7-2015

Do Analysts Understand Momentum? Evidence from Target Prices

Benjamin Carl Anderson
University of Arkansas, Fayetteville

Do Analysts Understand Momentum?
Evidence from Target Prices

Do Analysts Understand Momentum?
Evidence from Target Prices

A dissertation submitted in partial fulfillment
of the requirements for the degree of
Doctor of Philosophy in Business Administration

by

Benjamin Anderson
Truman State University
Bachelor of Science in Accounting, Economics, 2010
Truman State University
Master of Accountancy, 2011

July 2015
University of Arkansas

This dissertation is approved for recommendation to the Graduate Council.

_____
Dr. James N. Myers
Dissertation Director

_____
Dr. Linda A. Myers
Committee Member

_____
Dr. Amy Farmer
Committee Member

ABSTRACT

Target prices are analysts' forecasts of a firm's stock price. Although target prices can be used to help market participants make investment decisions, much is still unknown about how analysts make these forecasts. Because prior literature documents momentum in stock returns, in this paper, I examine whether target prices reflect the information in returns over the six months prior to the target price announcement date. I find that target prices systematically underestimate the persistence of these six month returns. I further find that the forecasted return in target price revisions is more pessimistic following periods of very good stock performance and more optimistic following periods of very poor stock performance. However, I find that target prices made by 'All-Star' analysts reflect the information in six month returns when these target prices follow a period of very poor stock performance.

ACKNOWLEDGEMENTS

I gratefully acknowledge the support of my dissertation committee: James Myers (Chair), Linda Myers, and Amy Farmer. I also thank T.J. Atwood, Jean Bedard, Lauren Cunningham, Sami Keskek, Karen Pincus, Jaclyn Prentice, Roy Schmardebeck, Jonathan Shipman, and Ari Yezegel for their helpful comments and suggestions. I thank workshop participants at Bentley University, Idaho State University, Oklahoma State University, San Jose State University, the University of Arkansas, and the University of Cincinnati for providing helpful comments and suggestions. I am grateful to the University of Arkansas Doctoral Academy Fellowship for funding during my program.

I am also extremely grateful to my 'long-lost brother' James Myers for his support and friendship and to Linda Myers for her guidance and camaraderie throughout the doctoral program. I owe very special thanks to my mother, father, grandparents, and sisters for their endless love, support, and understanding. I am thankful to Jacob Haislip for annoying office companionship and to Jaclyn Prentice for not-annoying office companionship. I am grateful to Caroline Burke and Ashley Douglass for cosmetic recommendations and to Lyle Roy Schmardebeck for rock-solid esprit de corps during conference travel.

DEDICATION

This dissertation is dedicated to my dearly departed grandfather, Charles Warren Totten. From a young age he encouraged my intellectual curiosity and helped me to gain an appreciation for an empirical perspective on the world.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

I. INTRODUCTION

Prior research (e.g., Jegadeesh 1990, Jegadeesh and Titman 1993, Chan 2003) documents momentum in common stock returns. Stock prices tend to drift following extreme returns but not following more moderate returns. Accordingly, there is information in past returns useful for predicting future returns. DeBondt and Thaler (1990) examine how analysts revise their earnings forecasts following periods of extreme returns and conclude that analysts overreact to extreme past returns. However, Klein (1990) examines earnings forecast errors and instead concludes that analysts remain overly optimistic about future earnings regardless of past returns. Nonetheless, since both papers examine analysts' earnings forecasts it is unclear how analysts' expectations of future returns change following large changes in stock price. In this paper, I use analysts' target prices to examine how analysts use the information in past returns to forecast future stock price.

A target price is an analyst's forecast of the price of a firm's common stock, typically for the twelve months following the date the target price is announced. Hereafter, I refer to the date the target price is announced as the 'target price announcement date'. Given the firm's stock price as of the target price announcement date, the target price implies a forecasted stock return (hereafter, 'forecast return'). Because momentum indicates that past returns have information for future returns, in this paper, I examine whether target prices reflect the information in the returns in the six months immediately preceding the target price announcement date (hereafter, 'momentum returns'). Target prices reflect the information in momentum returns if the forecast returns from target prices are related to momentum returns in the same way that future returns are related to momentum returns.

Prior research documents that market participants value the information in target prices (e.g., Brav and Lehavy 2003, Piotroski and Roulstone 2004, Asquith et al. 2005). Further, the business press covers target price announcements and encourages investors to use target prices to make their investment decisions.[1] A limited body of prior research studies the market reaction to "target price revisions" and casts doubt on the accuracy of target prices (e.g., Bradshaw et al. 2013), but do not study how analysts set these target prices. Some analysts explicitly state that they use past returns to form their target prices.[2] Accordingly, it is feasible that analysts use the information in returns to forecast stock price.

Using a sample of 733,677 target prices announced between January 2004 and December 2013, I examine whether target prices reflect the information in momentum returns. I do so by jointly estimating the relation between the forecast return in target prices and momentum returns and the relation between future returns and momentum returns using seemingly unrelated regression. Target prices reflect the information in momentum returns if the relation between the forecast return in target prices and momentum returns is not significantly different from the relation between future returns and momentum returns. I find that target prices fail to reflect the information in momentum returns. Specifically, I find target prices underestimate the persistence of momentum returns regardless of the magnitude of momentum returns.

[1] For example, a contributor to Forbes.com in October 2013 encouraged investors to invest in firms with target prices of at least 200 percent greater than the firm's current stock price. He picked five stocks as an example which would provide "100% to 200% potential upside with limited downside risk" (Forbes.com, 2013). These five firms earned an average return of -82.86 percent over the next twelve months.

[2] For example, in September 2014 an analyst with Stifel Nicolaus revised his target price for Tesla Motors up to $400, stating that 'Tesla sentiment is like a freight train'. The stock price at the time of the target price revision was $281.42, which results in an implied return of 42.14 percent for this target price (Business Insider, 2014).

Next, I examine what prior research refers to as "target price revisions".[3] I find that target price revisions reflect the information in momentum returns following periods of very poor stock performance and the analysts' previous target prices are too high. Further, I find that target prices overestimate the persistence of momentum returns when previous target prices are too low or when previous target price accuracy is high. I then examine whether target prices are revised differently following extreme positive and negative returns. I find that the forecast return in target price revisions following extreme negative revision period returns is much more optimistic than the forecast return in target price revisions following other negative revision period returns. Alternatively, I find that the forecast return in target price revisions following extreme positive revision period returns is much more pessimistic than the forecast return in target price revisions following other positive revision period returns.

It is possible that analysts do not consider returns over the entire six months when setting target prices, but instead only respond to short-term fluctuations in stock price. Therefore, I separate returns in the five days prior to the target price announcement date from the rest of the momentum returns and examine whether target prices efficiently reflect the information in short-window returns versus returns over the rest of the momentum period. I find that analysts react differently to short-window returns relative to the returns over the rest of the momentum period. Further, I find evidence that target prices reflect an underestimate of the persistence of extreme momentum returns occurring over both the five day period preceding a target price announcement and over the rest of the momentum return period.

[3] Following Brav and Lehavy (2005), I define a "target price revision" as a target price announced within the horizon of a previous target price forecast, even though the target price forecast horizon is extended to twelve months from the announcement date of the revised target price.

I next consider the effect of analyst characteristics that prior research (e.g., Clement 1999, Gleason and Lee, 2003) finds impact the accuracy of analysts' earnings forecasts. Specifically, I consider the effect of experience, resources, portfolio complexity, and whether analysts were listed in the Institutional Investor 'All-Star' ranking in the target price announcement year. When simply controlling for analyst characteristics, I find similar results to when I include analyst fixed effects in my analysis. In addition, I find no change in my results when I condition my analysis according to experience, resources, and portfolio complexity. Thus, these characteristics considered to affect analyst ability to forecast earnings appear to have no systematic impact on how analysts use the information in momentum returns. However, I find that First-Team 'All-Star' analysts incorporate the information in momentum returns into their target prices when they forecast target prices following very poor stock price performance. However, I find that other analysts listed in the 'All-Star' rankings but who are not the First-Team do not have this same ability. Thus, there is some underlying characteristic shared among First-Team 'All-Star' analysts not captured in experience, portfolio complexity, or resources that results in these analysts incorporating the information in momentum returns into their target prices.

Prior research finds that the information in negative returns for predicting future returns is different from the information in positive returns (Chan 2003). As such, I create quintiles separately across negative momentum returns and positive momentum returns and classify target prices according to these negative and positive momentum distributions as of the target price announcement date. I find that target prices fail to reflect the information in momentum returns for both negative and positive momentum returns. I continue to find that target prices

systematically underestimate the persistence of both negative and positive momentum returns regardless of magnitude.

In further robustness tests, I examine whether changing how I account for delisting firms has an effect on my results. I find that target prices systematically underestimate the persistence of momentum returns regardless of how I account for delisting firms.

I also examine the impact of including a variety of additional financial statement variables as controls. When I include control variables for financial statement variables such as accruals, income, leverage, research and development expenses, and dividends I continue to find that target prices systematically underestimate the persistence of momentum returns regardless of magnitude. My findings continue to remain unchanged when I include controls for both financial statement variables and analyst characteristics simultaneously.

Finally, I use an alternative empirical methodology to examine whether target prices accurately reflect the information in momentum returns. Specifically, I adopt a Mishkin (1983) type methodology and use iterative weighted non-linear least squares to simultaneously estimate how momentum returns relate to future returns and how target prices incorporate the information in momentum returns into forecast returns. I continue to find that target prices reflect a systematic underestimate in the persistence of momentum returns when using this alternative methodology

My study contributes to the literature on how analysts react to returns. Prior research is unclear regarding whether analysts use the information in returns to revise their forecasts (De Bondt and Thaler 1990, Klein 1990). However, analogous prior research examining analysts' earnings forecasts finds that earnings forecast revisions do not fully reflect the information in earnings (Abarbanell and Bernard 1992) or accruals (Bradshaw et al. 2001). I find evidence

consistent with the notion that analysts systematically underestimate the persistence of momentum returns regardless of magnitude. Further, I find that this is due in part to analysts becoming too pessimistic following periods of very good stock price performance and becoming too optimistic following periods of very poor stock price performance. However, I do find certain cases in which analysts incorporate the information in momentum returns into their target prices and when analysts overestimate the persistence of momentum returns.

My study also contributes to the growing literature on analysts' target prices. While prior research has investigated the characteristics of target prices, the determinants of target price accuracy, and the market reaction to analysts' target price revisions, to my knowledge, prior research does not address whether target price reflect the information in momentum returns. I find that target price revisions fail to efficiently reflect the information in momentum returns of all magnitudes, because analysts underestimate the persistence of these momentum returns. However, I find that First-Team 'All-Star' analysts incorporate the information in momentum returns into their target prices when their target prices follow a period of very poor stock price performance. Further, I do not find this same ability in other analysts, even those listed in the Second-Team and Third-Team of the Institutional Investor 'All-Star' list or when considering other analyst characteristics such as experience, resources, and portfolio complexity.

The remainder of the paper is organized as follows. Section 2 summarizes the prior research and presents my formal hypothesis. Section 3 presents my research design. Section 4 describes the data and presents results of my main empirical test. Section 5 contains supplementary analyses and Section 6 concludes.

II. PRIOR RESEARCH AND HYPOTHESIS DEVELOPMENT

A. Momentum in Stock Returns

A body of prior literature finds momentum in stock returns. For example, Jegadeesh (1990) finds economically and statistically significant positive serial correlation in returns, which can be used to improve predictions of stock prices over the next twelve months. Jegadeesh and Titman (1993) expand on this finding and document significant abnormal returns using a portfolio strategy based entirely on prior returns. They conclude that the market appears to process information slowly, which results in these predictable time-series patterns in returns. De Bondt and Thaler (1985) find stock price drift over the year following very large positive and negative returns results in stock price reversal over the following two to five years. They conclude that the one-year drift is the result of market overreaction, which is subsequently corrected in the long run. Jegadeesh and Titman (1995) find additional evidence that the one-year returns documented by Jegadeesh (1990) are consistent with market overreaction to very large positive and negative returns. They follow a contrarian portfolio strategy and find that it earns economically and statistically significant abnormal returns over the next two to five years. Additionally, these predictable time-series patterns differ depending on whether past returns were positive or negative (Hong et al. 2000, Chan 2003). Specifically, negative returns persist for longer than do positive returns because the market incorporates bad news more slowly.

B. Target Prices

A small but growing literature studies analysts' target prices.[4] In one of the earliest papers, Bradshaw (2002) finds that analysts provide target price forecasts along with their stock

[4] Recall that a target price is an analyst's forecast of the price of a firm's common stock, typically for the twelve months following the target price announcement date.

recommendations and earnings forecasts in two thirds of their research reports. He further finds that target price are often computed using simple price-multiple heuristics and he concludes that target prices are mainly used to justify analysts' stock recommendations. Nonetheless, other early research finds that the market values target prices, even when they just reiterate earlier target prices (Brav and Lehavy 2003, Asquith et al. 2005). For example, Brav and Lehavy (2003) find a significant market reaction to target price revisions after controlling for other information released concurrently. They also document that target prices are systematically optimistic, with average forecasted returns of almost 28 percent.

More recent papers study the characteristics of target prices and the determinants of target price accuracy. Bonini et al. (2010) find that target prices are inaccurate and that this inaccuracy persists over time. Gleason et al. (2013) find that target prices which appear to be generated from a sophisticated valuation methodology are significantly more accurate than are target prices which appear to be generated using on a simple methodology. Furthermore, individual analysts have a statistically significant, but economically trivial, ability to persistently provide more accurate target prices (Bradshaw et al. 2013).

C. Analysts' Use of Returns

Prior research is unclear regarding how analysts use the information in returns. DeBondt and Thaler (1990) examine how analysts react to past returns when revising their earnings forecasts and conclude that analysts have an underlying cognitive bias that results in an overreaction to returns. However, Klein (1990) examines earnings forecast errors and finds evidence inconsistent with this cognitive bias theory. She instead concludes that analysts remain overly optimistic about future earnings regardless of past returns. However, Abarbanell (1991) finds some evidence that analysts' earnings forecasts do not fully reflect the information in past

returns. Nonetheless, these papers all use analysts' earnings forecasts and so it is still unclear how analysts' expectations of future returns change following large changes in stock price. Recall that prior research (e.g., Jegadeesh and Titman 1993) finds that the most extreme positive and negative returns systematically persist. If analysts observe these time-series patterns in returns and incorporate this information into their target prices, then target price revisions efficiently reflect the information in revision period returns. However, analogous prior research finds that analyst earnings forecast revisions reflect an underreaction to the information in earnings (Abarbanell and Bernard 1992) and do not fully incorporate the information in accruals (Bradshaw et al. 2001). As such, it is unclear whether analysts understand the information in momentum and incorporate this information into their forecasts. As such, I test the following hypothesis:

H_0: Analysts' target prices do not reflect the information in momentum returns.

III. Research Design

Consistent with Bradshaw et al. (2013), I limit my sample to target prices with twelve-month forecast horizons. Thus, all target prices in my sample are stock price forecasts for twelve months following the date the target price is announced (hereafter, the 'target price announcement date'). I test whether target prices reflect the information in revision period returns by jointly estimating: 1) how target prices are related to momentum returns and 2) how future returns are related to momentum returns. I define the momentum return ($MomentumReturn_{k,i,t}$) as the six-month buy-and-hold return immediately preceding the target price announcement date and ending one day before the target price announcement date. I define the future return ($FutureReturn_{k,i,t}$) as the buy-and-hold return beginning one day after the target

price announcement date and ending twelve months (251 trading days) after the target price announcement date. If a target price firm delists in the twelve months following the target price announcement date, I follow Beaver et al. (2007) and compound the delisting return with the daily return in CRSP on the delisting date and assume the proceeds are invested in a value-weighted market portfolio for the remainder of the future return period. If the delisting return is missing, I follow Beaver et al. (2007) and use the average delisting return for firms with the same delisting code.[5] I present a timeline in Figure 1 to illustrate how I measure momentum returns and future returns relative to the target price announcement date t.

[Insert Figure 1 here]

Prior research finds that extreme returns persist for the next twelve months. Because the information in the most extreme momentum returns should differ from the information in other momentum returns, I separately examine whether target prices following the most extreme returns reflect the information in revision period returns differently than do target prices following smaller returns. Specifically, I identify target prices with momentum returns in the top or bottom quintile of momentum returns by calculating momentum return quintiles by trading day across the universe of firms for which returns data is available in CRSP. I assign each target price a momentum quintile by comparing the target price firm's momentum return to the momentum return distribution as of the target price announcement date.[6] I include delisting

[5] In supplementary analyses I use alternative methods to account for delisting firms.
[6] I adopt this approach to ensure that the quintile rankings are based solely on information available as of the target price announcement date.

firms when calculating the momentum return distribution if the firm delists in the momentum return period.[7]

First, I estimate the target price equation (1a) to model how target price revisions reflect the information in momentum returns:

$$\begin{aligned} ForecastReturn_{k,i,t} = {} & \alpha_0 + \alpha_1 MomentumReturnRest_{k,i,t} + \alpha_2 MomentumReturnQ1_{k,i,t} \\ & + \alpha_3 MomentumReturnQ5_{k,i,t} + \alpha_4 MarketReturn_{k,i,t} + \alpha_5 MVE_{k,i,t} \\ & + \alpha_6 BTM_{k,i,t} + \alpha_7 ReturnVolatility_{k,i,t} + Year\ Fixed\ Effects \\ & + Analyst\ Fixed\ Effects + \varepsilon_{k,i,t} \end{aligned} \quad (1a)$$

where $ForecastReturn_{k,i,t}$ is the forecasted return for analyst k's target price for firm i as of the target price announcement date t, calculated as the target price at date t divided by the stock price one day prior to the target price announcement date. For presentation I subtract one from $ForecastReturn_{k,i,t}$ to make the variable consistent with actual returns data. $MomentumReturnRest_{k,i,t}$ is equal to $MomentumReturn_{k,i,t}$ if $MomentumReturn_{k,i,t}$ is in the second through fourth quintiles, and is zero otherwise, $MomentumReturnQ1_{k,i,t}$ is equal to $MomentumReturn_{k,i,t}$ if $MomentumReturn_{k,i,t}$ is in the first quintile, and is zero otherwise, and $MomentumReturnQ5_{k,i,t}$ is equal to $MomentumReturn_{k,i,t}$ if $MomentumReturn_{k,i,t}$ is in the fifth quintile, and is zero otherwise. All else equal, α_1 reveals how target prices are related to momentum returns that are not extreme ($MomentumReturnRest_{k,i,t}$), α_2 reveals how target prices are related to momentum returns in the top quintile ($MomentumReturnQ5_{k,i,t}$), and α_3 reveals how target prices are related to momentum returns in the bottom quintile

[7] I calculate delisting returns by compounding the delisting return with the available return in CRSP on the delisting date and assume the proceeds are invested in a value-weighted market portfolio for the remainder of the return period.

($MomentumReturnQ1_{k,i,t}$). I control for the buy-and-hold value-weighted market return ($MarketReturn_{k,i,t}$) over the momentum return period to account for the market-wide portion of returns. I include the natural logarithm of the market value of equity ($MVE_{k,i,t}$) and the book-to-market ratio ($BTM_{k,i,t}$) because Fama and French (1993) finds that size and book-to-market are related to returns. I include return volatility, calculated as the standard deviation of firm I's common stock returns over the past six months, because Bradshaw et al. (2013) find that return volatility is related to target price accuracy. I include year fixed effects to control for year-specific macroeconomic factors that may affect how analysts set their target prices and use the information in momentum. Finally, I include analyst fixed effects to control for analyst-specific idiosyncrasies in target prices.

Second, I estimate the future returns equation (1b) to model the information in momentum returns for future returns:

$$\begin{aligned} FutureReturn_{k,i,t} = {} & a_0 + a_1 MomentumReturnRest_{k,i,t} + a_2 MomentumReturnQ1_{k,i,t} \\ & + a_3 MomentumReturnQ5_{k,i,t} + a_4 MarketReturn_{k,i,t} + a_5 MVE_{k,i,t} \\ & + a_6 BTM_{k,i,t} + a_7 ReturnVolatility_{k,i,t} + \text{Year Fixed Effects} \\ & + \text{Analyst Fixed Effects} + e_{k,i,t} \end{aligned} \quad (1b)$$

where $FutureReturn_{k,i,t}$ is the twelve-month future return for firm i following the target price revision date t. All else equal, a_1 reveals how future returns are related to momentum returns that are not extreme ($MomentumReturnRest_{k,i,t}$), a_2 reveals how future returns are related to momentum returns in the top quintile ($MomentumReturnQ5_{k,i,t}$), and α_3 reveals how future returns are related to momentum returns in the bottom quintile ($MomentumReturnQ1_{k,i,t}$), all else

equal. All other variables are as previously defined. I control for the market return, size, the book-to-market ratio, and return volatility and I include year and analyst fixed effects.

I estimate equations (1a) and (1b) jointly using seemingly unrelated regression (SUR) and test whether $\alpha_1=a_1$, $\alpha_2=a_2$, and $\alpha_3=a_3$ using chi-square tests.[8] If I cannot reject that $\alpha_1=a_1$, then target prices reflect the information in momentum returns that are not extreme, if I cannot reject that $\alpha_2=a_2$, then target prices reflect the information in momentum returns in the bottom quintile, and if I cannot reject that $\alpha_3=a_3$, then target prices reflect the information in momentum returns in the top quintile. Recall that the information in momentum returns differs when momentum returns are in the top and bottom quintile. As such, I am most interested in whether target prices reflect the information in momentum returns in the top and bottom quintile. If the difference between α_2 and a_2 is negative and significant then target prices reflect an underestimate of the persistence of momentum returns in the bottom quintile. Thus, analysts underreact to the momentum effect when setting their target prices following extremely good stock performance. Alternatively, if the difference between α_2 and a_2 is positive and significant then target prices reflect an overestimate of the persistence of momentum returns in the bottom quintile. Thus, analysts overreact to the momentum effect when setting their target prices following extremely poor stock performance. Likewise, if the difference between α_3 and a_3 is negative and significant then target prices reflect an underestimate of the persistence of momentum returns in the top quintile. Thus, analysts underreact to the momentum effect when setting their target prices following extremely good stock performance. Alternatively, if the difference between α_3 and a_3 is positive and significant then target prices reflect an overestimate of the persistence of momentum returns in the top quintile. Thus, analysts overreact to the momentum effect when

[8] This is similar to the methodology in Mikhail et al. (2007) and in Armstrong et al. (2012).

setting their target prices following extremely good stock performance. Because I perform all analyses at the analyst (k) firm (i) target price announcement date (t) level, hereafter, I suppress all subscripts for simplicity of presentation. In the next section I describe my data and present empirical results.

