Analysts' Non-GAAP Exclusions to Forecast Lower Earnings (but Higher Valuations)

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Abstract:

Although prior literature often assumes analysts' non-GAAP exclusions are motivated by a desire to forecast higher earnings and valuations, a significant portion (i.e., nearly 20%) of analysts' non-GAAP exclusions result in lower street than GAAP EPS forecasts. We exploit differences across analysts in their non-GAAP exclusions (including for the same firm/period) and document a robust positive relation between analysts' EPS-decreasing exclusions and the optimism of their concurrently-issued target prices. This association is inconsistent with the conventional wisdom that lower valuation inputs lead to lower valuation, but consistent with well-documented cognitive biases where analysts' extra effort to understand and forecast excluded items make them more optimistic towards the forecasted firms. Our results are not driven by analysts following managers' disclosures or reverse causality. Further, EPS-decreasing exclusions accompany higher growth forecasts than their non-exclusion counterparts. Finally, short-term market reactions suggest skepticism about higher valuations accompanied by EPS-decreasing exclusions.

Keywords: Analyst forecasts; Exclusions; Non-GAAP; Street earnings; Target prices; Optimism; Cognitive bias; Valuation; Growth

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1. Introduction

The wedge between firms' GAAP and non-GAAP earnings continues to grow, attracting both media and SEC attention (McCann 2018; Sherman 2020). The increasing popularity of non-GAAP reporting has triggered enormous academic interest in understanding its causes and consequences (see Black et al. 2018). In their seminal study, Bradshaw and Sloan (2002, page 42) propose that increased emphasis on non-GAAP earnings "may represent an attempt by managers and analysts to garner higher valuations by reporting the higher street earnings numbers." Indeed, subsequent studies assume that the use of non-GAAP metrics is at least partly driven by analyst and/or manager motivations to justify higher valuations (e.g., Gu and Chen 2004; Bentley et al. 2018). Recently, Mohanram et al. (2020) find that analysts who exclude stock-based compensation in calculating free cash flows provide more optimistic DCF valuations.

Much of the prior literature implicitly assumes that non-GAAP exclusions are EPS-increasing – for example, the exclusion of losses or stock-based compensation, resulting in non-GAAP earnings that exceed GAAP earnings – or explicitly focuses on EPS-increasing exclusions (e.g., Doyle et al. 2003; Baik et al. 2009). Although the majority of analyst exclusions are EPS-increasing, a substantial portion (i.e., nearly 20% in our sample) are actually EPS-decreasing. While earnings-increasing exclusions can be used to justify higher valuations, it is ex ante unclear what the valuation implications of individual analysts' EPS-decreasing exclusions are.[1]

[1] Non-GAAP earnings disclosed by firms are often referred to as "pro forma" earnings. Analysts' "street" earnings may or may not exclude GAAP earnings items, and may or may not equal firms' disclosed pro forma earnings. We refer to an analyst's exclusion forecast (their exclusion, for simplicity) as any difference between the analyst's GAAP and street EPS forecasts. For example, analyst A who forecasts $1.00 for both street and GAAP EPS has no exclusions, analyst B who forecasts $0.75 of street EPS and $0.80 of GAAP EPS has $0.05 of EPS-decreasing exclusions, and analyst C who forecasts $0.50 of street EPS and $0.30 of GAAP EPS has $(0.20) of EPS-increasing exclusions.

We form two hypotheses about the relation between analysts' EPS-decreasing exclusions and their valuations. On one hand, more pessimistic (optimistic) valuation inputs through exclusions could lead to more pessimistic (optimistic) valuations. We term this prediction as the "valuation input hypothesis." On the other hand, analysts are subject to cognitive bias in forming valuations (Bradshaw 2004). Prior literature finds that analysts put forth effort in making exclusions in order to identify persistent earnings (Barth et al. 2012), and to form more accurate forecasts (Bratten et al. 2022a). Indeed, we find that analyst reports with either type of exclusions are significantly longer than reports without exclusions. At the same time, in making exclusions, analysts may form an "inside view" (e.g., Kahneman and Lovallo 1993; Michaely and Womack 1999) and become optimistic as in the "IKEA effect" (e.g., Norton et al. 2012) where individuals place more value on items to which they devote more effort. These well-established cognitive biases lead to a different prediction that exclusions result in more optimistic valuations. We term this as the "cognitive bias hypothesis." We note that, while these two hypotheses predict opposite associations between EPS-decreasing exclusions and target price optimism (i.e., the main focus of the paper), they both predict a positive association between EPS-increasing exclusions and target price optimism. This tension highlights the importance of studying EPS-decreasing and EPS-increasing exclusions separately, given the potential for erroneous inferences when pooling them together, as the effect of EPS-increasing exclusions could dominate the effect of EPS-decreasing exclusions.

Before assessing the valuation implications of analysts' non-GAAP exclusions, we first observe that it is common for analysts to forecast EPS-decreasing exclusions. From I/B/E/S, we construct a sample of 1,365,164 individual analysts' GAAP and street EPS forecasts from 2003 to

2020 issued on the same day for the same firm-year, similar to Bradshaw et al. (2018).[2] For 39.4% of the sample, analysts make non-GAAP exclusions (i.e., the analyst's concurrent GAAP and street EPS forecasts differ). Moreover, 19.5% of these analyst exclusions result in lower street EPS than GAAP EPS forecasts. Second, we confirm prior evidence that individual analysts make different exclusion decisions for the same firm/period (Bratten et al. 2022a). Third, we hand-collect a sub-sample of analyst reports that correspond to forecasts in our sample. We observe that analysts' EPS-decreasing exclusions primarily reflect non-recurring items, such as gains and discontinued items, and have already been reported by the firm during the same fiscal year, while EPS-increasing exclusions primarily pertain to recurring items, and have not already been reported by the firm during the same fiscal year.[3]

Our main analyses directly test the relation between analysts' non-GAAP exclusions and the optimism of their contemporaneously issued target prices. We follow prior literature and assess analyst target prices relative to current and future prices (e.g., Bradshaw et al. 2019). In regression analyses, after controlling for various firm and analyst characteristics as well as analyst incentives to be optimistic and accurate, we observe that both analysts' EPS-decreasing and EPS-increasing exclusions are associated with higher target price optimism, both ex ante and ex post. Simply put, analysts who make non-GAAP exclusions appear more optimistic than analysts with the same GAAP and street EPS forecasts. While the results for EPS-increasing exclusions are consistent with both the valuation input and cognitive bias hypotheses, the results for EPS-decreasing exclusions are only consistent with the cognitive bias hypothesis, and inconsistent with the valuation input hypothesis. Notably, when we do not separate EPS-decreasing from EPS-

[2] While Bradshaw et al. (2018) focus on overall exclusions for the firm-quarter, we work with analysts' exclusion *forecasts* for the firm-year given our focus on valuation, which is underpinned by longer term forecasts.

[3] In Appendix B, we confirm these systematic differences between analysts' EPS-decreasing and -increasing exclusions in a large-sample analysis of the association between analysts' exclusions and Compustat earnings items.

increasing exclusions in these analyses, the results are dominated by EPS-increasing exclusions, leading to incorrect research inferences about EPS-decreasing exclusions.

We try to rule out two alternative explanations. First, it is possible that managers' use of non-GAAP earnings plays an important role in guiding analyst exclusion choices (e.g., Brown et al. 2015; Bentley et al. 2018) and potentially confounds the relation between analysts' exclusions and their target price optimism. It is worth noting that there is substantial variation across analysts in their use of non-GAAP exclusions, as discussed earlier. Nevertheless, to further alleviate this concern, we conduct two sets of analyses that take advantage of variation in the use of non-GAAP exclusions across individual analysts for the same firm/year. First, we add firm-year fixed effects to the regressions, and we find that all our inferences related to EPS-decreasing exclusions remain. Second, in matched sample analyses, we compare the target prices issued by analysts who forecast EPS-decreasing exclusions and by analysts who do not make earnings exclusions for the same firm/year in order to strictly hold constant the disclosure and information environment.[4] We observe consistent evidence that EPS-decreasing exclusions (as well as EPS-increasing exclusions) are associated with more optimistic target prices, both ex ante and ex post. Taken together, these results provide evidence that management disclosures are unlikely the main driver of the positive relation between analysts' EPS-decreasing exclusions and target price optimism.

A second alternative explanation for the phenomena we observe is reverse causality, i.e., analysts expend effort to forecast and understand the earnings of the firms for which they are most optimistic, paying extra attention to excluded earnings items and their implications. To address the possibility of reverse causality, we examine the association between target price optimism and

[4] To further mitigate concerns related to potential correlated omitted variables, we conduct similar analyses but match within analyst-time to isolate variation across firms and within firm-analyst to isolate variation across time. Our inferences related to EPS-decreasing exclusions are similar (results untabulated).

EPS-decreasing exclusions across partitions of analysts with Buy vs. with Hold/Sell recommendations. The latter partition provides a placebo test of the reverse causality story, which relies on analysts having positive opinions on firms. We observe similar results in both partitions, inconsistent with the reverse causality story, but consistent with the cognitive bias hypothesis.

We next investigate the mechanism by which analysts' EPS-decreasing exclusions translate into higher valuations. First, we assess the association between analysts' target prices and the components of their contemporaneously-issued earnings forecasts. We confirm that analysts put more weight on their street than GAAP EPS forecasts, consistent with Gu and Chen (2004). More importantly, we find that analysts' target prices are positively associated with the magnitude of their concurrent EPS-decreasing exclusions, after controlling for their street EPS forecasts – even though, in our prior analyses, EPS-decreasing exclusions largely reflect non-recurring items that have already been reported by the firm. Second, we explore whether and how analysts adjust other valuation inputs, such as forecasted growth, when they make non-GAAP exclusions. Again using samples strictly matched on firm and time, we observe that EPS-decreasing exclusions are associated with higher imputed growth forecasts, which are not justified by future realized growth, suggesting that higher growth forecasts contribute to analysts' optimistic valuations.

Finally, we investigate whether investors correct for any of the observed optimism in target prices that are accompanied by exclusions. To do so, we examine short-term market reactions to individual analysts' target price revisions as in Brav and Lehavy (2003). We find that the market reacts less (more) strongly to target price revisions with EPS-decreasing (-increasing) exclusions relative to non-exclusion target prices in the short (longer) term, controlling for analysts' concurrent EPS forecast and recommendation updates. In other words, the market seems to be

skeptical about higher valuations associated with lower EPS forecasts (as a result of EPS-decreasing exclusions) and higher growth estimates.

We contribute to the accounting literature in several ways. First, we present robust evidence that individual analysts' EPS-decreasing exclusions lead to higher target price optimism. This is surprising given the conventional wisdom that analysts and managers use EPS-increasing exclusions to justify higher valuations (e.g., Bradshaw and Sloan 2002) and evidence that analysts' exclusions of stock-based compensation in calculating free cash flows contribute to optimism in their target prices (Mohanram et al. 2020). We argue that one reason why analysts' non-GAAP exclusions lead to optimism is because of cognitive bias – analysts tend to be more optimistic when they put more effort into understanding and forecasting exclusions.[5] In this way, we also add to the growing literature on analysts' behavioral biases (Bradshaw 2004; Hirshleifer 2020) and we help to understand the "black box" of analysts' outputs (Bradshaw 2011).

Relatedly, while prior studies often do not distinguish analysts' EPS-decreasing exclusions from their EPS-increasing exclusions (e.g., Bentley et al. 2018) or explicitly remove EPS-decreasing exclusions from their analyses (e.g., Baik et al. 2009), we find that EPS-decreasing exclusions are rather common and we provide evidence that pooling together the two types of exclusions could lead to incorrect inferences about the impact of EPS-decreasing exclusions on analysts' valuation optimism. In this way, we add to the growing literature on analyst exclusions (e.g., Gu and Chen 2004), and provide a more complete picture of the analyst exclusion landscape.

[5] Our finding that analysts' EPS-decreasing exclusions are positively associated with target price optimism relates to a small literature on the inconsistency in analysts' recommendations, EPS forecasts, and target prices (e.g., Brown and Huang 2013; Malmendier and Shanthikumar 2014; Iselin et al. 2021). A key difference is that we focus on the role of non-GAAP exclusions in creating the apparent inconsistency, which is not discussed in these papers.

