	(3.400)	(2.228)	(0.986)	(0.568)
FirmSize x ΔQtrEarnings	-0.014**	-0.008**	-0.007**	-0.008*	-0.011**	-0.008*	-0.003
	(10.177)	(6.922)	(3.625)	(2.209)	(2.840)	(2.229)	(0.959)
Adj. R-squared	0.221	0.229	0.144	0.187	0.177	0.165	0.154
Observations	1,036,238	846,863	118,613	302,496	205,065	160,329	127,844

*Significant at the 5% level.

**Significant at the 1% level.

T-statistics (shown in parentheses) are calculated using clustered standard errors at the firm level.

Notes: RevYear1 is the revision of EPS for year 1 by analyst *i* for firm *j* at time *t*. *RevYear1* equals the earnings forecast for year 1 by analyst *i* for firm *j* at time *t* less the prior earnings forecast for year 1 by analyst *i* for firm *j* at time *t*-1 scaled by the absolute value of the prior earnings forecast for year 1 by analyst *i* for firm *j* at time *t*-1. *RevYear2* is the revision of EPS for year 2 by analyst *i* for firm *j* at time *t*. *RevYear2* equals the earnings forecast for year 2 by analyst *i* for firm *j* at time *t* less the prior earnings forecast for year 2 by analyst *i* for firm *j* at time *t-1* scaled by the absolute value of the prior earnings forecast for year 2 by analyst *i* for firm *j* at time *t*-1. *RevYear3* is the revision of EPS for year 3 by analyst *i* for firm *j* at time *t*. *RevYear3* equals earnings forecast for year 3 by analyst *i* for firm *j* at time *t* less the prior earnings forecast for year 3 by analyst *i* for firm *j* at time *t*-1 scaled by the absolute value of the prior earnings forecast for year 3 by analyst *i* for firm *j* at time *t*-1. *RevQtr1* is the revision of EPS for the first quarter of year 1 by analyst *i* for firm *j* at time *t*. *RevQtr1* equals the earnings forecast for the first quarter of year 1 by analyst *i* for firm *j* at time *t* less the prior earnings forecast for the first quarter of year 1 by analyst *i* for firm *j* at time *t*-1 scaled by the absolute value of the prior earnings forecast for the first quarter of year 1 by analyst *i* for firm *j* at time *t*-1. *RevQtr2* is the revision of EPS for the second quarter of year 1 by analyst *i* for firm *j* at time *t*. *RevQtr2* equals the earnings forecast for the second quarter of year 1 by analyst *i* for firm *j* at time *t* less the prior earnings forecast for the second quarter of year 1 by analyst *i* for firm *j* at time *t*-1 scaled by the absolute value of the prior earnings forecast for the second quarter of year 1 by analyst *i* for firm *j* at time *t*-1. *RevQtr3* is the revision of EPS for the third quarter of year 1 by analyst *i* for firm *j* at time *t*. *RevQtr3* equals the earnings forecast for the third quarter of year 1 by analyst *i* for firm *j* at time *t* less the prior earnings forecast for the third quarter of year 1 by analyst *i* for firm *j* at time *t*-1 scaled by the absolute value of the prior earnings forecast for the third quarter of year 1 by analyst *i* for firm *j* at time *t*-1. *RevQtr4* is the revision of EPS for the third quarter of year 1 by analyst *i* for firm *j* at time *t*. *RevQtr4* equals the earnings forecast for the fourth quarter of year 1 by analyst *i* for firm *j* at time *t* less the prior earnings forecast for the fourth quarter of year 1 by analyst *i* for firm *j* at time *t*-1 scaled by the absolute value of the prior earnings forecast for the fourth quarter of year 1 by analyst *i* for firm *j* at time *t*-1. *FirmSize* is the natural log of the average market capitalization of firm *j* over the quarter ended prior to time *t*. *MktAdjRet* is the market adjusted return for firm *j*. *MktAdjRet* equals the accumulated return for firm *j* from time *t*-1 to time *t* less the value weighted market return from time *t*-1 to time *t*. Δ*ConsForecast* is the change in consensus forecast. defined as the difference between the consensus forecast at time τ for firm *j* and the consensus forecast at time τ-1 for firm *j*, where time τ is the closest consensus date forecast prior to time *t* but after time *t*-1 and time τ-1 is the closest consensus forecast to time τ that is after time *t*-1, scaled by the absolute value of the consensus forecast at time τ -1 for firm *j*. *Deviation* is defined as the consensus forecast at time τ -2 for firm *j*, where τ -2 is the closest consensus forecast date prior to *t*-1 but after *t*-2, less the earnings forecast by analyst *i* for firm *j* at time *t-1* scaled by the absolute value of the earnings forecast by analyst *i* for firm *j* at time *t*-1. Δ*QtrEarnings* is the seasonally adjusted changed in quarterly earnings. Δ*QtrEarnings* equals the actual quarterly earnings announcement at time τ for firm *j*, where time τ is prior to time *t* but after time *t*-1 for quarter *q* of year *y*, less the actual quarterly earnings for firm *j* for quarter *q* of year *y*-1, scaled by the absolute value of the actual quarterly earnings for firm *j* for quarter *q* of year *y*-1. *DemElastic* is a proxy for the price elasticity of firm *j*'s stock. We estimate our proxy using principal component analysis of two measures used in Gao and Ritter (2010). The first measure, A_1, is the natural log of the average daily inverse price elasticity over the quarter prior to time *t*: $A_1 = ln\left(\frac{1}{D}\sum_{d=1}^{D}\frac{Absolute\ Raw\ Return_{jd}}{(Number\ of\ Shares\ Traded_{jd}/Number\ Shares\ Outstanding_{jt})}\right)$, where *D* is the number of days in the quarter ended prior to time *t*. We take the natural log to control for the presence of outliers. The second measure is the stock's non-institutional ownership: $A_2 = 100\% \cdot (1 - Institutional\ Ownership\ Fraction_{jt})$. The institutional ownership fraction is defined as the ratio of long institutional positions divided by the number of shares outstanding for firm *j* at the end of the quarter ended prior to time *t*.