IV. EMPIRICAL RESULTS

A. Data and Sample

I collect target price data from the I/B/E/S Detail History Adjusted Price Target file beginning January 2004 and ending December 2013.[9] I collect daily stock price and returns data from the Center for Research in Security Prices (CRSP) and I collect financial statement data for control variables from Compustat. Since I/B/E/S data are adjusted for stock splits but CRSP stock price data are unadjusted, I follow Bradshaw et al. (2013) and use the cumulative factor to adjust price (CFACPR) variable available in CRSP to adjust CRSP stock prices. Also following Bradshaw et al. (2013), I eliminate observations with a horizon of other than 12 months.[10] I eliminate all observations with a stock price or target price of less than $1 to eliminate the influence of penny stocks. Finally, following Bradshaw et al. (2013), I delete all observations with a ForecastReturn in the bottom and top one percent of the distribution and observations with

[9] I begin my sample in 2004 due to major regulatory events such as the Sarbanes-Oxley Act of 2002 and Regulation Fair Disclosure (Reg FD) which occurred in the early 2000s. I end my sample of target prices in 2013 because I require one year of future stock returns data for my tests.

[10] Twelve-month horizon target prices make up 98.23 percent of target prices issued over my sample period. The remainder is comprised predominantly of 6 month and 24 month target prices.

a ForecastReturn of greater than 400 percent.[11] Table 1 provides detailed information about my sample selection procedure.

[Insert Table 1 here]

B. Descriptive Statistics and Univariate Analyses

Table 2 contains descriptive statistics. Target price announcements follow a mean momentum return of 9.05 percent. The mean and median ForecastReturn in target price revisions are 19.51 and 15.01 percent, respectively. The mean and median future return are 12.69 and 9.32 percent, respectively. The positive mean difference between average ForecastReturn and FutureReturn is consistent with papers such as Bradshaw et al. (2013) which conclude that target prices are optimistically biased. I also find substantial variation in size and the book-to-market ratio for the firms in my sample. The mean market value of the firms in my sample is $12.49 million and my sample includes a substantial number of firms with market values of less than $1 million. The mean and median book-to-market ratio of the firms in my sample are 0.5048 and 0.4206, respectively. Because Fama and French (1993) finds that size and book-to-market ratio are related to returns, I control for these factors in my multivariate analyses.

[Insert Table 2 here]

Next, I present mean MomentumReturn, ForecastReturn, FutureReturn, and the difference between mean ForecastReturn and mean FutureReturn by momentum quintile in Table 3, Panel A. To illustrate the relation between mean RPReturn, ForecastReturn, and

[11] Bradshaw et al. (2013) note that there are still extreme observations when just eliminating target price forecasts with an implied return in the top and bottom one percent of the distribution. They find that these extreme observations are primarily due to miscoded or misaligned split factors.

FutureReturn, I plot mean ForecastReturn, mean FutureReturn, and the difference between mean ForecastReturn and mean FutureReturn by Momentum Return Quintile quintile in Figure 2.

[Insert Table 3 here]

[Insert Figure 2 here]

I find positive differences between mean ForecastReturn and mean FutureReturn in all Momentum Return quintiles. This is consistent with prior literature (e.g., Bonini et al. 2010, Bradshaw et al. 2013), which finds that target prices are optimistically biased. However, I find that the degree to which mean ForecastReturn exceeds mean FutureReturn differs substantially depending on the size of revision period returns. In Figure 2, the difference between mean ForecastReturn and mean FutureReturn decreases as Momentum Return increases, indicating that analysts become less optimistic as prior period stock performance improves. The difference between mean ForecastReturn and mean FutureReturn is particularly large for the worst performing stocks. Additionally, the difference between mean ForecastReturn and mean FutureReturn increases in the top quintile of momentum returns. I confirm these observations with univariate tests of differences in means between these subsamples and present these results in Table 3, Panel B.

In Column (1), I present results of a test of differences in the difference between mean ForecastReturn and mean FutureReturn for target price revisions following the lowest quintile of momentum returns. I find that the difference between mean ForecastReturn and mean FutureReturn is lower for firms with extremely poor prior period stock performance. This is in part due to the extraordinarily high level of optimism in these target prices, which have a mean ForecastReturn of 29.07 percent. In Column (3), I present results of tests of differences in the difference between mean ForecastReturn and mean FutureReturn for target price revisions

following the highest quintile of momentum returns. I find that the difference between mean ForecastReturn and mean FutureReturn is lower for firms with extremely good prior period stock performance.

C. Multivariate Analysis

Next, I examine whether target prices reflect the information in momentum returns using multivariate regression analysis. I present results of estimating equations (1a) and (1b) and the difference between coefficients of interest using SUR in Table 4. I calculate p-values using robust standard errors clustered by firm as recommended by Petersen (2009). I test the difference between regression coefficients of interest from the target price equation (1a) to the future returns equation (1b) using a chi-square test:

[Insert Table 4 here]

In Column (1), I present the results of estimating the target price returns equation (1a), in column (2), I present the results of estimating the future returns equation (1b), and column (3), I present the difference between regression coefficients of interest in equations (1a) and (1b) with p-values based on chi-square tests of coefficient equality. I find that target prices are negatively associated with momentum returns regardless of the size of momentum returns. I also find that target prices are negatively associated with market returns and negatively associated with the firm's market value of equity. I do not find that future returns are related to momentum returns when the momentum returns are not extreme. This is consistent with prior literature in momentum which finds that the momentum effect is concentrated in the most extreme momentum returns (e.g., Jegadeesh and Titman 1993). I also do not find, in my sample, that

future returns are related to momentum returns when momentum returns are in the top quintile.[12] Target prices do not reflect the information in momentum returns regardless of the magnitude of momentum returns. I further find that target prices underestimate the persistence of extreme momentum returns but overestimate the persistence of returns which are not extreme.

V. SUPPLEMENTARY ANALYSES

A. Examining Target Price Revisions

A limited body of prior research studies the market reaction to "target price revisions" but does not study how analysts make these revisions.[13] Target price revisions differ from earnings forecast revisions because earnings forecasts are for a specific financial statement period (e.g., third quarter earnings) while target prices are for a forecast horizon following the target price announcement date (e.g., stock price over the next twelve months). When an analyst issues an earnings forecast revision, the new earnings forecast replaces that analyst's previous earnings forecast for the given financial statement period. Alternatively, when an analyst issues a new target price, this target price reflects the analyst's expectation for the firm's stock price over a new horizon (again, typically twelve months) so it replaces that analyst's previous target price

[12] It is important to note that the insignificance of a_3 indicates that, on average, I do not find a momentum effect in this sample. However, in untabulated supplementary analyses, I find a momentum effect in at least six of the ten years in my sample. The reason a momentum effect does not appear in the pooled results appears to be due the influence of several years concurrent with the financial crisis of 2007-2008 in which future returns are highly negatively related to momentum returns. I do not exclude these years because this anomaly was unknowable ex ante to analysts when that they generated their target prices. In addition, in supplementary analyses I present later in this paper I find a momentum effect in samples which are subject to more stringent data requirements.

[13] Following Brav and Lehavy (2005), I define a "target price revision" as a target price announced within the horizon of a previous target price forecast, even though the target price forecast horizon is extended to twelve months from the announcement date of the revised target price.

but the forecast horizon ends on a different date.[14] In this section I analyze target price revisions instead of all target prices. Target price revisions could differ from initial target prices because they are set by analysts who are actively engaged in releasing target prices for the firm. Because these analysts are actively engaged in researching the firms for which they announce target prices, these analysts could better understand the momentum effect through observing the firm's stock price over a long period of time.

To find target price, I collect from the I/B/E/S Detail History Adjusted Price Target file the most recent target price issued by analyst k for firm i up to a maximum of one year prior to the target price revision date t. Because this new target price occurs within the horizon of a previous target price announced by that analyst for a particular firm, I refer to this new target price as a target price revision. First, I examine whether target prices reflect the information in momentum returns by estimating regression equations (2a) and (2b):

$$\begin{aligned} ForecastReturn_{k,i,t} = {} & \beta_0 + \beta_1 MomentumReturnRest + \beta_2 MomentumReturnQ1 \\ & + \beta_3 MomentumReturnQ5 + \beta_4 MarketReturn + \beta_5 MVE + \beta_6 BTM \\ & + \beta_7 ReturnVolatility + \beta_8 PreviousTPAccuracy + Year\ Fixed\ Effects \\ & + Analyst\ Fixed\ Effects + \omega \end{aligned} \quad (2a)$$

[14] Consider, for example, an analyst's earnings forecast and target price revision on August 22, 2012 for William Sonoma, which has a January 31 fiscal year-end. Matthew, an analyst covering William Sonoma, forecasts 2012 annual earnings per share of $2.54 on August 3, 2012. He later revises his forecast for 2012 annual earnings per share on August 22, 2012 to $2.57. This earnings forecast revision increases his earnings per share forecast by $0.03 but the forecast is still for the fiscal year ending January 31, 2013. Matthew also issues a target price of $42 on August 3, 2012. This target price forecasts Williams Sonoma's stock price through August 3, 2013. When Matthew later revises his target price forecast on August 22, 2012 to $46, this new target price increases his target price by $4, but forecasts Williams Sonoma's stock price through August 22, 2013.

$$FutureReturn_{k,i,t} = b_0 + b_1 MomentumReturnRest + b_2 MomentumReturnQ1 + b_3 MomentumReturnQ5 + b_4 MarketReturn + b_5 MVE + b_6 BTM + b_7 ReturnVolatility + b_8 PreviousTPAccuracy + Year\ Fixed\ Effects + Analyst\ Fixed\ Effects + z \quad (2b)$$

Since I examine target price revisions, in this analysis I include as an additional control the accuracy of the analyst's previous target price. I define the accuracy of the analyst's previous target price (PreviousTPAccuracy) as the difference between price one day before the target price revision date and the analyst's previous target price. All other variables are as previously defined. I present results of estimating equations (2a) and (2b) using SUR with robust standard errors clustered by firm in Table 5.

[Insert Table 5 here]

Columns (1), (2), and (3) are the same as previously defined. I find, similar to my main results, that target price revisions do not reflect the information in momentum returns. Specifically, I find that target price revisions underestimate the persistence of momentum returns regardless of the magnitude of momentum returns.

Next, I examine whether analysts' use of the information in momentum returns differs based on the accuracy of their previous target price. First, I split my sample based on whether the analyst's previous target price was too high or too low as of the target price revision date. I present results of estimating equations (2a) and (2b) for each subsample in Table 6 Panel A and Panel B, respectively.

[Insert Table 6 here]

Columns (1), (2), and (3) are the same as previously defined. For target price revisions that occur when the prior target price is too high, I find that target prices do not reflect the information in momentum returns when momentum returns are in the second through fifth quintile. Further, I find that target prices reflect an underestimate of the persistence of momentum returns when momentum returns are in the second through fifth quintile. However, I find that target prices reflect the information in momentum returns when momentum returns are in the bottom quintile. This indicates that when the previous target price is too high but stock price performance was extremely poor, analysts understand the effect of past returns on future returns and revise their target prices accordingly. For target price revisions that occur when the prior target price is too low, I find that target prices do not reflect the information in momentum returns regardless of the magnitude of momentum returns. Further, I find that target prices reflect a systematic overestimation of the persistence of momentum returns when the prior target price was too low.

Next, I examine whether analysts' use of the information in momentum returns differs based on the relative accuracy of their previous target price. I split my sample of target price revisions based on the absolute value of target price accuracy relative to median absolute target price accuracy for the calendar year. I present results of estimating equations (2a) and (2b) for high accuracy target prices in Table 7 Panel A and low accuracy target prices in Table 7 Panel B.

[Insert Table 7 here]

Columns (1), (2), and (3) are the same as previously defined. For target price revisions with relatively low target price accuracy, I find that target prices do not reflect the information in momentum returns. Further, I find that target prices reflect an underestimate of the persistence of momentum returns regardless of the magnitude of momentum returns. However, I find that

for target prices with relatively high target price accuracy, target prices reflect an overestimate of the persistence of momentum returns regardless of the magnitude of momentum returns. This indicates that how analysts use momentum returns depends on the accuracy of their prior target price. When their previous target price is relatively more inaccurate, analysts underestimate any persistence of prior returns. However, analysts overextrapolate the information in momentum returns when their previous target prices are more accurate. This is possibly due to analysts becoming overconfident in their own forecasting abilities following highly accurate target prices.

Next, I examine whether target prices are revised differently following extreme momentum returns. I define target price revisions two ways: ChgForecastReturn is the change in ForecastReturn from the previous target price to the revised target price, ChgTargetPrice is the change in Target Price from the previous target price to the revised target price, scaled by price as of one day before the previous target price. I present mean MomentumReturn, ChgForecastReturn, and ChgTargetPrice by momentum quintile in Table 8, Panel A. To illustrate the relation between mean MomentumReturn, ChgForecastReturn, and ChgTargetPrice, I plot mean ChgForecastReturn and mean ChgTargetPrice by MomentumReturn quintile in Figure 3.

[Insert Table 8 here]

I find that ChgForecastReturn declines as MomentumReturn increases, whereas ChgTargetPrice increases as MomentumReturn increases. This indicates that after periods of very poor stock performance analysts tend to revise their target prices downwards, but such that the ForecastReturn reflects some degree of optimism relative to their previous target price. Similarly, after periods of very good stock performance analysts are revising their target prices upwards, but in such a way that the ForecastReturn reflects some degree of pessimism relative to

their previous target price. I confirm these observations with univariate tests of differences in means between these subsamples and present these results in Table 8, Panel B.

Next I use multivariate regression to examine whether target prices are revised differently following extreme momentum returns. First, I examine whether ChgForecastReturn differs following the most extreme momentum returns relative to other target price revisions by estimating regression equation (3) using ordinary least squares (OLS) with robust standard errors clustered by firm:

$$\begin{aligned}\text{ChgForecastReturn} = {} & \lambda_0 + \lambda_1\text{MomentumReturnRest} + \lambda_2\text{MomentumReturnQ1} \\ & + \lambda_3\text{MomentumReturnQ5} + \lambda_4\text{MarketReturn} + \lambda_5\text{MVE} + \lambda_6\text{BTM} \\ & + \lambda_7\text{ReturnVolatility} + \lambda_8\text{PreviousTPAccuracy} + \text{Year Fixed Effects} \\ & + \text{Analyst Fixed Effects} + \rho \qquad (3)\end{aligned}$$

All variables are as previously defined. I control for the market return, size, the book-to-market ratio, return volatility, and the previous target price accuracy and I include year and analyst fixed effects. λ_1 reveals how ChgForecastReturn is related to momentum returns which are not extreme, λ_2 reveals how ChgForecastReturn is related to momentum returns in the bottom quintile, and λ_3 reveals hos ChgForecastReturn is related to momentum returns in the top quintile. If $\lambda_1=\lambda_2$ then target prices are not revised differently following periods of very poor stock performance relative to periods of more moderate returns. If $\lambda_2=\lambda_3$ then target prices are not revised differently following periods of very good stock performance relative to periods of more moderate returns. I present results of estimating equation (3) using OLS with robust standard errors clustered by firm in Table 9. I test whether $\lambda_1=\lambda_2$ and $\lambda_1=\lambda_3$ using F-tests.

[Insert Table 9]

I find the implied return in target price revisions becomes significantly more optimistic following the most extreme momentum returns relative to periods of more moderate momentum returns (p-value <0.0001). I also find that the implied return in target price revisions becomes significantly more pessimistic following the most extreme positive returns relative to more moderate momentum returns (p-value <0.0001). Recall that the most extreme negative and positive returns persist over the next twelve months. However, target price revisions reflect expectations that extreme revision period returns will reverse over the next twelve months. Thus, target prices are revised in the wrong direction following the most extreme negative and positive returns.

Next, I examine whether ChgTargetPrice differs following the most extreme momentum returns relative to other target price revisions by estimating regression equation (4):

$$\begin{aligned} \text{ChgTargetPrice} = {} & \theta_0 + \theta_1 \text{MomentumReturnRest} + \theta_2 \text{MomentumReturnQ1} \\ & + \theta_3 \text{MomentumReturnQ5} + \theta_4 \text{MarketReturn} + \theta_5 \text{MVE} + \theta_6 \text{BTM} \\ & + \theta_7 \text{ReturnVolatility} + \theta_8 \text{PreviousTPAccuracy} + \text{Year Fixed Effects} \\ & + \text{Analyst Fixed Effects} + \varphi \end{aligned} \quad (4)$$

All variables are as previously defined. I control for the market return, size, the book-to-market ratio, return volatility, and the previous target price accuracy and I include year and analyst fixed effects. θ_1 reveals how ChgTargetPrice is related to momentum returns which are not extreme, θ_2 reveals how ChgTargetPrice is related to momentum returns in the bottom quintile, and θ_3 reveals hos ChgTargetPrice is related to momentum returns in the top quintile. If $\theta_1 = \theta_2$ then target prices are not revised differently following periods of very poor stock performance relative to periods of more moderate returns. If $\theta_1 = \theta_3$ then target prices are not

revised differently following periods of very good stock performance relative to periods of more moderate returns. I present results of estimating equation (4) using OLS with robust standard errors clustered by firm in Table 6 Panel B. I test whether $\theta_1=\theta_2$ and $\theta_1=\theta_3$ using F-tests.

[Insert Table 10 here]

I find the target prices increase substantially more as a proportion of momentum returns following periods of very poor stock performance relative to periods of more moderate returns (p-value <0.0001). I also find that the target prices decrease substantially less as a proportion of momentum returns following periods of very good stock performance relative to periods of more moderate returns (p-value <0.0001).

B. Examining Short-Window Returns

So far, I examine whether target price revisions reflect the information in buy and hold returns occurring over the six months prior to a target price announcement. However, it is possible that analysts react to sudden fluctuations in stock price rather than returns over six months. In this section, I separate short window returns from momentum returns. I measure short window returns as the buy-and-hold returns for the five trading days immediately preceding the target price announcement (5DayReturn). I generate 5DayReturn quintiles using all firms available in CRSP for the same five days immediately preceding target price revisions. Thus, the assignment of a target price revision to a 5DayReturn quintile is relative to five day returns for which data is available in CRSP in the five day period immediately preceding the target price announcement.

I present mean ForecastReturn, FutureReturn, and the difference between mean ForecastReturn and mean FutureReturn by 5DayReturn quintile in Table 10, Panel A. To

illustrate the relation between 5DayReturn, mean ForecastReturn, and mean FutureReturn, I plot mean ForecastReturn, mean FutureReturn, and the difference between mean ForecastReturn and mean FutureReturn by 5DayReturn quintile in Figure 4.

[Insert Table 10 here]

[Insert Figure 4 here]

The difference between mean ForecastReturn and mean FutureReturn, when sorting according to 5DayReturn quintile, behaves similar to when sorted according to MomentumReturn quintiles in that it is slightly 'U' shaped. The difference between ForecastReturn and FutureReturn decreases from 5DayReturn quintiles one through four, but increases in the top 5DayReturn quintile. I confirm these observations with univariate tests of difference in means between these subsamples and present these returns in Table 10, Panel B.

Next, I examine whether target price announcements reflect the information in the most extreme negative short-window returns when separated from all other short-window returns by jointly estimating regression equations (5a) and (5b):

$$\begin{aligned}\text{ForecastReturn} = {} & \zeta_0 + \zeta_1 \text{5DayReturnRest} + \zeta_2 \text{5DayReturnQ1} + \zeta_3 \text{5DayReturnQ5} \\ & + \zeta_4 \text{Pre5DayReturnRest} + \zeta_5 \text{Pre5DayReturnQ1} + \zeta_6 \text{Pre5DayReturnQ5} \\ & + \zeta_7 \text{MarketReturn} + \zeta_8 \text{MVE} + \zeta_9 \text{BTM} + \zeta_{10} \text{ReturnVolatility} \\ & + \text{Year Fixed Effects} + \text{Analyst Fixed Effects} + \varepsilon \end{aligned} \quad (5a)$$

$$\begin{aligned}\text{FutureReturn} = {} & k_0 + k_1 \text{5DayReturnRest} + k_2 \text{5DayReturnQ1} + k_3 \text{5DayReturnQ5} \\ & + k_4 \text{Pre5DayReturnRest} + k_5 \text{Pre5DayReturnQ1} + k_6 \text{Pre5DayReturnQ5} \\ & + k_7 \text{MarketReturn} + k_8 \text{MVE} + k_9 \text{BTM} + k_{10} \text{ReturnVolatility} \\ & + \text{Year Fixed Effects} + \text{Analyst Fixed Effects} + \varepsilon \end{aligned} \quad (5b)$$

where 5DayReturnRest is equal to 5DayReturn if 5DayReturn is not in an extreme momentum quintile, and is zero otherwise, 5DayReturnQ1 is equal to 5DayReturn if 5DayReturn is in the lowest quintile, and is zero otherwise, and 5DayReturnQ5 is equal to 5DayReturn if 5DayReturn is in the highest quintile, and is zero otherwise. Pre5DayReturnRest is equal to MomentumReturn minus 5DayReturn if 5DayReturn is not in an extreme momentum quintile, and is zero otherwise, Pre5DayReturnQ1 is equal to MomentumReturn minus 5DayReturn if 5DayReturn is in the lowest quintile, and is zero otherwise, and Pre5DayReturnQ5 is equal to MomentumReturn minus 5DayReturn if 5DayReturn is in the highest quintile, and is zero otherwise. All other variables are as previously defined. I include controls for the market return, size, book-to-market ratio, and six month return volatility and include year and analyst fixed effects.

I present results of jointly estimating equations (5a) and (5b) using SUR with robust standard errors clustered by firm in Table 12.

[Insert Table 12 here]

Columns (1), (2), and (3) are the same as previously defined. I find that target prices reflect an underestimate of the persistence of both five day returns over the rest of the revision period when two day returns are in the extreme quintiles. I also find that target prices underestimate the persistence of returns occurring over the rest of the momentum period. However, I find that target prices reflect the information in short window returns which are not extreme. In addition, react to short-term fluctuations in price more strongly than returns over the rest of the momentum period. I conclude that analysts appear to be affected by extreme changes in prices and their target prices fail to reflect extreme short-window changes in price.