We also contribute to the target price literature. Prior research on analyst valuations considers street earnings (e.g., Bradshaw 2002) while ignoring the other, excluded components of GAAP earnings that are used to calculate street earnings. Specifically, we exploit individual analysts' non-GAAP exclusions, which differ for the same firm/period, to study how analysts use the different components of earnings in their valuations and the implications for the optimism of their valuations. While prior research describes the impact of incentives (Dechow and You 2020) and country-level institutional factors (Bradshaw et al. 2019) on target price optimism, we identify a specific tool through which analysts form more optimistic valuations, analogous to how Doyle et al. (2013) find that managers use non-GAAP reporting as one more tool for earnings management.

Finally, by studying the valuation implications of analyst exclusions, we evaluate the informativeness of non-GAAP exclusions from a different angle. Prior studies usually focus on the properties of excluded items, or the relation between non-GAAP earnings and future returns. For example, prior researchers document that firms' non-GAAP earnings better predict future cash flows (Doyle, Lundholm, and Soliman 2003) and are more aligned with investor returns (Brown and Sivakumar 2003) than GAAP earnings. Our evidence sheds new light on the informativeness of analysts' non-GAAP exclusions.

2. Literature review and hypotheses development

2.1 Literature on Non-GAAP exclusions

2.1.1 Non-GAAP reporting by firms

Non-GAAP reporting by firms has increased substantially over time (Black et al. 2018). Given the growth in non-GAAP earnings disclosures, researchers have investigated non-GAAP

versus GAAP earnings as predictors of future performance, as well as investor and analyst reactions to firms' non-GAAP earnings. Studies that examine the association of GAAP and non-GAAP earnings with future earnings and cash flows generally find that non-GAAP earnings better predict future performance than GAAP earnings, suggesting that overall excluded earnings components are likely to represent more transitory or less persistent earnings items (Doyle et al. 2003; Gu and Chen 2004; Kolev et al. 2008; and Barth et al. 2012). Studies that examine investor reliance on GAAP versus non-GAAP earnings generally find that stock prices are more aligned with non-GAAP earnings than with GAAP earnings (Brown and Sivakumar 2003; Bhattacharya et al. 2003). Doyle et al. (2013) find that the market discounts firms' earnings surprises when the surprise is associated with the use of earnings-increasing exclusions; these authors describe a mechanical relation between earnings-increasing exclusions and firms meeting-or-beating EPS targets. More recently, Bradshaw et al. (2018) find that the market reacts to the earnings surprise from both non-GAAP (i.e., street) earnings and excluded earnings items.

These studies of earnings persistence and investor reactions typically use actual street earnings from I/B/E/S, a prominent forecast data aggregator, to proxy for firms' non-GAAP earnings (Bentley et al. 2018). I/B/E/S owner Thomson Reuters (2009) describes street earnings as including the firm's earnings components that the majority of analysts following that firm include in their forecasts. Like firm-reported non-GAAP earnings, analyst use of street earnings that differ from firm-reported GAAP earnings has increased over time. Bratten et al. (2022b) observe that 50% of firm-quarters in their 2004 to 2017 sample have GAAP EPS that differ from I/B/E/S street EPS, with that difference reaching 62% in 2017.

2.1.2 Non-GAAP forecasting by analysts

Some non-GAAP research focuses directly on analyst exclusions. Similar to the literature on managers' non-GAAP earnings, a common topic is whether analyst exclusions result in forecasts that are more or less informative. The main approach is to study whether exclusions reflect recurring vs. transitory earnings items.[6] In other words, if the earnings items excluded by analysts are non-recurring, then analyst exclusions result in more informative forecasts. For example, Barth et al. (2012) examine analyst exclusion decisions with respect to stock-based compensation expense (SBC) and find evidence that SBC is excluded from (included in) analyst forecasts of future earnings when excluding is more (less) predictive of future earnings. These findings are consistent with analysts' exerting effort to understand excluded items, as well as with the Bentley et al. (2018) conclusion that analyst exclusion decisions differ from and are less aggressive than management's use of exclusions. However, as documented in Gu and Chen (2004), not all nonrecurring items have the same level of persistence and valuation implications, and analysts seem to have the ability to distinguish those items with high versus low persistence. In other words, including nonrecurring items in street earnings does not necessarily indicate that analyst exclusions are uninformative. Moreover, given the evidence of opportunism in firms' non-GAAP reporting, doing better than managers does not necessarily mean that analyst exclusions result in more informative EPS forecasts. For example, Bratten et al. (2022b) find that analysts exclude recurring, not just transitory, earnings items, including SBC, restructuring costs, and write-downs. Mohanram et al. (2020) find that analysts tend to exclude SBC from their street EPS forecasts, and provide more optimistically biased target prices for firms with higher SBC.

Another approach used in the prior literature is to focus on analyst incentives. As Lambert (2004) suggests, if analyst incentives motivate their exclusion decisions, analyst exclusions might

[6] A related approach is to study whether the excluded items are "cash based." For example, Whipple (2015) argues that investors are less concerned about non-cash earnings items such as amortization expense and gains and losses.

not be informative. Building on Lambert (2004), Baik et al. (2009) conclude that trading and investment banking incentives induce analysts to make EPS-increasing exclusions (e.g., expenses and losses) from earnings, particularly for growth stocks.

However, the prior literature typically either groups together analysts' EPS-increasing and EPS-decreasing exclusions (e.g., Bentley et al. 2018, in assessing analyst exclusions from actual street earnings, and Bradshaw et al. 2018, in calculating the "exclusions surprise"), or explicitly focuses only on EPS-increasing exclusions (e.g., Baik et al. 2009), overlooking the considerable proportion of analyst exclusions that are EPS-decreasing. While a few studies examine *managers'* earnings-decreasing exclusions (Curtis et al. 2014; Doyle et al. 2013), we fill this void in the literature by studying EPS-decreasing exclusions separately from *analysts'* EPS-increasing exclusions.[7]

2.2 Literature on analyst target prices

We are interested in the relation between analysts' use of exclusions and the optimism of their target prices. Analyst target prices are often used to proxy for analyst estimates of firm value (e.g., Botosan and Plumlee 2002). Prior research generally finds that target prices are informative. For example, Brav and Lehavy (2003) find that target price forecasts matter for stock returns conditional or unconditional on contemporaneously issued recommendations and earnings forecasts. Asquith et al. (2005) analyze the complete content of All-Star analyst reports and find that target prices remain a strong predictor of investor responses, even after controlling for analysts' qualitative assessments, EPS forecasts, and recommendations.

[7] We are not the first to notice the existence of analysts' EPS-decreasing exclusions. For example, Gu and Chen (2004) study whether analysts exclude non-recurring items, including gains. Donelson et al. (2020) and Beardsley et al. (2021) discuss analysts' exclusions of non-recurring tax items, both EPS-increasing and -decreasing. Leung and Veenman (2018) study non-GAAP exclusions in loss firms. Building on the evidence from these and other studies, we are the first to systematically study the differences between analysts' EPS-decreasing and EPS-increasing exclusions.

At the same time, a key feature of analyst valuations is that they are overwhelmingly optimistic. For example, Bradshaw (2004) finds that analyst recommendations rely less on rigid present value models but more on heuristic valuation models that emphasize long-term growth in earnings. Prior literature evaluates sell-side analyst target prices both relative to current price and as predictors of future price. Bradshaw et al. (2013) find that only 38% of target prices are met after a 12-month horizon. Recent empirical evidence finds that analyst target prices typically imply a 19 to 22% return relative to current price (Bradshaw et al. 2019; Dechow and You 2020).[8] As a key element of target prices, optimism provides an ideal setting for researchers to understand how target prices are affected by other factors (Bradshaw et al. 2019). Moreover, prior research indicates that adjusting for optimism can improve the informativeness of target prices. Da and Schaumburg (2011) find that analysts' relative, within-industry valuations are much more informative than absolute valuations. Dechow and You (2020) observe that realized returns are more strongly associated with the implied returns of target prices after correcting for the predictable errors in analyst earnings forecasts following So (2013).

2.3 Hypotheses development

It is unclear ex ante how EPS-decreasing exclusions affect analysts' valuation optimism. We develop two competing hypotheses. On one hand, the conventional wisdom is that any differences in individual analysts' exclusions could carry through to differences in their target prices. As Mohanram et al. (2020) show in a hand-collected sample of analyst reports that include DCF valuations, analysts who exclude stock-based compensation expense in calculating free cash flow issue more optimistic target prices than analysts who do not exclude SBC. In other words, a

[8] Gleason et al. (2013) conclude that the quality of analysts' target prices can be compromised by inaccurate forecasts or other valuation model inputs. Bilinski et al. (2013) find significant variation in average target price accuracy across countries due to differences in accounting disclosure quality, legal origins, cultural traits, and IFRS regulation.

more optimistic valuation input through exclusions leads to more optimistic valuation. It is natural to expect that this logic applies to analysts' EPS exclusions, and as a result we would expect that EPS-decreasing exclusions lead to lower target prices. We refer to this as the valuation input hypothesis, which we state in the alternative form.

Valuation input hypothesis: Individual analysts' EPS-decreasing exclusions lead to lower target price optimism.

On the other hand, well-established theories in psychology and behavioral economics would predict the opposite effect due to cognitive biases that increase in the presence of effort. Kahneman and Lovallo (1993) identify a systematic bias labeled as "inside view bias." This "inside bias" is discussed in several prior studies in the analyst literature, including Michaely and Womack (1999), Lundholm and Rogo (2016), and Chan et al. (2018). Relatedly, an emerging stream of literature in psychology and consumer behavior focuses on effort justification (e.g., Norton et al. 2012). That is, people tend to ascribe more value to items they put more effort into. This is also called "IKEA effect" such that people give products they assemble from IKEA more value than a similar product.[9]

Recent research suggests that, by making exclusions, analysts invest more effort in earnings forecasts than analysts not making exclusions, for example, by understanding the nature of the excluded items and justifying why certain items are excluded (Barth et al. 2014; Bratten et al. 2022a).[10] We observe that extra "effort" is reflected in the length of analyst reports.

[9] Kahneman and Lovallo (1993) use the analogy of parents who see their children as above-average. Warren (2012) theoretically ties together auditor bias and auditor effort while O'Donnell and Schultz (2005) hypothesize and find that auditors who develop favorable risk assessments are less likely to adjust for inconsistent fluctuations, consistent with the "halo effect". Relatedly, accounting researchers including Denison (2009) and Kadous and Sedor (2010) refer to managers' "escalation of commitment" to less profitable projects.

[10] For example, in forecasting a discontinued business segment and/or any gain or loss related to the divestiture of that segment, an analyst might expend effort to understand and forecast the implications of discontinuing the segment for the remaining, continuing operations of the business. SEC regulations related to firms' issuance of non-GAAP forecasts reference the effort needed to reconcile such forecasts to GAAP-based forecasts (Laurion and Sloan 2022).

Specifically, among all analyst reports in ThomsonOne that we can match with our I/B/E/S sample, we find that reports with EPS-decreasing (N = 7,326; mean length = 10.18 pages) or EPS-increasing exclusions (N = 37,269; mean length = 10.27) are significantly longer in pages than reports without exclusions (N = 72,000; mean length = 9.58; results untabulated). Analysts' incremental level of "effort" related to exclusions could potentially lead to cognitive biases. In other words, with more effort put into identifying exclusions, analysts view firms less objectively, and put less weight on the statistical reality that their covered firms will turn out to be average. By contrast, analysts without exclusions might form their valuation judgments more objectively. We refer to the notion that putting more effort into exclusions would lead to more favorable bias as the cognitive bias hypothesis, which we state in the alternative form.

Cognitive bias hypothesis: Individual analysts' EPS-decreasing exclusions lead to higher target price optimism.

We note that these two hypotheses both predict a positive association between analysts' EPS-increasing exclusions and their target price optimism. In our empirical analyses, we present EPS-increasing exclusions alongside EPS-decreasing exclusions for comparison.