Table IV

Performance of Revision Strategy by Price Elasticity Portfolio

Price Elasticity Portfolio	Hedge Return			
	MktAdjRet (EW)	*IndAdjRet (EW)*	*MktAdjRet (VW)*	*IndAdjRet (VW)*
Panel A: All firms				
1	0.46%	0.32%	1.08%	1.09%
2	2.06%	-0.50%	3.28%	0.01%
3	6.92%	3.78%	6.53%	4.08%
4	10.47%**	9.80%**	10.90%**	8.59%**
Panel B: Small firms				
1	2.99%	3.50%	3.33%	3.76%
4	12.56%**	8.62%**	12.80%**	9.13%**
Panel C: Small-medium firms				
1	-2.81%	-3.28%	-2.24%	-2.78%
4	7.40%**	4.14%**	6.25%**	4.25%**
Panel D: Medium-large firms				
1	2.47%	-0.18%	3.03%	-0.15%
4	4.13%	4.94%*	8.56%*	8.09%**
Panel E: Large firms				
1	4.70%	5.37%	7.83%	7.78%
4	7.51%*	13.04%**	8.07%	10.35%*

*Difference between portfolio 1 and 4 is significant at the 5% level.
**Difference between portfolio 1 and 4 is significant at the 1% level.

Notes: MktAdjRet (EW) is the equal weighted market adjusted return for firm *j* defined as the accumulated return for firm *j* from year *t*-1 to year *t* less the equal weighted market return from year *t*-1 to year *t* calculated separately for each price elasticity quartile. *IndAdjRet (EW)* is the equal weighted industry adjusted return for firm *j* defined as the accumulated return for firm *j* from year *t*-1 to year *t* less the equal weighted industry return from year *t*-1 to year *t* calculated separately for each price elasticity quartile. *MktAdjRet (VW)* is the value weighted market adjusted return for firm *j* defined as the accumulated return for firm *j* from year *t*-1 to year *t* less the value weighted market return from year *t*-1 to year *t* calculated separately for each price elasticity quartile. *IndAdjRet (VW)* is the value weighted industry adjusted return for firm *j* defined as the accumulated return for firm *j* from year *t*-1 to year *t* less the value weighted industry return from year *t*-1 to year *t* calculated separately for each price elasticity quartile.

