Does Wall Street Discriminate by Race? Evidence from Analyst Target Prices[*]

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Abstract

Analyzing over 97,000 price target valuations from 2005-2020, we find analysts' judgments reflect over four times more pessimism per dollar of negative earnings news for Non-White CEO firms, resulting in lower target valuations. These lower target valuations are associated with an increased likelihood that Non-White CEO firms exceed their price targets, suggesting such pessimism is unwarranted. Further analyses reveal that the time-series variation in analysts' pessimism is associated with several exogenous measures of racial sentiment (i.e., Donald Trump's presidency, Black Lives Matter, and the annual number of racial bias crimes), consistent with racial discrimination that results in a greater negative impact of bad news on analysts' valuations when the CEO is Non-White.

Keywords: Racial discrimination, financial analyst, valuation, CEO, earnings announcement, target price
JEL Classifications: G24, J71

1   Introduction

The investment banking industry is often referred to by the media as having a "White culture" and a lack of racial diversity.[1] In March 2021, shareholder advocacy groups approached five of the largest bulge bracket investment banks (Citibank, Bank of America, Goldman Sachs, JP Morgan and Morgan Stanley) and asked that they conduct internal audits to address potential racial inequities within their own firms and identify ways to "avoid adverse impacts on Non-White stakeholders". All five banks responded by urging their shareholders to reject such racial-equity audits, citing the vast resources they had already allocated towards improving racial equity.[2,3] Consistent with the media's portrayals and investment banks' desires to avoid transparency about their racial attitudes, there have also been numerous instances of workplace and consumer discrimination against minorities on Wall Street, many of which have been settled in legal venues for hundreds of millions of dollars.[4] Despite much evidence pointing towards the existence of racial bias within the banking culture, there are no studies to date that attempt to empirically examine whether the investment banking industry, as a whole, exhibits evidence consistent with racial discrimination. This paper empirically documents such discrimination by providing evidence that sell-side analysts' target valuations are negatively biased against firms that announce bad earnings news when the firm's CEO is Non-White.

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[1] For a few examples see: (a) https://www.wsj.com/articles/wall-street-knows-its-too-white-fixing-it-will-be-hard-11593687600, (b) https://www.bloomberg.com/news/features/2020-06-29/rules-of-working-on-wall-street-from-black-employees-who-lived-it, or (c) https://www.eeoc.gov/statistics/employment/jobpatterns/eeo1. Further, in recent disclosures to the U.S. Equal Employment Opportunity Commission in 2018, Blacks were severely underrepresented within the industry. While Blacks represent 12.6% of the employable labor force, they comprise only 2.6% of banking industry executives.

[2] For example, Citibank committed $1 billion in 2020 towards providing greater access to banking and mortgages for minority communities, in addition to making investments in Black businesses. In 2021, Bank of America announced a $1 billion commitment to supporting minority-owned business and jobs and initiatives in Black and Hispanic communities.

[3] Other firms, such as Starbucks, Facebook and AirBnB have already commissioned racial equity audits and released the results in full transparency to the shareholders. https://www.politico.com/news/2021/04/06/shareholders-diversity-data-479159

[4] In December 2011 (July 2012), Bank of America (Wells Fargo) settled allegations of discrimination against black and Hispanic borrowers for $335 million ($175 million). In August 2013, Merrill Lynch settled a racial discrimination lawsuit against its own stockbrokers for $160 million.

Several times per year, often following a firm's earnings announcement, analysts disclose price target reports that update their opinions about the firm's future market value over the upcoming 12 months. Brav and Lehavy (2003) document that these disclosures provide valuable information to equity markets and serve as "analysts' most explicit opinion about the firm." Because theory dictates that fundamental values are derived solely from expectations of future cash flows and the cost of equity, it follows that analysts' valuation updates following revealed earnings news will be directly correlated with analysts' beliefs that such earnings news will be persistent in future years. That is, if the revealed performance is identical for a firm with a White CEO and a Non-White CEO, the CEO's race should not impact fundamental value unless, for example, an analyst perceives that the CEO's race affects the recurrence of such economic performance in future years. In addition, examining valuation differences resulting from analysts' differential interpretations of earnings news across CEO race allows us to use Becker's (1957, 1993) proposed methods to identify discrimination. That is, following Asquith, Mikhail, and Au (2005) we examine the ex-post outcomes of analysts' bias by examining whether the actual stock prices exceed the analysts' targets over the next 12 months. Specifically, if analysts' are unjustifiably pessimistic towards Non-White CEO firms following earnings news, they would be more likely to exceed the valuation target than White CEO firms. Together, the theoretical underpinnings about a firm's valuation and the observability of the analysts' judgment accuracy using realized stock prices create an ideal setting for studying discrimination.

Following prior literature in psychology that has identified a bias known as the "ultimate attribution error" whereby a prejudiced agent attributes a negative event as "genetically predetermined" to the prejudiced group (Pettigrew, 1979), we investigate the impact of the CEO's race on how sell-side financial analysts differently interpret the economic impact of negative news on the firm's future valuation.[5] Because prior literature has documented

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[5]In contrast to negative events, theoretical predictions for positive events are ambiguous. Theory predicts positive behavior by a prejudiced group is perceived as one of the four cases:(a) exceptional case, (b) luck or special advantage, (c) high motivation and effort, and (d) manipulable situational context. While (a) and (b) may lead to exaggerated perception of the positive qualities, (c) and (d) can result in discounting of the

societal stereotypes of Non-Whites as having inferior leadership qualities relative to Whites (Dixon and Rosenbaum, 2004; Carton and Rosette, 2011; Burris, Ayman, Che, and Min, 2013), while also considering the White race to be representative of the prototypical business leader (Rosette, Leonardelli, and Phillips, 2008; Gündemir, Homan, De Dreu, and Van Vugt, 2014), we expect that analysts who fall prey to the ultimate attribution error would be more likely to expect bad news to recur for Non-White CEO firms, thereby leading to incremental pessimism per unit of earnings news as revealed in their valuation targets.

Our investigation provides evidence consistent with these conjectures. The impact of one dollar of negative economic news on analysts' valuations is, on average, over four times larger when the CEO is Non-White. Accordingly, analysts' target price valuations are lower for firms led by Non-White CEOs (relative to White CEOs) per unit of negative economic news, reflecting a more pessimistic outlook for Non-White CEO firms. For example, the median implied return from the pre-announcement price to one year following the analysts' target price report is 10.9%. A one quartile increase in bad earnings news will reduce the analyst's implied return by 80 basis points to 10.10% when the CEO is Non-White, but only by 19 basis points to 10.71% when the CEO is White.

Interestingly, when we examine event returns around earnings announcements in an analogous test to our baseline regression, we find no evidence that the market perceives the CEO's race to have any bearing on the firm's valuation when earnings are announced. Such contrasting behavior from aggregate market trades suggests that the analyst pessimism that we document may be a result of biased human judgment. Consistent with this, outcome tests based on ex-post stock prices reveal that this excessive pessimism towards Non-White CEOs is not economically justified as Non-White CEOs have a significantly higher probability of exceeding the analysts' target in our sample. Further analyses reveal that variation in the magnitude of such unwarranted pessimism against Non-White CEOs is strongly correlated with several plausibly exogenous measures of racial sentiment. Our findings are consistent

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positive acts, thus making any ex-ante predictions unclear (Pettigrew, 1979).

with analysts' target valuations reflecting a racial bias when interpreting the effect of negative news on the firm's future valuation.

To investigate our research question, we hand-collect CEO photos for Standard and Poor 1500 firms between 2005-2019 and classify their race as White or Non-White. We then merge the firms of these CEOs to the sample of firm-quarters where the firm has missed the analysts' consensus EPS forecast. Using the IBES Detail file, we match each firm-quarter with each analyst's first target price report following the announcement date. Our sample consists of 97,603 unique target price reports, where 4,893 (5%) of these reports refer to a firm covered by a Non-White CEO.

As previously mentioned, our analyses follow prior suggestions in discrimination research in economics and involve two main tests (Becker, 1957, 1993). Our first analysis examines analysts' incremental pessimism per unit of bad news towards Non-White CEOs. Our dependent variable, *Target*, is the analysts' annualized implied return based upon analysts' first published target valuation following the earnings announcement and the stock price one day prior to the earnings announcement, and captures the analysts' beliefs on how the earnings news will impact the firm's valuation. We measure pessimism towards Non-White CEO firms as the incremental effect per unit of bad news on *Target* when the CEO is Non-White. Our second analysis tests the analyst's target valuation accuracy, in accordance with Becker's use of outcome tests to confirm the existence of bias. Following Asquith et al. (2005), we create a dependent variable, *Outcome*, that equals one when the stock price exceeds the target price within 12 months after the report date. We then investigate whether these Non-White CEO firms are more likely to exceed the issued targets over the subsequent 12 months. To summarize, if the analysts' excessive pessimism towards Non-White CEO firms is unjustified by economic fundamentals, the target price will be set too low. Assuming that financial markets are efficient, excessive unjustified pessimism towards Non-White CEO firms will result in a higher likelihood that the stock prices of these Non-White CEO firms will exceed the target valuations. Collectively, the combination of the analyses of *Target* and *Outcome* allows us

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to examine whether there exists excessive pessimism towards Non-White CEO firms and whether such pessimism is warranted.

Our main analyses reveal that the impact of each marginal unit of negative news on analysts' target price valuations is over four times larger when the CEO is Non-White. Outcome tests reveal that the incremental pessimism towards Non-White CEOs significantly increases the probability that they will exceed analyst targets, indicating that such pessimism is not economically justified. This evidence is consistent with racial bias and Pettigrew (1979)'s ultimate attribution error, whereby analysts interpret negative news to confirm racial stereotypes that Non-Whites have inferior leadership abilities relative to Whites, thereby inferring that bad news is more likely to recur for firms when the CEO is Non-White. Our regressions include controls for a variety of firm attributes related to risk, growth and profitability as well as CEO tenure, gender, overconfidence, and analyst and year fixed effects. Inferences from the analyses of both *Target* and *Outcome* are robust to entropy balanced samples, a variety of scaling variables for price targets, several alternate methods of estimating target valuation accuracy, as well as limiting the sample to price targets issued immediately (within two days) after the earnings announcement.