3. Analysts' non-GAAP forecasts: EPS-decreasing versus EPS-increasing exclusions

3.1 The landscape of analysts' non-GAAP exclusions

Our main interest is the relation between analysts' EPS-decreasing exclusions and target price optimism. Before we test our hypotheses, we briefly describe analysts' non-GAAP exclusions in terms of the frequency of and the differences between EPS-decreasing versus EPS-increasing exclusions. We define an individual analyst's exclusion (*Exclusion*), a continuous variable, as the analyst's GAAP earnings per share forecast, *GPS*, minus the analyst's street earnings per share forecast, *EPS*, made on the same day for the same firm and fiscal period; the

earnings variables are scaled by the closing price from three trading days prior to the forecast date.[11] We further define *Exclusion_EPSDec* (*Exclusion_EPSInc*) as *Exclusion* when *Exclusion* is negative (positive), i.e., the exclusion results in lower *EPS* relative to *GPS* (*GPS* relative to *EPS*), and zero otherwise. Intuitively, *Exclusion_EPSDec* (*Exclusion_EPSInc*) reflects the exclusion of earnings items that positively (negatively) impact GAAP earnings such as gains (losses).[12] The *D_Exclusion_EPSDec* (*D_Exclusion_EPSInc*) indicator variable equals one if *Exclusion_EPSDec* (*Exclusion_EPSInc*) is non-zero, and equals zero otherwise.

We download all analyst-related data from I/B/E/S. We begin the sample in 2003, when I/B/E/S started to collect analyst GPS forecasts (Bradshaw et al. 2018), and we end the sample in 2020 so that we can observe one-year-ahead prices to calculate ex post target price optimism variables.[13] From the I/B/E/S detailed forecast database, we retain the 1,365,164 analyst-firm-day observations with both non-missing GAAP ("GPS" in I/B/E/S) and street ("EPS") earnings-per-share forecasts for the upcoming fiscal year (i.e., "FPI" = 1).[14] For analyst-firm combinations with multiple EPS or GPS forecasts issued on the same day, we keep the last one based on the time of the announcement. Of these, 1,300,537 forecasts can be matched with CRSP PERMNOs. Panel A of Table 1 presents details of our sample selection procedure.

We examine the prevalence of both types of exclusions in analyst earnings forecasts. We classify each observation based on whether the analyst's street EPS forecast equals, is smaller than, or exceeds their GPS forecast. Panel B of Table 1 shows that, in our sample, 60.6% of EPS

[11] While Whipple (2015) and Bradshaw et al. (2018) focus on overall exclusions from quarterly earnings, we focus on fiscal-year earnings and exclusions forecasts, and their association with valuation forecasts.
[12] The exclusion of earnings items that positively or negatively impact GAAP earnings is not mutually exclusive. We can only observe the net amount of each analyst's exclusions using I/B/E/S data. It is possible that in a small number of cases, we incorrectly identify analysts as having no exclusions when the analyst excludes both earnings items of similar magnitude that positively and negatively impact GAAP earnings. However, such misidentification would bias against us finding differences between analysts' forecasts with and without exclusions.
[13] We downloaded all I/B/E/S data on July 16, 2022.
[14] Chen and Koester (2021) evaluate the quality of analysts' GAAP forecasts.

forecasts are issued without exclusions (i.e., EPS = GPS in Column 2) and 39.4% are issued with exclusions (EPS ≠ GPS in Column 3), including 7.7% with EPS-decreasing exclusions (EPS < GPS in Column 4) and 31.7% with EPS-increasing exclusions (EPS > GPS in Column 5). It is worth noting that the proportion of non-exclusions increased from 2003 until 2009, and gradually decreased to 58.0% by 2020, while both types of exclusions have generally witnessed an opposite trend. Overall, non-exclusions range from 48.6% in 2003 to 70.8% in 2009; those with EPS-increasing exclusions range from 24.8% in 2009 to 40.0% in 2003; and those with EPS-decreasing exclusions range from 4.4% in 2009 to 11.4% in 2003. These statistics show that analysts' EPS-decreasing exclusions comprise a significant portion (i.e., 19.5%=7.7/39.4) of overall exclusions. Further, over 60% of firm-years (untabulated) exhibit at least some variation among analysts' exclusion choices, indicating that not all analysts follow precisely what managers exclude. Given the significance and limited research attention of EPS-decreasing exclusions, it is important to examine how they differ from the more common EPS-increasing exclusions in a valuation setting.

Panel C of Table 1 presents the summary statistics for the winsorized GAAP and street EPS forecasts and exclusions. We find that the average GAAP EPS forecast (GPS) is $2.941 per share, lower than the average street EPS of $3.352 per share. The difference is the average exclusion of $0.280 per share. For EPS-decreasing and EPS-increasing exclusions, the average is $0.399 and -$0.980 per share, respectively.

3.2 Differences between analysts' EPS-increasing and EPS-decreasing exclusions

Prior research provides some evidence of the differences between analysts' EPS-decreasing and EPS-increasing exclusions (e.g., Gu and Chen 2004). We further investigate these differences by examining the specific earnings items excluded by analysts in our sample. As this information is not available in machine-readable format such as in I/B/E/S, we hand-collect analyst

reports from the Thomson ONE database. Specifically, we start from our sample of EPS-decreasing and EPS-increasing exclusions with at least five cents per share in magnitude. Then we download 600 reports that correspond to a random sample of 300 EPS-decreasing exclusion observations and another random sample of 300 EPS-increasing exclusion observations, after matching the broker, analyst, firm, and forecast date between I/B/E/S and Thomson ONE. Table 2 summarizes this analysis.

For the 300 analyst reports with EPS-decreasing exclusions, we delete eight reports with GAAP forecasts that do not match the analyst's GPS forecast in I/B/E/S due to apparent data errors. For 116 of the remaining 292 reports, we can identify the sources of the analyst's EPS-decreasing exclusions. We observe that 76 pertain to gains, 16 to discontinued items, 9 to taxes, and 17 to other items such as equity income and provision adjustments (with some reports having exclusions in more than one category). For 87 (13) [8] of the 116 reports, all (some) [none] of the amount of the analyst's exclusions from their fiscal-year EPS forecasts pertain to earnings items reported during a previous quarter of the same fiscal year, while for the remaining eight reports we cannot observe the timing of the underlying earnings items.

For the 300 analyst reports with EPS-increasing exclusions, we delete five reports with GAAP forecasts that do not match the analyst's GPS forecast in I/B/E/S. For 140 of the remaining 295 reports, we can identify the source of the analyst's EPS-increasing exclusions. We observe that 81 pertain to stock-based compensation, 47 to amortization, 21 to restructuring charge, 16 to losses, 14 to discontinued items, 6 to taxes, 7 to impairments, 3 to research and development (R&D) expense, and 42 to other accounts (with some reports having exclusions in more than one category). For 27 (79) [20] of the 140 reports, all (some) [none] of the amount of the analyst's

exclusions from their fiscal-year EPS forecasts pertain to earnings reported during a previous quarter of the same fiscal year, while for the remaining 14 reports we cannot observe the timing.[15]

Table 2 provides a few important insights on the difference between analysts' EPS-increasing and EPS-decreasing exclusions. First, as expected, the excluded items are very different. In particular, EPS-increasing exclusions are largely based on recurring expenses, such as stock-based compensation, depreciation and amortization, and R&D expense, while the EPS-decreasing exclusions generally pertain to non-recurring items. Second, the extent to which analyst exclusions reflect already-reported earnings items is different. Specifically, while only 19.3% of EPS-increasing exclusions are based on already-reported earnings items, this statistic is almost four times higher at 75.0% for EPS-decreasing exclusions. Taken together, analysts appear more willing to forecast not-yet reported recurring items when making EPS-increasing exclusions, and reflect already-reported non-recurring items when making EPS-decreasing exclusions. We confirm these observations in Appendix B using a large-sample analysis of the association between analysts' non-GAAP exclusions and Compustat earnings items. Overall, these results provide strong evidence on how analysts' EPS-increasing exclusions and EPS-decreasing exclusions differ in the type and timing of excluded items, highlighting the importance of studying them separately.

4. Analysts' non-GAAP exclusions and target price optimism

After establishing the prevalence of analysts' EPS-decreasing exclusions and the differences from their EPS-increasing counterparts, we next turn to our main tests of the relation between analysts' target price optimism and their EPS-decreasing exclusions, using the relation between analysts' target price optimism and their EPS-increasing exclusions as a benchmark.

[15] For 176 reports with EPS-decreasing exclusions and 155 analyst reports with EPS-increasing exclusions, we could not identify the source of the exclusions because the analyst did not precisely describe the difference between their GAAP and non-GAAP (aka "adjusted" or "pro forma") forecasts other than as a "non-recurring" or "special" item.

4.1 Target price optimism variables and sample construction

Following Botosan and Plumlee (2002), we use an individual analyst's 12-month target price (*TP*) as a proxy for the analyst's valuation forecast. To assess target price optimism, we compare the target price with current and future price, using measures that follow prior literature (Bradshaw et al. 2013; Gleason et al. 2013; Bradshaw et al. 2019). As an ex ante measure of optimism, *TP_IMPRET* is the implied return of a target price relative to current price and equals the target price divided by the current price (i.e., the price from three trading days prior to the forecast date), less one. Ex post measures include both target price forecast error (*TP_FERR*) which is the price in 12 months less the target price, scaled by current price, and *TP_MET%* which is the percentage of days with closing prices higher than the target price over the next 12 months. Intuitively, target price optimism increases with *TP_IMPRET* but decreases with *TP_FERR* and *TP_MET%*. Our research design assesses the target prices issued by analysts who do and do not make exclusions on the same date, which we refer to as target prices with exclusions and non-exclusion target prices. Appendix A includes all variable definitions.

For target prices, we collect the 1,605,899 analyst-firm-day target price forecasts issued with a 12-month horizon. For analyst-firm combinations with multiple target prices issued on the same day, we retain the last one based on the time of announcement ("ANNTIMS" in I/B/E/S). We then merge target prices with concurrently-issued earnings forecasts, and keep the 558,457 analyst-firm-day observations with target prices and both GAAP and street earnings forecasts issued by the same analyst on the same day for the same firm in order to hold constant the information environment. Of these, 513,399 observations have non-missing control variables required for our analyses.

4.2 Regression model and control variables

In this section, we regress each of the three target price optimism measures on the exclusions variables, as well as control variables including firm and analyst characteristics, market-level variables, and year and industry fixed effects, as in the following equation:

$$TP\ Measure_{ijt} = \alpha_0 + \alpha_1 |Exclusion\_EPSDec|_{ijt} + \alpha_2 |Exclusion\_EPSInc|_{ijt} + \alpha_3 EPS_{ijt} + \sum Controls + \text{Year} + \text{Industry} + \epsilon_{ijt} \quad (1)$$

TP Measure$_{ijt}$ represents either *TP_IMPRET*, *TP_FERR*, or *TP_MET%* for analyst *i* following firm *j* in year *t*. We consider two types of exclusions separately by including both $|$*Exclusion_EPSDec*$|$ and $|$*Exclusion_EPSInc*$|$ to represent an analyst's non-GAAP exclusions. As an alternative to these continuous measures, we also consider two indicator variables, *D_Exclusion_EPSDec* and *D_Exclusion_EPSInc*. We control for the analyst's street EPS forecast, *EPS*, and for analyst incentives to optimistic and accurate. To capture optimism incentives, we follow Dechow and You (2020). While incentives to generate more trading and to help firms with external financing can result in more optimistic target prices, reputational concerns with institutional investors may cause analysts to be more cautious and *less* optimistic, consistent with survey-based evidence in Brown et al. (2015). As in Dechow and You (2020), we measure *VolPct* as the percentile rank of dollar trading volume in the past 12 months within each exchange, *Ext Fin* as the external financing (scaled by total assets) of the most recent fiscal year that ends three months before the month of the forecast, and *IOR* as the institutional ownership at the end of calendar quarter prior to the month of the forecast. To capture incentives to be accurate, we include *Past_Accuracy* which reflects the accuracy of one analyst relative to all analysts covering the same firm in the prior year.

We include additional firm- and analyst-level control variables, including the log of market capitalization (*LogMV*), book-to-market ratio (*BTM*), analyst coverage (*Nanalyst*), the analyst's firm-specific experience (*Fexp*) and general experience (*Gexp*), the number of firms the analyst covers (*Nfirms*), and the natural logarithm of the number of analysts employed by the analyst's broker-employer (*Bsize*). In addition, we follow Bradshaw et al. (2019) and include the following controls: revenue growth in the past five years (*Rev_growth*), intangible to current asset ratio (*Intangible*), average turnover in the past 12 months (*Turnover*), stock price volatility (*RetSTD*), the percentage change of target price by the same analyst (*ΔTP*), the cumulative abnormal returns between the previous and current target price forecast dates (*Return_rev*), the analyst's earnings forecast optimism (*EPS Optimism*), and the cumulative S&P 500 index return over the previous 12 months (*S&P500Ret*).