Table V

Effect of Stock Return-Forecast Revision Synchronicity on Accuracy

This table reports regression results for analyst forecast errors for year 1 earnings per share for from 1993 to 2007. Analyst and forecast characteristics are derived from detailed I/B/E/S data. Returns are derived from CRSP data. The price elasticity proxy is derived from data obtained from CRSP and Thomson Reuters' CDA/Spectrum Institutional (13f) Holdings database. We restrict the sample to U.S. firms only. We further restrict our sample to observations for which 1) the revision interval is greater than one day and less than one year and 2) the number of firms covered by an analyst during a given years exceeds 100. All variables are winsorized at the 1st and 99th percentiles.

$$ForecastError_{ijt} = \alpha_0 + \alpha_1 RevReturnSynch_{ijt} + \alpha_2 FirmsFollowed_{it} + \alpha_3 Experience_{it} + \alpha_4 Horizon_{ijt} + \varepsilon_{ijt}$$

	Price Elasticity Portfolios			
	1	2	3	4
RevReturnSynch	-0.069**	-0.069**	-0.057**	-0.039**
	(-7.06)	(-7.24)	(-6.71)	(-4.12)
FirmsFollowed	0.001**	0.001**	0.001**	0.001*
	(5.54)	(4.31)	(3.86)	(2.56)
Experience	-0.003**	-0.000	-0.001	-0.001
	(-3.19)	(-0.080)	(-1.02)	(-0.55)
BrokerSize	-0.000	-0.000**	-0.000**	-0.000
	(-0.41)	(-3.47)	(-4.42)	(-0.85)
Horizon	0.005**	0.005**	0.005**	0.004**
	(80.09)	(67.87)	(68.90)	(66.99)
Adj. R-squared	0.267	0.221	0.218	0.174
Observations	199,488	193,903	184,529	180,355

*Significant at the 5% level.

**Significant at the 1% level.

T-statistics (shown in parentheses) are calculated using clustered standard errors at the firm level.

Notes: ForecastError is defined as the absolute forecast error for analyst *i* for firm *j* for year *t* less the absolute mean consensus forecast error for firm *j* for year *t* calculated separately by *DemElastic* (price elasticity) quartile. *RevReturnSynch* is a measure of stock return-forecast revision synchronicity constructed by calculating the correlation between forecast revisions and stock returns. The measure is calculated separately for each individual analyst, year and price elasticity quartile. To calculate the measure reliably, we require at least eight observations. *FirmsFollowed* is the number of firms followed by analyst *i* in year *t* less the average number of firms covered by analysts in year *t*. *Experience* is a measure of analyst *i*'s firm-specific experience, calculated as the number of years analyst *i* has been covering firm *j* less the average years of experience analysts have covering firm *j* in year *t*. *BrokerSize* is a measure of analyst *i*'s brokerage size, calculated as the number of analysts employed by the brokerage employing analyst *i* in year *t* less the average brokerage size in year *t*. *Horizon* is a measure of the time from the forecast date to the end of the fiscal period for analyst *i* following firm *j* in year *t*.

Table VI

Association between Returns and Revisions – Alternative Price Elasticity Measure

This table reports regression results for analyst earnings forecast revision observations from 1993 to 2007. Forecast characteristics are derived from detailed I/B/E/S data. Returns are derived from CRSP data. The price elasticity proxy is derived from data obtained from CRSP and Thomson Reuters' CDA/Spectrum Institutional (13f) Holdings database. We restrict the sample to U.S. firms only. We further restrict our sample to observations for which 1) the revision interval is greater than one day and less than one year and 2) the number of firms covered by an analyst during a given years exceeds 100. Panel A shows the regression results using a simple model. Panel B shows the regression results using the full model. All variables are winsorized at the 1st and 99th percentiles.