We conduct analyses to test our conjecture that analysts' unwarranted pessimism is driven by racial bias. To further test this conjecture, we collect several exogenous time-varying measures of change in society-wide racial bias and examine how our findings regarding unwarranted pessimism towards Non-Whites varies with changes in racial bias. First, we examine the changes in analyst pessimism toward Non-White CEO firms following the transition away from Non-White leadership to White leadership for the entire country, i.e., the 45th United States Presidential Election of Donald Trump. We find that pessimism towards Non-Whites significantly increases in the years following the election victory. Next, we collect an annual measure of racial sentiment using nation-wide data for our entire time series from FBI Non-White Hate Crime Incidents. We find evidence that increases in Non-White racial tension are associated with increased levels of unwarranted pessimism towards

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Non-White CEO firms. Collectively, the inferences from these findings are identical, suggesting that the degree to which analysts' target prices discriminate against Non-White CEOs is strongly moderated by changes in negative racial sentiment against Non-Whites. Our final analysis involves a natural experiment surrounding the advent of the Black Lives Matter (BLM) movement. Consistent with prior literature which documents a reduction in racial bias towards black people after BLM, we find analysts' pessimism towards Black CEO firms decreases in the post-BLM period, while we find no such effect for other Non-White CEO firms.

We next explore some potential consequences of our findings. Specifically, we examine market reactions around target price event dates. To gauge the extent to which markets unravel the racial bias embedded in analysts' target prices, we decompose the fitted values of *Target* and *Outcome* into a component that is attributed to the racially biased interpretation of bad news and a remaining component which is purged of such racial bias. We then examine whether the stock returns around the revealed target prices are associated with analysts' biased reaction to bad news. We find that while the market reaction to the biased component is significantly smaller than that to the unbiased component, it is still greater than zero, implying that markets do not fully unravel such discrimination on the target price announcement date. Consequently, we also observe larger levels of insider purchases from Non-White CEOs and other firm insiders in the three-day window following the target price disclosure. Overall, while it does not appear that markets fully adjust for analysts' negatively biased price targets, insiders at firms with Non-White CEOs are aware of this and respond accordingly.

We contribute to several broad literatures. While prior studies document evidence of racial discrimination in higher education bonds (Dougal, Gao, Mayew, and Parsons, 2019), consumer and business loans (Butler, Mayer, and Weston, 2021; Howell, Kuchler, Snitkof, Stroebel, and Wong, 2021), housing (Ewens, Tomlin, and Wang, 2014), and labor markets (Bertrand and Mullainathan, 2004), racial discrimination from the firm to minority analysts

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(Flam, Green, Lee, and Sharp, 2020) and ethnic discrimination towards fund managers with foreign-sounding names (Kumar, Niessen-Ruenzi, and Spalt, 2015), to our knowledge we are the first, despite much anecdotal evidence from media interviews and litigation settlements, to document empirical evidence consistent with racial bias from the investment banking industry using industry-wide panel data. We also compliment a growing literature that examines the impact of culture and diversity in financial markets (Brochet, Miller, Naranjo, and Yu, 2019; Brochet, Naranjo, and Yu, 2016; Ellahie, Tahoun, and Tuna, 2017; Merkley, Michaely, and Pacelli, 2020; Pan, Siegel, and Wang, 2020). Finally, we contribute to a large literature (Womack, 1996; Ke and Yu, 2006; Mayew, 2008; Brown, Call, Clement, and Sharp, 2015) that documents the various biases and incentives that impact the accuracy of financial analyst outputs.

The remainder of our paper is structured as follows. Section 2 discusses the motivation and research setting. Section 3 describes the empirical design. Section 4 presents details regarding sample construction. Section 5 presents sample statistics and the main results from panel regressions. Section 6 addresses causal inference by examining how variation in racial sentiment impacts our main findings regarding analyst pessimism. Section 7 examines market reactions and insider trading around biased price target revelations. Section 8 tests the robustness of our results to alternate specifications. Section 9 concludes.

2 Motivation and Research Setting

Sell-side analysts are information intermediaries who are assigned to cover multiple firms within a given industry (Boni and Womack, 2006). They acquire relevant data and disclose outputs about each firm, thus communicating their judgment about the firm's future (Brown et al., 2015). One key piece of information provided by analysts are twelve-month price target projections, which represent the analyst's explicit opinion about the firm's market value. We argue that these valuations from analysts are ideal signals for examining potential ev-

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idence of racial bias. First, market values are fundamentally derived as the present value of all expected future cash flows, and thus should be dependent upon economic characteristics (i.e., estimates of future profitability, long-term expected growth rate, and the equity cost of capital). To the extent that the CEO's race is orthogonal to the firm's realization of these economic characteristics, race should not impact analyst's judgment of the firm's market value. Second, to the extent that biased beliefs about any of the aforementioned valuation inputs (profitability, growth, risk) are driven by the CEO's race, they are likely to be empirically observable in the analyst's target price report. Third, assuming that financial markets are efficient, valuations that are systematically biased downwards will have ex-post stock prices that more often exceed their targets, allowing us to design outcome tests that examine whether any potential bias in valuations that are associated with race can be economically justified. Finally, because analysts are assigned to multiple firms within the same industry, we can analyze potential bias within-analyst, which allows us to rule out the possibility that pessimistic analysts self-select to cover Non-White CEO firms.

It is a well-established fact that the CEO is the highest-ranking executive in a company and assumes the leadership role for the firm. In addition, the CEO plays a key public relations role as the public "face" of the company by acting as the lead spokesperson towards external stakeholders (Men, 2012). Given their primary leadership position and the fact that their primary objective is to accrue value to the shareholders, CEO's are active participants on earnings announcement dates. Dzielinski, Wagner, and Zeckhauser (2017) find that 93% of CEOs are actively involved in earnings announcement and conference call events, making their presence and racial identities very salient to analysts.

Prior research in psychology has documented that society tends to stereotype Whites as prototypical business leaders. For example, Rosette et al. (2008) find that subjects assume that "being White" is an attribute of the business leader prototype, while Lord and Maher (1991) find that leaders who possess typical leadership characteristics tend to be appraised most favorably by others. Gündemir et al. (2014) find that subjects implicitly have a stronger

association of White names with leadership roles/traits (versus Non-White names). At the same time, research documents numerous negative perceptions associated with Non-White individuals, making them less representative of a prototypical business leader. Carton and Rosette (2011) find that participants perceive black leaders (but not white leaders) to fail because of negative leader-based attributes, while Dixon and Rosenbaum (2004) find that subjects stereotype Hispanics as lazy and unintelligent. Lin, Kwan, Cheung, and Fiske (2005) and Burris et al. (2013) find that while Asian managers are generally perceived as competent, they are perceived to be anti-social, worse at networking, less transformative, and less authentic than Whites.

Given the CEO's presence at earnings announcement dates, and the prior research which documents that Non-Whites are perceived to have worse leadership qualities than Whites, we focus our investigation on analysts' target price revelations for firms that have announced earnings results which are below consensus expectations. The disclosure of bad earnings news gives analysts the opportunity to pass judgment on whether the bad news is a manifestation of external one-time factors unrelated to the CEO, or of poor decisions representative of the CEO's leadership quality.

To the extent that the analyst may have ex-ante beliefs consistent with societal stereotypes that Whites are better business leaders than Non-Whites, the announcement of earnings that fail to meet market expectations would allow analysts to attribute the bad news from Non-White CEO firms more strongly to inferior leadership qualities (versus White CEO firms). If these stereotypes are false, such judgments will reflect a well-established psychology bias known as the ultimate attribution error (Pettigrew, 1979), whereby an agent with prejudiced beliefs attributes a negative act by the disfavored group to an internal characteristic, i.e., poor leadership. This attribution would then make bad news appear more likely to recur in the future, resulting in the issuance of more pessimistic analysts' valuations for Non-White versus White CEO led firms.

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3 Empirical Design

Our empirical design consists of two primary analyses. The first analysis examines whether analysts perceive an economic unit of bad news (i.e., each cent of the firm's earnings per share (EPS) that is less than the consensus EPS) more pessimistically for valuation when the CEO is Non-White. The second analysis examines whether any such pessimism is either unwarranted or economically justifiable by examining the outcomes of these decisions. That is, we examine the likelihood that the ex-post stock prices exceed the analysts' target valuation. If analysts' target prices are set too low for Non-White CEO firms because of a biased interpretation of bad news, then Non-White CEO firms will be more likely to exceed the target valuation than White CEO firms.

Because we wish to examine the impact of bad earnings news on analysts' valuations, we limit the sample to each analyst's initial target price report following the earnings announcement date when calculating our dependent variable for the first analysis.[6] We calculate each analyst's annualized implied return (*Target*) by using the pre-earnings announcement stock price and the analysts' projected target price for the firm 12 months from the report date. Thus, in the equation below, *Target* is obtained by solving for the implied return, R, based on continuous compounding:

$$Price_{Forecast12M} = Price_{Pre-EA} \cdot e^{RT} \tag{1a}$$

$$R = \frac{ln(Price_{Forecast12M}) - ln(Price_{Pre-EA})}{T} \tag{1b}$$

Thus, *Target* (i.e.,R) is calculated as the difference between the natural log of the target price and the natural log of the pre-announcement price, all scaled by T, where T equals 1 plus the number of days between the earnings announcement date and the target price date

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[6]In untabulated analyses, we remove any price targets where the analyst target price is greater than 80 calendar days after the earnings announcement, doing so removes 1% of the sample observations and does not affect any statistical or economic inferences.

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scaled by 365. The dependent variable for the second analysis follows Asquith et al. (2005). We set *Outcome* equal to one when the stock price exceeds the target price within 12 months after the report date, and zero otherwise.

The independent variable which is the main focus of our empirical investigation is the interaction of *Non-White* and *Bad News*. *Non-White* is a binary variable that takes a value of one if the CEO's race is classified as Non-White, and zero if White. *Bad News* is the analyst-based earnings surprise (SUE) calculated following Livnat and Mendenhall (2006), multiplied by minus one, so that more positive values of *Bad News* represent larger earnings misses.[7] Thus, in equation 2 below, when our dependent variable Y is *Target*, the interaction term *Non-White·Bad News* represents the incremental effect of negative earnings news on the analyst's valuation when the CEO is *Non-White*, where i, j, and t denote firm, analyst, and quarter, respectively.

$$Y_{ijt} = \beta_1 \ Non\text{-}White_{it} + \beta_2 \ Bad \ News_{it} + \beta_3 \ Non\text{-}White_{it} \cdot Bad \ News_{it}$$
$$+ \gamma X_{it} + \phi_j + \tau_t + \epsilon_{ijt} \tag{2}$$

Similarly, when our dependent variable, Y is *Outcome*, the interaction term *Non-White·Bad News* represents the increased likelihood for each unit of *Bad News* that a Non-White CEO firm will exceed the analyst's target price. The timeline of observing analysts' target price pessimism and ex-post justification is summarized in the schematic shown in Illustration (a) (Appendix B).