Table 3, Panel A presents descriptive statistics for the variables used in the regression analysis. On average, sample target prices are 26.2 percent higher than the current price (*TP_IMPRET*) and 13.4 percent higher than the realized price in 12 months (*TP_FERR*), with only 39.0 percent of them met (*TP_MET%*) based on the realized price after 12 months. Other firm- and analyst-level characteristics are generally in line with both our intuition and prior literature.

4.3 Regression results

Panel B of Table 3 presents the results of estimating Equation 1. The dependent variables are *TP_IMPRET* in Columns 1 and 4, *TP_FERR* in 2 and 5, and *TP_MET%* in 3 and 6, respectively. To represent analysts' exclusions, Columns 1 through 3 use the two continuous exclusion variables, $|Exclusion\_EPSDec|$ and $|Exclusion\_EPSInc|$, and Columns 4 through 6 use two indicator variables, *D_Exclusion_EPSDec* and *D_Exclusion_EPSInc*. The coefficients on $|Exclusion\_EPSDec|$ and *D_Exclusion_EPSDec* are significantly positive for the *TP_IMPRET*

dependent variable in Columns 1 and 4, and negative for *TP_FERR* in Columns 2 and 5 and for *TP_MET%* in Columns 3 and 6. All are significant at the 5% level except Column 4 at the 10% level. In other words, when analysts have EPS-decreasing exclusions, their concurrently issued target prices become more (rather than less) optimistic. This is inconsistent with the valuation input hypothesis, but consistent with the cognitive bias hypothesis, which argues that the effort individual analysts put in their exclusion decisions results in more optimistic valuations.

As a comparison, the coefficients on EPS-increasing exclusions are of the same signs, with smaller magnitudes compared with their EPS-decreasing counterparts. In other words, when analysts have EPS-increasing exclusions, their concurrently issued target prices become more optimistic. These results for EPS-increasing exclusions are consistent with both the valuation input and cognitive bias hypotheses. Taken together, the associations between target price optimism and both EPS-decreasing and EPS-increasing exclusions are consistent with the cognitive bias hypothesis.

Turning to the control variables, we observe that target price optimism is positively associated with the firm's trading volume and external financing, but negatively associated with its institutional ownership, similar to Dechow and You (2020). At the same time, the coefficient on past accuracy is insignificant for most columns. In addition, target price optimism is generally negatively correlated with recent returns, analysts' firm-specific experience, the size of analysts' coverage portfolio, the broker size, and overall market returns, and positively correlated with revenue growth, stock volatility, target price revision, and earnings forecast optimism. Coefficients on these variables are generally consistent with results in Bradshaw et al. (2019), except for the positive association of target price optimism with firm experience in their international sample.

4.4 Pooling two types of exclusions together and erroneous research inferences

In Section 3 we observe that EPS-decreasing exclusions are nearly 20% of all analysts' exclusions, and are substantially different from their EPS-increasing exclusions in both the type and the timing of the excluded items. These results point to the importance of studying the two types of exclusions separately. While we are unaware of a prior study that examines the association between analysts' exclusions and their valuations, we provide evidence in Panel C of Table 3 that pooling all exclusions together would lead to erroneous inferences on the valuation implication of EPS-decreasing exclusions. Specifically, in Columns 1 through 3 we use the combined exclusion variable, *Exclusion*, which equals the analyst's GPS forecast less EPS forecast. The coefficient on *Exclusion* suggests that a higher (lower) GPS vs. EPS forecast is associated with less (more) target price optimism. This is inconsistent with the EPS-decreasing results in Panel B of Table 3. To make this clearer, in Columns 4 through 6 of Panel C, Table 3, we split *Exclusion* into two exclusion variables, *Exclusion_EPSDec* and *Exclusion_EPSInc*, to capture the positive and negative parts of *Exclusion.* We see that while the *Exclusion_EPSInc* has the same sign as *Exclusion* in all three columns*, Exclusion_EPSDec* has the opposite sign across all three columns. In summary, we conclude that pooling both directions of exclusions together would lead to erroneous inferences on the relation between EPS-decreasing inclusions and target price optimism.

4.5 Addressing management disclosures as an alternative explanation

Our results in Table 3 support the cognitive bias hypothesis – when analysts put forth incremental effort to understand the implications of, and forecast, exclusions, they suffer from cognitive bias that leads to more optimistic valuation. However, an alternative explanation relates to the potential correlated omitted variable of managers' use of non-GAAP earnings, which may influence both analysts' non-GAAP exclusion decisions (Brown et al. 2015; Bentley et al. 2018) and analysts' valuations. As a result, it is possible that our results are not driven by analysts'

exclusion choices, but managers' exclusion choices. It is worth noting that there is substantial variation across analysts in their use of non-GAAP exclusions for the same firm/year, as discussed earlier. Nevertheless, we conduct two sets of analyses to further alleviate this concern.

First, we employ firm-year fixed effects in our regression analyses in order to assess the relation between target price optimism and non-GAAP exclusions across analysts for the same firm/year, while holding constant the firm's fundamentals, information environment, and non-GAAP disclosures. In Panel A of Table 4, Columns 1 through 3 use the two continuous variables, $|$*Exclusion_EPSDec*$|$ and $|$*Exclusion_EPSInc*$|$, and Columns 4 through 6 use the two indicator variables, *D_Exclusion_EPSDec* and *D_Exclusion_EPSInc*, to represent analysts' non-GAAP exclusions. The dependent variables are again *TP_IMPRET* in Columns 1 and 4, *TP_FERR* in 2 and 5, and *TP_MET%* in 3 and 6, respectively. We continue to observe a significantly positive association between analysts' EPS-decreasing exclusions forecasts and target price optimism, but a weaker positive association between analysts' EPS-increasing exclusions forecasts and target price optimism.

Second, we conduct matched sample analyses in order to test the relation between target price optimism and non-GAAP exclusions across analysts at the same time for the same firm/period, while holding constant the firm's fundamentals, information environment, and non-GAAP disclosures (e.g., Mikhail et al. 2003; De Franco and Zhou 2010) in samples matched by firm and date (allowing one day difference). Table 4, Panels B and C compare non-exclusion target prices with target prices with exclusions issued for the same firm at the same time (i.e., within a day), but by different analysts. We observe the following. In Panel B, for those firm-date pairs with at least one EPS-decreasing exclusion target price and one target price without exclusions, we find that target prices associated with EPS-decreasing exclusions are statistically more

optimistic than their matched non-exclusion counterparts across all optimism metrics, based on both means and medians. In Panel C, for those firm-date pairs with both at least one EPS-increasing exclusion target price and one target price without exclusions, we find that target prices associated with EPS-increasing exclusions are statistically more optimistic than their matched non-exclusion counterparts for both *TP_IMPRET* and *TP_FERR*, based on both means and medians.

Overall, our regression analyses using firm-year fixed effects and matched-sample analyses provide convincing evidence that EPS-decreasing exclusions (and, to a lesser degree, EPS-decreasing exclusions) are associated with higher analyst target price optimism, even when holding the covered firms' information environment constant. In other words, it is unlikely that management exclusions explain our results. It is worth noting that these tests also help to mitigate concerns related to correlated omitted biases caused by other unobservable factors at the firm level. However, it is possible that there are other omitted variables at the analyst level. For example, some analysts are more likely to forecast exclusions and they also happen to be more optimistic. In untabulated analyses, we control for analyst fixed effects, and construct matched samples as in Table 4 (Panels B and C) based on same analyst and time, and based on same firm and analysts (allowing three months difference). All our main inferences remain that EPS-decreasing exclusions are associated with more optimistic target prices.

4.6 Addressing reverse causality as an alternative explanation

It is also possible that the phenomena we observe is driven by reverse causality, such that analysts expend effort to forecast the earnings and excluded earnings items of the firms for which they are most optimistic. We address this possibility by examining the association between target price optimism and EPS-decreasing exclusions across partitions of analysts with Buy vs. with

Hold/Sell recommendations. In Panel A of Table 5, we observe the association in both partitions.[16] The latter partition provides a placebo test of the reverse causality story, which relies on analysts having positive opinions on firms. These Hold/Sell analysts are less likely to expend effort on firms for which they do not have a favorable view. At the same time, these findings are consistent with analysts who expend more effort becoming more likely to both make exclusions and form more optimistic target prices.

5. Channels through which EPS-decreasing exclusions lead to valuation optimism

In this section, we explore two channels through which analysts' EPS-decreasing exclusions lead to more optimistic target prices: (1) on the association between analysts' exclusions and valuations, and (2) other concurrent valuation inputs such as earnings growth forecasts.

5.1 The relation between analysts' target prices and earnings forecasts

First, we examine the relation between analysts' valuations and their earnings forecasts. As analysts use their earnings forecasts to form their target prices (e.g., Damodaran 2012; Block 1999; Brown et al. 2015; Huang, Wang, Tan, and Yu 2021), we start with the relation between target prices and specific earnings components such as analyst's GAAP EPS forecast (*GPS*), and their street EPS forecast (*EPS*), each of which is scaled by price. Then we add in the analyst's exclusion ($|Exclusion|$), if any, and finally split it into $|Exclusion\_EPSDec|$ and $|Exclusion\_EPSInc|$; we again use absolute values to ease interpretation, and we standardize continuous values (by subtracting the mean of each variable and scaling by its standard deviation

[16] In an alternative, untabulated test we interact the EPS-decreasing exclusion with a Hold/Sell indicator variable, and observe an insignificant coefficient which again provides evidence that the exclusion – target price optimism association holds both for analysts with Buy recommendations and with Hold/Sell recommendations.

across the sample) in this analysis. Table 6 presents the results. In Column 1, we observe a 0.139 (t = 2.597) coefficient on *GPS* and in Column 2, we observe a larger 0.146 (t = 2.661) coefficient on *EPS*, suggesting that analysts' target prices are more strongly related to their street EPS forecasts.[17] In Column 3, which includes the absolute value of analyst exclusions, we observe a 0.121 coefficient (t = 2.618) on *EPS* and a 0.069 coefficient on $|Exclusion|$ (t = 1.919). The difference between the coefficients on *EPS* and *Exclusion* is statistically significant, based on an F-test ($p < 0.001$), suggesting that analysts' target prices are more strongly associated with street earnings than with excluded earnings items.

We further split the analyst's exclusion into EPS-decreasing and EPS-increasing components in order to examine whether analysts' target prices are associated with each type of exclusion. In Column 4, we observe a similar coefficient on *EPS*, a 0.016 coefficient on $|Exclusion\_EPSDec|$ (t = 1.991), and a 0.069 coefficient on $|Exclusion\_EPSInc|$ (t = 1.913). The positive coefficients on both types of exclusions provide evidence that analyst exclusions (either EPS-decreasing or -increasing) are associated with higher target prices. Recall that in Table 2 and Appendix B we observe that EPS-decreasing exclusions largely represent non-recurring items that have already been reported by the firm. These findings imply that EPS-decreasing exclusions should have minimal valuation relevance. However, our evidence in Table 6 suggests that analysts' target prices are highly associated with their EPS-decreasing exclusions.

5.2 Analysts' non-GAAP exclusions and growth forecasts

As an alternative channel, we explore if analysts coordinate their EPS forecasts with other valuation inputs, so that an analyst with EPS-decreasing exclusions can still achieve an optimistic valuation. While the cost of capital estimates used by analysts are difficult to observe

[17] When we use raw, rather than scaled and standardized, values in the regression, the coefficient on EPS is around 14 (results untabulated).

(Balakrishnan et al. 2021), we can infer analysts' growth forecasts based on their EPS forecasts for the upcoming and future years. To formally test the role of analyst growth forecasts, we infer each analyst's growth forecasts based on the analyst's earnings forecasts for year *t+1* ("FPI" = 1 in I/B/E/S) and the following years *t+2* ("FPI" = 2), after excluding negative EPS forecasts. We calculate analysts' implied EPS growth in year 2 (*EPS Growth Forecast*) as EPS(*t+2*)/EPS(*t+1*) – 1.[18] To further examine whether those growth rate forecasts are justified by realized growth, we calculate analysts' EPS growth forecast error (*EPS Growth Forecast Error*) as *EPS Growth Forecast* minus the actual EPS growth rate.