C. Analyst Characteristics

Prior research finds that analyst characteristics have an effect on both the accuracy and market's response to analysts' earnings forecasts. Clement (1999) finds that experience, resources, and portfolio complexity affect analysts' earnings forecast accuracy while Gleason and Lee (2003) find that the market responds faster to analysts named 'All-Stars' by Institutional Investor magazine. In this section, I consider the effect of general experience, firm-specific experience, brokerage size (which proxies for resources), portfolio complexity, and All-Star rankings on how analysts use the information in momentum returns to generate target prices.

First, I examine the impact of analyst characteristics on analysts' use of the information in momentum returns by including these analyst characteristics as additional control variables. I include controls for general experience, firm-specific experience, brokerage size, portfolio complexity (Clement 1999), and whether the analyst was ranked as an 'All-Star' by Institutional Investor magazine (Gleason and Lee 2003). I estimate whether target prices reflect the information in momentum returns when controlling for analyst characteristics by jointly estimating regression equations (6a) and (6b):

$$\begin{aligned}\text{ForecastReturn} = {} & \eta_0 + \eta_1 \text{MomentumReturnRest} + \eta_2 \text{MomentumReturnQ1} \\ & + \eta_3 \text{MomentumReturnQ5} + \eta_4 \text{MarketReturn} + \eta_5 \text{MVE} + \eta_6 \text{BTM} \\ & + \eta_7 \text{ReturnVolatility} + \eta_8 \text{General Experience} + \eta_9 \text{Firm-Specific Experience} \\ & + \eta_{10} \text{Brokerage Size} + \eta_{11} \text{Complexity} + \eta_{12} \text{All-Star Analyst} \\ & + \text{Year Fixed Effects} + \varsigma \end{aligned} \quad (6a)$$

$$\begin{aligned}\text{FutureReturn} = \quad & g_0 + g_1\text{MomentumReturnRest} + g_2\text{MomentumReturnQ1} \\ & + g_3\text{MomentumReturnQ5} + g_4\text{MarketReturn} + g_5\text{MVE} + g_6\text{BTM} \\ & + g_7\text{ReturnVolatility} + g_8\text{General Experience} + g_9\text{Firm-Specific Experience} \\ & + g_{10}\text{Brokerage Size} + g_{11}\text{Complexity} + g_{12}\text{All-Star Analyst} \\ & + \text{Year Fixed Effects} + s \qquad (6b)\end{aligned}$$

where General Experience is the number of years through the year of the target price announcement date for which the analyst has supplied at least one target price for any firm, Firm-Specific Experience is the number years through the year of the target price announcement date for which the analyst has supplied at least one target price for firm i, Brokerage Size is dummy variable which equals 1 if the analyst is employed by a firm in the top size decile during the year of the target price announcement, where size deciles are calculated based on the number of analysts issuing target prices in a calendar year, Complexity is the number of firms for which the analyst has supplied at least one target price in the year of the target price announcement, and All-Star Analyst is a dummy variable which equals 1 if the analyst is listed as a first-team 'All-Star' analyst by Institutional Investor in the year of the target price announcement. All other variables are as previously defined. I include controls for the market return, size, book-to-market ratio, return volatility, and include year fixed effects. However, because I now include analyst characteristics, some of which are measured at the analyst-year, I no longer include analyst fixed effects.

I present results of jointly estimating equations (6a) and (6b) using SUR with robust standard errors clustered by firm in Table 13.

[Insert Table 13 here]

Columns (1), (2), and (3) are the same as previously defined. After controlling for analyst characteristics such as experience, resources, portfolio complexity, and whether they were listed as an 'All-Star' by Institutional Investor, I find that target prices fail to reflect the information in momentum returns. Further, I find that target prices systematically reflect an underestimate of the persistence of momentum returns regardless of magnitude.

It is possible that analyst characteristics could have a direct effect on how analysts incorporate the information in momentum returns into their target prices. As such, next I examine whether analysts with greater experience, resources, portfolio complexity, or who are listed as an 'All-Star' by Institutional Investor incorporate the information in momentum returns differently, relative to other analysts. I separate target prices into subsamples based on each of these different characteristics and include all of the other characteristics as controls in each set of regressions.

First, I split target prices into subsamples based on general experience forecasting target prices. As analysts forecast target prices over successive years, they gain experience in the target price forecasting process and observe patterns that occur in stock market, such as momentum. Thus, it is possible that analysts with greater general experience will be better able to use the information in momentum returns in their target prices. To do so, I split my sample of target prices based on the analyst's General Experience relative to median General Experience in the calendar year of the target price announcement. I present results of jointly estimating equations (6a) and (6b) using SUR with standard errors clustered by firm for analysts with high General

Experience in Table 14, Panel A and for analysts with low General Experience in Table 14, Panel B.

[Insert Table 14 here]

I exclude General Experience as a control variable from the regressions since my subsample classifications are based on General Experience. In addition, I exclude analyst fixed effects because I include analyst characteristics that are specific to an analyst-year. For both analysts with high general experience and analysts with low general experience, I find that target prices fail to reflect the information in momentum returns. Specifically, and consistent with my main empirical results, I find that target prices reflect an underestimate in the persistence of momentum returns regardless of magnitude.

Next, I split target prices into subsamples based on experience forecasting target prices for a specific firm. As analysts continue to forecast target prices for a specific firm, they should gain experience with details about the firm's operations and how the firm's stock price moves over time. I split my sample of target prices based on an analyst's Firm-Specific Experience relative to median Firm-Specific Experience in the calendar year of the target price announcement. I present results of jointly estimating equations (6a) and (6b) using SUR with standard errors clustered by firm for analyst-firms with high Firm-Specific Experience in Table 15, Panel A and for analyst-firms with low Firm-Specific Experience in Table 15, Panel B.

[Insert Table 15 here]

Note that I exclude Firm-Specific Experience as a control variable from the regressions since my subsample classifications are based on Firm-Specific Experience. In addition, I exclude analyst fixed effects because I include analyst characteristics that are specific to an analyst-year. For both the high Firm-Specific Experience subsample and the low Firm-Specific

Experience subsample, I find that target prices fail to reflect the information in momentum returns. Specifically, and consistent with my main empirical results, I find that target prices reflect an underestimate in the persistence of momentum returns regardless of magnitude.

Since an analyst has a limited amount of time at their disposal, a greater number of firms in their research portfolio means that they will be able to dedicate less time to each individual firm. However, having a larger research portfolio may also result in the analyst gaining better knowledge regarding industry and market-wide trends. As such, it is unclear how complexity will affect how target prices reflect the information in momentum returns. I split my sample of target prices based on an analyst's Complexity relative to median Complexity in the calendar year of the target price announcement. I present results of jointly estimating equations (6a) and (6b) using SUR with standard errors clustered by firm for analysts with high Complexity in Table 16, Panel A and for analysts with high Complexity in Table 16, Panel B.

[Insert Table 16 here]

I exclude Complexity as a control variable from the regressions since my subsample classifications are based on Firm-Specific Experience. In addition, I exclude analyst fixed effects because I include analyst characteristics that are specific to an analyst-year. For both the high Complexity subsample and the low Complexity subsample, I find that target prices fail to reflect the information in momentum returns. Specifically, and consistent with my main empirical results, I find that target prices reflect an underestimate in the persistence of momentum returns regardless of magnitude.

Analysts require a significant amount of resources in order to effectively forecast target prices. Such resources include research assistants, sophisticated technology, and access to expensive data. Analysts associated with the very largest brokerage firms will have access to the

most resources and thus may be best able to forecast target prices which reflect a complex market dynamic such as momentum. Since Brokerage Size is already a binary variable based on the relative size of the analyst's brokerage in a calendar year, I split my sample based on whether Brokerage Size is equal to one or zero. I present results of jointly estimating equations (6a) and (6b) using SUR with standard errors clustered by firm for analysts with large Brokerage Size in Table 17, Panel A and for analysts with small Brokerage Size in Table 17, Panel B.

[Insert Table 17 here]

Since my subsample classifications are based on Brokerage Size, I exclude Brokerage Size as a control variable from the regressions. In addition, I exclude analyst fixed effects because I include analyst characteristics that are specific to an analyst-year. For both the large Brokerage Size subsample and the small Brokerage Size subsample, I find that target prices fail to reflect the information in momentum returns. Specifically, and consistent with my main empirical results, I find that target prices reflect an underestimate in the persistence of momentum returns regardless of magnitude.

Next, I split target prices into subsamples based on whether the analyst was listed in the Institutional Investor 'All-Star' rankings in the year in of the target price announcement. Prior studies have shown that analysts listed in the 'All-Star' rankings have better career outcomes and that the market responds to their earnings forecast revisions more quickly (Gleason and Lee, 2003). However, it is important to note that, in each year, Institutional Investor not only produces a list of First-Team 'All-Stars', but also Second-Team, Third-Team, and Runners-Up.

It is unclear how these classifications affect analysts' target prices, so I classify analysts as 'All-Stars' in three ways.

First, I classify analysts as 'All-Star' if they are included as part of the First-Team 'All-Star' ranking in the year of the target price announcement (AllStar1). I present results of jointly estimating equations (6a) and (6b) using SUR with standard errors clustered by firm for these First-Team All-Stars in Table 18, Panel A and for analysts who are not First-Team All-Stars in Table 18, Panel B.

[Insert Table 18 here]

Note that I exclude AllStar as a control variable from the regressions since my subsample classifications are based on AllStar. In addition, I exclude analyst fixed effects because I include analyst characteristics that are specific to an analyst-year. For analysts who are listed in the First-Team 'All-Star' ranking by Institutional Investor in the target price announcement year, I find that target prices reflect the information in momentum returns in the bottom quintile. However, I find that target prices fail to reflect the information in momentum returns when momentum returns are in the second through fifth quintile. Further, I find that analysts who are not listed in the First-Team 'All-Star' ranking by Institutional Investor in the target price announcement year fail to reflect the information in momentum returns regardless of magnitude. Accordingly, it appears that First-Team 'All-Stars' incorporate the information in momentum returns into their target prices when those target prices follow a period of very poor stock performance. This appears to be because these analysts do not raise their target prices as much, relative to the momentum returns, compared to other analysts.

Second, I classify analysts as 'All-Star' if they are included as part of the First-Team, Second-Team, or Third-Team 'All-Star' rankings in the year of the target price announcement

(AllStar2). I present results of jointly estimating equations (6a) and (6b) using SUR with standard errors clustered by firm for these All-Stars in Table 19, Panel A and for analysts who are not All-Stars in Table 19, Panel B.

[Insert Table 18 here]

Once again, I exclude AllStar as a control variable from the regressions since my subsample classifications are based on AllStar. In addition, I exclude analyst fixed effects because I include analyst characteristics that are specific to an analyst-year. For AllStar2 and non AllStar2 analysts, I find that target prices fail to reflect the information in momentum returns. Specifically, and consistent with my main empirical results, I find that target prices reflect an underestimate in the persistence of momentum returns regardless of magnitude. However, the difference between coefficients across the two models for momentum returns in the bottom quintile is only marginally significant. As such, analysts listed in the All-Star rankings appear to have some marginal ability to incorporate the information in momentum returns into their target prices compared to analysts not listed in the All-Star rankings.

Third, I classify analysts as 'All-Star' if they are included as part of the First-Team, Second-Team, Third-Team, or Runner-Up 'All-Star' rankings in the year of the target price announcement (AllStar3). I present results of jointly estimating equations (6a) and (6b) using SUR with standard errors clustered by firm for these All-Stars, including Runners-Up, in Table 19, Panel A and for analysts who are not All-Stars in Table 19, Panel B.

[Insert Table 18 here]

I exclude AllStar as a control variable from the regressions since my subsample classifications are based on AllStar. In addition, I exclude analyst fixed effects because I include

analyst characteristics that are specific to an analyst-year. For AllStar3 and non AllStar3 analysts, I find that target prices fail to reflect the information in momentum returns. Specifically, and consistent with my main empirical results, I find that target prices reflect an underestimate in the persistence of momentum returns regardless of magnitude.

In sum, it appears that the ability to incorporate the information in momentum returns into their target prices is limited to those analysts listed in the First-Team. However, it is also important to recall that no other analyst characteristic (general experience, firm-specific experience, resources, or complexity) captured the same effect of those analyst listed as First-Team 'All-Star' analysts by Institutional Investor. As such, some other characteristic of these analysts must be driving how they use of the information in momentum returns.

D. Separating Negative and Positive Momentum Returns

Because prior research (e.g., Hong et al. 2000, Chen 2003) document differences in the time-series patterns of negative and positive returns, in this section I separately examine target prices when momentum returns are positive and when momentum returns are negative. To do so, I assign target prices with negative or positive momentum returns into a negative or positive momentum return quintile based on the negative or positive momentum return distribution as of the target price announcement date.[15]

I examine whether target prices reflect the information in the most extreme positive momentum returns relative to more moderate positive momentum returns by jointly estimating regression equations regression equations (7a) and (7b):

[15] I include delisting firms when calculating the negative or positive momentum return distribution if the firm delists in the momentum return period.

$$\text{ForecastReturn} = \gamma_0 + \gamma_1\text{MomentumReturnPRest} + \gamma_2\text{MomentumReturnPQ5} + \gamma_3\text{MarketReturn} + \gamma_4\text{MVE} + \gamma_5\text{BTM} + \gamma_6\text{ReturnVolatility} + \text{Year Fixed Effects} + \text{Analyst Fixed Effects} + \upsilon \quad (7a)$$

$$\text{FutureReturn} = c_0 + c_1\text{MomentumReturnPRest} + c_2\text{MomentumReturnPQ5} + c_3\text{MarketReturn} + c_4\text{MVE} + c_5\text{BTM} + c_6\,\text{ReturnVolatility} + \text{Year Fixed Effects} + \text{Analyst Fixed Effects} + v \quad (7b)$$

where MomentumReturnPRest is equal to MomentumReturn if MomentumReturn is not in the fifth positive momentum return quintile, and is zero otherwise, and MomentumReturnPQ5 is equal to MomentumReturn if MomentumReturn is in the fifth positive momentum return quintile, and is zero otherwise. All other variables are as previously defined. I include controls for the market return, size, book-to-market ratio, return volatility, and include year and analyst fixed effects. If I cannot reject that $\gamma_2=c_2$, then target price revisions efficiently reflect the information in positive momentum returns that are not in the most extreme positive quintile and if I cannot reject that $\gamma_2=c_2$, then target prices reflect the information in the most extreme positive momentum returns. If the difference between γ_2 and c_2 is negative and significant then target prices reflect an underestimate of the persistence of the most extreme positive momentum returns. In the next section I describe my data and present empirical results. Alternatively, if the difference between γ_2 and c_2 is positive and significant then target prices reflect an overestimate

of the persistence of the most extreme positive momentum returns. I present results of jointly estimating equations (7a) and (7b) for all positive MomentumReturn target prices in Table 21.

[Insert Table 21 here]

I find that target prices fail to reflect the information in positive momentum returns regardless of the magnitude. Specifically, I find that target prices reflect an underestimate in the persistence of momentum returns. This is consistent with my main findings that analysts underestimate the persistence of all momentum returns.

Next, I examine how analysts use the information in extreme negative momentum returns, relative to other negative momentum returns by jointly estimating regression equations (8a) and (8b):

$$\begin{aligned}\text{ForecastReturn} = {} & \delta_0 + \delta_1\text{MomentumReturnNRest} + \delta_2\text{MomentumReturnNQ1} + \delta_3\text{MarketReturn} \\ & + \delta_4\text{MVE} + \delta_5\text{BTM} + \delta_6\text{ReturnVolatility} + \text{Year Fixed Effects} \\ & + \text{Analyst Fixed Effects} + \omega \end{aligned} \quad (8a)$$

$$\begin{aligned}\text{FutureReturn} = {} & d_0 + d_1\text{MomentumReturnNRest} + d_2\text{MomentumReturnNQ1} + d_3\text{MarketReturn} \\ & + d_4\text{MVE} + d_5\text{BTM} + d_6\text{ReturnVolatility} + \text{Year Fixed Effects} \\ & + \text{Analyst Fixed Effects} + z \end{aligned} \quad (8b)$$

where MomentumReturnNRest is equal to MomentumReturn if MomentumReturn is not in the first negative momentum return quintile, and is zero otherwise, and RPReturnRest is equal to MomentumReturn if MomentumReturn is in the first negative momentum return quintile, and is zero otherwise I include controls for the market return, size, book-to-market ratio, return volatility, and include year and analyst fixed effects. All other variables are as previously

defined. If I cannot reject that $\delta_1=d_1$, then target price revisions efficiently reflect the information in momentum returns that are not in the most extreme negative quintile, and if I cannot reject that $\delta_2=d_2$, then target price revisions efficiently reflect the information in the most extreme negative momentum returns. Recall that prior research (e.g., Jegadeesh 1990) finds that the most extreme returns persist. If the difference between δ_1 and d_1 is negative and significant then target price revisions reflect an underestimate of the persistence of the most extreme negative revision period returns. Alternatively, if the difference between δ_2 and d_2 is positive and significant then target price revisions reflect an overestimate of the persistence of the most extreme negative revision period returns. I present results of jointly estimating equations (8a) and (8b) using SUR with robust standard errors clustered by firm for all negative Momentum Return target prices in Table 22.

[Insert Table 22]

I find that target prices fail to reflect the information in negative momentum returns regardless of magnitude. Specifically, I find that target prices reflect an underestimate of the persistence of negative momentum returns both when momentum returns are extreme and when momentum returns are not extreme.

E. Alternative Methods for Handling Delisting

Firms delist from major stock exchanges for a variety of reasons. Often firms delist because of mergers or acquisitions, but sometimes the delisting occurs due to bankruptcy, failing to meet financial or disclosure requirements set by the stock exchanges in question, or by moving to a private exchange. Since whether a firm will delist is unknown to both analysts and to investors as of the target price announcement date, it is important to consider the effect of delisting returns when calculating momentum quintiles and when calculating future returns. In

my main analysis I follow Beaver et al. (2007) and documentation available through the Wharton Data Research Services website and compound the daily return available from CRSP with the delisting return on the delisting date and assume the proceeds are invested in a value-weighted market portfolio for the remainder of the returns period. If a delisting return is missing, I follow Beaver et al. (2007) and replace the missing delisting return with the average delisting return within its delisting code. However, there are alternative ways to replace the missing delisting return. Shumway and Warther (1999) suggest using -30 percent, which is the median delisting return for all firms delisted due to poor performance. Other papers such as Sloan (1999) use -100 percent, assuming that investors lose their whole investment when firms delist. As such, in this section I use alternative methods to deal with delistings to see whether these alternative research design choices affect my results.

First, I use the method suggested by Shumway and Warther (1999) and replace missing delisting returns with -30 percent and compound this amount with the CRSP daily return available on the delisting date. I then assume all proceeds are invested in a value-weighted market portfolio for the remainder of the returns window. I refer to this delisting method as Alternative Delisting Method 1. I generate MomentumReturn, MomentumReturn quintiles, and Future Return based on this method and present results of jointly estimating equations (1a) and (1b) using SUR with standard errors clustered by firm in Table 23:

[Insert Table 23 here]

When using Alternative Delisting Method 1 some coefficient estimates change, but the key results from my main analysis otherwise remain unchanged. I find that target prices do not reflect the information in momentum returns regardless of the magnitude of the momentum

returns. Specifically, I find that target prices reflect an underestimate of the persistence of momentum returns.

Next, I use the method employed by papers such as Sloan (1996) and replace missing delisting returns with -100 percent and compound this amount with the CRSP daily return available on the delisting date. I then assume all proceeds are invested in a value-weighted market portfolio for the remainder of the returns window. I refer to this delisting method as Alternative Delisting Method 2. I generate MomentumReturn, MomentumReturn quintiles, and FutureReturn based on this method and present results of jointly estimating equations (1a) and (1b) using SUR with standard errors clustered by firm in Table 24:

[Insert Table 24 here]

When using Alternative Delisting Method 2 some coefficient estimates change, but the key results from my main analysis otherwise remain unchanged. I find that target prices do not reflect the information in momentum returns regardless of the magnitude of the momentum returns. Specifically, I find that target prices reflect an underestimate of the persistence of momentum returns.

Next, I change the assumption about what occurs on the delisting day. I first use the same method as in my main analysis to replace missing delisting returns, but replace any extant daily CRSP return with the delisting return on the delisting date. I then assume all proceeds are invested in a value-weighted market portfolio for the remainder of the returns window. I refer to this delisting method as Alternative Delisting Method 3. I generate MomentumReturn, MomentumReturn quintiles, and FutureReturn based on this method and present results of jointly estimating equations (1a) and (1b) using SUR with standard errors clustered by firm in Table 25:

[Insert Table 25 here]

When using Alternative Delisting Method 3 the key results from my main analysis remain unchanged. I find that target prices do not reflect the information in momentum returns regardless of the magnitude of the momentum returns. Specifically, I find that target prices reflect an underestimate of the persistence of momentum returns.

I next follow Shumway and Warther (1999) and replace missing delisting returns with -30 percent and replace any extant daily CRSP return with the delisting return on the delisting date. I then assume all proceeds are invested in a value-weighted market portfolio for the remainder of the returns window. I refer to this delisting method as Alternative Delisting Method 4. I generate MomentumReturn, MomentumReturn quintiles, and FutureReturn based on this method and present results of jointly estimating equations (1a) and (1b) using SUR with standard errors clustered by firm in Table 26:

[Insert Table 26 here]

Once again, when using Alternative Delisting Method 4 the key results from my main analysis otherwise remain unchanged even though some regression coefficients change slightly. I find that target prices do not reflect the information in momentum returns regardless of the magnitude of the momentum returns. Specifically, I find that target prices reflect an underestimate of the persistence of momentum returns.