The magnitude and significance of the interaction coefficient on *Non-White · Bad News*, β_3 represent our primary interest. To the extent that analysts' valuations reflect excessive pessimism per unit of bad news towards Non-White CEO firms (relative to White CEO firms), β_3 should be negative and significant when Y is *Target*. Conversely, a positive and significant β_3 when Y is *Outcome* would indicate that the likelihood of Non-White CEO firms

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[7]SUE is calculated as the actual EPS before extraordinary items as reported by I/B/E/S less the most recent I/B/E/S consensus EPS forecast prior to the announcement date, scaled by stock price at the end of quarter.

(relative to White CEO firms) exceeding analysts' target increases for each additional unit of bad news, implying that the analysts' excessive pessimism towards Non-Whites was not economically justified by ex-post stock prices. In contrast, finding an insignificant coefficient for β_3 when Y is *Outcome* would suggest that analysts' pessimism may be justified via economic fundamentals.

We use a vector of controls (X) that proxy for a firm's future growth, risk, profitability, information environment, and CEO characteristics. *Log Market Cap* is calculated as the natural logarithm of the firm's market capitalization, *MTB* is the firm's market value of assets scaled by the book value of total assets, *Book Leverage* is calculated as total debt divided by total assets, *Abnormal Return* is the firm's buy and hold market-adjusted abnormal return over the prior three months, *ROA* is calculated as net income before extraordinary items scaled by lagged total assets, *Return Volatility* is the standard deviation of the firm's daily stock returns over the prior three months, *ROA Volatility* is the standard deviation in ROA over the prior 20 quarters, *Sales Growth* is calculated as quarterly sales minus lagged sales, scaled by lagged sales, *Log Analyst Following* is the natural logarithm of the total number of analysts issuing target prices on the firm in the given quarter, *Inst Ownership* is institutional ownership percentage, *Male* is a dummy variable that takes on a value of one if the CEO's gender is male, and zero if the CEO is female, *Log Tenure* is the natural logarithm of the number of years of experience of the CEO, and *Overconfidence* is a dummy variable which takes a value of one for an overconfident CEO and zero otherwise, where overconfidence is measured using the CEO's option holding behavior following Malmendier and Tate (2005) and Campbell, Gallmeyer, Johnson, Rutherford, and Stanley (2011).[8] We also include analyst fixed effects, which creates within-analyst comparisons of target price pessimism and allows us to rule out the possibility that systematically pessimistic analysts may somehow endogenously match to Non-White CEOs. Other potentially unobservable

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[8]In Malmendier and Tate (2005) and Campbell et al. (2011) the dummy variable takes a value of one if the CEO, at least twice during their tenure, holds exercisable option portfolios that are greater than 67% in the money at the end of the fiscal year.

time-varying effects on *Target* and *Outcome* are removed by the inclusion of year fixed effects.

4   Sample Construction

We obtain information on the names of the CEOs of S&P 1500 companies from the Execucomp database. During our sample period of FY2005 – FY2019, we identified 5,631 unique CEO-firm observations. We used Amazon Mechanical Turk workers to collect and classify photos of CEOs as White versus Non-White. The task required mechanical Turk workers to find a link to a CEO's headshot, and then classify their race. For each observation, we recruited three different workers, which allowed us to use consensus in these three workers' responses as a quality metric for determining whether the classification was accurate. Consensus was achieved for 5,133 CEO-firm observations. For the remaining 498 observations for which consensus was low, the authors reviewed the responses and verified the classification.

Table 1 presents our sample construction procedure. We merge the race data of CEOs to the sample of firm-quarters in which the firm failed to meet the prevailing analysts' consensus EPS forecast. We next match each earnings announcement with analysts' first target price report following the announcement date, yielding an initial sample of 143,875 analyst-firm-target price report observations. We eliminate firms in utility and financial industries, as well as observations with a stock price less than $1. Finally, after excluding singleton values from the estimation of our baseline regression model, the final sample used for our analyses consists of 97,603 target price reports issued by 4,025 unique analysts. Of these reports, 4,893 (5%) are issued for firms with a Non-White CEO, and 92,710 (95%) for firms with a White CEO. Our final sample covers 1,787 unique firms, 1,600 (74) of which have only White (Non-White) CEOs throughout the firm's existence. Of the 3,180 unique CEOs in our sample, 201 (6%) are classified as Non-White and 2,979 (94%) as White.

5 Baseline Results and Discussion

5.1 Sample statistics

Table 2a presents univariate summary statistics for our sample. The level of observations is analyst-firm-date. The average *Target* is 0.108 and *Outcome* is 0.640, suggesting that analysts' target price valuations imply 10.8% annualized returns from the pre-earnings announcement stock price to 12 months following the target report date, and the likelihood that the stock price exceeds the target price for the entire sample is 64%. Table 2b presents comparison between the Non-White and White subsamples. Implied returns from *Target* are 1.1 percentage point lower (0.098 vs 0.109) for Non-White CEO led firms, and this difference is significant at the 1% level. On the contrary, Non-white CEO led firms are 2.3 percentage point more likely to meet the target valuations within one year than White CEO led firms. This difference is also statistically significant at the 1% level.

Figure 1 graphically presents the cumulative percentage of firms exceeding the target at three-month intervals during the subsequent one-year window after analysts' target valuation issuance. Panel a shows that on average, 64% of our sample firms exceed the price targets within one year. Panel b shows that at any given point in time during the one-year window, the percentage of firms exceeding the analyst target is higher for Non-White CEO firms than for their White CEO counterparts. Panels c to e present plots by *Bad News* terciles. Notably, the difference in the likelihood of exceeding the target between Non-White and White CEO firms varies with the magnitude of bad news, with the largest earnings miss tercile (panel e) exhibiting the greatest difference between the two groups. Collectively, these patterns provide preliminary evidence that following bad news earnings announcements, analysts' target valuations are systematically set too low for Non-White CEO led firms, and that the extent of this pessimism varies predictably with the magnitude of bad news.

In Table 2b, we observe that there is no statistically significant difference in the magnitude

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of bad earnings news, past stock performance, or sales growth between the two samples, and that the Non-White sample has higher profitability (ROA). The Non-White sample however tends to comprise firms with smaller market capitalization, and higher market to book. These characteristics are generally consistent with the Non-White sample being younger in the life cycle and more characteristic of 'glamour' firms (Rau and Vermaelen, 1998) when compared to the White sample. The Non-White sample can also be characterized as having lower financial leverage, and higher return volatility. Additionally, Non-White CEOs are more likely to be female, less experienced, and less overconfident, than White CEOs.

Prior to analyzing analysts, we examine whether equity market interpretations of bad earnings news differ when the CEO is Non-White. That is, to the extent that financial markets believe that economic losses around earnings by Non-White (White) CEOs are expected to be more (less) persistent due to differences in perceived ability or other attributes specific to firms led by Non-White (versus White) CEOs, this could serve as a potential explanation if we were to find that analysts' target valuations were excessively pessimistic towards Non-White CEOs. In Table 3, we examine the market reaction around earnings announcements and find no evidence that markets perceive the persistence of economic losses to be different when the CEO is Non-White. The dependent variable is three-day market adjusted returns around the earnings announcement and the independent variables are identical to our main baseline regressions from equation 2 including the vector of controls. In column 1, the coefficient on *Non-White* is statistically insignificant, indicating that markets on average do not react differently when Non-White CEOs disclose bad news earnings. As expected, the coefficient on *Bad News* is negative (-1.305) and significant ($p < 0.01$), consistent with markets reacting more negatively to larger bad news. In column 2, the interaction coefficient on *Non-White·Bad News* is statistically insignificant. This evidence suggests that after controlling for economic information, equity markets do not find the CEO's race to have any differential impact on the persistence of bad news, and hence the CEO's race has no effect on earnings announcement returns.

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5.2 Analyst pessimism, CEO race, and bad news

In Table 4 we estimate the baseline regressions. In columns 1 and 2, we first estimate equation 2 without the interaction term. In column 1, the insignificant coefficient on *Non-White*, suggests that analysts' target valuations for Non-White CEOs are on average not different from those for White CEOs. The coefficient on *Bad News* is negative and significant ($p < 0.01$), indicating that analysts assign lower valuations to firms with larger earnings misses. Column 2 shows that the coefficient on *Non-White* is statistically insignificant, implying that the likelihood of Non-White CEO firms exceeding their target prices is not different from that of White CEO firms. The positive and significant coefficient ($p < 0.01$) on *Bad News*, suggests that the likelihood of firms exceeding their valuation targets becomes higher as the reported earnings shortfall increases.

Columns 3 and 4 present our main results. In column 3, the dependent variable is *Target*. The coefficient on the interaction term, *Non-White·Bad News*, our primary variable of interest is -2.019 and significant ($p < 0.01$), indicating that Non-White CEO firms receive valuations that are 4.14 times ($(-2.019-0.644)/-0.644$) lower than White CEO firms for each unit of bad news (i.e., each additional cent by which the firm misses the consensus EPS). Recall that *Target* is expressed as the implied return between pre-earnings announcement price and the expected valuation 12 months from the target price date and that the median firm in our sample has an implied return of 10.9%. The coefficients on *Bad News* and *Non-White·Bad News* in column 3 imply that a one quartile increase in bad news from the median in our sample will decrease the implied return by 19 basis points (to 10.71%) if the CEO is White, and by 80 basis points (to 10.10%) if the CEO is Non-White. In column 4, when the dependent variable is *Outcome*, the coefficient on the interaction term is 3.541 and significant ($p < 0.01$), indicating the impact of a marginal unit of bad news on the likelihood of exceeding the valuation target is 3.45 times ($(3.541+1.448)/1.448$) higher when the CEO is Non-White. Taken together, the combined evidence presented in columns 3 and 4

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is consistent with analysts' excessive pessimism towards firms with Non-White CEO's being unwarranted following the release of bad news.