To assess the relation between exclusions and growth forecasts, we conduct a strict matching analysis, based on within firm-time match, similar to Table 4. Specifically, for each implied growth forecast associated with exclusions, we find a matching implied growth forecast without exclusions that is issued by a different analyst for the same firm within one day. We report the results in Table 7, comparing growth estimates without and with EPS-decreasing (EPS-increasing) exclusions in Panel A (B). In Panel A (B), we observe that analysts who forecast EPS-decreasing (increasing) exclusions have significantly higher (lower) growth estimates as well as higher (lower) growth forecast errors, based on means and medians. These results indicate that analysts adjust their growth forecasts in the opposite direction of their exclusions. More importantly, the forecast errors analyses show that analysts who forecast EPS-decreasing exclusions also over-estimate their growth forecasts. Our results suggest that at least some portion of the higher growth associated with EPS-decreasing exclusions is unjustified.[19]

[18] Our results are similar if we infer growth rate based on earnings forecasts in year *t+3*. Beyond year *t+3,* the number of observations fall rapidly. In untabulated analyses, we obtain similar, but statistically weaker, results when we instead examine analysts' long-term growth forecasts, possibly due to a smaller sample size.

[19] At the same time, we cannot observe whether analysts' higher growth forecasts are intentional or unintentional, or both. It is possible that in decreasing their street EPS forecasts through exclusions, analysts do not realize that the resulting growth forecasts (which use the upcoming street EPS as the base) are excessively high. It is also possible

6. Market reactions to target price revisions

Finally, we seek to understand whether the market corrects for the observed optimism in analysts' target prices in the presence of exclusions. To do so, we examine market reactions to analyst target price revisions following Brav and Lehavy (2003). In these tests, we explicitly control for the information contained in the analyst's concurrent EPS forecast and/or recommendation. We work with 513,399 target prices issued contemporaneously with EPS forecasts (before requiring control variables), as illustrated in Table 1, Panel A. We can calculate revisions of both target prices and EPS forecasts for 453,453 of these observations. We scale *ΔTP* by the previous target price, and *ΔEPS* by the closing price three trading days prior to the forecast date, as in the calculation of *Exclusion*. We also match 76,393 recommendations issued on the same day as the target price forecasts, including 45,005 buys, 25,902 holds, and 5,486 sells. We then estimate versions of the following equation:

$$BHAR_{ijt} = \beta_1 \Delta TP_{ijt} + \beta_2 |Exclusion\_EPSDec_{ijt}| + \beta_3 |Exclusion\_EPSInc_{ijt}| + \beta_4 \Delta TP_{ijt} \times |Exclusion\_EPSDec_{ijt}| + \beta_5 \Delta TP_{ijt} \times |Exclusion\_EPSInc_{ijt}| + \beta_6 \Delta EPS_{ijt} + \beta_7 Upgrade_{ijt} + \beta_8 Downgrade_{ijt} + \beta_9 Iteration_{ijt} + \text{Year} + \text{Industry} + \epsilon_{ijt} \quad (2)$$

We estimate the equation using both continuous variables (as presented in Equation 2) and indicator variables to represent both analysts' EPS-decreasing and EPS-increasing exclusions. We compute buy-and-hold abnormal returns (*BHAR*) for each target price in three different windows: a three-day window ([-1, 1]), a one-month window ([-1, 30]), and a one-year window ([-1, 365]) that all start from the date prior to the forecast date and end one, 30, and 365 days later, respectively. We subtract the CRSP value-weighted return, following Ertimur et al. (2007). The

that analysts believe that their exclusions justify higher future growth. For example, when a firm exits an unprofitable market and disposes related assets for a gain, analysts might believe that the firm's exit will lead to higher growth.

final sample of 453,453 observations includes 267,349 target price revisions without exclusions, 32,890 with EPS-decreasing exclusions, and 153,214 with EPS-increasing exclusions.

Table 8 presents the results of estimating Equation 2 on how analyst exclusions affect target price informativeness, with Columns 1 to 2, 3 to 4, and 5 to 6 presenting results based on the BHAR window of [-1, 1], [-1, 30], [-1, 365], respectively. We find that short-term BHARs exhibit strong positive associations with *ΔTP*, *ΔEPS*, and *Upgrade*, and strong negative associations with *Downgrade* and *Iterations*, all consistent with Brav and Lehavy (2003). Overall, we find that the coefficients on *ΔTP* × *Exclusion_EPSDec* and *ΔTP* × *D_Exclusion_EPSDec* are significantly negative for shorter windows (i.e., [-1,1] and [-1,30]), while the coefficients on *ΔTP* × *Exclusion_EPSInc* and *ΔTP* × *D_Exclusion_EPSInc* are significantly positive for longer windows (i.e., [-1, 30] and [-1, 365]). In other words, the market reacts less strongly to target prices with more EPS-decreasing exclusions, investors seem to be under-reacting to analysts' target price revisions associated with EPS-decreasing exclusions, but this muted reaction is reversed in the long term. By contrast, investors seem to consistently react more strongly to target price revisions associated with EPS-increasing exclusions. These results provide an interesting contrast with Doyle et al. (2013), who find that the market discounts firms' earnings surprises when the surprise is associated with the use of EPS-increasing exclusions.

7. Conclusion

While the non-GAAP literature largely examines firms' financial reporting (e.g., Black et al. 2021), a small but growing literature focuses on analysts' non-GAAP forecasts (e.g., Bradshaw et al. 2018). However, this stream of literature either groups together analysts' EPS-decreasing and -increasing exclusions, or specifically focuses on EPS-increasing exclusions, overlooking the

more than one fifth of non-GAAP exclusions that are EPS-decreasing. We find that two types of exclusions differ in the type and timing of excluded items. Specifically, in a hand-collected sample of analyst reports, we find that EPS-decreasing exclusions are more likely to capture previously-reported, non-recurring earnings items relative to EPS-increasing exclusions.

In our main analyses, we study the valuation implications of analysts' EPS-decreasing exclusions, separate from and compared to, EPS-increasing exclusions. We find that both analysts' EPS-decreasing and -increasing exclusions are associated with more optimistic target prices; these results are consistent with our cognitive bias hypothesis in which analysts, in exerting effort to identify and forecast excluded earnings items, exhibit more optimism. We conduct additional analyses to rule out explanations related to both managers' non-GAAP disclosures and reverse causality. We provide evidence on two potential channels through which analysts' EPS-decreasing exclusions lead to more optimistic target prices: (1) the positive association between analysts' valuations and their EPS-decreasing exclusions, and (2) analysts making EPS-decreasing exclusions set higher growth forecasts. At the same time, the market reacts less strongly in the short term to target price revisions accompanied by EPS-decreasing exclusions, relative to non-exclusions target price revisions, although this effect reverses over a longer window.

In addition to contributing to the non-GAAP literature, our evidence has implications for practitioners. Specifically, investors should understand the valuation optimism accompanied with analysts' non-GAAP exclusions, both EPS-decreasing and EPS-increasing. Finally, to the extent that many analysts do not realize that their EPS-decreasing exclusions could make the growth forecasts mechanically higher and thus valuation overoptimistic, our results could also help the sell-side community to address a potential cognitive blind spot.

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Appendix A: Variable Definitions

Variable	Definition
BHAR [-1,1]	The buy-and-hold return (adjusted for the CRSP value-weighted return index) for each target price revision starting from the trading day prior to the target price forecast date and ending on the trading day following the target price forecast date
Bsize	Brokerage size, defined as the natural logarithm of the number of analysts working for the analyst's brokerage in I/B/E/S in a year
BTM	The book-to-market ratio of a firm as of the fiscal year end prior to the target price forecast date
D_Exclusion _EPSDec	Indicator variable that equals one when *Exclusion* is positive, and equals zero otherwise
D_Exclusion _EPSInc	Indicator variable that equals one when *Exclusion* is negative, and equals zero otherwise
Downgrade	Indicator variable that equals one when the recommendation accompanying a target price revision is a downgrade (based on the three-tier system of buys, holds, and sells) from the prior recommendation, and equals zero otherwise
EPS	Analyst's street EPS forecast for the upcoming fiscal year from I/B/E/S scaled by the closing price three trading days prior to the forecast date
ΔEPS	The EPS revision accompanying a target price revision, measured as the change in the EPS forecast for the upcoming fiscal year scaled by the closing price three trading days prior to the forecast date
EPS Growth Forecast	EPS($t+2$)/EPS($t+1$) – 1, where EPS($t+1$) and EPS($t+2$) are the EPS forecasts for the upcoming year and the following year. We exclude all observations with negative EPS (t+1)
EPS Growth Forecast Error	*EPS Growth Forecast* minus the actual EPS growth rate. We exclude all observations with negative EPS (t+1)
EPS Optimism	Earnings forecast optimism, computed as 100 × (EPS Forecast − Actual EPS)/Stock Price. We obtain the nearest annual earnings forecast by the same analyst for the same firm within one year of the target price forecast date
Exclusion	*GPS – EPS*, scaled by the closing price three trading days prior to the earnings forecast date
Exclusion_EPSDec	Equals *Exclusion* when *Exclusion* is positive, and zero otherwise
Exclusion_EPSInc	Equals *Exclusion* when *Exclusion* is negative, and zero otherwise
Ext_Fin	External financing for the most recent fiscal year that ends at least three months before the current month, scaled by total assets
Fexp	Time interval in years since an analyst provides the first earnings forecast for the underlying firm in I/B/E/S

Gexp	Time interval in years since an analyst provides the first earnings forecast for any firm in I/B/E/S
GPS	Analyst's GAAP EPS forecast for the upcoming fiscal year from I/B/E/S scaled by the closing price three trading days prior to the forecast date
Intangible	The ratio of intangible assets to current assets as of the fiscal year end prior to the target price forecast date
IOR	Institutional ownership at the end of the calendar quarter prior to the current month
Iteration	Indicator variable that equals one when the recommendation accompanying a target price revision is the same as the prior one (based on the three-tier system of buys, holds, and sells), and equals zero otherwise
LogMV	The natural logarithm of market capitalization as of the fiscal year end prior to the target price forecast date
Nanalyst	The natural logarithm of the number of analysts following the firm in the previous year
Nfirms	The natural logarithm of the number of firms that the analyst covers in the year prior to the forecast date based on the I/B/E/S detail files
Past_Accuracy	We scale each analyst *i*'s absolute forecast error for firm *j* in year *t-1* to fall between 0 and 1, with larger values indicating higher accuracy, using the following equation to compare analyst i's absolute forecast error with the maximum and minimum of absolute forecast errors for all analysts following firm *j* in year *t*-1: $Past\_Accuracy_{ijt-1} = \frac{Max(\lvert AFE_{jt-1}\rvert) - \lvert AFE_{ijt-1}\rvert}{Max(\lvert AFE_{jt-1}\rvert) - Min(\lvert AFE_{jt-1}\rvert)}$
RetSTD	Standard deviation of the firm's daily stock returns over the past 12 months
Return_rev	Cumulative market-adjusted abnormal return between the previous and current target price forecast dates
Rev_growth	The average annual growth of total revenues over the past five years
S&P500Ret	The previous 12-month cumulative S&P 500 index return ending in the month prior to the target price forecast date
ΔTP	The change in target price forecast issued by the same analyst for the same firm within a year, scaled by the previous target price forecast
TP_FERR	Price 12 months following the forecast date less the target price, scaled by the closing price three trading days prior to the forecast date
TP_IMPRET	*TP/P* less one
TP_MET%	The percentage of days with closing prices higher than the target price over the next 12 months
TP/P	Target price divided by the closing price three trading days prior to the forecast date
Turnover	Average stock turnover of a firm over the past 12 months

Upgrade	Indicator variable that equals one when the recommendation accompanying a target price revision is an upgrade (based on the three-tier system of buys, holds, and sells) from the prior recommendation, and equals zero otherwise
Volume	The percentile rank of dollar trading volume in the past 12 months sorted within exchange
12 earnings items, scaled by market capitalization at fiscal year-end, and set to zero if missing	
D&A	Compustat item DP (depreciation and amortization expense). We multiply this variable by -1 to make it increase with earnings.
DiscItem	Compustat item DO (discontinued items)
ExtraItem	Compustat items XI (extraordinary items)
GainLoss	Compustat item GLA (gains and losses after-tax). If GLA is missing, this variable is set equal to Compustat item GLP * 0.65.
GWImp	Compustat item GDWLIA (impairment of goodwill after-tax). If GDWLIA is missing, this variable is set equal to Compustat item GDWLIP * 0.65.
MinorityInt	Compustat item MII (minority interest). We multiply this variable by -1 to make it increase with earnings.
NRecurTax	Compustat item NRTXT (non-recurring taxes)
OtherSpecial	Compustat item SPI (special items) * 0.65, less *GainLoss*, *GWImp*, *Restructure*, and *WriteDown*.
R&D	Compustat item XRD (research and development expense) * 0.65. We multiply this variable by -1 to make it increase with earnings.
Restructure	Compustat item RCA (restructuring cost after-tax). If RCA is missing, this variable is set equal to Compustat item RCP * 0.65.
SBC	Compustat item STKCPA (after-tax stock compensation). If STKCPA is missing, this variable is set equal to Compustat item STKCO * 0.65. We multiply this variable by -1 to make it increase with earnings.
WriteDown	Compustat item WDA (writedowns after-tax). If WDA is missing, this variable is set equal to Compustat item WDP * 0.65.