Dependent Variable	*RevYear1*	*RevYear2*	*RevYear3*	*RevQtr1*	*RevQtr2*	*RevQtr3*	*RevQtr4*
Panel A: Simple Model	$Rev_{ijt} = \alpha_0 + \alpha_1 MktAdjRet_{jt,t-1} + \alpha_2 DemElastic_{jt} + \alpha_3 MktAdjRet_{j,t-1,t} \times DemElastic_{jt} + \alpha_4 FirmSize_{jt} + \alpha_5 MktAdjRet_{jt,t-1} \times FirmSize_{jt} + \varepsilon_{ijt}$						
Intercept	-0.253**	-0.209**	-0.170**	-0.502**	-0.396**	-0.276**	-0.193**
	(-34.808)	(-33.335)	(-16.574)	(-29.705)	(-24.209)	(-18.682)	(-14.670)
MktAdjRet	0.899**	0.905**	0.645**	1.317**	1.013**	0.915**	0.898**
	(21.257)	(21.410)	(9.736)	(13.609)	(10.183)	(9.325)	(9.344)
DemElasticB	-0.010**	-0.010**	-0.006**	-0.025**	-0.022**	-0.020**	-0.017**
	(-8.685)	(-10.542)	(-3.913)	(-9.137)	(-9.028)	(-9.118)	(-8.172)
MktAdjRet x DemElasticB	-0.051**	-0.046**	-0.050**	-0.117**	-0.096**	-0.055**	-0.046**
	(-8.290)	(-7.619)	(-4.630)	(-8.381)	(-7.133)	(-4.073)	(-3.443)
FirmSize	0.014**	0.012**	0.010**	0.026**	0.020**	0.014**	0.009**
	(27.247)	(25.864)	(15.020)	(21.378)	(17.245)	(13.396)	(10.499)
MktAdjRet x FirmSize	-0.045**	-0.042**	-0.023**	-0.058**	-0.039**	-0.032**	-0.033**
	(-13.159)	(-12.466)	(-4.916)	(-7.428)	(-4.932)	(-4.120)	(-4.403)
Adj. R-squared	0.082	0.107	0.080	0.124	0.123	0.112	0.103
Observations	1,037,302	847,962	120,297	303,138	205,607	160,961	128,580

Table VI (continued)

Panel B: Expanded Model	$Rev_{ijt} = \alpha_0 + \alpha_1 MktAdjRet_{jt,t-1} + \alpha_2 DemElastic_{jt} + \alpha_3 MktAdjRet_{j,t-1,t} \times DemElastic_{jt} + \alpha_4 FirmSize_{jt} + \alpha_5 \Delta ConsForecast_{jt} + \alpha_6 Deviation_{ijt} + \alpha_7 \Delta QtrEarnings_{jt} + \alpha_8 MktAdjRet_{j,t-1,t} \times FirmSize_{jt} + \alpha_9 DemElastic_{jt} \times \Delta ConsForecast_{jt} + \alpha_{10} DemElastic_{jt} \times Deviation_{ijt} + \alpha_{11} DemElastic_{jt} \times \Delta QtrEarnings_{jt} + \alpha_{12} FirmSize_{ijt} \times \Delta ConsForecast_{jt} + \alpha_{13} FirmSize_{jt} \times Deviation_{ijt} + \alpha_{14} FirmSize_{jt} \times \Delta QtrEarnings_{jt} + \varepsilon_{ijt}$						
Intercept	-0.221**	-0.194**	-0.165**	-0.493**	-0.396**	-0.280**	-0.205**
	(-33.259)	(-33.349)	(-17.156)	(-30.134)	(-25.419)	(-19.719)	(-16.054)
MktAdjRet	0.724**	0.793**	0.641**	1.298**	1.002**	0.911**	0.879**
	(19.558)	(21.020)	(9.788)	(13.739)	(10.607)	(9.564)	(9.440)
DemElasticB	-0.003**	-0.005**	-0.005**	-0.021**	-0.019**	-0.017**	-0.015**
	(-2.812)	(-5.949)	(-3.123)	(-8.168)	(-7.875)	(-8.061)	(-7.464)
MktAdjRet x DemElasticB	-0.048**	-0.044**	-0.048**	-0.114**	-0.095**	-0.054**	-0.044**
	(-8.611)	(-7.943)	(-4.724)	(-8.326)	(-7.201)	(-4.079)	(-3.306)
FirmSize	0.012**	0.010**	0.009**	0.025**	0.020**	0.014**	0.010**
	(24.359)	(24.078)	(14.793)	(21.190)	(17.706)	(13.739)	(11.183)
Δ*ConsForecast*	0.354**	0.172**	-0.027	0.350**	0.275**	0.249**	0.275**
	(7.118)	(3.100)	(0.245)	(4.943)	(3.383)	(2.937)	(3.162)
Deviation	0.133**	0.114**	0.060	0.093	0.123*	0.199**	0.220**
	(3.247)	(3.267)	(1.066)	(1.594)	(2.181)	(3.441)	(3.445)
Δ*QtrEarnings*	0.307**	0.201**	0.175**	0.230**	0.244**	0.200**	0.119*
	(18.295)	(14.063)	(6.532)	(4.597)	(4.590)	(3.896)	(2.291)
MktAdjRet x FirmSize	-0.037**	-0.039**	-0.026**	-0.058**	-0.040**	-0.034**	-0.033**
	(-12.280)	(-12.912)	(-5.542)	(-7.738)	(-5.373)	(-4.451)	(-4.554)
DemElasticB x Δ*ConsForecast*	0.038**	0.023**	0.030	0.033**	0.024*	0.028*	0.032*
	(5.043)	(2.938)	(1.901)	(3.231)	(2.116)	(2.166)	(2.457)
DemElasticB x Deviation	0.006	0.017**	0.029**	0.019*	0.006	0.015	0.014
	(1.023)	(3.632)	(3.454)	(2.227)	(0.791)	(1.735)	(1.493)
DemElasticB x Δ*QtrEarnings*	0.005	0.010**	0.013**	0.013	0.005	0.010	0.009
	(1.873)	(4.212)**	(3.333)	(1.484)	(0.551)	(1.056)	(0.894)
FirmSize x Δ*ConsForecast*	0.012**	0.023**	0.024**	0.007	0.007	0.008	0.004
	(2.855)	(5.077)	(2.860)	(1.194)	(1.106)	(1.178)	(0.696)