I also use the method used by papers such as Sloan (1996) and replace missing delisting returns with -30 percent and replace any extant daily CRSP return with the delisting return on the delisting date. I then assume all proceeds are invested in a value-weighted market portfolio for the remainder of the returns window. I refer to this delisting method as Alternative Delisting Method 5. I generate MomentumReturn, MomentumReturn quintiles, and FutureReturn based

on this method and present results of jointly estimating equations (1a) and (1b) using SUR with standard errors clustered by firm in Table 27:

[Insert Table 27 here]

When using Alternative Delisting Method 5 the key results from my main analysis otherwise remain unchanged even though some regression coefficients change slightly. I find that target prices do not reflect the information in momentum returns regardless of the magnitude of the momentum returns. Specifically, I find that target prices reflect an underestimate of the persistence of momentum returns.

Finally, I test the influence of delisting firms on my findings by eliminating all delisting firms from my analysis. I generate MomentumReturn, MomentumReturn quintiles, and FutureReturn based on this method and present results of jointly estimating equations (1a) and (1b) using SUR with standard errors clustered by firm in Table 28.

[Insert Table 28 here]

When eliminating all delisting firms from my analysis, my results remain mostly unchanged. I find that target prices do not reflect the information in momentum returns when momentum returns are moderate or in the highest quintile. However, I find that target prices reflect the information of momentum returns when momentum returns are in the lowest quintile. This could indicate that analysts are able to incorporate the time series of properties of returns into their target prices only when the firm continues to remain being a going concern after a period of very poor stock price performance. However, because this method introduces a survivorship bias into my analysis, one should interpret these results only with great caution.

F. Controlling for Other Financial Information

It has been suggested that other financial information could affect both target prices and the information in momentum returns. In this section, I additionally control for net income, accruals, leverage, research and development expenses, and dividends.

I examine whether target prices reflect the information in momentum returns while controlling for other financial information by estimating regression equations (9a) and (9b):

$$\begin{aligned}\text{ForecastReturn} = {} & \chi_0 + \chi_1\text{MomentumReturnRest} + \chi_2\text{MomentumReturnQ1} \\ & + \chi_3\text{MomentumReturnQ5} + \chi_4\text{MarketReturn} + \chi_5\text{MVE} + \chi_6\text{BTM} \\ & + \chi_7\text{ReturnVolatility} + \chi_8\text{Accruals} + \chi_9\text{Income} + \chi_{10}\text{Loss} + \chi_{11}\text{Leverage} \\ & + \chi_{12}\text{RD} + \chi_{13}\text{Dividends} + \text{Year Fixed Effects} + \text{Analyst Fixed Effects} + \pi \quad (9a)\end{aligned}$$

$$\begin{aligned}\text{FutureReturn} = {} & m_0 + m_1\text{MomentumReturnRest} + m_2\text{MomentumReturnQ1} \\ & + m_3\text{MomentumReturnQ5} + m_4\text{MarketReturn} + m_5\text{MVE} + m_6\text{BTM} \\ & + m_7\text{ReturnVolatility} + m_8\text{Accruals} + m_9\text{Income} + m_{10}\text{Loss} + m_{11}\text{Leverage} \\ & + m_{12}\text{RD} + m_{13}\text{Dividends} + \text{Year Fixed Effects} \\ & + \text{Analyst Fixed Effects} + p \quad (9b)\end{aligned}$$

where Accruals is equal to Income (Compustat item OIADP) minus operating cash flows (Compustat item OANCF), Income is equal to operating income (Compustat item OIADP), Loss is an indicator variable equaling one if Income is less than zero, and zero otherwise, Leverage is equal to long-term debt (Compustat item DLTT) plus current debt (Compustat item DLC) divided by the sum of long-term debt, current debt, and the market value of equity (Compustat item CSHO times Compustat item PRCC_F). RD is equal to research and development expenses

(Compustat item XRD), if XRD is missing in Compustat then I set RD equal to zero, and Dividends are equal to dividends paid (Compustat item DVC). I also include controls for the market return, size, book-to-market ratio, return volatility, and include year and analyst fixed effects. All other variables are as previously defined. I present results of estimating equations (9a) and (9b) using SUR with robust standard errors clustered by firm in Table 29.

[Insert Table 29 here]

I find that my main results remain unchanged with the addition of control variables for other financial statement information.

Next, I examine whether target prices reflect the information in momentum returns while controlling for both other financial information and analyst characteristics by estimating regression equations (9a) and (9b):

$$\begin{aligned}\text{ForecastReturn} = {} & \psi_0 + \psi_1\text{MomentumReturnRest} + \psi_2\text{MomentumReturnQ1} \\ & + \psi_3\text{MomentumReturnQ5} + \psi_4\text{MarketReturn} + \psi_5\text{MVE} + \psi_6\text{BTM} \\ & + \psi_7\text{ReturnVolatility} + \psi_8\text{Accruals} + \psi_9\text{Income} + \psi_{10}\text{Loss} + \psi_{11}\text{Leverage} \\ & + \psi_{12}\text{RD} + \psi_{13}\text{Dividends} + \psi_{14}\text{General Experience} \\ & + \psi_{15}\text{Firm-Specific Experience} + \psi_{16}\text{Brokerage Size} + \psi_{17}\text{Complexity} \\ & + \psi_{18}\text{All-Star Analyst} + \text{Year Fixed Effects} + \tau \qquad (10a)\end{aligned}$$

$$\begin{aligned}\text{FutureReturn} = {} & v_0 + v_1\text{MomentumReturnRest} + v_2\text{MomentumReturnQ1} \\ & + v_3\text{MomentumReturnQ5} + v_4\text{MarketReturn} + v_5\text{MVE} + v_6\text{BTM} \\ & + v_7\text{ReturnVolatility} + v_8\text{Accruals} + v_9\text{Income} + v_{10}\text{Loss} + v_{11}\text{Leverage} \\ & + v_{12}\text{RD} + v_{13}\text{Dividends} + v_{14}\text{General Experience} \\ & + v_{15}\text{Firm-Specific Experience} + v_{16}\text{Brokerage Size} + v_{17}\text{Complexity} \\ & + v_{18}\text{All-Star Analyst} + \text{Year Fixed Effects} + q \qquad (10b)\end{aligned}$$

In addition to the controls for other financial statement information and for analyst characteristics, I also include controls for the market return, size, book-to-market ratio, return volatility, and include year fixed effects. Note that I exclude analyst fixed effects because I now include analyst characteristics that are analyst-year specific. All variables are as previously defined. I present results of estimating equations (10a) and (10b) using SUR with robust standard errors clustered by firm in Table 30.

[Insert Table 30 here]

My main findings remain unchanged when including controls for other financial statement information and analyst characteristics. Specifically, I find that target prices reflect an underestimate of the persistence of momentum returns regardless of the magnitude of momentum returns.

G. Following Mishkin (1983) Type Methodology

In my previous analyses I use Seemingly Unrelated Regression to jointly estimate 1) how target prices are related to momentum returns and 2) how future returns are related to momentum returns. This is similar in concept to the framework developed by Mishkin (1983) to test efficient markets models and which is used by Sloan (1996) to test whether the market

understands the time-series properties of accruals. In this section, I use a Mishkin (1983) type methodology to test whether analysts use the information in momentum returns to set their target prices.

I first have the future returns equation (11a):

$$\text{FutureReturn} = \delta_0 + \delta_1\text{MomentumReturn} + \delta_2\text{MomentumReturnQ1} + \delta_1\text{MomentumReturnQ5} + \upsilon \quad (11a)$$

All variables are as previously defined. δ_1 reflects how momentum returns are related to future returns. If there is momentum, δ will be greater than zero.

Next I have the analyst response equation (11b):

$$\text{ForecastReturn} = (\text{FutureReturn} - \delta_0 - \beta_1^*\text{MomentumReturnRest} - \beta_2^*\text{MomentumReturnQ1} - \beta_3^*\text{MomentumReturnQ5}) + \upsilon \quad (11b)$$

If analysts' target prices reflect the information in momentum returns, then $\delta_1=\beta_1^*$, $\delta_2=\beta_2^*$, and $\delta_2=\beta_3^*$. I estimate (11a) and (11b) using iterative weighted non-linear least squares and test whether $\delta_1=\beta_1^*$ using a likelihood ratio statistic. I present results of following this Mishkin (1983) type methodology in Table 31:

[Insert Table 31 here]

I find that my main results remain unchanged when adopting a Mishkin (1983) type methodology. I find that target prices reflect a systematic underestimate of the persistence of momentum returns regardless of the magnitude of momentum returns.

VI. CONCLUSION

Market participants value the information in target prices and use target prices to make investment decisions. Prior research (e.g., Jegadeesh and Titman 1993) document a momentum

effect in returns. In this paper, I study whether analysts understand momentum by examining whether target prices reflect the information in momentum returns.

I find that target prices do not reflect the information in momentum returns. Instead, target prices represent a systematic underestimate of the persistence of momentum returns. When examining target price revisions, I find that analysis overestimate the persistence of momentum returns when their previous target price is more accurate or when their previous target price is too low. When examining the effect of certain analyst characteristics such as experience, resources, portfolio complexity, and whether the analyst was listed on the Institutional Investor 'All-Star' list, I find that First-Team 'All-Stars' incorporate the information in momentum returns into their target prices when these target prices follow a period of very poor stock performance. Finally, my results are robust to different ways of accounting for delisting firms, to classifying momentum returns according to negative or positive momentum return quintile, to the inclusion of financial statement variables such as income, accruals, leverage, research and development expenses, and dividends.

My paper should be of interest to academic researchers and market participants interested in whether analysts understand the momentum effect. My paper should also be of interest to those interested in the value of target prices and cases in which target prices are valuable to market participants for making investment decisions. I find that the implied return in target price revisions becomes too optimistic following extreme negative revision period returns and too pessimistic following extreme positive revision period returns. Accordingly, target price revisions reflect a systematic underestimate of the persistence of extreme positive and negative revision period returns. However, I find that target prices produced by All Star analysts reflect the information of momentum returns for firms that have very poor stock performance. Thus I

conclude that All-Star analysts produce target prices which are useful for market participants to better understand the time-series patterns in returns when target prices follow a period of very poor stock performance.

References

Abarbanell, J. 1991. Do analysts' earnings forecasts incorporate the information in prior stock price changes? Journal of Accounting and Economics 14: 147-165.

Abarbanell, J. and Bernard, V. 1992. Tests of analysts' overreaction/underreaction to earnings information as an explanation for anomalous stock price behavior. Journal of Finance 47: 1181-1207.

Armstrong, C., Blouin, J., and Larcker, D. 2012. The incentives for tax planning. Journal of Accounting and Economics 53: 391-411.

Asquith, P., Mikhail, M., and Au, A. 2005. Information content of equity analyst reports. Journal of Financial Economics 75: 245-282.

Beaver, W., McNichols, M., and Price, R. 2007. Delisting returns and their effect on accounting-based market anomalies. Journal of Accounting and Economics 43: 241-368.

Bonini, S., Zanetti, L., Bianchini, R., and Salvi, A. 2010. Target price accuracy in equity research. Journal of Business Finance and Accounting 37: 1177-1217.

Bradshaw, M. 2002. The use of target prices to justify sell-sides analysts' stock recommendations. Accounting Horizons 16: 27-41.

Bradshaw, M., Brown, L., and Huang, K. 2013. Do sell-side analysts exhibit differential target price forecasting ability? Review of Accounting Studies 18: 930-955.

Bradshaw, M., Drake, M., Myers, J., and Myers, L. 2012. A re-examination of analysts' superiority over time-series forecasts of annual earnings. Review of Accounting Studies 17: 944-968.

Bradshaw, M., Richardson, S., and Sloan, R. 2001. Do analysts and auditors use information in accruals? Journal of Accounting Research 39: 45-74.

Brav, A. and Lehavy, R. 2003. An empirical analysis of analysts' target prices: short-term informativeness and long-term dynamics. Journal of Finance 58: 1933-1967.

Business Insider. 2014. Tesla analyst predicts the sentiment 'freight train' will send shares up another 50%. Available at http://www.businessinsider.com/stifel-tesla-400-price-target-2014-9/

Chan, W. 2003. Stock price reaction to news and no-news: drift and reversal after headlines. Journal of Financial Economics 70: 223-260.

Clement, M. 1999. Analyst forecast accuracy: Do ability, resources, and portfolio complexity matter? Journal of Accounting and Ecnomics 27: 285-303.

Cochran, W. and Cox, G. 1950. Experimental designs. New York: Wiley, 1950.

De Bondt, W. and Thaler, R. 1985. Does the stock market overreact? Journal of Finance 40: 793-805.

De Bondt, W. and Thaler, R. 1990. Do security analysts overreact? American Economic Review 80: 52-57.

Easton, P. and Harris, T. 1991. Earnings as an explanatory variable for returns. Journal of Accounting Research 29: 19-36.

Fama, E. and French, K. 1993. Common risk factors in the returns on stocks and bonds. Journal of Financial Economics 33: 3-56.

Gleason, C., Johnson, W., and Li, H. 2013. Valuation model use and the price target performance of sell-side equity analysts. Contemporary Accounting Research 30: 80-115.

Gleason, C. and Lee, C. 2003. Analyst forecast revisions and market price discovery. The Accounting Review 78: 193-225.

Hong, H., Lim, T., and Stein, J. 2000. Bad news travels slowly: size, analyst coverage, and the profitability of momentum strategies. Journal of Finance 55: 265-295.

Jegadeesh, N. 1990. Evidence of predictable behavior of security returns. Journal of Finance 45: 881-898.

Jegadeesh, N. and Titman, S. 1993. Returns to buying winners and selling losers: implications for stock market efficiency. Journal of Finance 48: 65-91.

Jegadeesh, N. and Titman, S. 1995. Overreaction, delayed reaction, and contrarian profits. Review of Financial Studies 8: 973-993.

Klein, A. 1990. A direct test of the cognitive bias theory of share price reversals. Journal of Accounting and Economics 13: 155-166.

Mikhail, M., Walther, B., and Willis, R. 2007. When security analysts talk, who listens? The Accounting Review 82: 1227-1253.

Mishkin, F. 1983. A rational expectations approach to Macroeconometrics: Testing Policy Effectiveness and Efficient Markets Models. Chicago, IL: University of Chicago Press for the National Bureau of Economic Research.

Petersen, M. 2009. Estimating standard errors in finance panel data sets: comparing approaches. Review of Financial Studies 22: 435-480.

Piotroski, J. and Roulstone, D. 2004. The influence of analysts, institutional investors, and insiders on the incorporation of market, industry, and firm-specific information into stock prices. The Accounting Review 79: 1119-1151.

Rich, B. 2013. Five stocks analysts see tripling in price. Available at: http://www.forbes.com/sites/greatspeculations/2013/10/08/five-stocks-analysts-see-tripling-in-price/

Shumway, T. and Warther, V. 1999. The delisting bias in CRSP's Nasdaq data and its implications for the size effect. Journal of Finance 54: 2361-2389.

Skinner, D. and Sloan, R. 2002. Earnings surprises, growth expectations, and stock returns or don't let an earnings torpedo sink your portfolio. Review of Accounting Studies 7: 289-312.

Sloan, R. 1996. Do stock prices fully reflect information in accruals and cash flows about future earnings? The Accounting Review 289-315.

Table 1
Sample Selection

All I/B/E/S target prices issued between January 2004 and December 2013	897,560
Less: Target prices without 12-month forecast horizon	(15,867)
Less: Observations with missing CRSP data	(122,046)
Less: Observations with a stock price of less than $1	(1,266)
Less: Observations with a target price of less than $1	(255)
Less: Missing data from Compustat for controls	(9,477)
Less: Observations with either implied return ratios in bottom one percent of distribution or larger than four (Following Bradshaw et al., 2013)	(14,972)
Final Sample	733,677

Table 2
Descriptive Statistics

Variable	N	Mean	Median	Lower Quartile	Upper Quartile	Std Dev
MomentumReturn	733,677	0.0905	0.0781	-0.1090	0.2467	0.3892
ForecastReturn	733,677	0.1951	0.1501	0.0535	0.2699	0.2530
FutureReturn	733,677	0.1347	0.1054	-0.1218	0.3327	0.4973
MarketReturn	733,677	0.0476	0.0710	-0.0070	0.1242	0.1406
MVE (in millions)	733,677	12.4982	2.7976	0.8983	9.7247	32.8412
BTM	733,677	0.5048	0.4206	0.2553	0.6544	0.5056
ReturnVolatility	733,677	0.0259	0.0222	0.0159	0.0312	0.0153

MomentumReturn is the momentum return, calculated as the buy-and-hold return of the common stock for the firm covered by the target price beginning six months (121 trading days) before the target price announcement date and ending one day before the target price announcement date. ForecastReturn is the target price as of the target price announcement date divided by stock price for the firm covered by the target price one day before the target price announcement date. FutureReturn is the twelve-month buy-and-hold return of the common stock for the firm covered by the target price beginning one day after the target price announcement date and ending twelve months (251 trading days) after the target price announcement date. MarketReturn is the value-weighted market return beginning six months (121 trading days) before the target price announcement and ending one day before the target price announcement date. MVE is the market value of equity. BTM is the book-to-market ratio. ReturnVolatility is the standard deviation of daily returns for the six months prior to the target price announcement.

Table 3

Panel A

Mean MomentumReturn, ForecastReturn, FutureReturn and Difference between ForecastReturn and FutureReturn by MomentumReturn Quintile

	1	2	3	4	5
MomentumReturn	-0.2986	-0.1010	0.0294	0.1569	0.4609
ForecastReturn	0.2907	0.2150	0.1743	0.1571	0.1653
FutureReturn	0.1262	0.1422	0.1442	0.1425	0.1219
Difference	0.1645***	0.0728***	0.0300***	0.0146***	0.0434***
P-Value	(<.0001)	(<.0001)	(<.0001)	(<.0001)	(<.0001)

Panel B

Univariate Tests of Differences in Difference between ForecastReturn and FutureReturn

Test of Differences in Quintile 1		**Test of Differences in Quintile 5**	
Quintile 1	0.1645	Quintile 5	0.0434
All other Quintiles	0.0402	All other Quintiles	0.0705
Difference:	0.1243***	Difference:	-0.0271***
P-Value	(<.0001)	P-Value	(<.0001)

MomentumReturn is the momentum return, calculated as the buy-and-hold return of the common stock for the firm covered by the target price beginning six months (121 trading days) before the target price announcement date and ending one day before the target price announcement date. ForecastReturn is the target price as of the target price announcement date divided by stock price for the firm covered by the target price one day before the target price announcement date. FutureReturn is the twelve-month buy-and-hold return of the common stock for the firm covered by the target price beginning one day after the target price announcement date and ending twelve months (251 trading days) after the target price announcement date. Difference is the difference between mean ForecastReturn and FutureReturn by MomentumReturn quintile. P-values for univariate tests are calculated using the Cochran and Cox (1950) approximation of the probability level assuming unequal variances. ***, **, and * represent statistical significance from zero at the 1 percent, 5 percent, and 10 percent levels, respectively.

Table 4
Do Analysts Understand Momentum?

	(1)	(2)	(3)
	DV: ForecastReturn	DV: FutureReturn	Difference
MomentumReturnRest	-0.1333***	0.0223	0.1556***
	(<.0001)	(0.1792)	(<.0001)
MomentumReturnQ1	-0.2619***	-0.1648***	-0.0971***
	(<.0001)	(<.0001)	(0.0002)
MomentumReturnQ5	-0.0458***	-0.0071	-0.0387***
	(<.0001)	(0.3676)	(<.0001)
MarketReturn	-0.0443***	-0.9012***	
	(<.0001)	(<.0001)	
MVE	-0.0037**	-0.0032	
	(0.0174)	(0.1118)	
BTM	0.0061	0.0511***	
	(0.2810)	(<.0001)	
ReturnVolatility	1.4846***	2.2291***	
	(<.0001)	(<.0001)	
Year Fixed Effects	Included	Included	
Analyst Fixed Effects	Included	Included	
Observations	733,677	733,677	
Adjusted R-Squared	0.0806	0.1526	
F-Value	333.16***	362.57***	

This table presents SUR results with robust standard errors clustered by firm. P-values are presented in parentheses. Column (1) contains regression results from the target price equation. Column (2) contains regression results from the future returns equation. Column (3) contains the difference between estimated coefficients of interest from the target price equation to the future returns equation and statistical significance is determined using a chi-square test. MomentumReturnRest is equal to the momentum return if the momentum return is in the second through fourth momentum return quintiles, and is zero otherwise. MomentumReturnQ1 is equal to the momentum return if the momentum return is in the first quintile, and is zero otherwise. MomentumReturnQ5 is equal to the momentum return if the momentum return is in the fifth quintile, and is zero otherwise. ForecastReturn is the target price as of the target price announcement date divided by stock price for the firm covered by the target price one day before the target price announcement date. FutureReturn is the twelve-month buy-and-hold return of the common stock for the firm covered by the target price beginning one day after the target price announcement date and ending twelve months (251 trading days) after the target price announcement date. MarketReturn is the value-weighted market return beginning six months (121 trading days) before the target price announcement and ending one day before the target price announcement date. MVE is the market value of equity. BTM is the book-to-market ratio. ReturnVolatility is the standard

deviation of daily returns for the six months prior to the target price announcement. ***, **, and * represent statistical significance from zero at the 1 percent, 5 percent, and 10 percent levels, respectively.

Table 5
Do Analysts Understand Momentum?
Examining Target Price Revisions

	(1)	(2)	(3)
	DV: ForecastReturn	DV: FutureReturn	Difference
MomentumReturnRest	-0.1308***	0.0232	-0.1540***
	(<.0001)	(0.1728)	(<.0001)
MomentumReturnQ1	-0.2658***	-0.1742***	-0.0916***
	(<.0001)	(<.0001)	(<.0001)
MomentumReturnQ5	-0.0444***	-0.0090	-0.0354***
	(<.0001)	(0.268)	(<.0001)
MarketReturn	-0.0575***	-0.9064***	
	(<.0001)	(<.0001)	
MVE	-0.0008	-0.0034	
	(0.6151)	(0.1043)	
BTM	0.0063	0.0485***	
	(0.2766)	(<.0001)	
ReturnVolatility	1.3859***	2.323***	
	(<.0001)	(<.0001)	
PreviousTPAccuracy	0.0000	0.0000***	
	(0.1997)	(<.0001)	
Year Fixed Effects	Included	Included	
Analyst Fixed Effects	Included	Included	
Observations	640,893	640,893	
Adjusted R-Squared	0.0852	0.1568	
F-Value	300.18***	323.18***	

This table presents SUR results with robust standard errors clustered by firm. P-values are presented in parentheses. Column (1) contains regression results from the target price equation. Column (2) contains regression results from the future returns equation. Column (3) contains the difference between estimated coefficients of interest from the target price equation to the future returns equation and statistical significance is determined using a chi-square test. MomentumReturnRest is equal to the momentum return if the momentum return is in the second through fourth momentum return quintiles, and is zero otherwise. MomentumReturnQ1 is equal to the momentum return if the momentum return is in the first quintile, and is zero otherwise. MomentumReturnQ5 is equal to the momentum return if the momentum return is in the fifth quintile, and is zero otherwise. ForecastReturn is the target price as of the target price announcement date divided by stock price for the firm covered by the target price one day before the target price announcement date. FutureReturn is the twelve-month buy-and-hold return of the common stock for the firm covered by the target price beginning one day after the target price announcement date and ending twelve months (251 trading days) after the target price announcement date. MarketReturn is the value-

weighted market return beginning six months (121 trading days) before the target price announcement and ending one day before the target price announcement date. MVE is the market value of equity. BTM is the book-to-market ratio. ReturnVolatility is the standard deviation of daily returns for the six months prior to the target price announcement. PreviousTPAccuracy is equal to the difference between price as of the target price announcement date and the analyst's most recent target price for that firm. ***, **, and * represent statistical significance from zero at the 1 percent, 5 percent, and 10 percent levels, respectively.