6   Racial Sentiment and Analyst Pessimism

In this section, we exploit time-series variation in racial bias in society and examine whether changes in analysts' unwarranted pessimism towards Non-White CEO firms are associated with these changes in racial bias.

6.1   The 45th presidential election, November 8, 2016

November 8, 2016 marked the election of the 45th President of the United States, and a transition of leadership away from the first Non-White president in the United States, Barack Obama to his successor, Donald Trump. We examine whether our primary results on analysts' pessimism towards Non-White CEO firms vary surrounding the 45th Presidential Election.

Prior psychology literature documents that biases resulting from stereotypes (i.e., that minorities have inferior leadership skills) can be reduced by incongruent or disconfirming examples (O'Sullivan and Durso, 1984; Hewstone, 1989). In addition to numerous well-documented actions to reduce discrimination and promote diversity throughout the Obama era [9, 10], President Obama arguably held the most salient leadership role in the United States with a Non-White racial identity. Moreover, the Trump era has generally been viewed by many as one with heightened racial tension. For example, a simple Google Trends search shown in Illustration (b) (Appendix B) for the term "White Nationalism" [11] shows a large

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[9]For example, in August 2011, President Barack Obama signed an Executive Order (EO) titled "Establishing a Coordinated Government-Wide Initiative to Promote Diversity and Inclusion in the Federal Workforce. https://obamawhitehouse.archives.gov/issues/civil-rights/empowerment

[10]https://www.govexec.com/management/2016/11/obama-seeks-cement-agency-diversity-efforts-trump-takes-office/133441/

[11]White nationalism is also described as a euphemism for white supremacism, which is defined by the Oxford dictionary that white people are superior to other races and ethnic groups. https://www.oxfordlearnersdictionaries.com/definition/english/white-supremacy

shock in the search score in the election month of November 2016, along with four other large shocks occurring during the subsequent four years. The average search score during this period is over five times larger than the preceding four years (Pre = 5.12, Post = 26.5), and this difference is statistically significant at the 1% level (untabulated). To the extent that the post-period identifies a regime shift in the level of racial bias and that analyst pessimism is a function of racial bias, we expect greater analyst pessimism toward Non-White CEO firms in the post-period.

We modify equation 2 to triple difference regressions that test whether the magnitude of unwarranted analyst pessimism increases following the post-election structural break. We define a dummy variable, *Post-Trump*, that equals one for target price forecasts issued during the four years after November 8, 2016, and zero for target price forecasts issued during the four years before. In equation 3 β_7 represents the incremental levels of analyst pessimism in the *Post-Trump* period.

$$
\begin{aligned}
Y_{ijt} =& \beta_1 \textit{ Non-White}_{it} + \beta_2 \textit{ Bad News}_{it} + \beta_3 \textit{ Non-White}_{it} \cdot \textit{Bad News}_{it} \\
& + \beta_4 \textit{ Post-Trump}_t + \beta_5 \textit{ Non-White}_{it} \cdot \textit{Post-Trump}_t + \beta_6 \textit{ Bad News}_{it} \cdot \textit{Post-Trump}_t \\
& + \beta_7 \textit{ Non-White}_{it} \cdot \textit{Bad News}_{it} \cdot \textit{Post-Trump}_t \\
& + \gamma X_{it} + \phi_j + \tau_t + \epsilon_{ijt}
\end{aligned}
\tag{3}
$$

Results are tabulated in Table 5. The coefficients for β_7 are –4.166 and 10.982 and statistically significant ($p < 0.05$ and $p < 0.01$, respectively). These estimates indicate that unwarranted analyst pessimism towards Non-White CEO firms was significantly larger in the *Post-Trump* era. Interestingly, we also find that the coefficients on *Non-White · Bad News* (β_3) to be insignificant in the years prior to President Trump's election victory. In the following section, we expand upon this analysis by considering the variation in racial sentiment across the entire sample period, which allows for granular changes in the magnitude of such racial bias across years.

6.2 FBI racial bias incidents

Our next set of analyses rely on data from the Federal Bureau of Investigation Hate Crimes Statistics [12] to create a measure of negative racial sentiment, *Race Tension*, where higher levels indicate heightened racial tension. Specifically, we measure racial tension as a direct count of the number of reported racial bias crimes against Non-Whites each year to the FBI Hate Crimes department. We standardize the measure such that *Race Tension* has a mean of zero and a standard deviation of one. We estimate the following regression model:

$$
\begin{aligned}
Y_{ijt} =& \beta_1 \, \textit{Non-White}_{it} + \beta_2 \, \textit{Bad News}_{it} + \beta_3 \, \textit{Non-White}_{it} \cdot \textit{Bad News}_{it} + \beta_4 \, \textit{Race Tension}_t \\
& + \beta_5 \, \textit{Non-White}_{it} \cdot \textit{Race Tension}_t + \beta_6 \, \textit{Bad News}_{it} \cdot \textit{Race Tension}_t \\
& + \beta_7 \, \textit{Non-White}_{it} \cdot \textit{Bad News}_{it} \cdot \textit{Race Tension}_t \\
& + \gamma X_{it} + \phi_j + \tau_t + \epsilon_{ijt}
\end{aligned}
\tag{4}
$$

In equation 4, β_7 is the main coefficient of interest, which measures the effect of worsening racial tensions incremental to β_3.

Table 6 reports the results. Similar to the baseline results in Table 4, the coefficient for β_3 is negatively (positively) significant in column 1 (2). That is, throughout our sample period analysts are on average excessively pessimistic in their interpretations of bad news for market valuations for Non-White CEO firms and that such biases are economically unjustified. The coefficients for β_7 are –1.692 and 5.912 and are statistically significant ($p < 0.05$ and $p < 0.01$, respectively), suggesting that worsening levels of racial tension against Non-Whites in society result in increased levels of analyst pessimism towards Non-White CEO firms. These results provide further evidence that race-driven bias, rather than differences in economic fundamentals, is likely the mechanism underlying our main results.

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[12] https://www.fbi.gov/services/cjis/ucr/publications#Hate-Crime%20Statistics

6.3 Black Lives Matter

Our final setting that attempts to link the variation in our discrimination coefficient on *Non-White·Bad News* to changes in racial sentiment is the Black Lives Matter (BLM) movement. BLM is a social movement which began in July 2013, following the trial of George Zimmerman in the shooting death of African-American teen Trayvon Martin, and was initiated to increase awareness about societal racism, and to protest against racially motivated violence against black people. Several prior papers (Sawyer and Gampa, 2018; Mazumder, 2019; Campbell, 2021) have documented that BLM had a significant impact in reducing the bias shown towards black people. For example, Sawyer and Gampa (2018) conduct a regression discontinuity analysis (reprinted in Appendix B, Illustration (c)) and find that implicit biases against black people are significantly attenuated in the post-BLM period.

We use the advent of BLM as a setting to conduct a natural experiment. Specifically, given prior findings that BLM improved racial attitudes towards black people, we expect that analyst pessimism towards Black CEOs will be attenuated in the post-BLM era. Furthermore, as the BLM movement was specifically targeted towards increasing social awareness about racial discrimination against black people (and not other Non-White races), we expect that BLM would impact analyst pessimism for Black CEOs but not for other Non-White CEOs.

We investigate these conjectures by examining two years pre- and post- BLM. We follow Sawyer and Gampa (2018) and define *Post-BLM* as one for the time period after July 6, 2013, and zero for the time period before. We re-examine the photos of Non-White CEOs in our sample to identify Black CEOs. *Black* is equal to one if the CEO's race is identified as black, and zero otherwise. *Other* takes a value of one for all Non-White CEOs other than black CEOs. We then estimate the following regression model:

$$Y_{ijt} = \beta_1 Black_{it} + \beta_2\ Bad\ News_{it} + \beta_3 Black_{it} \cdot Bad\ News_{it}$$

$$+ \beta_4\ Post\text{-}BLM_t + \beta_5 Black_{it} \cdot Post\text{-}BLM_t + \beta_6\ Bad\ News_{it} \cdot Post\text{-}BLM_t$$

$$+ \beta_7 Black_{it} \cdot Bad\ News_{it} \cdot Post\text{-}BLM_t$$

$$+ \beta_8 Other_{it} + \beta_9 Other_{it} \cdot Bad\ News_{it} \tag{5}$$

$$+ \beta_{10} Other_{it} \cdot Post\text{-}BLM_t$$

$$+ \beta_{11} Other_{it} \cdot Bad\ News_{it} \cdot Post\text{-}BLM_t$$

$$+ \gamma X_{it} + \phi_j + \tau_t + \epsilon_{ijt}$$

The key coefficient of interest is β_7, which captures the change in analysts' pessimism towards Black CEOs in the post-BLM period. We expect β_7 to be positive for *Target* and negative for *Outcome*, respectively, as a reduction in racial bias against black people would attenuate analysts' unjustified pessimism in the post-BLM period, while we expect the coefficient on *Other* CEOs, β_{11} to be insignificant. Table 7 presents the results. Consistent with our predictions, we find that coefficients for β_7 are 22.553 and -32.195 ($p < 0.05$ and $p < 0.1$), suggesting a significant decrease in analyst pessimism for firms led by black CEOs after BLM. On the contrary, we do not find evidence of statistically significant changes in pessimism for other Non-White CEOs post-BLM.