Appendix B: Large sample evidence from I/B/E/S and Compustat

The hand-collected sample illustrates the earnings items excluded from analysts' non-GAAP forecasts in both directions. However, this exercise is limited in scope due to the high cost of hand-collection and manual coding. We therefore build on the insights generated from this sample, as well as from prior literature, and conduct a large sample analysis using earnings components from Compustat. Specifically, we match the forecasts in our sample with 12 Compustat items, including: depreciation and amortization (*D&A*), discontinued items (*DiscItem*), extraordinary items (*ExtraItem*), gains and losses (*GainLoss*), goodwill impairment (*GWImp*), non-controlling interest (*MinorityInt*), non-recurring taxes (*NRecurTax*), other special items (*OtherSpecial*), R&D expense (*R&D*), restructuring charges (*Restructure*), stock-based compensation (*SBC*), and write-downs (*WriteDown*).[20]

For comparability across earnings components and firms, we make three adjustments. First, we use the after-tax basis of each item. If the after-tax item is missing, we use the pre-tax item multiplied by 0.65. (Note that Compustat provides discontinued items, extraordinary items, non-controlling interest, and non-recurring taxes on an after-tax basis.) Second, we scale each of these variables by the closing market capitalization at fiscal year-end. Third, we sign items based on their effect on earnings, and so we multiply each of *D&A*, *MinorityInt*, *R&D*, and *SBC* by –1.

In Table B1, we examine the relation between the 12 earnings items and each of EPS-decreasing and EPS-increasing exclusions in a regression framework, with the following equation:

$$Exclusion\_EPSDec(EPSInc)_{ijt} = \alpha_0 + \sum Earnings\ item_{jt} + \text{Year} + \text{Industry} + \epsilon_{ijt} \quad (3)$$

[20] While Compustat groups together depreciation and amortization, we note that our hand-collected sample provides evidence that analysts exclude amortization, not depreciation – similar to Whipple (2015).

To facilitate comparison of different coefficients in the same column and across columns, we standardize the 12 earnings-item variables by subtracting each variable's mean and scaling by its standard deviation across the sample, although our inferences are similar without standardizing. We cluster standard errors by firm and analyst, and we include Fama-French 49 industry fixed effects to capture differences in earnings persistence across industries as well as year fixed effects in all regression analyses. Column 1 in Table B1 provides evidence that EPS-decreasing exclusions are highly associated (in order of influence) with *GainLoss*, *DiscItem*, *OtherSpecial*, *NRecurTax*, and *ExtraItem*. Column 2 provides evidence that EPS-increasing exclusions are most highly associated with *D&A*, *SBC*, *NRecurTax*, and *GainLoss*.[21] These results are consistent with the hand-collected sample in Table 2 in that the underlying excluded items differ between analysts' EPS-decreasing and -increasing exclusions.

We next split each of the 12 Compustat earnings items into two components: those reported in the fiscal quarters prior to the analysts' forecasts and those reported in later fiscal quarters of the same fiscal year. We then include these 24 items as explanatory variables in the regression. To facilitate comparison between already-reported vs. not-yet reported components of the same item for the same fiscal year, we present already-reported components in Column 3a (4a) and not-yet reported components in Column 3b (4b) for *Exclusion_EPSDec* (*Exclusion_EPSInc*). For *Exclusion_EPSDec*, focusing on the five earnings items that load positively in Column 1, all five are positively associated with their already-reported components, while *ExtraItem* and *OtherSpecial* are not positively associated with their not-yet-reported components. For *Exclusion_EPSInc*, however, out of the four items that load positively in Column 2 (i.e., *D&A*, *SBC*, *NRecurTax*, and *GainLoss*), the role of *D&A* and *SBC* is entirely driven by the not-yet

[21] In untabulated tests, we replicate these analyses after excluding all non-exclusion observations and find that the coefficients generally become larger than their counterparts presented in Table B1, but all inferences are the same.

reported component. Overall, these results are consistent with the observations from our hand-collected sample of analyst reports – EPS-decreasing exclusions are more likely to reflect items previously reported by firms than are EPS-increasing exclusions.

Table B1: Large sample evidence on the differences between analysts' EPS-decreasing and EPS-increasing exclusions

Dep var =	*Exclusion_EPSDec*	*Exclusion_EPSInc*	*Exclusion_EPSDec*		*Exclusion_EPSInc*	
			earnings items already reported	earnings items not-yet reported	earnings items already reported	earnings items not-yet reported
	(1)	(2)	(3a)	(3b)	(4a)	(4b)
Earnings items:						
D&A	-0.024**	3.713**	-0.029**	3.517**	-0.016**	0.887**
	(-2.399)	(2.456)	(-2.656)	(2.218)	(-2.734)	(2.454)
DiscItem	0.041***	0.136	0.048**	0.362***	0.006	-0.081
	(3.246)	(1.137)	(2.602)	(3.057)	(1.445)	(-0.474)
ExtraItem	0.006***	0.005	0.006***	0.008	-0.000	0.007
	(6.348)	(0.387)	(9.764)	(0.582)	(-0.348)	(0.529)
GainLoss	0.060***	0.114**	0.069***	0.135***	0.013***	0.015
	(8.280)	(2.167)	(6.750)	(3.052)	(3.201)	(0.375)
GWImp	0.002	0.149	0.016***	0.892***	-0.004	-0.434
	(0.343)	(0.405)	(6.325)	(3.658)	(-1.545)	(-0.979)
MinorityInt	-0.016***	-0.220**	-0.023**	-0.258	0.008	-0.084
	(-3.741)	(-2.404)	(-2.869)	(-1.659)	(1.602)	(-1.422)
NRecurTax	0.035**	0.316*	0.057***	0.254***	0.010**	0.228*
	(2.466)	(2.094)	(4.848)	(2.884)	(2.877)	(1.760)
OtherSpecial	0.038***	-0.464	0.053***	0.149	0.001	-0.619
	(4.183)	(-0.857)	(6.548)	(1.084)	(0.383)	(-0.967)
R&D	0.006	0.032	-0.001	-0.297	0.007	0.071
	(0.636)	(0.165)	(-0.264)	(-1.032)	(1.327)	(0.737)
Restructure	-0.009*	0.028	0.001	0.162	-0.008*	-0.208
	(-2.058)	(0.077)	(0.271)	(0.507)	(-1.924)	(-1.052)
SBC	-0.005	0.727***	-0.004	0.546**	-0.005	0.246*
	(-1.060)	(3.584)	(-0.773)	(2.479)	(-1.037)	(1.975)
WriteDown	-0.006**	0.077	0.001	0.228	-0.012***	-0.127
	(-2.454)	(0.805)	(0.361)	(0.936)	(-3.777)	(-1.387)
Observations	1,095,147	1,095,147	1,095,147		1,095,147	
Adjusted R-squared	0.042	0.116	0.059		0.145	
Year FE	Yes	Yes	Yes		Yes	
FF49 FE	Yes	Yes	Yes		Yes	

This table examines the differences between analysts' EPS-increasing and EPS-decreasing exclusions using a large sample from I/B/E/S and Compustat. We regress analysts' exclusions on the standardized values of several Compustat earnings items, scaled by market value, with EPS-decreasing exclusions in Columns 1 and 3a/b, and EPS-increasing exclusions in Columns 2 and 4a/b. To facilitate comparison between already-reported vs. not-yet reported components of the same item for the same fiscal year, we present already-reported components in Column 3a (4a) and not-yet reported components in Column 3b (4b) for *Exclusion_EPSDec* (*Exclusion_EPSInc*). Earnings items are standardized by subtracting the mean and then dividing by the standard deviation of the earnings item across the sample. *Exclusion_EPSDec* (*Exclusion_EPSInc*) equals the difference between the analyst's EPS and GPS forecasts when the analyst makes an earnings exclusion that is EPS-decreasing (EPS-increasing), and zero otherwise. Standard errors are clustered by firm and analyst. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels, respectively. All continuous variables are winsorized by year at the 1% and 99% levels. All variable descriptions are in Appendix A.

Table 1: Sample selection, distribution, and summary statistics

Panel A: Sample selection

Criterion	Observations
Sample of analysts' exclusions (Table 1 Panel B and Panel C)	
- All analyst-firm-day observations in the I/B/E/S earnings forecast database with both annual EPS and GPS forecasts for the upcoming year (i.e., 'FPI' = 1) from 2003 to 2020. We retain the last one if there are multiple forecasts on the same analyst-firm-day.	1,365,164
- Matching with CRSP PERMNO	1,300,537
Main sample of exclusions and target prices	
- Merging with the target price forecast dataset, requiring the same analyst-firm-day for both target price and earnings forecasts. Note that there are 1,605,899 analyst-firm-day target price forecasts issued with a 12-month horizon. We retain the last one if there are multiple forecasts on the same analyst-firm-day.	558,457
- Removing those observations with missing control variables	513,399
Hand-collected, random samples, from analyst reports	
- Hand-collected 300 reports with EPS-increasing exclusions	
- Hand-collected 300 reports with EPS-decreasing exclusions	

Panel B: Sample distribution by year

Year	Total (1)	EPS = GPS (2)		EPS ≠ GPS (3)		EPS < GPS (4)		EPS > GPS (5)	
		N	%	N	%	N	%	N	%
2003	2829	1375	48.6%	1454	51.4%	323	11.4%	1131	40.0%
2004	12842	6970	54.3%	5872	45.7%	1402	10.9%	4470	34.8%
2005	17729	9828	55.4%	7901	44.6%	1745	9.8%	6156	34.7%
2006	22936	12718	55.4%	10218	44.6%	1955	8.5%	8263	36.0%
2007	32724	19416	59.3%	13308	40.7%	2791	8.5%	10517	32.1%
2008	46509	28886	62.1%	17623	37.9%	3280	7.1%	14343	30.8%
2009	77480	54858	70.8%	22622	29.2%	3435	4.4%	19187	24.8%
2010	89781	60205	67.1%	29576	32.9%	6746	7.5%	22830	25.4%
2011	101826	67980	66.8%	33846	33.2%	7674	7.5%	26172	25.7%
2012	102600	66095	64.4%	36505	35.6%	8030	7.8%	28475	27.8%
2013	97462	59635	61.2%	37827	38.8%	8680	8.9%	29147	29.9%
2014	107929	63752	59.1%	44177	40.9%	9394	8.7%	34783	32.2%
2015	115163	66504	57.7%	48659	42.3%	8786	7.6%	39873	34.6%
2016	108828	61393	56.4%	47435	43.6%	8307	7.6%	39128	36.0%
2017	103480	59485	57.5%	43995	42.5%	9015	8.7%	34980	33.8%
2018	103399	59561	57.6%	43838	42.4%	8650	8.4%	35188	34.0%
2019	102380	59166	57.8%	43214	42.2%	8154	8.0%	35060	34.2%
2020	119267	69203	58.0%	50064	42.0%	7026	5.9%	43038	36.1%
Total	1365164	827030	60.6%	538134	39.4%	105393	7.7%	432741	31.7%

Panel C: Summary statistics for GAAP and street earnings forecasts and exclusions

$/share value of item	N	Mean	Std dev.	P25	P50	P75
GAAP earnings per share (GPS)	1,365,164	2.941	14.80	0.240	1.350	3.050
Street earnings per share (EPS)	1,365,164	3.352	15.18	0.400	1.500	3.240
Exclusion (per share)	1,365,164	-0.280	1.135	0.000	0.000	0.110
Exclusion when EPS < GPS	105,393	0.399	0.495	0.040	0.160	0.580
Exclusion when EPS > GPS	432,741	-0.980	1.802	-0.960	-0.380	-0.140

This table presents the sample selection procedures (in Panel A), describes the distribution of the sample by year (Panel B), and presents summary statistics for GAAP and street earnings forecasts as well as exclusions on a per-share basis (Panel C). In Panel A, we present the resulting number of observations after applying the criterion described in the first column. All continuous variables are winsorized by year at the 1% and 99% levels. All variable descriptions are in Appendix A.