Table 6
Do Analysts Understand Momentum?
Examining Target Price Revisions

	Panel A – Prior Target Price Too High			Panel B – Prior Target Price Too Low		
	(1)	(2)	(3)	(1)	(2)	(3)
	DV: ForecastReturn	DV: FutureReturn	Difference	DV: ForecastReturn	DV: FutureReturn	Difference
MomentumReturnRest	-0.0794***	0.0661***	-0.1455***	0.0414***	-0.0727***	0.1141***
	(<.0001)	(0.001)	(<.0001)	(<.0001)	(<.0001)	(<.0001)
MomentumReturnQ1	-0.1970***	-0.1574***	-0.0396	0.0799***	-0.0757	0.1556***
	(<.0001)	(<.0001)	(0.1320)	(<.0001)	(0.1363)	(0.0023)
MomentumReturnQ5	-0.0147***	0.0078	-0.0225**	0.0252***	-0.0395***	0.0647***
	(0.0002)	(0.4263)	(0.0246)	(<.0001)	(<.0001)	(<.0001)
MarketReturn	-0.0453***	-1.0481***		0.0300***	-0.4656***	
	(<.0001)	(<.0001)		(<.0001)	(<.0001)	
MVE	-0.0042**	-0.0022		-0.0002	-0.0070***	
	(0.0173)	(0.3241)		(0.7224)	(0.0020)	
BTM	0.0064	0.0573***		0.0002	0.0290***	
	(0.3577)	(<.0001)		(0.9275)	(0.0052)	
Return Volatility	2.1185***	2.6579***		0.6806***	1.8355***	
	(<.0001)	(<.0001)		(<.0001)	(<.0001)	
Year Fixed Effects	Included	Included		Included	Included	
Analyst Fixed Effects	Included	Included		Included	Included	
Observations	467,341	467,341		172,605	172,605	
Adjusted R-Squared	0.0726	0.1653		0.0185	0.1502	
F-Value	185.96***	321.51***		32.61***	247.95***	

This table presents SUR results with robust standard errors clustered by firm. P-values are presented in parentheses. Column (1) contains regression results from the target price equation. Column (2) contains regression results from the future returns

equation. Column (3) contains the difference between estimated coefficients of interest from the target price equation to the future returns equation and statistical significance is determined using a chi-square test. MomentumReturnRest is equal to the momentum return if the momentum return is in the second through fourth momentum return quintiles, and is zero otherwise. MomentumReturnQ1 is equal to the momentum return if the momentum return is in the first quintile, and is zero otherwise. MomentumReturnQ5 is equal to the momentum return if the momentum return is in the fifth quintile, and is zero otherwise. ForecastReturn is the target price as of the target price announcement date divided by stock price for the firm covered by the target price one day before the target price announcement date. FutureReturn is the twelve-month buy-and-hold return of the common stock for the firm covered by the target price beginning one day after the target price announcement date and ending twelve months (251 trading days) after the target price announcement date. MarketReturn is the value-weighted market return beginning six months (121 trading days) before the target price announcement and ending one day before the target price announcement date. MVE is the market value of equity. BTM is the book-to-market ratio. ReturnVolatility is the standard deviation of daily returns for the six months prior to the target price announcement. ***, **, and * represent statistical significance from zero at the 1 percent, 5 percent, and 10 percent levels, respectively.

Table 7
Do Analysts Understand Momentum?
Examining Target Price Revisions

	Panel A - Low Prior TP Accuracy			**Panel B - High Prior TP Accuracy**		
	(1)	(2)	(3)	(1)	(2)	(3)
	DV: ForecastReturn	DV: FutureReturn	Difference	DV: ForecastReturn	DV: FutureReturn	Difference
MomentumReturnRest	-0.1679***	0.0243	-0.1922***	0.0255***	-0.0201	0.0456**
	(<.0001)	(0.2541)	(<.0001)	(<.0001)	(0.3229)	(0.0253)
MomentumReturnQ1	-0.3141***	-0.1837***	-0.1304***	-0.0514***	-0.2301***	0.1787***
	(<.0001)	(<.0001)	(<.0001)	(<.0001)	(<.0001)	(<.0001)
MomentumReturnQ5	-0.0943***	-0.0081	-0.0862***	0.0096***	-0.0243***	0.0339***
	(<.0001)	(0.4188)	(<.0001)	(<.0001)	(0.0047)	(0.0001)
MarketReturn	-0.0615***	-0.9582***		0.0010	-0.8518***	
	(<.0001)	(<.0001)		(0.8633)	(<.0001)	
MVE	-0.0055**	0.0030		-0.0101***	-0.0043*	
	(0.0273)	(0.2203)		(<.0001)	(0.0581)	
BTM	0.0370***	0.0523***		0.0067**	0.038***	
	(0.0006)	(0.0001)		(0.0211)	(0.0004)	
Return Volatility	1.9370***	2.0530***		1.0370***	2.5753***	
	(<.0001)	(<.0001)		(<.0001)	(<.0001)	
Year Fixed Effects	Included	Included		Included	Included	
Analyst Fixed Effects	Included	Included		Included	Included	
Observations	320,450	320,450		320,443	320,443	
Adjusted R-Squared	0.1296	0.1718		0.0346	0.1479	
F-Value	350.11***	252.08***		81.65***	292.24***	

This table presents SUR results with robust standard errors clustered by firm. P-values are presented in parentheses. Column (1) contains regression results from the target price equation. Column (2) contains regression results from the future returns

equation. Column (3) contains the difference between estimated coefficients of interest from the target price equation to the future returns equation and statistical significance is determined using a chi-square test. MomentumReturnRest is equal to the momentum return if the momentum return is in the second through fourth momentum return quintiles, and is zero otherwise. MomentumReturnQ1 is equal to the momentum return if the momentum return is in the first quintile, and is zero otherwise. MomentumReturnQ5 is equal to the momentum return if the momentum return is in the fifth quintile, and is zero otherwise. ForecastReturn is the target price as of the target price announcement date divided by stock price for the firm covered by the target price one day before the target price announcement date. FutureReturn is the twelve-month buy-and-hold return of the common stock for the firm covered by the target price beginning one day after the target price announcement date and ending twelve months (251 trading days) after the target price announcement date. MarketReturn is the value-weighted market return beginning six months (121 trading days) before the target price announcement and ending one day before the target price announcement date. MVE is the market value of equity. BTM is the book-to-market ratio. ReturnVolatility is the standard deviation of daily returns for the six months prior to the target price announcement. ***, **, and * represent statistical significance from zero at the 1 percent, 5 percent, and 10 percent levels, respectively.

Table 8

Panel A

Mean MomentumReturn, ChgForecastReturn, and ChgTargetPrice by Momentum Quintile

	1	2	3	4	5
MomentumReturn	-0.3038	-0.1045	0.0286	0.1587	0.4584
ChgForecastReturn	0.0350	0.0106	-0.0036	-0.0133	-0.0370
ChgTargetPrice	-0.1697	-0.0507	0.0143	0.0700	0.1594

Panel B

Univariate Tests of Differences in ChgForecastReturn in Extreme Quintiles

Test of Differences in Quintile 5		**Test of Differences in Quintile 5**	
Quintile 1	0.0350	Quintile 5	-0.0370
All other Quintiles	-0.0108	All other Quintiles	0.0072
Difference:	0.0458***	Difference:	-0.0442***
P-Value	(<.0001)	P-Value	(<.0001)

Panel C

Univariate Tests of Differences in ChgTargetPrice in Extreme Quintiles

Test of Differences in Quintile 5		**Test of Differences in Quintile 5**	
Quintile 1	-0.1697	Quintile 5	0.1594
All other Quintiles	0.0483	All other Quintiles	-0.0340
Difference:	-0.2180***	Difference:	0.1934***
P-Value	(<.0001)	P-Value	(<.0001)

MomentumReturn is the momentum return, calculated as the buy-and-hold return of the common stock for the firm covered by the target price beginning six months (121 trading days) before the target price announcement date and ending one day before the target price announcement date. ChgForecastReturn is the change in ForecastReturn from the previous target price to the revised target price. ChgTargetPrice is the change in Target Price from the previous target price to the revised target price, scaled by price as of one day before the previous target price. Difference is the difference between mean ForecastReturn and FutureReturn by MomentumReturn quintile. P-values for univariate tests are calculated using the Cochran and Cox (1950) approximation of the

probability level assuming unequal variances. ***, **, and * represent statistical significance from zero at the 1 percent, 5 percent, and 10 percent levels, respectively.

Table 9
Examining Target Price Revisions
Change in ForecastReturn

	DV: ChgForecastReturn
MomentumReturnRest	-0.0862***
	(<.0001)
MomentumReturnQ1	-0.1906***
	(<.0001)
MomentumReturnQ5	-0.0376***
	(<.0001)
MarketReturn	-0.0048
	(0.4444)
MVE	-0.0014***
	(<.0001)
BTM	-0.0111***
	(<.0001)
Return Volatility	-1.8653***
	(<.0001)
Previous TP Accuracy	0.0000
	(0.3952)
Year Fixed Effects	Included
Analyst Fixed Effects	Included
Observations	640,893
Adjusted R-Squared	0.0287
F-Value	165.83***

This table presents OLS results with robust standard errors clustered by firm. P-values are presented in parentheses. MomentumReturnRest is equal to the momentum return if the momentum return is in the second through fourth momentum return quintiles, and is zero otherwise. MomentumReturnQ1 is equal to the momentum return if the momentum return is in the first quintile, and is zero otherwise. MomentumReturnQ5 is equal to the momentum return if the momentum return is in the fifth quintile, and is zero otherwise. ChgForecastReturn is the change in ForecastReturn from the previous target price to the revised target price. MarketReturn is the value-weighted market return beginning six months (121 trading days) before the target price announcement and ending one day before the target price announcement date. MVE is the market value of equity. BTM is the book-to-market ratio. ReturnVolatility is the standard deviation of daily returns for the six months prior to the target price announcement. PreviousTPAccuracy is equal to the difference between price as of the target price announcement date and the analyst's most recent target price for that firm. ***, **, and * represent statistical significance from zero at the 1 percent, 5 percent, and 10 percent levels, respectively.

Table 10
Analysts' Efficient Use of Information in Returns
Change in Target Price

	DV: ChgTargetPrice
MomentumReturnRest	0.3952***
	(<.0001)
MomentumReturnQ1	0.6307***
	(<.0001)
MomentumReturnQ5	0.2226***
	(<.0001)
MarketReturn	0.0809***
	(<.0001)
MVE	0.0003
	(0.697)
BTM	0.0047*
	(0.0456)
Return Volatility	1.3147***
	(<.0001)
Previous TP Accuracy	0.0000**
	(0.0243)
Year Fixed Effects	Included
Analyst Fixed Effects	Included
Observations	640893
Adjusted R-Squared	0.279
F-Value	1843.35***

This table presents OLS results with robust standard errors clustered by firm. P-values are presented in parentheses. MomentumReturnRest is equal to the momentum return if the momentum return is in the second through fourth momentum return quintiles, and is zero otherwise. MomentumReturnQ1 is equal to the momentum return if the momentum return is in the first quintile, and is zero otherwise. MomentumReturnQ5 is equal to the momentum return if the momentum return is in the fifth quintile, and is zero otherwise. ChgTargetPrice is the change in Target Price from the previous target price to the revised target price, scaled by price as of one day before the previous target price. MarketReturn is the value-weighted market return beginning six months (121 trading days) before the target price announcement and ending one day before the target price announcement date. MVE is the market value of equity. BTM is the book-to-market ratio. ReturnVolatility is the standard deviation of daily returns for the six months prior to the target price announcement. PreviousTPAccuracy is equal to the difference between price as of the target price announcement date and the analyst's most recent target price for that firm. ***, **, and * represent statistical significance from zero at the 1 percent, 5 percent, and 10 percent levels, respectively.

Table 11

Panel A

Mean ForecastReturn and FutureReturn by 5DayReturn Quintiles

	5DayReturn Quintiles				
	1	2	3	4	5
ForecastReturn	0.2513	0.1948	0.1751	0.1683	0.1848
FutureReturn	0.1212	0.1419	0.1430	0.1382	0.1320
Difference	0.1301***	0.0529***	0.0321***	0.0301***	0.0527***
P-Value	(<.0001)	(<.0001)	(<.0001)	(<.0001)	(<.0001)

Panel B

Univariate Tests of Differences in Difference Between ForecastReturn and FutureReturn

Test of Differences in Quintile 1		Test of Differences in Quintile 5	
Quintile 1	0.1301	Quintile 5	0.0527
All other Quintiles	0.0420	All other Quintiles	0.0613
Difference:	0.0881***	Difference:	-0.0086***
P-Value	(<.0001)	P-Value	(<.0001)

5DayReturn is the buy-and-hold returns for the five trading days immediately preceding the target price announcement. ForecastReturn is the target price as of the target price announcement date divided by stock price for the firm covered by the target price one day before the target price announcement date. FutureReturn is the twelve-month buy-and-hold return of the common stock for the firm covered by the target price beginning one day after the target price announcement date and ending twelve months (251 trading days) after the target price announcement date. Difference is the difference between mean ForecastReturn and FutureReturn by MomentumReturn quintile. P-values for univariate tests are calculated using the Cochran and Cox (1950) approximation of the probability level assuming unequal variances. ***, **, and * represent statistical significance from zero at the 1 percent, 5 percent, and 10 percent levels, respectively.

Table 12
Examining Short-Window Returns

	(1)	(2)	(3)
	DV: ForecastReturn	DV: FutureReturn	Difference
5DayReturnRest	-0.4840***	-0.5553***	-0.0713
	(<.0001)	(<.0001)	(0.2073)
5DayReturnQ1	-0.4641***	-0.1911***	-0.2730***
	(<.0001)	(<.0001)	(<.0001)
5DayReturnQ5	-0.234***	0.0321	-0.2661***
	(<.0001)	(0.3408)	(<.0001)
Pre5DayReturnRest	-0.0817***	-0.0245**	-0.0572***
	(<.0001)	(0.0095)	(<.0001)
Pre5DayReturnQ1	-0.087***	-0.0641***	-0.0229**
	(<.0001)	(<.0001)	(0.0182)
Pre5DayReturnQ5	-0.0624***	-0.0254***	-0.0370***
	(<.0001)	(0.0019)	(<.0001)
Market Return	-0.045***	-0.8383***	
	(<.0001)	(<.0001)	
MVE	-0.0035**	-0.0028	
	(0.0232)	(0.1547)	
BM	0.0076	0.0517***	
	(0.1756)	(<.0001)	
ReturnVolatility	2.4418***	2.7813***	
	(<.0001)	(<.0001)	
Year Fixed Effects	Included	Included	
Analyst Fixed Effects	Included	Included	
Observations	733677	733677	
Adjusted R-Squared	0.147	0.1525	
F-Value	342.78***	293.17***	

This table presents SUR results with robust standard errors clustered by firm. P-values are presented in parentheses. Column (1) contains regression results from the target price equation. Column (2) contains regression results from the future returns equation. Column (3) contains the difference between estimated coefficients of interest from the target price equation to the future returns equation and statistical significance is determined using a chi-square test. 5DayReturnRest is equal to 5DayReturn if 5DayReturn is not in an extreme momentum quintile, and is zero otherwise, 5DayReturnQ1 is equal to 5DayReturn if 5DayReturn is in the lowest quintile, and is zero otherwise, and 5DayReturnQ5 is equal to 5DayReturn if 5DayReturn is in the highest quintile, and is zero otherwise. Pre5DayRPReturn is equal to Momentum Return minus 5DayReturn if 5DayReturn is not in an extreme momentum quintile, and is zero otherwise, Pre5DayReturnQ1 is equal to Momentum Return minus 5DayReturn if 5DayReturn is in the lowest quintile, and is zero otherwise, and Pre5DayReturnQ5 is equal to

Momentum Return minus 5DayReturn if 5DayReturn is in the highest quintile, and is zero otherwise. ForecastReturn is the target price as of the target price announcement date divided by stock price for the firm covered by the target price one day before the target price announcement date. FutureReturn is the twelve-month buy-and-hold return of the common stock for the firm covered by the target price beginning one day after the target price announcement date and ending twelve months (251 trading days) after the target price announcement date. MarketReturn is the value-weighted market return beginning six months (121 trading days) before the target price announcement and ending one day before the target price announcement date. MVE is the market value of equity. BTM is the book-to-market ratio. ReturnVolatility is the standard deviation of daily returns for the six months prior to the target price announcement. PreviousTPAccuracy is equal to the difference between price as of the target price announcement date and the analyst's most recent target price for that firm. ***, **, and * represent statistical significance from zero at the 1 percent, 5 percent, and 10 percent levels, respectively.

Table 13
Do Analysts Understand Momentum?
Controlling for Analyst Characteristics

	(1)	(2)	(3)
	DV: ForecastReturn	DV: FutureReturn	Difference
Intercept	0.1806***	0.1614***	
	(<.0001)	(<.0001)	
MomentumReturnRest	-0.1318***	0.0772***	-0.2090***
	(<.0001)	(<.0001)	(<.0001)
MomentumReturnQ1	-0.2527***	-0.0961***	-0.1566***
	(<.0001)	(0.0004)	(<.0001)
MomentumReturnQ5	-0.0328***	0.0238**	-0.0566***
	(<.0001)	(0.0072)	(<.0001)
MarketReturn	0.0027	-0.9863***	
	(0.7327)	(<.0001)	
MVE	0.0000*	0.0000**	
	(0.0547)	(0.0351)	
BTM	-0.0205***	0.0043	
	(0.0001)	(0.6563)	
Return Volatility	2.7807***	1.5173***	
	(<.0001)	(<.0001)	
General Experience	0.0022***	0.0018***	
	(<.0001)	(<.0001)	
Firm-Specific Experience	-0.0009*	0.0001	
	(0.0687)	(0.9083)	
Brokerage Size	-0.0015***	-0.0002	
	(<.0001)	(0.1898)	
Complexity	-0.0529***	0.0269***	
	(<.0001)	(<.0001)	
All-Star Analyst	-0.0074*	0.0036	
	(0.0625)	(0.3830)	
Year Fixed Effects	Included	Included	
Observations	733,041	733,041	
Adjusted R-Squared	0.1017	0.1559	
F-Value	307.63***	268.87***	

This table presents SUR results with robust standard errors clustered by firm. P-values are presented in parentheses. Column (1) contains regression results from the target price equation. Column (2) contains regression results from the future returns equation. Column (3) contains the difference between estimated coefficients of interest from the target price equation to the future returns equation and statistical significance is determined using a chi-

square test. MomentumReturnRest is equal to the momentum return if the momentum return is in the second through fourth momentum return quintiles, and is zero otherwise. MomentumReturnQ1 is equal to the momentum return if the momentum return is in the first quintile, and is zero otherwise. MomentumReturnQ5 is equal to the momentum return if the momentum return is in the fifth quintile, and is zero otherwise. ForecastReturn is the target price as of the target price announcement date divided by stock price for the firm covered by the target price one day before the target price announcement date. FutureReturn is the twelve-month buy-and-hold return of the common stock for the firm covered by the target price beginning one day after the target price announcement date and ending twelve months (251 trading days) after the target price announcement date. MarketReturn is the value-weighted market return beginning six months (121 trading days) before the target price announcement and ending one day before the target price announcement date. MVE is the market value of equity. BTM is the book-to-market ratio. ReturnVolatility is the standard deviation of daily returns for the six months prior to the target price announcement. General Experience is the number of years through the year of the target price announcement date for which the analyst has supplied at least one target price for any firm, Firm-Specific Experience is the number years through the year of the target price announcement date for which the analyst has supplied at least one target price for firm i, Brokerage Size is a dummy variable which equals 1 if the analyst is employed by a firm in the top size decile during the year of the target price announcement, where size deciles are calculated based on the number of analysts issuing target prices in a calendar year, Complexity is the number of firms for which the analyst has supplied at least one target price in the year of the target price announcement, and All-Star Analyst is a dummy variable which equals 1 if the analyst is listed as a first-team 'All-Star' analyst by Institutional Investor in the year of the target price announcement. ***, **, and * represent statistical significance from zero at the 1 percent, 5 percent, and 10 percent levels, respectively.

Table 14

Do Analysts Understand Momentum?