Table VI (continued)

FirmSize x Deviation	0.011**	0.012**	0.012**	0.014**	0.009*	0.003	0.001
	(3.355)	(4.454)	(3.054)	(3.172)	(1.981)	(0.691)	(0.252)
FirmSize x ΔQtrEarnings	-0.013**	-0.008**	-0.007**	-0.008*	-0.010**	-0.008*	-0.003
	(-10.127)	(-6.769)	(-3.634)	(-2.302)	(-2.840)	(-2.262)	(-0.951)
Adj. R-squared	0.221	0.229	0.144	0.188	0.178	0.166	0.154
Observations	1,036,238	846,863	118,613	302,496	205,065	160,329	127,844

*Significant at the 5% level.

**Significant at the 1% level.

T-statistics (shown in parentheses) are calculated using clustered standard errors at the firm level.

Notes: RevYear1 is the revision of EPS for year 1 by analyst *i* for firm *j* at time *t*. *RevYear1* equals the earnings forecast for year 1 by analyst *i* for firm *j* at time *t* less the prior earnings forecast for year 1 by analyst *i* for firm *j* at time *t*-1 scaled by the absolute value of the prior earnings forecast for year 1 by analyst *i* for firm *j z*at time *t*-1. *RevYear2* is the revision of EPS for year 2 by analyst *i* for firm *j* at time *t*. *RevYear2* equals the earnings forecast for year 2 by analyst *i* for firm *j* at time *t* less the prior earnings forecast for year 2 by analyst *i* for firm *j* at time *t-1* scaled by the absolute value of the prior earnings forecast for year 2 by analyst *i* for firm *j* at time *t*-1. *RevYear3* is the revision of EPS for year 3 by analyst *i* for firm *j* at time *t*. *RevYear3* equals earnings forecast for year 3 by analyst *i* for firm *j* at time *t* less the prior earnings forecast for year 3 by analyst *i* for firm *j* at time *t*-1 scaled by the absolute value of the prior earnings forecast for year 3 by analyst *i* for firm *j* at time *t*-1. *RevQtr1* is the revision of EPS for the first quarter of year 1 by analyst *i* for firm *j* at time *t*. *RevQtr1* equals the earnings forecast for the first quarter of year 1 by analyst *i* for firm *j* at time *t* less the prior earnings forecast for the first quarter of year 1 by analyst *i* for firm *j* at time *t*-1 scaled by the absolute value of the prior earnings forecast for the first quarter of year 1 by analyst *i* for firm *j* at time *t*-1. *RevQtr2* is the revision of EPS for the second quarter of year 1 by analyst *i* for firm *j* at time *t*. *RevQtr2* equals the earnings forecast for the second quarter of year 1 by analyst *i* for firm *j* at time *t* less the prior earnings forecast for the second quarter of year 1 by analyst *i* for firm *j* at time *t*-1 scaled by the absolute value of the prior earnings forecast for the second quarter of year 1 by analyst *i* for firm *j* at time *t*-1. *RevQtr3* is the revision of EPS for the third quarter of year 1 by analyst *i* for firm *j* at time *t*. *RevQtr3* equals the earnings forecast for the third quarter of year 1 by analyst *i* for firm *j* at time *t* less the prior earnings forecast for the third quarter of year 1 by analyst *i* for firm *j* at time *t*-1 scaled by the absolute value of the prior earnings forecast for the third quarter of year 1 by analyst *i* for firm *j* at time *t*-1. *RevQtr4* is the revision of EPS for the third quarter of