7 Market Reactions and Insider Trading

In this section, we examine whether the market unravels analysts' biased interpretations of bad news when the firm's CEO is Non-White. We conduct our analysis using a two-stage approach. In the first stage, we use the coefficient estimates for β_3 from equation 2 to isolate the portion of the target price that is attributed to analysts' racially biased interpretation of bad news.

$$Non\text{-}White\ Bias_{it} = \hat{\beta}_3\ Non\text{-}White_{it} \cdot Bad\ News_{it} \tag{6}$$

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No Bias is then calculated as the difference between *Fitted* and *Non-White Bias*, where *Fitted* is the fitted values for *Target* or *Outcome* from equation 2, calculated using the estimated coefficients from the baseline regression estimation.

$$No\ Bias_{ijt} = \widehat{Y_{ijt}} - Non\text{-}White\ Bias_{it} \tag{7}$$

In the second stage, we estimate the following regression model to test market reaction around analysts' target price disclosures:

$$3\text{-}day\ CAR_{ijt} = \lambda_1\ Non\text{-}White\ Bias_{it} + \lambda_2\ No\ Bias_{ijt} \quad + \gamma X_{it} + \phi_j + \tau_t + \epsilon_{ijt} \tag{8}$$

where *3-day CAR* is market-adjusted three-day returns around target price disclosure. We are primarily interested in λ_1 which captures how the market interprets the portion of the valuation associated with racial bias, and how that compares with the market's reaction to the non-discriminatory portion of target price, λ_2. Specifically, we examine whether markets are aware of such analyst pessimism and discount this information, or whether they react as if the race-driven bias is economically valuable information to a firm's fundamental value. The interpretation of the coefficients λ_1 and λ_2 are as follows:

Coefficients	Economic interpretation
$\lambda_1 = 0$	Markets fully debias analysts' pessimism. Racial bias has no negative impact on announcement returns measured around the target price disclosure date.
$\lambda_1 < \lambda_2$	Markets partially debias analysts' pessimism. Racial bias still has some negative effect on announcement returns.
$\lambda_1 > \lambda_2$	Markets do not debias analysts' pessimism. Racial bias from analysts has a full impact on announcement returns.

Results are presented in Table 8a. Untabulated, the mean of 3-day CAR around target price issuance is –3.7% (–2.65%) for Non-White (White) CEO firms, and the difference is statistically significant at the 1% level. Columns 1 and 2 use *Target* and *Outcome*, respectively, for the calculation of *Non-White Bias* and *No Bias*. In column 1, the coefficient

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estimate for λ_1 is 0.480 and λ_2 is 1.282 ($p < 0.01$ for both), and the difference between the two coefficients is statistically significant at the 1% level. In column 2, the coefficient estimate for λ_1 is –0.213 and λ_2 is –0.623 ($p < 0.01$ for both), and the difference between the two coefficients is statistically significant at the 1% level. This evidence is consistent with markets appearing to partially, but not fully, unravel (1 – (0.480/1.282) = 63% using *Target*, 1 – (– 0.213/– 0.623) = 66% using *Outcome*) the bias, thus resulting in some of the differences in target announcement day returns across race.

While the market is not able to fully unravel analyst pessimism toward Non-White CEO firms, individuals with private information may be better positioned to do so. The Non-White CEOs themselves should have insight into how analysts' perceive their firms. Therefore, we next examine whether corporate insiders are aware of analysts' pessimistic biases and and the market's inability to fully adjust prices in response to them. If so, then they stand to gain on the extreme negative reaction to bad news disclosures and should trade accordingly. As a result, we expect greater insider purchase intensity for Non-White CEO firms following biased target price disclosures. We estimate the following regression:

$$NPR_{ijt} = \theta_1 \, Non\text{-}White_{it} + \theta_2 \, Non\text{-}White \, Bias_{it} + \theta_3 \, 3\text{-}day \, CAR_{ijt} \quad + \gamma X_{it} + \phi_j + \tau_t + \epsilon_{ijt} \tag{9}$$

where *NPR* is net purchase ratio, calculated as the number of shares purchased subtracted by the number of shares sold, divided by the total number of shares traded during the [+1, +3] window after target price disclosure. Because *Non-White Bias* is by construction zero for White CEO observations, θ_2 captures the association between the bias component of target and outcome tests and Non-White CEOs' stock purchasing behavior.

Results are presented in Table 8b. We alternately define corporate insiders as all directors and executives (columns 1 and 4), C-suite executives (columns 2 and 5), and the CEO only (columns 3 and 6). Across all columns, the coefficient for θ_2 is statistically significant ($p < 0.01$ for all columns), suggesting that insiders of Non-White CEO firms purchase more shares

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after more pessimistically biased target price disclosures. In sum, the evidence presented in Table 8 is consistent with markets not being able to fully debias the unjustified analyst pessimism at the announcement date. Corporate insiders take advantage of the market's incorrect reaction by adjusting their own trading behavior.

8   Robustness

We test the robustness of our results to using alternate measures of analyst target price pessimism. Specifically, we re-estimate our baseline regression using four additional proxies of ex-post analyst target price pessimism: *Outcome%*, calculated as the percentage of target price achieved from the pre-earnings announcement benchmark price; *Maxprice%*, calculated as the ratio of maximum stock price achieved within twelve months to the target price; and *Outcome3M* and *Outcome6M* which are indicator variables for whether the stock price exceeds the target price within three and six months, respectively. Table 9 shows that our results are robust to these alternate measures of target price pessimism.

An alternative explanation to our results is that the differential target price pessimism is caused by systematic differences in unobservable characteristics between firms led by Non-White versus White CEOs. To alleviate this concern, we re-estimate our baseline regression using entropy-balanced samples of Non-White CEO firms and White CEO firms. Specifically, we match the distributions of the two samples such that the mean, variance and skewness are identical across the Non-White and White subsamples for all of the control variables in equation 2. Table 10 shows that our results remain robust to this specification, suggesting that the differences in observable and unobservable firm and CEO characteristics are not likely to be the primary drivers of our results.

Next, we restrict our sample to analyst targets that are issued immediately (within two days) after the earnings announcement (51% of our sample) to assess the possibility that the documented analyst pessimism is not driven by earnings announcements. In Table 11, we

continue to find that the coefficient on *Non-White·Bad News* is negative and significant for *Target* and positive and significant for *Outcome*, suggesting that restricting our analysis to a short event window does not change our inferences. Moreover, the coefficients are larger than those obtained using the full sample of analyst targets, consistent with analysts' pessimism about bad earnings news being stronger when valuations are updated immediately after the earnings announcement date.

Finally, we assess the plausibility of an alternative explanation whereby our results are driven by analysts simply overreacting to valences of both types of earnings news (i.e., positive and negative surprises) coming from a Non-White CEO for reasons unrelated to racial bias. If overreaction, rather than the attribution of negative events to racial stereotypes, is the primary driver of our results, we expect to observe analysts reacting more strongly to a marginal unit of good news from a Non-White CEO versus White CEO. In Table 12, we replicate our findings using a sample of good news earnings announcements. The interaction coefficients on *Non-White·Good News* are statistically insignificant, implying that our result is unlikely to be driven by a systematic overreaction to news for Non-White CEOs.

9   Conclusion

We investigate whether analysts assess the impact of bad earnings news differently when the CEO of the firm is Non-White. We find that, indeed, the marginal impact of bad news on analysts' valuations is over four times larger when the CEO is Non-White. Consistent with the pessimism stemming from racial bias, we also document that these Non-White CEO firms are more likely to exceed their price targets over the subsequent year. Our findings are robust to entropy balanced samples, alternate methods of estimating target price accuracy, as well as limiting the sample to price targets issued immediately after the earnings announcement.

To better establish causality, we examine how the magnitude of such unwarranted analyst pessimism varies over time with changes in a society-wide measure of racial bias. We

collect nationwide data on the number of Non-White hate crime incidents reported to the Federal Bureau of Investigation and create a measure of negative racial sentiment. We find that increases in nation-wide levels of racial bias are strongly associated with increases in unjustified analyst pessimism towards Non-White CEO firms. We also run pre-post regression analyses around the date which marked the transition away from Non-White to White presidential leadership, i.e., Donald Trump's Presidential election victory, and find similar results. Findings appear to be consistent with increased discrimination from sell-side analysts against Non-White CEOs when racial tensions in society are heightened. Our final test involves a natural experiment around the advent of the Black Lives Matter movement. Consistent with prior research that BLM reduced racial bias towards black people, we find a reduction in unwarranted pessimism towards Black CEOs (but not other Non-White CEOs) in the post-BLM period.

Finally, evidence from target price event-date stock returns suggest that financial markets do not fully unravel the discrimination in these price targets, and that Non-White CEOs exhibit increased levels of insider buying when the market has reacted too negatively to price targets which are too pessimistic due to racial bias. We are the first, to our knowledge, to document evidence consistent with racial discrimination against Non-White CEO firms using panel data that spans across all publicly reporting sell-side financial analysts.

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Appendix A: Variable Definitions and Data Sources

Variable	Definition (Data Source)
Dependent variables	
Target	Natural logarithm of analyst's target price valuation scaled by the stock price one day prior to the earnings announcement, divided by 1+ number of days elapsed between earnings announcement and target price disclosure. (Source: I/B/E/S, CRSP)
Outcome	Dummy variable that equals one if the stock price exceeds the target price within twelve months from the target price issuance date, and zero otherwise. (Source: I/B/E/S, CRSP)
NPR	Net purchase ratio, calculated as the number of shares purchased minus shares sold, divided by the sum of shares purchased and sold, during the [+1, +3] window from target price issuance. (Source: Thomson Reuters)
3-day CAR	Cumulative market-adjusted abnormal returns during the [−1, +1] window around an event. (Source: CRSP)
Outcome%	Percentage the target price is met within twelve months from the issuance date, calculated as the maximum stock price within twelve months minus the stock price at the beginning of the quarter, divided by the target price minus the stock price at the beginning of the quarter. (Source: I/B/E/S, CRSP)
Maxprice%	Ratio of the maximum stock price within twelve months from the target price issuance date to the target price. (Source: I/B/E/S, CRSP)
Outcome3M	Dummy variable that equals one if the stock price exceeds the target price within three months from the target price issuance date, and zero otherwise. (Source: I/B/E/S, CRSP)
Outcome6M	Dummy variable that equals one if the stock price exceeds the target price within six months from the target price issuance date, and zero otherwise. (Source: I/B/E/S, CRSP)
Main	
Non-White	Dummy variable that equals one if the CEO's race is identified as non-white, and zero otherwise. (Source: Collected through survey)
Bad News	Negative earnings surprise measured as I/B/E/S actual EPS minus the last consensus EPS forecast, scaled by the share price at the end of the quarter. We multiply the measure by minus one. (Source: I/B/E/S)
Firm and CEO characteristics	
Log Market Cap	Natural logarithm of market capitalization. (Source: Compustat)
MTB	Market-to-book value of assets. (Source: Compustat)