	Panel A - High General Experience			Panel B - Low General Experience		
	(1)	(2)	(3)	(1)	(2)	(3)
	DV: ForecastReturn	DV: FutureReturn	Difference	DV: ForecastReturn	DV: FutureReturn	Difference
Intercept	0.1832***	0.1742***		0.1932***	0.1627***	
	(<.0001)	(<.0001)		(<.0001)	(<.0001)	
MomentumReturnRest	-0.1296***	0.0839***	-0.2135***	-0.1333***	0.0687***	-0.2020***
	(<.0001)	(<.0001)	(<.0001)	(<.0001)	(0.0007)	(<.0001)
MomentumReturnQ1	-0.2505***	-0.1032***	-0.1473***	-0.2543***	-0.0908***	-0.1635***
	(<.0001)	(0.0016)	(<.0001)	(<.0001)	(0.002)	(<.0001)
MomentumReturnQ5	-0.0340***	0.0212**	-0.0552***	-0.0318***	0.0263**	-0.0581***
	(<.0001)	(0.0189)	(<.0001)	(<.0001)	(0.0101)	(<.0001)
MarketReturn	-0.0065	-0.9614***		0.0128	-1.0114***	
	(0.4957)	(<.0001)		(0.1493)	(<.0001)	
MVE	0.0000**	0.0000**		0.0000	0.0000	
	(0.0269)	(0.0184)		(0.2692)	(0.1133)	
BTM	-0.0149**	0.0062		-0.0259***	0.0021	
	(0.0178)	(0.5532)		(<.0001)	(0.8458)	
Return Volatility	2.7310***	1.7702***		2.8345***	1.3003***	
	(<.0001)	(<.0001)		(<.0001)	(<.0001)	
Firm-Specific Experience	0.0002	0.0009		-0.0038***	-0.0003	
	(0.7124)	(0.1545)		(<.0001)	(0.7291)	
Brokerage Size	-0.0013***	0.0000		-0.0017***	-0.0002	
	(<.0001)	(0.8545)		(<.0001)	(0.238)	
Complexity	-0.0474***	0.0157***		-0.0588***	0.0357***	
	(<.0001)	(<.0001)		(<.0001)	(<.0001)	
All-Star Analyst	-0.0145***	0.0012		0.0117	0.0225*	
	(0.0006)	(0.7982)		(0.2191)	(0.0402)	

Year Fixed Effects	Included	Included	Included	Included
Observations	364349	364349	368692	368692
Adjusted R-Squared	0.0989	0.1657	0.1062	0.1470
F-Value	227.46***	222.60***	244.57***	270.12***

This table presents SUR results with robust standard errors clustered by firm. P-values are presented in parentheses. Column (1) contains regression results from the target price equation. Column (2) contains regression results from the future returns equation. Column (3) contains the difference between estimated coefficients of interest from the target price equation to the future returns equation and statistical significance is determined using a chi-square test. MomentumReturnRest is equal to the momentum return if the momentum return is in the second through fourth momentum return quintiles, and is zero otherwise. MomentumReturnQ1 is equal to the momentum return if the momentum return is in the first quintile, and is zero otherwise. MomentumReturnQ5 is equal to the momentum return if the momentum return is in the fifth quintile, and is zero otherwise. ForecastReturn is the target price as of the target price announcement date divided by stock price for the firm covered by the target price one day before the target price announcement date. FutureReturn is the twelve-month buy-and-hold return of the common stock for the firm covered by the target price beginning one day after the target price announcement date and ending twelve months (251 trading days) after the target price announcement date. MarketReturn is the value-weighted market return beginning six months (121 trading days) before the target price announcement and ending one day before the target price announcement date. MVE is the market value of equity. BTM is the book-to-market ratio. ReturnVolatility is the standard deviation of daily returns for the six months prior to the target price announcement. Firm-Specific Experience is the number years through the year of the target price announcement date for which the analyst has supplied at least one target price for firm i, Brokerage Size is a dummy variable which equals 1 if the analyst is employed by a firm in the top size decile during the year of the target price announcement, where size deciles are calculated based on the number of analysts issuing target prices in a calendar year, Complexity is the number of firms for which the analyst has supplied at least one target price in the year of the target price announcement, and All-Star Analyst is a dummy variable which equals 1 if the analyst is listed as a first-team 'All-Star' analyst by Institutional Investor in the year of the target price announcement. ***, **, and * represent statistical significance from zero at the 1 percent, 5 percent, and 10 percent levels, respectively.

Table 15

Do Analysts Understand Momentum?

	Panel A - High Firm-Specific Experience			Panel B - Low Firm-Specific Experience		
	(1)	(2)	(3)	(1)	(2)	(3)
	DV: ForecastReturn	DV: FutureReturn	Difference	DV: ForecastReturn	DV: FutureReturn	Difference
Intercept	0.1765***	0.1619***		0.1746***	0.1630***	
	(<.0001)	(<.0001)		(<.0001)	(<.0001)	
MomentumReturnRest	-0.1330***	0.0744***	-0.2074***	-0.1313***	0.0754***	-0.2067***
	(<.0001)	(0.0002)	(<.0001)	(<.0001)	(0.0002)	(<.0001)
MomentumReturnQ1	-0.2581***	-0.1110***	-0.1471***	-0.2483***	-0.0811**	-0.1672***
	(<.0001)	(0.0004)	(<.0001)	(<.0001)	(0.0057)	(<.0001)
MomentumReturnQ5	-0.0354***	0.0174*	-0.0528***	-0.0324***	0.0314***	-0.0638***
	(<.0001)	(0.0576)	(<.0001)	(<.0001)	(0.0032)	(<.0001)
MarketReturn	-0.0227**	-0.9659***		0.0318***	-1.0046***	
	(0.0171)	(<.0001)		(0.0004)	(<.0001)	
MVE	0.0000**	0.0000**		0.0000	0.0000	
	(0.0283)	(0.0115)		(0.2959)	(0.2261)	
BTM	-0.0170**	-0.0064		-0.0214***	0.0121	
	(0.0075)	(0.5417)		(<.0001)	(0.249)	
Return Volatility	2.2599***	2.2977***		3.2574***	0.7802**	
	(<.0001)	(<.0001)		(<.0001)	(0.014)	
General Experience	0.0033***	0.0027***		0.0020***	0.0013**	
	(<.0001)	(<.0001)		(<.0001)	(0.013)	
Brokerage Size	-0.0015***	-0.0002		-0.0015***	-0.0002	
	(<.0001)	(0.2558)		(<.0001)	(0.3496)	
Complexity	-0.0438***	0.0277***		-0.0611***	0.0247***	
	(<.0001)	(<.0001)		(<.0001)	(<.0001)	
All-Star Analyst	-0.0056	0.0013		-0.0229***	0.0130	
	(0.2449)	(0.7777)		(0.0004)	(0.1712)	

Year Fixed Effects	Included	Included	Included	Included
Observations	382796	382796	350245	350245
Adjusted R-Squared	0.0952	0.1816	0.1093	0.1322
F-Value	217.49***	224.86***	224.32***	239.72***

This table presents SUR results with robust standard errors clustered by firm. P-values are presented in parentheses. Column (1) contains regression results from the target price equation. Column (2) contains regression results from the future returns equation. Column (3) contains the difference between estimated coefficients of interest from the target price equation to the future returns equation and statistical significance is determined using a chi-square test. MomentumReturnRest is equal to the momentum return if the momentum return is in the second through fourth momentum return quintiles, and is zero otherwise. MomentumReturnQ1 is equal to the momentum return if the momentum return is in the first quintile, and is zero otherwise. MomentumReturnQ5 is equal to the momentum return if the momentum return is in the fifth quintile, and is zero otherwise. ForecastReturn is the target price as of the target price announcement date divided by stock price for the firm covered by the target price one day before the target price announcement date. FutureReturn is the twelve-month buy-and-hold return of the common stock for the firm covered by the target price beginning one day after the target price announcement date and ending twelve months (251 trading days) after the target price announcement date. MarketReturn is the value-weighted market return beginning six months (121 trading days) before the target price announcement and ending one day before the target price announcement date. MVE is the market value of equity. BTM is the book-to-market ratio. ReturnVolatility is the standard deviation of daily returns for the six months prior to the target price announcement. General Experience as the number of years through the year of the target price announcement date for which the analyst has supplied at least one target price for any firm, Brokerage Size is a dummy variable which equals 1 if the analyst is employed by a firm in the top size decile during the year of the target price announcement, where size deciles are calculated based on the number of analysts issuing target prices in a calendar year, Complexity is the number of firms for which the analyst has supplied at least one target price in the year of the target price announcement, and All-Star Analyst is a dummy variable which equals 1 if the analyst is listed as a first-team 'All-Star' analyst by Institutional Investor in the year of the target price announcement. ***, **, and * represent statistical significance from zero at the 1 percent, 5 percent, and 10 percent levels, respectively.

Table 16

Do Analysts Understand Momentum?

	Panel A - Less Complexity			Panel A - Greater Complexity		
	(1) DV: ForecastReturn	(2) DV: FutureReturn	(3) Difference	(1) DV: ForecastReturn	(2) DV: FutureReturn	(3) Difference
Intercept	0.1527***	0.1707***		0.1607***	0.1434***	
	(<.0001)	(<.0001)		(<.0001)	(<.0001)	
MomentumReturnRest	-0.1228***	0.0628***	-0.1856***	-0.1423***	0.0907***	-0.2330***
	(<.0001)	(0.0014)	(<.0001)	(<.0001)	(<.0001)	(<.0001)
MomentumReturnQ1	-0.2352***	-0.0867***	-0.1485***	-0.2720***	-0.1057***	-0.1663***
	(<.0001)	(0.0042)	(<.0001)	(<.0001)	(0.0006)	(<.0001)
MomentumReturnQ5	-0.0244***	0.0240**	-0.0484***	-0.0402***	0.0236**	-0.0638***
	(<.0001)	(0.0154)	(<.0001)	(<.0001)	(0.0156)	(<.0001)
MarketReturn	-0.0148	-0.9653***		0.0210**	-1.0065***	
	(0.1198)	(<.0001)		(0.0206)	(<.0001)	
MVE	0.0000***	0.0000**		0.0000	0.0000*	
	(0.0012)	(0.0136)		(0.2661)	(0.0793)	
BTM	-0.0323***	-0.0099		-0.0084	0.0192*	
	(<.0001)	(0.3386)		(0.1613)	(0.0788)	
Return Volatility	2.5579***	1.7623***		3.0907***	1.3112***	
	(<.0001)	(<.0001)		(<.0001)	(0.0001)	
General Experience	0.0017***	0.0016**		0.0027***	0.0023***	
	(0.0002)	(0.0057)		(<.0001)	(<.0001)	
Firm-Specific Experience	-0.0002	0.0002		-0.0017**	-0.0001	
	(0.7507)	(0.7431)		(0.0057)	(0.8613)	
Brokerage Size	-0.0576***	0.0360***		-0.0476***	0.0213***	
	(<.0001)	(<.0001)		(<.0001)	(<.0001)	
All-Star Analyst	-0.0144***	0.0029		-0.0152	0.0048	
	(0.0007)	(0.5369)		(0.1413)	(0.588)	

Year Fixed Effects	Included	Included	Included	Included
Observations	363,512	363,512	369,529	369,529
Adjusted R-Squared	0.0899	0.1675	0.1070	0.1463
F-Value	165.27***	241.87***	227.87***	221.07***

This table presents SUR results with robust standard errors clustered by firm. P-values are presented in parentheses. Column (1) contains regression results from the target price equation. Column (2) contains regression results from the future returns equation. Column (3) contains the difference between estimated coefficients of interest from the target price equation to the future returns equation and statistical significance is determined using a chi-square test. MomentumReturnRest is equal to the momentum return if the momentum return is in the second through fourth momentum return quintiles, and is zero otherwise. MomentumReturnQ1 is equal to the momentum return if the momentum return is in the first quintile, and is zero otherwise. MomentumReturnQ5 is equal to the momentum return if the momentum return is in the fifth quintile, and is zero otherwise. ForecastReturn is the target price as of the target price announcement date divided by stock price for the firm covered by the target price one day before the target price announcement date. FutureReturn is the twelve-month buy-and-hold return of the common stock for the firm covered by the target price beginning one day after the target price announcement date and ending twelve months (251 trading days) after the target price announcement date. MarketReturn is the value-weighted market return beginning six months (121 trading days) before the target price announcement and ending one day before the target price announcement date. MVE is the market value of equity. BTM is the book-to-market ratio. ReturnVolatility is the standard deviation of daily returns for the six months prior to the target price announcement. General Experience as the number of years through the year of the target price announcement date for which the analyst has supplied at least one target price for any firm, Firm-Specific Experience is the number years through the year of the target price announcement date for which the analyst has supplied at least one target price for firm i, Brokerage Size is a dummy variable which equals 1 if the analyst is employed by a firm in the top size decile during the year of the target price announcement, where size deciles are calculated based on the number of analysts issuing target prices in a calendar year, and All-Star Analyst is a dummy variable which equals 1 if the analyst is listed as a first-team 'All-Star' analyst by Institutional Investor in the year of the target price announcement. ***, **, and * represent statistical significance from zero at the 1 percent, 5 percent, and 10 percent levels, respectively.

Table 17

Do Analysts Understand Momentum?

	Panel A - Large Brokerage Size			Panel A - Small Brokerage Size		
	(1)	(2)	(3)	(1)	(2)	(3)
	DV: ForecastReturn	DV: FutureReturn	Difference	DV: ForecastReturn	DV: FutureReturn	Difference
Intercept	0.1336***	0.1752***		0.1639***	0.1932***	
	(<.0001)	(<.0001)		(<.0001)	(<.0001)	
MomentumReturnRest	-0.1302***	0.0883***	-0.2185***	-0.1350***	0.0535**	-0.1885***
	(<.0001)	(<.0001)	(<.0001)	(<.0001)	(0.0101)	(<.0001)
MomentumReturnQ1	-0.2318***	-0.1217***	-0.1101***	-0.2931***	-0.0465	-0.2466***
	(<.0001)	(0.0001)	(0.0006)	(<.0001)	(0.0939)	(<.0001)
MomentumReturnQ5	-0.0304***	0.0224**	-0.0528***	-0.0387***	0.0287**	-0.0674***
	(<.0001)	(0.0231)	(<.0001)	(<.0001)	(0.0076)	(<.0001)
MarketReturn	-0.0070	-0.9771***		0.0069	-0.9896***	
	(0.4107)	(<.0001)		(0.5215)	(<.0001)	
MVE	0.0000***	0.0000**		0.0000**	0.0000	
	(0.0035)	(0.0195)		(0.0357)	(0.2293)	
BTM	-0.0105*	0.0027		-0.0366***	0.0041	
	(0.07)	(0.7887)		(<.0001)	(0.7094)	
Return Volatility	2.0405***	2.3944***		4.0138***	-0.0022	
	(<.0001)	(<.0001)		(<.0001)	(0.9948)	
General Experience	0.0025***	0.0004		0.0021***	0.0039***	
	(<.0001)	(0.4482)		(0.0001)	(<.0001)	
Brokerage Size	-0.0002	0.0008		-0.0029***	-0.0009	
	(0.6805)	(0.2419)		(0.0001)	(0.3282)	
Complexity	-0.0016***	0.0001		-0.0014***	-0.0009***	
	(<.0001)	(0.3804)		(<.0001)	(0.0011)	
All-Star Analyst	-0.0043	0.0032		-0.0851***	0.0160	
	(0.2945)	(0.4606)		(<.0001)	(0.3296)	

Year Fixed Effects	Included	Included	Included	Included
Observations	485,220	485,220	247,821	247,821
Adjusted R-Squared	0.0786	0.1689	0.1156	0.1345
F-Value	212.08***	236.98***	172.19***	237.88***

This table presents SUR results with robust standard errors clustered by firm. P-values are presented in parentheses. Column (1) contains regression results from the target price equation. Column (2) contains regression results from the future returns equation. Column (3) contains the difference between estimated coefficients of interest from the target price equation to the future returns equation and statistical significance is determined using a chi-square test. MomentumReturnRest is equal to the momentum return if the momentum return is in the second through fourth momentum return quintiles, and is zero otherwise. MomentumReturnQ1 is equal to the momentum return if the momentum return is in the first quintile, and is zero otherwise. MomentumReturnQ5 is equal to the momentum return if the momentum return is in the fifth quintile, and is zero otherwise. ForecastReturn is the target price as of the target price announcement date divided by stock price for the firm covered by the target price one day before the target price announcement date. FutureReturn is the twelve-month buy-and-hold return of the common stock for the firm covered by the target price beginning one day after the target price announcement date and ending twelve months (251 trading days) after the target price announcement date. MarketReturn is the value-weighted market return beginning six months (121 trading days) before the target price announcement and ending one day before the target price announcement date. MVE is the market value of equity. BTM is the book-to-market ratio. ReturnVolatility is the standard deviation of daily returns for the six months prior to the target price announcement. General Experience as the number of years through the year of the target price announcement date for which the analyst has supplied at least one target price for any firm, Firm-Specific Experience is the number years through the year of the target price announcement date for which the analyst has supplied at least one target price for firm i, Complexity is the number of firms for which the analyst has supplied at least one target price in the year of the target price announcement, and All-Star Analyst is a dummy variable which equals 1 if the analyst is listed as a first-team 'All-Star' analyst by Institutional Investor in the year of the target price announcement. ***, **, and * represent statistical significance from zero at the 1 percent, 5 percent, and 10 percent levels, respectively.

Table 18

Do Analysts Understand Momentum?

	Panel A - AllStar1			Panel A - Not AllStar1		
	(1)	(2)	(3)	(1)	(2)	(3)
	DV: ForecastReturn	DV: FutureReturn	Difference	DV: ForecastReturn	DV: FutureReturn	Difference
Intercept	0.1099***	0.1817***		0.1812***	0.1639***	
	(<.0001)	(<.0001)		(<.0001)	(<.0001)	
MomentumReturnRest	-0.1870***	0.0250	-0.2120***	-0.13***	0.0788***	-0.2088***
	(<.0001)	(0.4528)	(<.0001)	(<.0001)	(<.0001)	(<.0001)
MomentumReturnQ1	-0.2198***	-0.1706**	-0.0492	-0.2531***	-0.0944***	-0.1587***
	(<.0001)	(0.0065)	(0.4677)	(<.0001)	(0.0005)	(<.0001)
MomentumReturnQ5	-0.0416***	0.0056	-0.0472**	-0.0329***	0.0244**	-0.0573***
	(<.0001)	(0.7468)	(0.0120)	(<.0001)	(0.0062)	(<.0001)
MarketReturn	0.0442*	-0.6912***		0.0008	-0.9967***	
	(0.0442)	(<.0001)		(0.9236)	(<.0001)	
MVE	0.0000**	0.0000***		0.0000*	0.0000*	
	(0.0081)	(0.0004)		(0.0714)	(0.0484)	
BTM	-0.0123	-0.004		-0.0207***	0.0044	
	(0.3310)	(0.8047)		(<.0001)	(0.6516)	
Return Volatility	1.5974***	3.7620***		2.8152***	1.4487***	
	(<.0001)	(<.0001)		(<.0001)	(<.0001)	
General Experience	0.0046**	0.0036**		-0.0013***	-0.0001	
	(0.0139)	(0.0123)		(0.0053)	(0.9233)	
Firm-Specific Experience	0.0006	-0.0064**		0.0025***	0.0021***	
	(0.7528)	(0.006)		(<.0001)	(<.0001)	
Complexity	-0.0006*	0.0009***		-0.0017***	-0.0004**	
	(0.0517)	(0.001)		(<.0001)	(0.0308)	
Brokerage Size	0.0241*	-0.0032		-0.0531***	0.0273***	
	(0.0676)	(0.8473)		(<.0001)	(<.0001)	

Year Fixed Effects	Included	Included	Included	Included
Observations	23,497	23,497	709,544	709,544
Adjusted R-Squared	0.0928	0.2303	0.1020	0.1545
F-Value	22.35***	66.46***	323.19***	282.58***

This table presents SUR results with robust standard errors clustered by firm. P-values are presented in parentheses. Column (1) contains regression results from the target price equation. Column (2) contains regression results from the future returns equation. Column (3) contains the difference between estimated coefficients of interest from the target price equation to the future returns equation and statistical significance is determined using a chi-square test. MomentumReturnRest is equal to the momentum return if the momentum return is in the second through fourth momentum return quintiles, and is zero otherwise. MomentumReturnQ1 is equal to the momentum return if the momentum return is in the first quintile, and is zero otherwise. MomentumReturnQ5 is equal to the momentum return if the momentum return is in the fifth quintile, and is zero otherwise. ForecastReturn is the target price as of the target price announcement date divided by stock price for the firm covered by the target price one day before the target price announcement date. FutureReturn is the twelve-month buy-and-hold return of the common stock for the firm covered by the target price beginning one day after the target price announcement date and ending twelve months (251 trading days) after the target price announcement date. MarketReturn is the value-weighted market return beginning six months (121 trading days) before the target price announcement and ending one day before the target price announcement date. MVE is the market value of equity. BTM is the book-to-market ratio. ReturnVolatility is the standard deviation of daily returns for the six months prior to the target price announcement. General Experience as the number of years through the year of the target price announcement date for which the analyst has supplied at least one target price for any firm, Firm-Specific Experience is the number years through the year of the target price announcement date for which the analyst has supplied at least one target price for firm i, Brokerage Size is a dummy variable which equals 1 if the analyst is employed by a firm in the top size decile during the year of the target price announcement, where size deciles are calculated based on the number of analysts issuing target prices in a calendar year, Complexity is the number of firms for which the analyst has supplied at least one target price in the year of the target price announcement. ***, **, and * represent statistical significance from zero at the 1 percent, 5 percent, and 10 percent levels, respectively.

Table 19

Do Analysts Understand Momentum?