Table 2: Summary statistics from the hand-collected samples of analyst reports

Panel A: EPS-decreasing reports (i.e., EPS < GPS)

	Random selection	Data errors	Unable to identify excluded items	Final Reports	
Number of reports	300	8	176	116	100%
Excluded items:					
- Gains				76	65.5%
- Disc Items				16	13.8%
- Taxes				9	7.8%
- Minority Int				3	2.6%
- Others				17	14.7%
Have excluded earnings items already been reported by the firm?					
- Yes				87	75.0%
- Some				13	11.2%
- No				8	6.9%
- Unclear				8	6.9%

Panel B: EPS-increasing reports (i.e., EPS > GPS)

	Random selection	Data errors	Unable to identify excluded items	Final Reports	
Number of reports	300	5	155	140	100%
Excluded items:					
- SBC				81	57.9%
- Amortization				47	33.6%
- Restructuring				21	15.0%
- Losses				16	11.4%
- Disc Items				14	10.0%
- Taxes				6	4.3%
- Impairments				7	5.0%
- R&D				3	2.1%
- Others				42	30.0%
Have excluded earnings items already been reported by the firm?					
- Yes				27	19.3%
- Some				79	56.4%
- No				20	14.3%
- Unclear				14	10.0%

This table describes the hand-collected samples of analyst reports with EPS-decreasing exclusions (Panel A) and with EPS-increasing exclusions (Panel B) that correspond to randomly-selected analysts' forecasts in our sample. In each Panel, we tabulate both the specific items the analysts exclude for the fiscal year, and whether the excluded items have already been reported by the firm during previous quarters of the same fiscal year.

Table 3: Analysts' target price optimism and exclusions – Regression analyses

Panel A: Summary statistics for variables used in the regressions

stats	N	mean	sd	p25	p50	p75
TP_IMPRET	513,399	0.262	0.695	0.055	0.156	0.281
TP_FERR	513,033	-0.134	0.853	-0.370	-0.073	0.195
TP_MET%	513,399	0.390	0.375	0.000	0.298	0.750
Exclusion	513,398	-0.012	0.057	-0.004	0.000	0.000
| Exclusion_EPSInc |	513,399	0.013	0.056	0.000	0.000	0.004
| Exclusion_EPSDec |	513,399	0.001	0.005	0.000	0.000	0.000
D_Exclusion_EPSInc	513,399	0.335	0.472	0.000	0.000	1.000
D_Exclusion_EPSDec	513,399	0.073	0.260	0.000	0.000	0.000
EPS	513,399	0.026	0.413	0.021	0.050	0.075
Volume	513,399	0.740	0.217	0.596	0.788	0.919
Ext _Fin	513,399	0.036	0.208	-0.049	0.000	0.030
IOR	513,399	0.744	0.244	0.638	0.812	0.927
Past_Accuracy	513,399	0.714	0.133	0.639	0.733	0.808
LogMV	513,399	15.000	1.807	13.720	14.940	16.260
BTM	513,399	0.650	0.943	0.229	0.435	0.766
Rev_growth	513,399	0.259	0.693	0.034	0.104	0.236
Intangible	513,399	0.685	1.256	0.000	0.167	0.772
Nanalyst	513,399	2.655	0.708	2.197	2.773	3.178
Turnover	513,399	0.013	0.012	0.006	0.010	0.015
RetSTD	513,399	0.026	0.014	0.016	0.023	0.033
ΔTP	513,399	0.038	0.352	-0.095	0.026	0.111
Return_rev	513,399	0.158	0.714	-0.077	0.017	0.120
EPS Optimism	513,399	1.466	16.990	-0.486	-0.045	0.473
Fexp	513,399	4.752	3.844	2.000	4.000	6.000
Gexp	513,399	10.780	6.966	5.000	10.000	15.000
Nfirms	513,399	2.773	0.611	2.565	2.890	3.135
Bsize	513,399	1.307	0.316	1.129	1.343	1.553
S&P500Ret	513,399	0.086	0.144	0.029	0.114	0.162

Panel B: Regression analyses of analysts' target price optimism and exclusions with industry and year fixed effects

Dep Var =	(1) TP_IMPRET	(2) TP_FERR	(3) TP_MET%	(4) TP_IMPRET	(5) TP_FERR	(6) TP_MET%
|Exclusion_EPSDec|	4.204**	-5.262***	-0.967***			
	(2.564)	(-3.079)	(-4.476)			
|Exclusion_EPSInc|	0.820***	-0.840***	-0.097***			
	(3.216)	(-3.118)	(-3.312)			
D_Exclusion_EPSDec				0.033*	-0.043**	-0.014***
				(1.847)	(-2.288)	(-2.859)
D_Exclusion_EPSInc				0.009	-0.010	-0.013***
				(0.408)	(-0.472)	(-3.063)
EPS	0.017	0.025	0.002	0.017	0.025	0.002
	(0.839)	(1.131)	(0.605)	(0.851)	(1.131)	(0.688)
VolPct	0.196***	-0.249***	-0.108***	0.220***	-0.274***	-0.111***
	(3.852)	(-4.394)	(-7.254)	(4.247)	(-4.761)	(-7.479)
Ext_Fin	0.247***	-0.285***	-0.110***	0.240***	-0.278***	-0.110***
	(5.996)	(-6.164)	(-11.595)	(5.884)	(-6.045)	(-11.530)
IOR	-0.141***	0.195***	0.054***	-0.147***	0.201***	0.056***
	(-4.444)	(5.661)	(6.168)	(-4.488)	(5.681)	(6.318)
Past_Accuracy	-0.014	0.066	0.036***	-0.011	0.063	0.037***
	(-0.276)	(1.245)	(3.493)	(-0.223)	(1.210)	(3.599)
LogMV	-0.018	0.018	0.006**	-0.023*	0.023*	0.007***
	(-1.371)	(1.271)	(2.331)	(-1.814)	(1.705)	(2.606)
BTM	0.028***	0.008	0.000	0.030***	0.007	-0.000
	(2.695)	(0.740)	(0.072)	(2.773)	(0.579)	(-0.046)
Rev_Growth	0.038***	-0.046***	-0.012***	0.037***	-0.045***	-0.012***
	(3.278)	(-3.623)	(-3.921)	(3.180)	(-3.557)	(-3.993)
Intangible	-0.022***	0.014*	-0.008***	-0.020***	0.012*	-0.008***
	(-3.016)	(1.818)	(-3.911)	(-2.939)	(1.689)	(-3.792)
Nanalyst	0.027	0.021	0.078***	0.032	0.017	0.078***
	(1.280)	(0.932)	(15.309)	(1.441)	(0.702)	(15.231)
Turnover	-0.065	-1.324	0.395	-0.118	-1.264	0.408
	(-0.044)	(-0.779)	(1.366)	(-0.080)	(-0.739)	(1.408)
RetSTD	3.026***	1.459	1.443***	3.555***	0.916	1.383***

	(3.471)	(1.459)	(6.286)	(3.906)	(0.882)	(5.990)
DTP	0.117***	-0.161***	-0.032***	0.115***	-0.159***	-0.032***
	(12.430)	(-15.935)	(-15.358)	(12.497)	(-16.080)	(-15.314)
Return_rev	-0.032***	0.045***	-0.001	-0.033***	0.046***	-0.001
	(-6.560)	(8.617)	(-0.943)	(-6.488)	(8.467)	(-0.873)
EPS_Optimism	-0.000	-0.003***	-0.001***	0.000	-0.003***	-0.001***
	(-0.190)	(-10.535)	(-13.694)	(0.642)	(-11.456)	(-14.247)
Fexp	-0.005**	0.004**	0.003***	-0.005**	0.004**	0.003***
	(-2.569)	(2.150)	(6.123)	(-2.576)	(2.154)	(6.046)
Gexp	-0.001	0.003***	-0.000	-0.001	0.003***	-0.000
	(-1.580)	(3.093)	(-0.544)	(-1.568)	(3.084)	(-0.508)
Nfirms	-0.099***	0.107***	0.013***	-0.098***	0.106***	0.013***
	(-4.592)	(4.847)	(4.008)	(-4.559)	(4.813)	(3.985)
Bsize	-0.097***	0.104***	0.049***	-0.097***	0.104***	0.050***
	(-3.160)	(3.241)	(8.317)	(-3.128)	(3.207)	(8.365)
S&P500Ret	-0.177***	-0.550***	-0.365***	-0.179***	-0.548***	-0.365***
	(-11.398)	(-21.939)	(-29.332)	(-11.468)	(-21.830)	(-29.285)
Observations	513,399	513,033	513,399	513,399	513,033	513,399
Adjusted R-squared	0.104	0.119	0.161	0.099	0.115	0.161
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
FF49 FE	Yes	Yes	Yes	Yes	Yes	Yes

Panel C: Regression analyses of analysts' target price optimism and exclusions with industry and year fixed effects using either pooled or separate exclusions variables

Dep var =	(1) TP_IMPRET	(2) TP_FERR	(3) TP_MET%	(4) TP_IMPRET	(5) TP_FERR	(6) TP_MET%
Exclusion	-0.744***	0.747***	0.081***			
	(-3.204)	(3.040)	(2.927)			
Exclusion_EPSDec				4.204**	-5.261***	-0.967***
				(2.565)	(-3.079)	(-4.473)
Exclusion_EPSInc				-0.820***	0.840***	0.097***
				(-3.216)	(3.118)	(3.311)
Observations						
Adjusted R-squared	513,398	513,033	513,398	513,398	513,033	513,398
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
FF49 FE	Yes	Yes	Yes	Yes	Yes	Yes

This table presents the results of tests of the association between analysts' target price optimism and exclusions. Panel A presents summary statistics for the variables used in the regression analyses, and Panels B and C report the results of regression tests that include industry and year fixed effects. In Panel B, Columns 1 through 3 use two continuous variables, *Exclusion_EPSDec* and *Exclusion_EPSInc*, and columns 4 through 6 use two indicator variables, *D_Exclusion_EPSDec* and *D_Exclusion_EPSInc*, to represent both analysts' EPS-decreasing and EPS-increasing exclusions. In Panel C, Columns 1 through 3 use a single continuous variable, *Exclusion*, while columns 4 through 6 again use two continuous variables, *Exclusion_EPSDec* and *Exclusion_EPSInc*, to represent both analysts' exclusions.

Exclusion equals the analyst's GPS forecast less their EPS forecast, scaled by the closing price three trading days prior to the earnings forecast date. *Exclusion_EPSDec* (*Exclusion_EPSInc*) equals the difference between the analyst's EPS and GPS forecasts when the analyst makes an earnings exclusion that is EPS-decreasing (EPS-increasing), and zero otherwise. The *D_Exclusion_EPSDec* (*D_Exclusion_EPSInc*) indicator variable equals one when the analyst makes an earnings exclusion that is EPS-decreasing (EPS-increasing), and zero otherwise. *TP_IMPRET* is the target price divided by the closing price three trading days prior to the forecast date, less one. *TP_FERR* is the price 12 months following the forecast date less the target price, scaled by the closing price three trading days prior to the forecast date. *TP_MET%* is the percentage of days in the next 12 months with prices higher than the target price. Thus, the *TP_IMPRET* variable is increasing in optimism while *TP_FERR* and *TP_MET%* are decreasing in optimism. Standard errors are clustered by firm and analyst. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels, respectively. All continuous variables are winsorized by year at the 1% and 99% levels. All variable descriptions are in Appendix A.