Book Leverage	Total debt divided by total assets. (Source: Compustat)
Abnormal Returns	Buy-and-hold market-adjusted abnormal returns measured over the previous quarter. (Source: CRSP)
ROA	Return-on-assets, calculated as income before extra-ordinary items divided by lagged total assets. (Source: Compustat)
Return Volatility	Standard deviation of daily returns over the previous quarter. (Source: Compustat)
ROA Volatility	Standard deviation of quarterly ROA over the past 20 quarters. (Source: Compustat)
Sales Growth	Quarterly growth of total sales, calculated as sales minus lagged sales, divided by lagged sales. (Source: Compustat)
Log Analyst Following	Natural logarithm of the number of analysts following the firm. (Source: I/B/E/S)
Inst. Ownership	Institutional ownership percentage (Source: Thomson Reuters)
Male	Dummy variable that equals one if the CEO is male, and zero otherwise. (Source: Execucomp)
Log Tenure	Natural logarithm of the CEO's tenure calculated as the difference between a given year and the first year as CEO. (Source: Execucomp)
Overconfidence	Dummy variable that equals one if the CEO, at least twice during his/her tenure at the firm, holds exercisable option portfolios that are greater than 67% in the money at the end of the fiscal year, and zero otherwise (Malmendier and Tate 2005, Campbell et al. 2012). (Source: Execucomp)

Racial sentiment variables

Post-Trump	Dummy variable that equals one for target price valuations issued during the four years after November 8, 2016 (the election of the 45th President of the USA, Donald J. Trump), and zero for target price valuations issued during the four years before.
Race Tension	The number of incidents where racial bias crimes were reported against non-white people: The data are available at the annual frequency. We calculate the number of total non-white racial bias incidents as total racial bias incidents minus total anti-white bias incidents. The measure is standardized to mean =0, SD = 1. (Source: FBI [https://ucr.fbi.gov/hate-crime])
Post-BLM	Dummy variable that equals one for target price valuations issued during the two years after July 6, 2013, and zero for target price valuations issued during the two years before. July 6, 2013 is identified as the beginning of the Black Lives Matter movement, based on the surge in media citations and the associated hashtag (#BlackLivesMatter) starting from the week prior to the trial of George Zimmerman (Sawyer and Gampa, 2018).

Appendix B: Illustrations

(a) Timeline for variable measurement
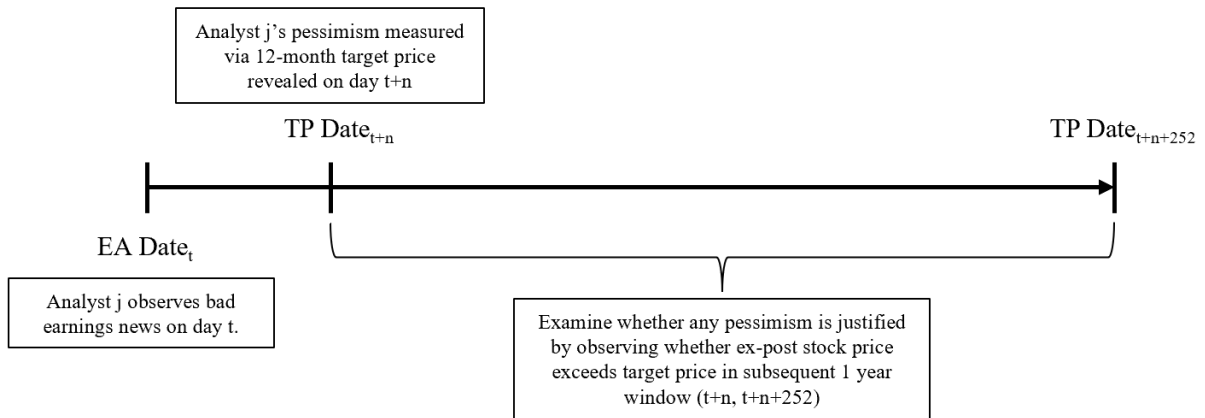
(b) Google search trend on "White Nationalism"
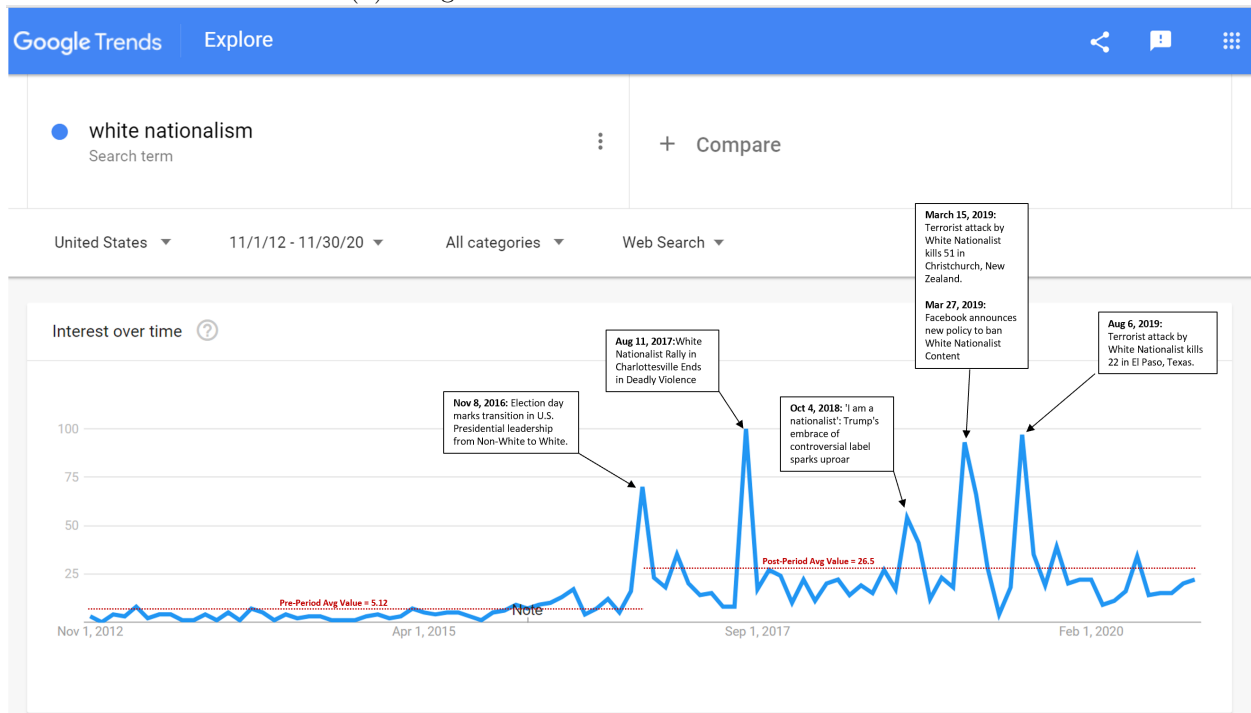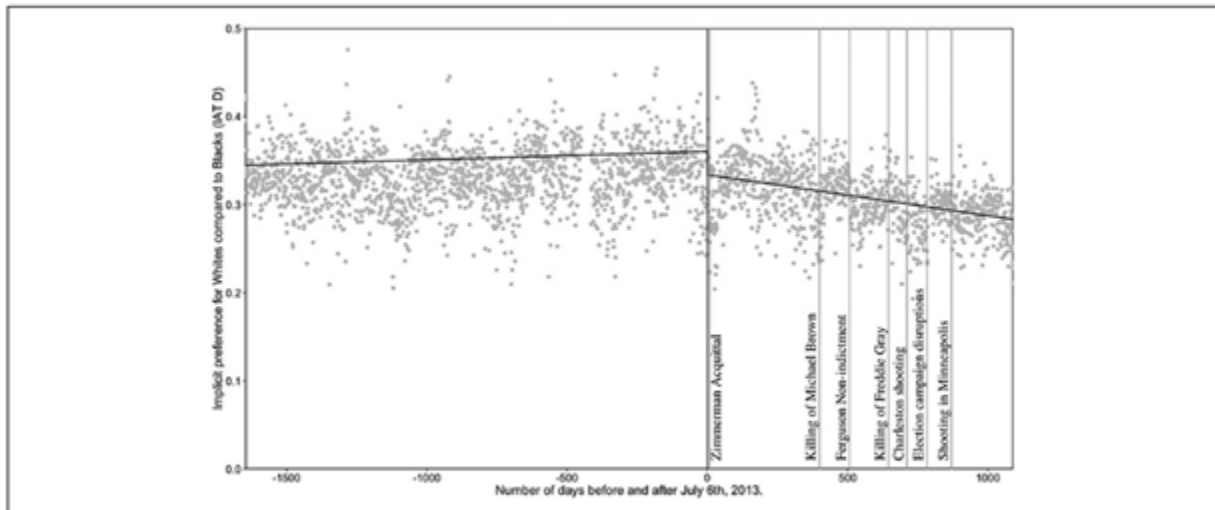
Figure 2. Average daily IAT D scores (implicit attitudes) for January 1, 2009, to June 30, 2016, with separate regression lines for pre-BLM and BLM period overlaid on the scatterplot of the seven high points of BLM struggle are labeled on vertical gray lines.
Note. IAT = Implicit Attitude Test; BLM = Black Lives Matter.