	Panel A - AllStar2			Panel A - Not AllStar2		
	(1) DV: ForecastReturn	(2) DV: FutureReturn	(3) Difference	(1) DV: ForecastReturn	(2) DV: FutureReturn	(3) Difference
Intercept	0.1082***	0.1558***		0.1805***	0.1666***	
	(<.0001)	(<.0001)		(<.0001)	(<.0001)	
MomentumReturnRest	-0.1397***	0.0400	-0.0997***	-0.1312***	0.0803***	-0.2115***
	(<.0001)	(0.1395)	(<.0001)	(<.0001)	(<.0001)	(<.0001)
MomentumReturnQ1	-0.2097***	-0.1224**	-0.0873*	-0.2562***	-0.0938***	-0.1624***
	(<.0001)	(0.0099)	(0.0803)	(<.0001)	(0.0006)	(<.0001)
MomentumReturnQ5	-0.0389***	0.0065	-0.0324***	-0.0327***	0.0253***	-0.0580***
	(<.0001)	(0.6056)	(0.0013)	(<.0001)	(0.0051)	(<.0001)
MarketReturn	-0.0127	-0.8276***		0.0035	-1.0017***	
	(0.434)	(<.0001)		(0.6555)	(<.0001)	
MVE	0.0000***	0.0000***		0.0000	0.0000*	
	(<.0001)	(0.0048)		(0.1337)	(0.0547)	
BTM	-0.0146	0.0065		-0.0208***	0.0037	
	(0.1391)	(0.6385)		(<.0001)	(0.709)	
Return Volatility	1.5662***	3.4456***		2.8872***	1.352***	
	(<.0001)	(<.0001)		(<.0001)	(<.0001)	
General Experience	0.0025**	0.0013		-0.0016***	-0.0001	
	(0.0201)	(0.2321)		(0.0009)	(0.8617)	
Firm-Specific Experience	0.0029**	-0.0004		0.0027***	0.0021***	
	(0.0095)	(0.7537)		(<.0001)	(<.0001)	
Complexity	-0.0009***	0.0007***		-0.0018***	-0.0006***	
	(0.0021)	(0.0015)		(<.0001)	(0.0024)	
Brokerage Size	0.0047	0.0169		-0.0521***	0.0267***	
	(0.6600)	(0.2147)		(<.0001)	(<.0001)	

Year Fixed Effects	Included	Included	Included	Included
Observations	66,857	66,857	666,184	666,184
Adjusted R-Squared	0.0826	0.2148	0.1025	0.1517
F-Value	49.93***	108.17***	322.13***	281.84***

This table presents SUR results with robust standard errors clustered by firm. P-values are presented in parentheses. Column (1) contains regression results from the target price equation. Column (2) contains regression results from the future returns equation. Column (3) contains the difference between estimated coefficients of interest from the target price equation to the future returns equation and statistical significance is determined using a chi-square test. MomentumReturnRest is equal to the momentum return if the momentum return is in the second through fourth momentum return quintiles, and is zero otherwise. MomentumReturnQ1 is equal to the momentum return if the momentum return is in the first quintile, and is zero otherwise. MomentumReturnQ5 is equal to the momentum return if the momentum return is in the fifth quintile, and is zero otherwise. ForecastReturn is the target price as of the target price announcement date divided by stock price for the firm covered by the target price one day before the target price announcement date. FutureReturn is the twelve-month buy-and-hold return of the common stock for the firm covered by the target price beginning one day after the target price announcement date and ending twelve months (251 trading days) after the target price announcement date. MarketReturn is the value-weighted market return beginning six months (121 trading days) before the target price announcement and ending one day before the target price announcement date. MVE is the market value of equity. BTM is the book-to-market ratio. ReturnVolatility is the standard deviation of daily returns for the six months prior to the target price announcement. General Experience as the number of years through the year of the target price announcement date for which the analyst has supplied at least one target price for any firm, Firm-Specific Experience is the number years through the year of the target price announcement date for which the analyst has supplied at least one target price for firm i, Brokerage Size is a dummy variable which equals 1 if the analyst is employed by a firm in the top size decile during the year of the target price announcement, where size deciles are calculated based on the number of analysts issuing target prices in a calendar year, Complexity is the number of firms for which the analyst has supplied at least one target price in the year of the target price announcement. ***, **, and * represent statistical significance from zero at the 1 percent, 5 percent, and 10 percent levels, respectively.

Table 20
Do Analysts Understand Momentum?

	Panel A - AllStar3			Panel A - Not AllStar3		
	(1)	(2)	(3)	(1)	(2)	(3)
	DV: ForecastReturn	DV: FutureReturn	Difference	DV: ForecastReturn	DV: FutureReturn	Difference
Intercept	0.1266***	0.1525***		0.1792***	0.1674***	
	(<.0001)	(<.0001)		(<.0001)	(<.0001)	
MomentumReturnRest	-0.1403***	0.0757**	-0.2160***	-0.1310***	0.0773***	-0.2083***
	(<.0001)	(0.0079)	(<.0001)	(<.0001)	(<.0001)	(<.0001)
MomentumReturnQ1	-0.1924***	-0.0753*	-0.1171***	-0.2596***	-0.0976***	-0.1620***
	(<.0001)	(0.0843)	(0.0096)	(<.0001)	(0.0004)	(<.0001)
MomentumReturnQ5	-0.0399***	0.0084	-0.0483***	-0.0326***	0.0256***	-0.0582***
	(<.0001)	(0.5338)	(<.0001)	(<.0001)	(0.0046)	(<.0001)
MarketReturn	-0.0203	-0.9160***		0.0050	-0.9938***	
	(0.2026)	(<.0001)		(0.5248)	(<.0001)	
MVE	0.0000***	0.0000**		0.0000	0.0000*	
	(0.0006)	(0.0353)		(0.1771)	(0.0484)	
BTM	-0.0166	0.002		-0.0208***	0.0043	
	(0.134)	(0.8838)		(<.0001)	(0.6663)	
Return Volatility	1.6772***	3.5832***		2.8997***	1.3027***	
	(<.0001)	(<.0001)		(<.0001)	(<.0001)	
General Experience	0.0026**	0.0003		-0.0018***	0.0000	
	(0.0085)	(0.7887)		(0.0002)	(0.9661)	
Firm-Specific Experience	0.0030***	0.0014		0.0028***	0.0019***	
	(0.0045)	(0.2664)		(<.0001)	(<.0001)	
Complexity	-0.0010***	0.0006**		-0.0017***	-0.0006***	
	(0.0003)	(0.0063)		(<.0001)	(0.0037)	
Brokerage Size	-0.0026	0.0025		-0.0522***	0.0266***	
	(0.8052)	(0.8456)		(<.0001)	(<.0001)	

Year Fixed Effects	Included	Included	Included	Included
Observations	84,117	84,117	648,924	648,924
Adjusted R-Squared	0.0756	0.2080	0.1041	0.1511
F-Value	54.62***	119.36***	321.72***	278.94***

This table presents SUR results with robust standard errors clustered by firm. P-values are presented in parentheses. Column (1) contains regression results from the target price equation. Column (2) contains regression results from the future returns equation. Column (3) contains the difference between estimated coefficients of interest from the target price equation to the future returns equation and statistical significance is determined using a chi-square test. MomentumReturnRest is equal to the momentum return if the momentum return is in the second through fourth momentum return quintiles, and is zero otherwise. MomentumReturnQ1 is equal to the momentum return if the momentum return is in the first quintile, and is zero otherwise. MomentumReturnQ5 is equal to the momentum return if the momentum return is in the fifth quintile, and is zero otherwise. ForecastReturn is the target price as of the target price announcement date divided by stock price for the firm covered by the target price one day before the target price announcement date. FutureReturn is the twelve-month buy-and-hold return of the common stock for the firm covered by the target price beginning one day after the target price announcement date and ending twelve months (251 trading days) after the target price announcement date. MarketReturn is the value-weighted market return beginning six months (121 trading days) before the target price announcement and ending one day before the target price announcement date. MVE is the market value of equity. BTM is the book-to-market ratio. ReturnVolatility is the standard deviation of daily returns for the six months prior to the target price announcement. General Experience as the number of years through the year of the target price announcement date for which the analyst has supplied at least one target price for any firm, Firm-Specific Experience is the number years through the year of the target price announcement date for which the analyst has supplied at least one target price for firm i, Brokerage Size is a dummy variable which equals 1 if the analyst is employed by a firm in the top size decile during the year of the target price announcement, where size deciles are calculated based on the number of analysts issuing target prices in a calendar year, Complexity is the number of firms for which the analyst has supplied at least one target price in the year of the target price announcement. ***, **, and * represent statistical significance from zero at the 1 percent, 5 percent, and 10 percent levels, respectively.

Table 21
Do Analysts Understand Momentum?
Positive MomentumReturn

	(1)	(2)	(3)
	DV: ForecastReturn	DV: FutureReturn	Difference
MomentumReturnPRest	-0.0481***	-0.0078	-0.0403***
	(<.0001)	(0.5469)	(0.0032)
MomentumReturnPQ5	-0.0310***	-0.0065	-0.0245***
	(<.0001)	(0.4031)	(0.0025)
MarketReturn	0.0335***	-0.3498***	
	(<.0001)	(<.0001)	
MVE	-0.0015	-0.0122***	
	(0.3164)	(<.0001)	
BTM	0.0149**	0.0419***	
	(0.009)	(<.0001)	
Return Volatility	1.8835***	-0.3549	
	(<.0001)	(0.2169)	
Year Fixed Effects	Included	Included	
Analyst Fixed Effects	Included	Included	
Observations	453,584	453,584	
Adjusted R-Squared	0.0152	0.1233	
F-Value	65.57***	327.65***	

This table presents SUR results with robust standard errors clustered by firm. P-values are presented in parentheses. Column (1) contains regression results from the target price equation. Column (2) contains regression results from the future returns equation. Column (3) contains the difference between estimated coefficients of interest from the target price equation to the future returns equation and statistical significance is determined using a chi-square test. MomentumReturnPRest is equal to Momentum Return if MomentumReturn is in the most extreme positive quintile, and is zero otherwise, and MomentumReturnPQ5 is equal to MomentumReturn for all other target prices, and is zero otherwise. ForecastReturn is the target price as of the target price announcement date divided by stock price for the firm covered by the target price one day before the target price announcement date. FutureReturn is the twelve-month buy-and-hold return of the common stock for the firm covered by the target price beginning one day after the target price announcement date and ending twelve months (251 trading days) after the target price announcement date. MarketReturn is the value-weighted market return beginning six months (121 trading days) before the target price announcement and ending one day before the target price announcement date. MVE is the market value of equity. BTM is the book-to-market ratio. ReturnVolatility is the standard deviation of daily returns for the six months prior to the target price announcement. ***, **, and * represent statistical significance from zero at the 1 percent, 5 percent, and 10 percent levels, respectively.

Table 22
Do Analysts Understand Momentum?
Negative MomentumReturn

	(1)	(2)	(3)
	DV: ForecastReturn	DV: FutureReturn	Difference
MomentumReturnNRest	-0.2669***	-0.2610***	-0.0058*
	(<.0001)	(<.0001)	(0.0889)
MomentumReturnNQ1	-0.3020***	-0.2990***	-0.0030***
	(<.0001)	(<.0001)	(<.0001)
MarketReturn	-0.1172***	-1.300***	
	(<.0001)	(<.0001)	
MVE	-0.0076***	-0.0008	
	(<.0001)	(0.7832)	
BTM	-0.0079	0.0618***	
	(0.2290)	(0.0003)	
Return Volatility	0.4777***	3.3121***	
	(0.0001)	(<.0001)	
Year Fixed Effects	Included	Included	
Analyst Fixed Effects	Included	Included	
Observations	280,093	280,093	
Adjusted R-Squared	0.0728	0.2109	
F-Value	217.23***	277.94***	

This table presents SUR results with robust standard errors clustered by firm. P-values are presented in parentheses. Column (1) contains regression results from the target price equation. Column (2) contains regression results from the future returns equation. Column (3) contains the difference between estimated coefficients of interest from the target price equation to the future returns equation and statistical significance is determined using a chi-square test. MomentumReturnNRest is equal to Momentum Return if MomentumReturn is not in the most extreme negative quintile, and is zero otherwise, and MomentumReturnNQ1 is equal to MomentumReturn if MomentumReturn is in the first negative momentum quintile, and is zero otherwise. ForecastReturn is the target price as of the target price announcement date divided by stock price for the firm covered by the target price one day before the target price announcement date. FutureReturn is the twelve-month buy-and-hold return of the common stock for the firm covered by the target price beginning one day after the target price announcement date and ending twelve months (251 trading days) after the target price announcement date. MarketReturn is the value-weighted market return beginning six months (121 trading days) before the target price announcement and ending one day before the target price announcement date. MVE is the market value of equity. BTM is the book-to-market ratio. ReturnVolatility is the standard deviation of daily returns for the six months prior to the

target price announcement. ***, **, and * represent statistical significance from zero at the 1 percent, 5 percent, and 10 percent levels, respectively.

Table 23
Do Analysts Understand Momentum?
Alternative Delisting Method 1

	(1)	(2)	(3)
	DV: ForecastReturn	DV: FutureReturn	Difference
MomentumReturnRest	-0.1329***	0.0225	0.1554***
	(<.0001)	(0.1741)	(<.0001)
MomentumReturnQ1	-0.2620***	-0.1665***	-0.0955***
	(<.0001)	(<.0001)	(0.0002)
MomentumReturnQ5	-0.0458***	-0.0070	-0.0388***
	(<.0001)	(0.3747)	(<.0001)
MarketReturn	-0.0445***	-0.9006***	
	(<.0001)	(<.0001)	
MVE	-0.0037**	-0.0032	
	(0.0173)	(0.1144)	
BTM	0.0060	0.0509***	
	(0.2820)	(<.0001)	
Return Volatility	1.4825***	2.2355***	
	(<.0001)	(<.0001)	
Year Fixed Effects	Included	Included	
Analyst Fixed Effects	Included	Included	
Observations	733,677	733,677	
Adjusted R-Squared	0.0806	0.1528	
F-Value	333.37***	362.66***	

This table presents SUR results with robust standard errors clustered by firm. P-values are presented in parentheses. Column (1) contains regression results from the target price equation. Column (2) contains regression results from the future returns equation. Column (3) contains the difference between estimated coefficients of interest from the target price equation to the future returns equation and statistical significance is determined using a chi-square test. MomentumReturnRest is equal to the momentum return if the momentum return is in the second through fourth momentum return quintiles, and is zero otherwise. MomentumReturnQ1 is equal to the momentum return if the momentum return is in the first quintile, and is zero otherwise. MomentumReturnQ5 is equal to the momentum return if the momentum return is in the fifth quintile, and is zero otherwise. ForecastReturn is the target price as of the target price announcement date divided by stock price for the firm covered by the target price one day before the target price announcement date. FutureReturn is the twelve-month buy-and-hold return of the common stock for the firm covered by the target price beginning one day after the target price announcement date and ending twelve months (251 trading days) after the target price announcement date. MarketReturn is the value-weighted market return beginning six months (121 trading days) before the target price announcement and ending one day before the target price announcement date. MVE is the

market value of equity. BTM is the book-to-market ratio. ReturnVolatility is the standard deviation of daily returns for the six months prior to the target price announcement. ***, **, and * represent statistical significance from zero at the 1 percent, 5 percent, and 10 percent levels, respectively.

Table 24
Do Analysts Understand Momentum?
Alternative Delisting Method 2

	(1)	(2)	(3)
	DV: ForecastReturn	DV: FutureReturn	Difference
MomentumReturnRest	-0.2665***	0.0777**	-0.3442***
	(<.0001)	(0.0384)	(<.0001)
MomentumReturnQ1	-0.4037***	-0.1119	-0.2918***
	(<.0001)	(0.1202)	(<.0001)
MomentumReturnQ5	-0.3979***	-0.1020**	-0.2959***
	(<.0001)	(0.0108)	(<.0001)
MarketReturn	-0.1785***	-0.9031***	
	(<.0001)	(<.0001)	
MVE	-0.0034**	-0.0029	
	(0.0268)	(0.1392)	
BTM	0.0101*	0.0535***	
	(0.0721)	(<.0001)	
Return Volatility	2.2533***	2.7728***	
	(<.0001)	(<.0001)	
Year Fixed Effects	Included	Included	
Analyst Fixed Effects	Included	Included	
Observations	733,677	733,677	
Adjusted R-Squared	0.0610	0.1509	
F-Value	305.37***	323.80***	

This table presents SUR results with robust standard errors clustered by firm. P-values are presented in parentheses. Column (1) contains regression results from the target price equation. Column (2) contains regression results from the future returns equation. Column (3) contains the difference between estimated coefficients of interest from the target price equation to the future returns equation and statistical significance is determined using a chi-square test. MomentumReturnRest is equal to the momentum return if the momentum return is in the second through fourth momentum return quintiles, and is zero otherwise. MomentumReturnQ1 is equal to the momentum return if the momentum return is in the first quintile, and is zero otherwise. MomentumReturnQ5 is equal to the momentum return if the momentum return is in the fifth quintile, and is zero otherwise. ForecastReturn is the target price as of the target price announcement date divided by stock price for the firm covered by the target price one day before the target price announcement date. FutureReturn is the twelve-month buy-and-hold return of the common stock for the firm covered by the target price beginning one day after the target price announcement date and ending twelve months (251 trading days) after the target price announcement date. MarketReturn is the value-weighted market return beginning six months (121 trading days) before the target price announcement and ending one day before the target price announcement date. MVE is the

market value of equity. BTM is the book-to-market ratio. ReturnVolatility is the standard deviation of daily returns for the six months prior to the target price announcement. ***, **, and * represent statistical significance from zero at the 1 percent, 5 percent, and 10 percent levels, respectively.

Table 25
Do Analysts Understand Momentum?
Alternative Delisting Method 3

	(1)	(2)	(3)
	DV: ForecastReturn	DV: FutureReturn	Difference
MomentumReturnRest	-0.1332***	0.0218	-0.1550***
	(<.0001)	(0.189)	(<.0001)
MomentumReturnQ1	-0.2619***	-0.1661***	-0.0958***
	(<.0001)	(<.0001)	(0.0002)
MomentumReturnQ5	-0.0458***	-0.0071	-0.0387***
	(<.0001)	(0.3719)	(<.0001)
MarketReturn	-0.0444***	-0.9004***	
	(<.0001)	(<.0001)	
MVE	-0.0037**	-0.0031	
	(0.0173)	(0.1160)	
BTM	0.006	0.051***	
	(0.2820)	(<.0001)	
Return Volatility	1.4832***	2.23***	
	(<.0001)	(<.0001)	
Year Fixed Effects	Included	Included	
Analyst Fixed Effects	Included	Included	
Observations	733,677	733,677	
Adjusted R-Squared	0.0806	0.1528	
F-Value	333.33***	363.20***	

This table presents SUR results with robust standard errors clustered by firm. P-values are presented in parentheses. Column (1) contains regression results from the target price equation. Column (2) contains regression results from the future returns equation. Column (3) contains the difference between estimated coefficients of interest from the target price equation to the future returns equation and statistical significance is determined using a chi-square test. MomentumReturnRest is equal to the momentum return if the momentum return is in the second through fourth momentum return quintiles, and is zero otherwise. MomentumReturnQ1 is equal to the momentum return if the momentum return is in the first quintile, and is zero otherwise. MomentumReturnQ5 is equal to the momentum return if the momentum return is in the fifth quintile, and is zero otherwise. ForecastReturn is the target price as of the target price announcement date divided by stock price for the firm covered by the target price one day before the target price announcement date. FutureReturn is the twelve-month buy-and-hold return of the common stock for the firm covered by the target price beginning one day after the target price announcement date and ending twelve months (251 trading days) after the target price announcement date. MarketReturn is the value-weighted market return beginning six months (121 trading days) before the target price announcement and ending one day before the target price announcement date. MVE is the

market value of equity. BTM is the book-to-market ratio. ReturnVolatility is the standard deviation of daily returns for the six months prior to the target price announcement. ***, **, and * represent statistical significance from zero at the 1 percent, 5 percent, and 10 percent levels, respectively.

Table 26
Do Analysts Understand Momentum?
Alternative Delisting Method 4

	(1)	(2)	(3)
	DV: ForecastReturn	DV: FutureReturn	Difference
MomentumReturnRest	-0.2666***	0.0783**	-0.1883***
	(<.0001)	(0.0371)	(<.0001)
MomentumReturnQ1	-0.4042***	-0.1118	-0.2924***
	(<.0001)	(0.1233)	(0.0001)
MomentumReturnQ5	-0.3977***	-0.1025**	-0.2952***
	(<.0001)	(0.0103)	(<.0001)
MarketReturn	-0.1785***	-0.9035***	
	(<.0001)	(<.0001)	
MVE	-0.0034**	-0.003	
	(0.0268)	(0.1359)	
BTM	0.0101*	0.0536***	
	(0.0722)	(<.0001)	
Return Volatility	2.2532***	2.7596***	
	(<.0001)	(<.0001)	
Year Fixed Effects	Included	Included	
Analyst Fixed Effects	Included	Included	
Observations	733,677	733,677	
Adjusted R-Squared	0.0610	0.1508	
F-Value	305.37***	323.20***	

This table presents SUR results with robust standard errors clustered by firm. P-values are presented in parentheses. Column (1) contains regression results from the target price equation. Column (2) contains regression results from the future returns equation. Column (3) contains the difference between estimated coefficients of interest from the target price equation to the future returns equation and statistical significance is determined using a chi-square test. MomentumReturnRest is equal to the momentum return if the momentum return is in the second through fourth momentum return quintiles, and is zero otherwise. MomentumReturnQ1 is equal to the momentum return if the momentum return is in the first quintile, and is zero otherwise. MomentumReturnQ5 is equal to the momentum return if the momentum return is in the fifth quintile, and is zero otherwise. ForecastReturn is the target price as of the target price announcement date divided by stock price for the firm covered by the target price one day before the target price announcement date. FutureReturn is the twelve-month buy-and-hold return of the common stock for the firm covered by the target price beginning one day after the target price announcement date and ending twelve months (251 trading days) after the target price announcement date. MarketReturn is the value-weighted market return beginning six months (121 trading days) before the target price announcement and ending one day before the target price announcement date. MVE is the

market value of equity. BTM is the book-to-market ratio. ReturnVolatility is the standard deviation of daily returns for the six months prior to the target price announcement. ***, **, and * represent statistical significance from zero at the 1 percent, 5 percent, and 10 percent levels, respectively.