year 1 by analyst *i* for firm *j* at time *t*. *RevQtr4* equals the earnings forecast for the fourth quarter of year 1 by analyst *i* for firm *j* at time *t* less the prior earnings forecast for the fourth quarter of year 1 by analyst *i* for firm *j* at time *t*-1 scaled by the absolute value of the prior earnings forecast for the fourth quarter of year 1 by analyst *i* for firm *j* at time *t*-1. *FirmSize* is the natural log of the average market capitalization of firm *j* over the quarter ended prior to time *t*. *MktAdjRet* is the market adjusted return for firm *j*. *MktAdjRet* equals the accumulated return for firm *j* from time *t*-1 to time *t* less the value weighted market return from time *t*-1 to time *t*. Δ*ConsForecast* is the change in consensus forecast. defined as the difference between the consensus forecast at time τ for firm *j* and the consensus forecast at time τ-1 for firm *j*, where time τ is the closest consensus date forecast prior to time *t* but after time *t*-1 and time τ-1 is the closest consensus forecast to time τ that is after time *t*-1, scaled by the absolute value of the consensus forecast at time τ -1 for firm *j*. *Deviation* is defined as the consensus forecast at time τ -2 for firm *j*, where τ -2 is the closest consensus forecast date prior to *t*-1 but after *t*-2, less the earnings forecast by analyst *i* for firm *j* at time *t-1* scaled by the absolute value of the earnings forecast by analyst *i* for firm *j* at time *t*-1. Δ*QtrEarnings* is the seasonally adjusted changed in quarterly earnings. Δ*QtrEarnings* equals the actual quarterly earnings announcement at time τ for firm *j*, where time τ is prior to time *t* but after time *t*-1 for quarter *q* of year *y*, less the actual quarterly earnings for firm *j* for quarter *q* of year *y*-1, scaled by the absolute value of the actual quarterly earnings for firm *j* for quarter *q* of year *y*-1. *DemElasticB* is an alternative proxy for the demand elasticity of firm *j*'s stock. We estimate the alternative proxy using principal component analysis of two measures used in Gao and Ritter (2010) and a third used in Wurgler and Zhurvskaya (2002). The first measure, A_1, is the natural log of the average daily inverse price elasticity over the quarter prior to time *t*: $A_1 = ln\left(\frac{1}{D}\sum_{d=1}^{D}\frac{Absolute\ Raw\ Return_{jd}}{(Number\ of\ Shares\ Traded_{jd}/Number\ Shares\ Outstanding_{jt})}\right)$, where *D* is the number of days in the quarter ended prior to time *t*. We take the natural log to control for the presence of outliers. The second measure is the stock's non-institutional ownership: $A_2 = 100\% \cdot (1 - Institutional\ Ownership\ Fraction_{jt})$. The institutional ownership fraction is defined as the ratio of long institutional positions divided by the number of shares outstanding for firm *j* at the end of the quarter ended prior to time *t*. The third measure, A_3, is an arbitrage risk measure where A_3 is the variance of the market model OLS regression residuals estimated over year *t*: $(R_{it} - R_{ft}) = \alpha + \beta(R_{Mt} - R_{ft}) + g(R_{INDt} - R_{ft}) + \varepsilon_t$.