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Figure 1: Cumulative % of firms exceeding target price

(a) All
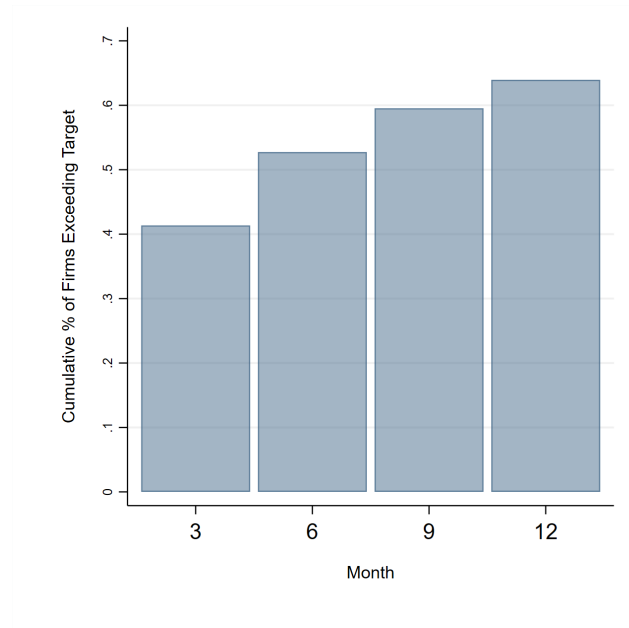
(b) Non-white vs White

34
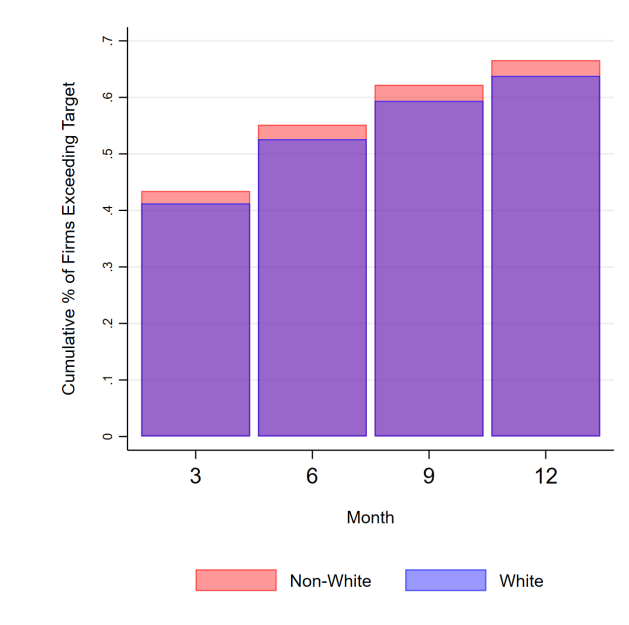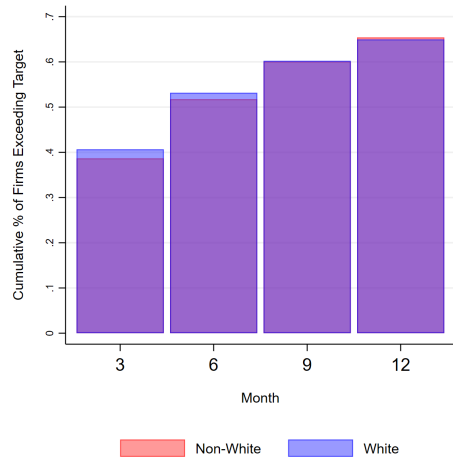
(c) Tercile 1 (small bad news) (d) Tercile 2 (e) Tercile 3 (big bad news)
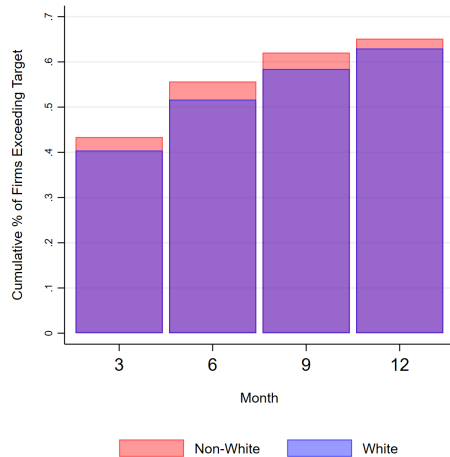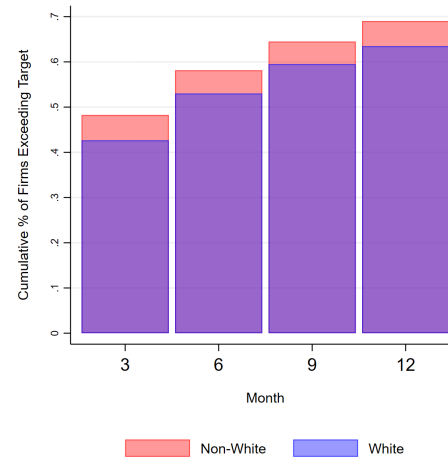
Figure 1

These figures plot the cumulative percentage of firms exceeding the target price by the end of the third-, sixth-, ninth-, and twelfth- month, following analysts' target price issuance. Panel a plots for the entire sample. Panel b plots for Non-White and White. Panels c - e plot for Non-White and White, by bad news terciles. Red (blue) bars represent Non-White (White).

Table 1: Sample selection

Criteria	N
Analysts' first target price forecasts issued between 2005 and 2020 for firm quarters with negative earnings surprises with non-missing Execucomp, Compustat and CRSP data	143,875
Eliminate firms in utility (SICH 4000-4999) and financial (SICH 6000-6999) industries	(45,297)
Eliminate observations with stock price less than $1	(184)
Eliminate singleton values from the main regression model estimation	(791)
Final sample observations (analyst-firm-date)	97,603
Number of analysts	4,025
Number of firms	1,787
Firms with only white CEOs	1,600
Firms with only non-white CEOs	74
Number of CEOs	3,180
White CEOs	2,979
Non-white CEOs	201

This table presents the sample selection procedure.

Table 2a: Summary statistics

	N	Mean	SD	25%	50%	75%
Target	97603	0.108	0.216	-0.005	0.109	0.221
Outcome	97603	0.640	0.480	0.000	1.000	1.000
Bad News	97603	0.004	0.006	0.001	0.001	0.004
Log Market Cap	97603	8.248	1.553	7.128	8.132	9.304
MTB	97603	2.037	1.310	1.226	1.629	2.353
Book Leverage	97603	0.256	0.194	0.111	0.238	0.370
Abnormal Returns	97603	-0.011	0.171	-0.113	-0.018	0.083
ROA	97603	0.012	0.028	0.003	0.014	0.025
Return Volatility	97603	0.025	0.013	0.016	0.021	0.029
ROA Volatility	97603	0.022	0.022	0.008	0.014	0.027
Sales Growth	97603	0.030	0.180	-0.050	0.019	0.093
Log Analyst Following	97603	2.627	0.581	2.197	2.708	3.045
Inst. Ownership	97603	0.617	0.389	0.000	0.779	0.911
Male	97603	0.965	0.185	1.000	1.000	1.000
Log Tenure	97603	1.591	0.831	1.099	1.609	2.197
Overconfidence	97603	0.580	0.494	0.000	1.000	1.000

This table presents descriptive statistics for the full sample. See Appendix A for variable definitions.

Table 2b: Summary statistics - Non-white vs white

	White N	White Mean	Non-White N	Non-White Mean	Diff
Target	92710	0.109	4893	0.098	0.011***
Outcome	92710	0.638	4893	0.662	-0.023***
Bad News	92710	0.004	4893	0.004	-0.000
Log Market Cap	92710	8.256	4893	8.094	0.162***
MTB	92710	2.029	4893	2.196	-0.167***
Book Leverage	92710	0.257	4893	0.234	0.023***
Abnormal Returns	92710	-0.011	4893	-0.014	0.004
ROA	92710	0.012	4893	0.014	-0.002***
Return Volatility	92710	0.025	4893	0.025	-0.000**
ROA Volatility	92710	0.022	4893	0.022	-0.000
Sales Growth	92710	0.030	4893	0.032	-0.002
Log Analyst Following	92710	2.630	4893	2.568	0.062***
Inst. Ownership	92710	0.619	4893	0.578	0.041***
Male	92710	0.966	4893	0.942	0.023***
Log Tenure	92710	1.594	4893	1.519	0.075***
Overconfidence	92710	0.581	4893	0.556	0.025***

This table presents descriptive statistics for Non-White and White CEO sample observations. Statistical significance at the 10%, 5%, and 1% levels is indicated by *, **, ***. See Appendix A for variable definitions.

Table 3: Market reaction around earnings announcements

	(1) 3-day CAR	(2) 3-day CAR
Non-White	-0.005	-0.006
	(0.003)	(0.004)
Bad News	-1.305***	-1.317***
	(0.149)	(0.150)
Non-White × Bad News		0.190
		(0.592)
Log Market Cap	0.005***	0.005***
	(0.001)	(0.001)
MTB	-0.001	-0.001
	(0.001)	(0.001)
Book Leverage	0.011**	0.011**
	(0.005)	(0.005)
Abnormal Returns	-0.019***	-0.019***
	(0.004)	(0.004)
ROA	-0.176***	-0.176***
	(0.031)	(0.031)
Return Volatility	0.130*	0.131*
	(0.079)	(0.079)
ROA Volatility	0.037	0.037
	(0.036)	(0.036)
Sales Growth	-0.002	-0.002
	(0.004)	(0.004)
Log Analyst Following	-0.006***	-0.006***
	(0.002)	(0.002)
Inst. Ownership	0.003	0.003
	(0.002)	(0.002)
Male	0.007	0.007
	(0.004)	(0.004)
Log Tenure	-0.000	-0.000
	(0.001)	(0.001)
Overconfidence	0.003**	0.003**
	(0.002)	(0.002)
Year FE	Yes	Yes
Industry FE	Yes	Yes
Adj-R^2	0.029	0.029
N	17327	17327

This table presents results from the analysis of market reactions during the [-1, +1] day window (cumulative market-adjusted returns) around the earnings announcement. Heteroskedasticity robust standard errors adjusted for firm clustering are in parentheses. Statistical significance at the 10%, 5%, and 1% levels is indicated by *, **, ***. See Appendix A for variable definitions.

Table 4: Analyst target price pessimism

	(1) Target	(2) Outcome	(3) Target	(4) Outcome
Non-White	-0.001	0.004	0.007	-0.010
	(0.004)	(0.009)	(0.004)	(0.010)
Bad News	-0.741***	1.617***	-0.644***	1.448***
	(0.205)	(0.315)	(0.206)	(0.322)
Non-White $\times$ Bad News			-2.019***	3.541***
			(0.760)	(1.168)
Log Market Cap	0.008***	-0.024***	0.008***	-0.023***
	(0.001)	(0.002)	(0.001)	(0.002)
MTB	-0.004***	0.010***	-0.004***	0.010***
	(0.001)	(0.002)	(0.001)	(0.002)
Book Leverage	0.026***	0.033***	0.027***	0.032***
	(0.007)	(0.011)	(0.007)	(0.011)
Abnormal Returns	0.002	-0.034***	0.002	-0.034***
	(0.005)	(0.010)	(0.005)	(0.010)
ROA	-0.314***	0.205**	-0.317***	0.210***
	(0.041)	(0.080)	(0.041)	(0.080)
Return Volatility	0.540***	0.363**	0.536***	0.369**
	(0.101)	(0.175)	(0.101)	(0.175)
ROA Volatility	0.310***	-0.357***	0.314***	-0.364***
	(0.058)	(0.100)	(0.058)	(0.100)
Sales Growth	0.036***	-0.029***	0.036***	-0.030***
	(0.004)	(0.009)	(0.004)	(0.009)
Log Analyst Following	-0.030***	0.020***	-0.030***	0.020***
	(0.003)	(0.005)	(0.003)	(0.005)
Inst. Ownership	-0.003	0.057***	-0.003	0.057***
	(0.003)	(0.006)	(0.003)	(0.006)
Male	0.022***	-0.017*	0.022***	-0.017*
	(0.005)	(0.010)	(0.005)	(0.010)
Log Tenure	0.003***	0.008***	0.003***	0.008***
	(0.001)	(0.002)	(0.001)	(0.002)
Overconfidence	0.003	0.003	0.003	0.004
	(0.002)	(0.004)	(0.002)	(0.004)
Year FE	Yes	Yes	Yes	Yes
Analyst FE	Yes	Yes	Yes	Yes
Adj-R^2	0.175	0.119	0.175	0.119
N	97603	97603	97603	97603

This table presents results from the analysis of analyst target price pessimism following the disclosure of negative earnings news. Heteroskedasticity robuststandard errors adjusted for analyst clustering are in parentheses.Statistical significance at the 10%, 5%, and 1% levels is indicated by *, **, ***. See Appendix A for variable definitions.