Table 27
Do Analysts Understand Momentum?
Alternative Delisting Method 5

	(1)	(2)	(3)
	DV: ForecastReturn	DV: FutureReturn	Difference
MomentumReturnRest	-0.1335***	0.0217	-0.1118***
	(<.0001)	(0.1913)	(<.0001)
MomentumReturnQ1	-0.2618***	-0.1645***	-0.0973***
	(<.0001)	(<.0001)	(0.0002)
MomentumReturnQ5	-0.0459***	-0.0072	-0.0387***
	(<.0001)	(0.3641)	(<.0001)
MarketReturn	-0.0443***	-0.9011***	
	(<.0001)	(<.0001)	
MVE	-0.0037**	-0.0032	
	(0.0174)	(0.1132)	
BTM	0.0061	0.0511***	
	(0.2809)	(<.0001)	
Return Volatility	1.4848***	2.2241***	
	(<.0001)	(<.0001)	
Year Fixed Effects	Included	Included	
Analyst Fixed Effects	Included	Included	
Observations	733,677	733,677	
Adjusted R-Squared	0.0806	0.1527	
F-Value	332.96***	363.31***	

This table presents SUR results with robust standard errors clustered by firm. P-values are presented in parentheses. Column (1) contains regression results from the target price equation. Column (2) contains regression results from the future returns equation. Column (3) contains the difference between estimated coefficients of interest from the target price equation to the future returns equation and statistical significance is determined using a chi-square test. MomentumReturnRest is equal to the momentum return if the momentum return is in the second through fourth momentum return quintiles, and is zero otherwise. MomentumReturnQ1 is equal to the momentum return if the momentum return is in the first quintile, and is zero otherwise. MomentumReturnQ5 is equal to the momentum return if the momentum return is in the fifth quintile, and is zero otherwise. ForecastReturn is the target price as of the target price announcement date divided by stock price for the firm covered by the target price one day before the target price announcement date. FutureReturn is the twelve-month buy-and-hold return of the common stock for the firm covered by the target price beginning one day after the target price announcement date and ending twelve months (251 trading days) after the target price announcement date. MarketReturn is the value-weighted market return beginning six months (121 trading days) before the target price announcement and ending one day before the target price announcement date. MVE is the

market value of equity. BTM is the book-to-market ratio. ReturnVolatility is the standard deviation of daily returns for the six months prior to the target price announcement. ***, **, and * represent statistical significance from zero at the 1 percent, 5 percent, and 10 percent levels, respectively.

Table 28
Do Analysts Understand Momentum?
Excluding Delisting Firms

	(1)	(2)	(3)
	DV: ForecastReturn	DV: FutureReturn	Difference
MomentumReturnRest	-0.1379***	-0.0067	-0.1312***
	(<.0001)	(0.7039)	(<.0001)
MomentumReturnQ1	-0.2756***	-0.2490***	-0.0266
	(<.0001)	(<.0001)	(0.3414)
MomentumReturnQ5	-0.0480***	-0.0197**	-0.0283***
	(<.0001)	(0.0252)	(0.0024)
MarketReturn	-0.0283***	-0.7950***	
	(0.0001)	(<.0001)	
MVE	-0.0012	-0.0010	
	(0.4988)	(0.6324)	
BTM	0.0128*	0.0633***	
	(0.0546)	(<.0001)	
Return Volatility	1.5733***	3.3963***	
	(<.0001)	(<.0001)	
Year Fixed Effects	Included	Included	
Analyst Fixed Effects	Included	Included	
Observations	581,793	581,793	
Adjusted R-Squared	0.0812	0.1752	
F-Value	265.43***	312.86***	

This table presents SUR results with robust standard errors clustered by firm. P-values are presented in parentheses. Column (1) contains regression results from the target price equation. Column (2) contains regression results from the future returns equation. Column (3) contains the difference between estimated coefficients of interest from the target price equation to the future returns equation and statistical significance is determined using a chi-square test. MomentumReturnRest is equal to the momentum return if the momentum return is in the second through fourth momentum return quintiles, and is zero otherwise. MomentumReturnQ1 is equal to the momentum return if the momentum return is in the first quintile, and is zero otherwise. MomentumReturnQ5 is equal to the momentum return if the momentum return is in the fifth quintile, and is zero otherwise. ForecastReturn is the target price as of the target price announcement date divided by stock price for the firm covered by the target price one day before the target price announcement date. FutureReturn is the twelve-month buy-and-hold return of the common stock for the firm covered by the target price beginning one day after the target price announcement date and ending twelve months (251 trading days) after the target price announcement date. MarketReturn is the value-weighted market return beginning six months (121 trading days) before the target price announcement and ending one day before the target price announcement date. MVE is the

market value of equity. BTM is the book-to-market ratio. ReturnVolatility is the standard deviation of daily returns for the six months prior to the target price announcement. ***, **, and * represent statistical significance from zero at the 1 percent, 5 percent, and 10 percent levels, respectively.

Table 29
Do Analysts Understand Momentum?
Controlling for Other Financial Information

	(1)	(2)	(3)
	DV: ForecastReturn	DV: FutureReturn	Difference
MomentumReturnRest	-0.1312***	0.0186	-0.1498***
	(<.0001)	(0.2671)	(<.0001)
MomentumReturnQ1	-0.2568***	-0.168***	-0.0888***
	(<.0001)	(<.0001)	(<.0001)
MomentumReturnQ5	-0.0479***	-0.0088	-0.0391***
	(<.0001)	(0.2543)	(<.0001)
MarketReturn	-0.0582***	-0.8954***	
	(<.0001)	(<.0001)	
MVE	-0.0056***	-0.0014	
	(0.0005)	(0.5659)	
BTM	-0.0087	0.0492***	
	(0.1647)	(<.0001)	
Return Volatility	1.1508***	2.4095***	
	(<.0001)	(<.0001)	
Accruals	-0.0074	-0.1521***	
	(0.7424)	(0.0036)	
Income	0.0000***	0.0000	
	(<.0001)	(0.1934)	
Loss	0.0534***	-0.0588***	
	(<.0001)	(<.0001)	
Leverage	0.0549***	0.0353	
	(<.0001)	(0.0907)	
RD	0.0000	0.0000	
	(0.7127)	(0.2613)	
Dividends	0.0000***	0.0000*	
	(0.0012)	(0.0655)	
Year Fixed Effects	Included	Included	
Analyst Fixed Effects	Included	Included	
Observations	725,273	725,273	
Adjusted R-Squared	0.0876	0.1545	
F-Value	249.16***	269.27***	

This table presents SUR results with robust standard errors clustered by firm. P-values are presented in parentheses. Column (1) contains regression results from the target price equation. Column (2) contains regression results from the future returns equation. Column (3) contains the difference between estimated coefficients of interest from the target price equation

to the future returns equation and statistical significance is determined using a chi-square test. MomentumReturnRest is equal to the momentum return if the momentum return is in the second through fourth momentum return quintiles, and is zero otherwise. MomentumReturnQ1 is equal to the momentum return if the momentum return is in the first quintile, and is zero otherwise. MomentumReturnQ5 is equal to the momentum return if the momentum return is in the fifth quintile, and is zero otherwise. ForecastReturn is the target price as of the target price announcement date divided by stock price for the firm covered by the target price one day before the target price announcement date. FutureReturn is the twelve-month buy-and-hold return of the common stock for the firm covered by the target price beginning one day after the target price announcement date and ending twelve months (251 trading days) after the target price announcement date. MarketReturn is the value-weighted market return beginning six months (121 trading days) before the target price announcement and ending one day before the target price announcement date. MVE is the market value of equity. BTM is the book-to-market ratio. ReturnVolatility is the standard deviation of daily returns for the six months prior to the target price announcement. Accruals is equal to Income minus operating cash flows, Income is equal to operating income, Loss is an indicator variable equaling one if Income is less than zero, and zero otherwise, Leverage is equal to long-term debt plus current debt divided by the sum of long-term debt, current debt, and the market value of equity. RD is equal to research and development expenses, and Dividends are equal to dividends paid. ***, **, and * represent statistical significance from zero at the 1 percent, 5 percent, and 10 percent levels, respectively.

Table 30
Do Analysts Understand Momentum?
Controlling for Other Financial Information and Analyst Characteristics

	(1)	(2)	(3)
	DV: ForecastReturn	DV: FutureReturn	Difference
MomentumReturnRest	-0.1273***	0.0738***	-0.2011***
	(<.0001)	(<.0001)	(<.0001)
MomentumReturnQ1	-0.2509***	-0.1023***	-0.1486***
	(<.0001)	(0.0001)	(<.0001)
MomentumReturnQ5	-0.0346***	0.0229**	-0.0575***
	(<.0001)	(0.0077)	(<.0001)
MarketReturn	-0.0261***	-0.9783***	
	(0.0005)	(<.0001)	
MVE	0.0000*	0.0000	
	(0.0604)	(0.4959)	
BTM	-0.0165**	0.011	
	(0.0219)	(0.3167)	
Return Volatility	2.0619***	1.7715***	
	(<.0001)	(<.0001)	
General Experience	0.0019***	0.0018***	
	(<.0001)	(0.0001)	
Firm-Specific Experience	-0.0004	0.0001	
	(0.4303)	(0.9109)	
Brokerage Size	-0.0015***	-0.0002	
	(<.0001)	(0.2685)	
Complexity	-0.0504***	0.0267***	
	(<.0001)	(<.0001)	
All-Star Analyst	-0.0051	0.0045	
	(0.1987)	(0.2763)	
Accruals	-0.0787**	-0.2074***	
	(0.0074)	(0.0002)	
Income	0.0000*	0.0000*	
	(0.0501)	(0.0868)	
Loss	0.0901***	-0.0609***	
	(<.0001)	(<.0001)	
Leverage	-0.0203	-0.0087	
	(0.1560)	(0.6099)	
RD	0.0000	0.0000	
	(0.5386)	(0.3802)	
Dividends	0.0000***	0.0000	
	(0.0040)	(0.1852)	
Year Fixed Effects	Included	Included	

Observations	725,273	725,273
Adjusted R-Squared	0.1138	0.1581
F-Value	248.54***	216.36***

This table presents SUR results with robust standard errors clustered by firm. P-values are presented in parentheses. Column (1) contains regression results from the target price equation. Column (2) contains regression results from the future returns equation. Column (3) contains the difference between estimated coefficients of interest from the target price equation to the future returns equation and statistical significance is determined using a chi-square test. MomentumReturnRest is equal to the momentum return if the momentum return is in the second through fourth momentum return quintiles, and is zero otherwise. MomentumReturnQ1 is equal to the momentum return if the momentum return is in the first quintile, and is zero otherwise. MomentumReturnQ5 is equal to the momentum return if the momentum return is in the fifth quintile, and is zero otherwise. ForecastReturn is the target price as of the target price announcement date divided by stock price for the firm covered by the target price one day before the target price announcement date. FutureReturn is the twelve-month buy-and-hold return of the common stock for the firm covered by the target price beginning one day after the target price announcement date and ending twelve months (251 trading days) after the target price announcement date. MarketReturn is the value-weighted market return beginning six months (121 trading days) before the target price announcement and ending one day before the target price announcement date. MVE is the market value of equity. BTM is the book-to-market ratio. ReturnVolatility is the standard deviation of daily returns for the six months prior to the target price announcement. Accruals is equal to Income minus operating cash flows, Income is equal to operating income, Loss is an indicator variable equaling one if Income is less than zero, and zero otherwise, Leverage is equal to long-term debt plus current debt divided by the sum of long-term debt, current debt, and the market value of equity. RD is equal to research and development expenses, and Dividends are equal to dividends paid. General Experience is the number of years through the year of the target price announcement date for which the analyst has supplied at least one target price for any firm, Firm-Specific Experience is the number years through the year of the target price announcement date for which the analyst has supplied at least one target price for firm i, Brokerage Size is a dummy variable which equals 1 if the analyst is employed by a firm in the top size decile during the year of the target price announcement, where size deciles are calculated based on the number of analysts issuing target prices in a calendar year, Complexity is the number of firms for which the analyst has supplied at least one target price in the year of the target price announcement, and All-Star Analyst is a dummy variable which equals 1 if the analyst is listed as a first-team 'All-Star' analyst by Institutional Investor in the year of the target price announcement. ***, **, and * represent statistical significance from zero at the 1 percent, 5 percent, and 10 percent levels, respectively.

Table 31
Do Analysts Understand Momentum?
Mishkin-Type Methodology

	(1)	(2)
	DV: ForecastReturn	DV: FutureReturn
MomentumReturnRest	-0.2273***	0.0022
	(<.0001)	(0.6000)
MomentumReturnQ1	-0.3872***	0.179***
	(<.0001)	(<.0001)
MomentumReturnQ5	0.0014	0.0079***
	(0.1150)	(0.0001)
	Likelihood Ratio Tests of Coefficient Equality	
MomentumReturnRest	1841.50***	
	(<.0001)	
MomentumReturnQ1	8996.10***	
	(<.0001)	
MomentumReturnQ5	6.36**	
	(0.0117)	

This table presents SUR results with robust standard errors clustered by firm. P-values are presented in parentheses. Column (1) contains regression results from the target price equation. Column (2) contains regression results from the future returns equation. Statistical significance of the difference between estimated coefficients of interest from the target price equation to the future returns equation is determined using a likelihood ratio test. MomentumReturnRest is equal to the momentum return if the momentum return is in the second through fourth momentum return quintiles, and is zero otherwise. MomentumReturnQ1 is equal to the momentum return if the momentum return is in the first quintile, and is zero otherwise. MomentumReturnQ5 is equal to the momentum return if the momentum return is in the fifth quintile, and is zero otherwise. ForecastReturn is the target price as of the target price announcement date divided by stock price for the firm covered by the target price one day before the target price announcement date. FutureReturn is the twelve-month buy-and-hold return of the common stock for the firm covered by the target price beginning one day after the target price announcement date and ending twelve months (251 trading days) after the target price announcement date. ***, **, and * represent statistical significance from zero at the 1 percent, 5 percent, and 10 percent levels, respectively.

Figure 1

Timeline for Firm i Returns as of Analyst k's Target Price Announcement on date t

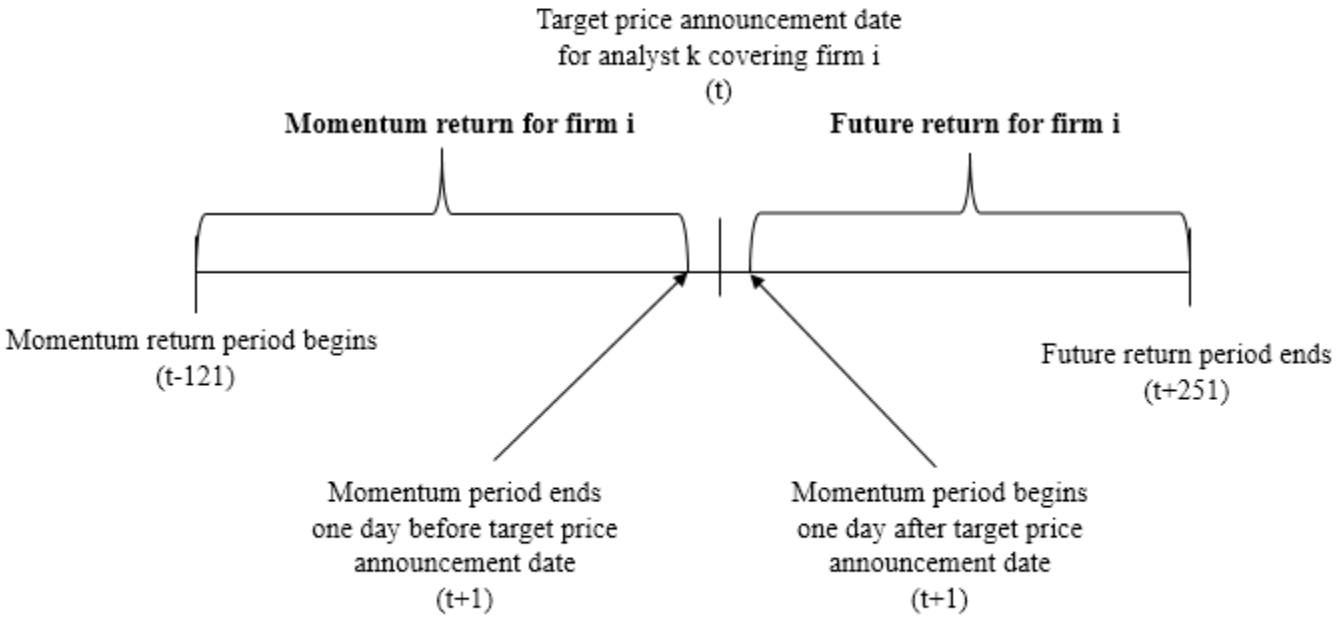

Figure 2
ForecastReturn and FutureReturn by MomentumReturn Quintile

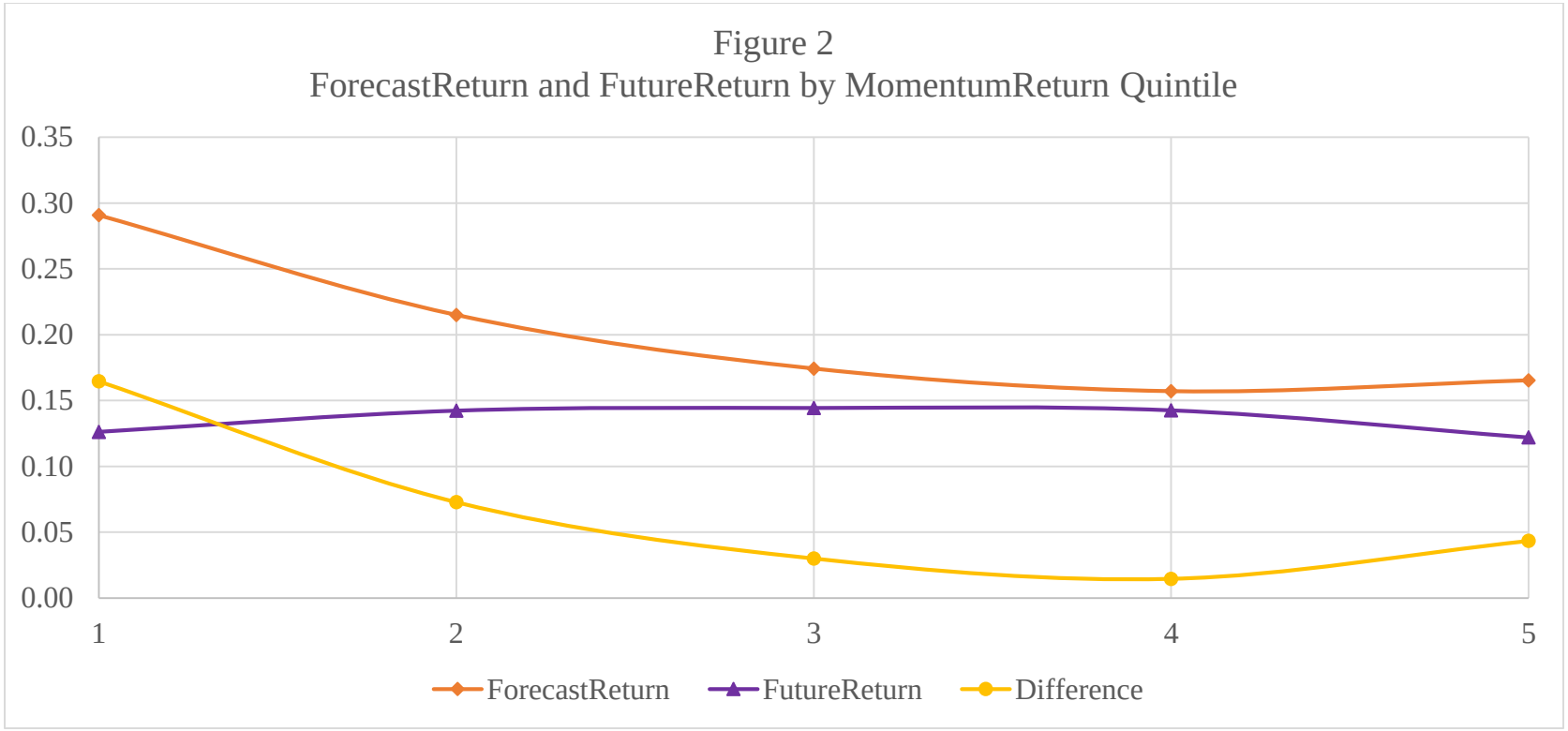

Figure 3
Change in ForecastReturn and Change in Target Price by MomentumReturn Quintile

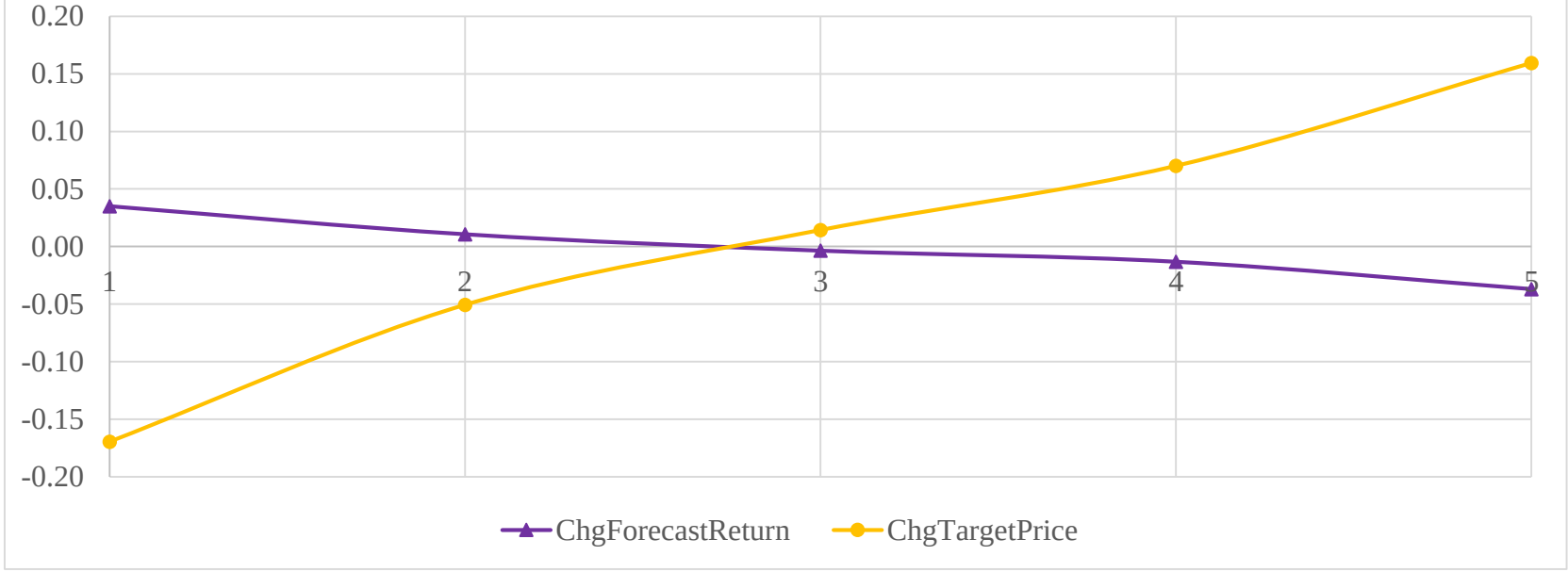

Figure 4
ForecastReturn and FutureReturn by 5DayReturn Quintile