Table 4: Tests addressing the role of the firm's disclosures

Panel A: Regression analyses of analysts' target price optimism and exclusions with firm-year fixed effects

Dep var =	(1) TP_IMPRET	(2) TP_FERR	(3) TP_MET%	(4) TP_IMPRET	(5) TP_FERR	(6) TP_MET%
|Exclusion_EPSDec|	0.868**	-1.368***	-0.287**			
	(2.363)	(-3.089)	(-2.089)			
|Exclusion_EPSInc|	0.034	-0.044	-0.054***			
	(1.045)	(-1.044)	(-2.828)			
D_Exclusion_ EPSDec				0.007**	-0.020***	-0.000
				(2.382)	(-4.735)	(-0.139)
D_Exclusion_ EPSInc				0.002	-0.011***	-0.002
				(0.879)	(-3.177)	(-0.911)
Controls from Table 3?	Yes	Yes	Yes	Yes	Yes	Yes
Observations	506,423	506,062	506,423	506,423	506,062	506,423
Adjusted R-squared	0.883	0.850	0.564	0.883	0.850	0.564
Firm-Year FE	Yes	Yes	Yes	Yes	Yes	Yes

Panel B: Sample matched by firm and time: EPS-decreasing exclusions vs. Non-exclusion

	N	*TP_IMPRET*		*TP_FERR*		*TP_MET %*	
		Mean	median	Mean	median	Mean	median
Non-exclusion (I)	15,079	0.221	0.141	-0.134	-0.077	0.465	0.444
EPS-decreasing exclusion (II)	9,958	0.284	0.143	-0.210	-0.094	0.426	0.369
Difference (II - I)		0.063	0.002	-0.076	-0.017	-0.039	-0.075
(two-sided p-value)		(<0.001)	(0.043)	(<0.001)	(<0.001)	(<0.001)	(<0.001)

Panel C: Sample matched by firm and time: EPS-increasing exclusions vs. Non-exclusion

	N	*TP_IMPRET*		*TP_FERR*		*TP_MET %*	
		Mean	median	Mean	median	Mean	median
Non-exclusion (I)	32,414	0.293	0.142	-0.178	-0.063	0.475	0.468
EPS-increasing exclusion (II)	35,959	0.387	0.156	-0.262	-0.074	0.471	0.464
Difference (II - I)		0.095	0.014	-0.084	-0.011	-0.004	-0.004
(two-sided p-value)		(<0.001)	(<0.001)	(<0.001)	(0.001)	(0.212)	(0.109)

This table presents the results of alternative tests of the association between analysts' target price optimism and exclusions. Panel A reports the results of regression tests that include firm-year fixed effects. Panel B matches non-exclusion target prices with target prices associated with EPS-decreasing exclusions. Panel C matches non-exclusion target prices with target prices associated with EPS-increasing exclusions. In Panel A, Columns 1 through 3 use continuous variables, and columns 4 through 6 use indicator variables, to represent both analysts' EPS-decreasing and EPS-increasing exclusions. In Panels B and C, samples are matched by firm and time (allowing one day difference).

Exclusion_EPSDec (*Exclusion_EPSInc*) equals the analyst's GPS forecast less their EPS forecast, scaled by the closing price three trading days prior to the earnings forecast date, when the analyst makes an earnings exclusion that is EPS-decreasing (EPS-increasing), and zero otherwise. The *D_Exclusion_EPSDec* (*D_Exclusion_EPSInc*) indicator variable equals one when the analyst makes an earnings exclusion that is EPS-decreasing (EPS-increasing), and zero otherwise. *TP_IMPRET* is the target price divided by the closing price three trading days prior to the forecast date, less one. *TP_FERR* is the price 12 months following the forecast date less the target price, scaled by the closing price three trading days prior to the forecast date. *TP_MET%* is the percentage of days in the next 12 months with prices higher than the target price. Thus, the *TP_IMPRET* variable is increasing in optimism while *TP_FERR* and *TP_MET%* are decreasing in optimism. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels, respectively. All continuous variables are winsorized by year at the 1% and 99% levels. All variable descriptions are in Appendix A.

Table 5: Tests addressing the possibility of reverse causality

Dep var =	(1) TP_ IMPRET	(2) TP_ FERR	(3) TP_ MET%	(4) TP_ IMPRET	(5) TP_ FERR	(6) TP_ MET%
	Sell/Hold			Buy		
|Exclusion_EPSDec|	1.038	-2.754***	-1.551***	1.430*	-2.786***	-0.673**
	(1.625)	(-3.410)	(-4.672)	(1.924)	(-3.310)	(-2.554)
|Exclusion_EPSInc|	0.331*	-0.467**	-0.119***	0.505***	-0.581***	-0.070**
	(1.901)	(-2.513)	(-2.776)	(2.647)	(-2.865)	(-2.335)
Controls from Table 3?	Yes	Yes	Yes	Yes	Yes	Yes
Observations	29,400	29,358	29,400	40,805	40,776	40,805
Adjusted R-squared	0.041	0.132	0.155	0.149	0.159	0.107
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
FF49 FE	Yes	Yes	Yes	Yes	Yes	Yes

This table presents the results of regressions of analysts' target price optimism on exclusions in samples partitioned according to whether the analyst has a "Sell" or "Hold" recommendation, or a "Buy" recommendation, when the target price is issued. *Exclusion_EPSDec* (*Exclusion_EPSInc*) the analyst's GPS forecast less their EPS forecast, scaled by the closing price three trading days prior to the earnings forecast date, when the analyst makes an earnings exclusion that is EPS-decreasing (EPS-increasing), and zero otherwise. *TP_IMPRET* is the target price divided by the closing price three trading days prior to the forecast date, less one. *TP_FERR* is the price 12 months following the forecast date less the target price, scaled by the closing price three trading days prior to the forecast date. *TP_MET%* is the percentage of days in the next 12 months with prices higher than the target price. Thus, the *TP_IMPRET* variable is increasing in optimism while *TP_FERR* and *TP_MET%* are decreasing in optimism. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels, respectively. All continuous variables are winsorized by year at the 1% and 99% levels. All variable descriptions are in Appendix A.

Table 6: Regressions of analysts' target prices on components of their earnings forecasts

VARIABLES	(1) Z(TP/P)	(2) Z(TP/P)	(3) Z(TP/P)	(4) Z(TP/P)
Z(GPS)	0.139*** (2.597)			
Z(EPS)		0.146*** (2.661)	0.121*** (2.618)	0.119*** (2.610)
Z(| Exclusion |)			0.069* (1.919)	
Z(| Exclusion_EPSDec |)				0.016** (1.991)
Z(| Exclusion_EPSInc |)				0.069* (1.913)
Observations	442,562	442,562	442,562	442,562
Adjusted R-squared	0.009	0.010	0.013	0.013
Year FE	Year, FF49	Year, FF49	Year, FF49	Year, FF49

This table presents the results of tests of the association between analysts' target prices, scaled by price at the time the target price is issued, and the components of their earnings forecasts, also scaled by price. Each variable is standardized by subtracting the mean and then dividing by the standard deviation of the variable. *TP/P* is the target price divided by the closing price three trading days prior to the forecast date. *Exclusion* equals the analyst's GPS forecast less their EPS forecast. *Exclusion_EPSDec* (*Exclusion_EPSInc*) equals the difference between the analyst's EPS and GPS forecasts when the analyst makes an earnings exclusion that is EPS-decreasing (EPS-increasing), and zero otherwise. Standard errors are clustered by firm and analyst. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels, respectively. All continuous variables are winsorized by year at the 1% and 99% levels. All variable descriptions are in Appendix A.

Table 7: Analysts' exclusions and implied growth forecasts

Panel A: Sample matched by firm and time: EPS-decreasing exclusions vs. Non-exclusion

Variable is:	*EPS Growth Forecast*			*EPS Growth Forecast Error*		
	N	Mean	median	N	Mean	median
Non-exclusion (I)	44,901	0.252	0.125	41,777	0.145	0.042
EPS-decreasing exclusion (II)	27,815	0.296	0.135	25,839	0.195	0.064
Difference (II - I)		0.044	0.010		0.050	0.022
(two-sided p-value)		(<0.001)	(<0.001)		(<0.001)	(<0.001)

Panel B: Sample matched by firm and time: EPS-increasing exclusions vs. Non-exclusion

Variable is:	*EPS Growth Forecast*			*EPS Growth Forecast Error*		
	N	Mean	median	N	Mean	median
Non-exclusion (I)	81,953	0.331	0.142	75,031	0.202	0.053
EPS-increasing exclusion (II)	90,738	0.244	0.135	83,248	0.139	0.036
Difference (II - I)		-0.087	-0.007		-0.064	-0.017
(two-sided p-value)		(<0.001)	(<0.001)		(<0.001)	(<0.001)

This table examines analysts' EPS growth forecasts and their errors relative to realized growth rate, using samples matched by firm and time (allowing one day difference). Panel A matches non-exclusion target prices with target prices associated with EPS-decreasing exclusions and Panel B matches non-exclusion target prices with target prices associated with EPS-increasing exclusions. We infer analysts' growth forecasts based on their EPS forecasts for the upcoming and future years. Specifically, *EPS Growth Forecast* is calculated as EPS($t+2$)/EPS($t+1$) – 1, and *EPS Growth Forecast Error* is calculated as *EPS Growth Forecast* minus actual EPS growth rate, where EPS($t+1$) and EPS($t+2$) are the analyst's EPS forecasts for the upcoming year, the following year, and two years later, respectively. We exclude all observations with negative *EPS (t+1)*. All continuous variables are winsorized by year at the 1% and 99% levels. All variable descriptions are in Appendix A.

Table 8: Analysts' exclusions and target price informativeness

VARIABLES	(1) BHAR [-1, 1]	(2) BHAR [-1, 1]	(3) BHAR [-1,30]	(4) BHAR [-1, 30]	(5) BHAR [-1, 365]	(6) BHAR [-1, 365]
ΔTP	0.097***	0.087***	0.101***	0.091***	0.068***	0.058***
	(42.718)	(37.269)	(35.851)	(29.857)	(7.781)	(5.882)
|Exclusion_EPSDec|	0.038		0.062		0.173	
	(0.949)		(0.874)		(0.533)	
|Exclusion_EPSInc|	-0.008		0.026*		0.545***	
	(-1.305)		(1.835)		(5.967)	
ΔTP × |Exclusion_EPSDec|	-0.983***		-0.834***		0.528	
	(-5.374)		(-2.734)		(0.544)	
ΔTP × |Exclusion_EPSInc|	-0.003		0.080**		0.374**	
	(-0.136)		(2.123)		(2.177)	
D_Exclusion_EPSDec		0.002***		0.001		0.001
		(2.845)		(0.695)		(0.280)
D_Exclusion_EPSInc		-0.001**		-0.001		0.011**
		(-2.413)		(-1.443)		(2.147)
ΔTP × D_Exclusion_EPSDec		-0.012***		-0.010		0.008
		(-2.674)		(-1.495)		(0.392)
ΔTP × D_Exclusion_EPSInc		0.033***		0.034***		0.042***
		(9.258)		(7.274)		(2.720)
ΔEPS	0.128***	0.129***	0.125***	0.127***	-0.286***	-0.296***
	(15.379)	(15.381)	(8.858)	(8.930)	(-4.097)	(-4.255)
Upgrade	0.015***	0.015***	0.017***	0.017***	0.030***	0.031***
	(17.836)	(18.004)	(13.713)	(13.750)	(7.534)	(7.615)
Downgrade	-0.036***	-0.036***	-0.041***	-0.041***	-0.081***	-0.080***
	(-32.174)	(-32.493)	(-26.764)	(-26.888)	(-17.500)	(-17.461)
Iteration	-0.002*	-0.002*	-0.004**	-0.004**	-0.016***	-0.016***
	(-1.921)	(-1.857)	(-2.412)	(-2.406)	(-3.098)	(-3.110)
Observations	453,453	453,453	453,453	453,453	453,453	453,453
Adjusted R-squared	0.108	0.110	0.053	0.054	0.062	0.060
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
FF49 FE	Yes	Yes	Yes	Yes	Yes	Yes

This table presents the results of tests of target price informativeness and analysts' exclusions. Columns 1, 3, and 5 uses continuous variables, and columns 2, 4, and 6 uses indicator variables, to represent both analysts' EPS-decreasing and EPS-increasing exclusions. We compute buy-and-hold abnormal returns (BHAR) for each target price in three different windows: a three-day window ([-1, 1]) in Columns 1-2, a one-month window ([-1, 30]) in Columns 3-4, and a one-year window ([-1, 365]) in Columns 5-6 that all start from the date prior to the forecast date and end one, 30, and 365 days later, respectively. *Exclusion_EPSDec* (*Exclusion_EPSInc*) equals the analyst's GPS forecast less their EPS forecast, scaled by the closing price three trading days prior to the earnings forecast date, when the analyst makes an earnings exclusion that is EPS-decreasing (EPS-increasing), and zero otherwise. The *D_Exclusion_EPSDec* (*D_Exclusion_EPSInc*) indicator variable equals one when the analyst makes an earnings exclusion that is EPS-decreasing (EPS-increasing), and zero otherwise. Standard errors are clustered by firm and analyst. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels, respectively. All continuous variables are winsorized by year at the 1% and 99% levels. All variable descriptions are in Appendix A.