Table 5: Analyst pessimism around the 45th
presidential election

| | (1) | (2) |
	Target	Outcome
Non-White	0.001	0.013
	(0.007)	(0.016)
Bad News	-2.157***	2.293***
	(0.385)	(0.548)
Non-White × Bad News	0.196	0.057
	(1.096)	(1.915)
Post-Trump	0.010**	-0.061***
	(0.005)	(0.012)
Non-White × Post-Trump	0.006	-0.048*
	(0.010)	(0.026)
Bad News × Post-Trump	1.306**	-2.060***
	(0.516)	(0.772)
Non-White × Bad News × Post-Trump	-4.166**	10.982***
	(1.755)	(2.622)
Controls	Yes	Yes
Year FE	Yes	Yes
Analyst FE	Yes	Yes
Adj-R^2	0.187	0.134
N	53440	53440

This table presents results from the analysis of analyst target price pessimism surrounding the election of the 45th President of the USA, Donald J. Trump, in November 2016. *Post-Trump* equals one for target price forecasts issued during the four years after November 8, 2016, and zero for those issued during the four years before. Heteroskedasticity robust standard errors adjusted for analyst clustering are in parentheses. Statistical significance at the 10%, 5%, and 1% levels is indicated by *, **, ***. See Appendix A for variable definitions.

Table 6: Analyst pessimism and racial sentiment

	(1) Target	(2) Outcome
Non-White	0.005	-0.012
	(0.004)	(0.010)
Bad News	-0.633***	0.706**
	(0.210)	(0.327)
Non-White × Bad News	-1.759**	2.986***
	(0.760)	(1.157)
Race Tension	-0.002*	-0.012***
	(0.001)	(0.003)
Non-White × Race Tension	0.009**	-0.028***
	(0.004)	(0.010)
Bad News × Race Tension	0.601***	-0.058
	(0.191)	(0.291)
Non-White × Bad News × Race Tension	-1.692**	5.912***
	(0.716)	(1.151)
Controls	Yes	Yes
Year FE	No	No
Analyst FE	Yes	Yes
Adj-R^2	0.170	0.094
N	97603	97603

This table presents results from the analysis of the relation between analyst target price pessimism and a time-series proxy of racial sentiment. *Race Tension* is measured using the FBI data that counts the number of incidents where racial bias crimes were reported against non-white people. *Race Tension* is scaled to mean = 0, SD = 1. Heteroskedasticity robust standard errors adjusted for analyst clustering are in parentheses. Statistical significance at the 10%, 5%, and 1% levels is indicated by *, **, ***. See Appendix A for variable definitions.

Table 7: Analyst pessimism around Black Lives Matter

	(1) Target	(2) Outcome
Black	-0.021	-0.187***
	(0.018)	(0.048)
Bad News	-0.377	1.745***
	(0.429)	(0.673)
Black × Bad News	-10.749	47.910***
	(10.314)	(8.463)
Post-BLM	-0.011**	-0.092***
	(0.005)	(0.011)
Black × Post-BLM	-0.023	0.038
	(0.019)	(0.056)
Bad News × Post-BLM	-2.712***	-0.501
	(0.555)	(1.078)
Black × Bad News × Post-BLM	22.553**	-32.195*
	(11.337)	(17.674)
Other	-0.002	0.020
	(0.012)	(0.026)
Other × Bad News	1.296	-2.556
	(1.753)	(3.109)
Other × Post-BLM	0.022	0.027
	(0.014)	(0.034)
Other × Bad News × Post-BLM	2.854	-3.495
	(2.351)	(4.735)
Controls	Yes	Yes
Year FE	Yes	Yes
Analyst FE	Yes	Yes
Adj-R^2	0.185	0.188
N	31970	31970

This table presents results from the analysis of analyst target price pessimism surrounding advent of the Black Lives Matter (BLM) movement in July 2013. *Post-BLM* equals one for target price forecasts issued during the two years after July 6, 2013, and zero for those issued during the two years before. Heteroskedasticity robust standard errors adjusted for analyst clustering are in parentheses. Statistical significance at the 10%, 5%, and 1% levels is indicated by *, **, ***. See Appendix A for variable definitions.

Table 8a: Market reaction around target issuance

	(1)	(2)
	3-day CAR	3-day CAR
Non-White Bias (Target-based)	0.480***	
	(0.109)	
No Bias (Target-based)	1.282***	
	(0.093)	
Non-White Bias (Outcome-based)		-0.213***
		(0.062)
No Bias (Outcome-based)		-0.623***
		(0.044)
Controls	Yes	Yes
Year FE	Yes	Yes
Analyst FE	Yes	Yes
Adj-R^2	0.054	0.055
N	97603	97603

This table presents results from the analysis of market reactions during the [-1, +1] day window (cumulative market-adjusted returns) around the target price issuance. Columns 1 and 2 use *Target* and *Outcome*, respectively, to estimate *Non-White Bias* and *No Bias*. Heteroskedasticity robust standard errors adjusted for analyst clustering are in parentheses. Statistical significance at the 10%, 5%, and 1% levels is indicated by *, **, ***. See Appendix A for variable definitions.

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Table 8b: Insider purchase intensity

	Target-based			Outcome-based		
	(1) All	(2) C-suite	(3) CEO	(4) All	(5) C-suite	(6) CEO
Non-White	-0.024***	-0.014**	-0.018***	-0.024***	-0.014**	-0.018***
	(0.008)	(0.006)	(0.004)	(0.008)	(0.006)	(0.004)
Non-White Bias (Target-based)	-1.132***	-0.686***	-0.680***			
	(0.370)	(0.236)	(0.206)			
Non-White Bias (Outcome-based)				0.645***	0.391***	0.388***
				(0.211)	(0.135)	(0.117)
3-day CAR at target issuance	-0.865***	-0.368***	-0.234***	-0.865***	-0.368***	-0.234***
	(0.018)	(0.012)	(0.010)	(0.018)	(0.012)	(0.010)
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Analyst FE	Yes	Yes	Yes	Yes	Yes	Yes
Adj-R^2	0.090	0.059	0.038	0.090	0.059	0.038
N	97603	97603	97603	97603	97603	97603

This table presents results from the analysis of insider purchase intensity. Columns 1, 2, and 3 use *Target*, and 4, 5, and 6 use *Outcome*, to estimate *Non-White Bias*. The dependent variables are net purchase ratio by all insiders, C-suite executives, and the CEO. Heteroskedasticity robust standard errors adjusted for analyst clustering are in parentheses. Statistical significance at the 10%, 5%, and 1% levels is indicated by *, **, ***. See Appendix A for variable definitions.

Table 9: Alternate pessimism measures

	(1) Outcome%	(2) Maxprice%	(3) Outcome3M	(4) Outcome6M
Non-White × Bad News	3.452***	6.929***	3.444***	3.471***
	(0.917)	(1.699)	(1.289)	(1.253)
Controls	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Analyst FE	Yes	Yes	Yes	Yes
Adj-R^2	0.119	0.159	0.103	0.103
N	97603	97603	97603	97603

This table presents results from re-estimating the main regression using alternate measures of target price pessimism. Heteroskedasticity robust standard errors adjusted for analyst clustering are in parentheses. Statistical significance at the 10%, 5%, and 1% levels is indicated by *, **, ***. See Appendix A for variable definitions.

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Table 10: Entropy balanced sample

	(1) Target	(2) Outcome
Non-White × Bad News	-2.119***	5.843***
	(0.725)	(1.177)
Controls	Yes	Yes
Year FE	Yes	Yes
Analyst FE	Yes	Yes
Adj-R^2	0.284	0.199
N	97603	97603

This table presents results from re-estimating the main regression after matching the Non-White and White subsamples using entropy balancing. Heteroskedasticity robust standard errors adjusted for analyst clustering are in parentheses. Statistical significance at the 10%, 5%, and 1% levels is indicated by *, **, ***. See Appendix A for variable definitions.

Table 11: Short-window analysis

| | (1) | (2) |
	Target	Outcome
Non-White × Bad News	-2.581**	4.771***
	(1.016)	(1.441)
Controls	Yes	Yes
Year FE	Yes	Yes
Analyst FE	Yes	Yes
Adj-R^2	0.211	0.113
N	50157	50157

This table presents results from re-estimating the main regression after restricting the sample to target price forecasts issued within two days from the earnings announcement. Heteroskedasticity robust standard errors adjusted for analyst clustering are in parentheses. Statistical significance at the 10%, 5%, and 1% levels is indicated by *, **, ***. See Appendix A for variable definitions.

Table 12: Alternative explanation - overreaction to news from Non-White CEOs

	(1) Target	(2) Outcome
Non-White × Good News	0.021	-0.534
	(0.663)	(1.094)
Controls	Yes	Yes
Year FE	Yes	Yes
Analyst FE	Yes	Yes
Adj-R^2	0.157	0.100
N	286144	286144

This table presents results from re-estimating the main regression using a sample of target price forecasts issued following the disclosure of positive earnings news. Heteroskedasticity robust standard errors adjusted for analyst clustering are in parentheses. Statistical significance at the 10%, 5%, and 1% levels is indicated by *, **, ***. See Appendix A for variable definitions.