ESG and Shareholder Value:
The Role of Board Facial Impressions and Perceived Trustworthiness*

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Abstract

We propose that when agents such as managers and employees trust the board more and have shared values with the board, the firm is able to manage its ESG activities more effectively to increase firm value. ESG activities are potentially risky for agents and may require guidance, so trust and shared values help reduce agency problems and induce better information flow. We test whether the interaction of ESG ratings and perceptions of trustworthiness extracted from facial features of board members predict future firm performance. We find evidence that the interaction of high ESG ratings and high board trust predicts high future abnormal positive returns, sales, and accounting profitability. The predictive relations are especially strong in firms with newer CEOs, in firms that score low in the governance index, and social issues that are harder to quantify.

Keywords: ESG, Face Impressions, Trust, Social Capital, Board of Directors, Agency Costs, Shareholder Value.

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1. Introduction

Global ESG investments by asset managers are projected to exceed $53 trillion by 2025, a 50% increase from $35.3 trillion in 2020.[1] Consequently, asset managers are able to exert pressure on corporate boardrooms and executive suites to allocate firm resources to ESG efforts. Such ESG activity potentially has important social value. However, given the large magnitude and growth rate of ESG investments, another key issue is to understand whether ESG activity creates value for the firms that engage in this activity.

Investors seem to think that such activity is relevant for firm value though whether positively, negatively or is not relevant is being debated in the ESG literature.[2] Academic studies have found conflicting evidence on whether ESG ratings are associated with firm value. For example, Khan, Serafeim and Yoon (2016) and Welch and Yoon (2022) find a positive association, whereas McWilliams and Siegel (1997), Cheng, Hong and Shue (2014), and Di Giuli and Kostovetsky (2014) find a negative association, and Bebchuk, Kastiel, and Tallarita (2022) find neither value nor harm from ESG (see Section 2.3 for further details). The reasons proffered for the conflicting evidence largely focus on the lack of agreement about what constitutes ESG activities, lack of specificity of the disclosures, and the costs, benefits and risks associated with these new innovative activities are hard to measure and quantify (Christensen, Hail, and Leuz 2019; Christensen, Sikochi, and Serafeim 2022).

We propose a different behavioral approach based on employee and management perceptions about the trustworthiness of the board of directors and investigate whether ESG

[1] See "ESG assets may hit $53 trillion by 2025, a third of global AUM" by *Bloomberg Intelligence* (February 23, 2021). Available at: https://www.bloomberg.com/professional/blog/esg-assets-may-hit-53-trillion-by-2025-a-third-of-global-aum/.

[2] The huge growth in spending on ESG data suggests high investor demand for ESG information, which is prima facie evidence that investors view ESG activities as relevant for firm value. See Section 2 for statistics on growth in ESG data.

activities create shareholder value. This approach borrows from the management literature (for example Schoorman, Mayer, and Davis 2007) and the social capital literature (Fukuyama 1995; Glaeser, Laibson and Sacerdote 2002; Guiso, Sapienza and Zingales 2006) that has shown that trust in leadership and institutions is critical for organizational effectiveness or economic growth and development. Neuroscience studies on trust (Zak 2017) and Graham et al.'s 2022 study also confirm the importance of trust on employee productivity.

Many ESG activities rely on new technological innovations that involve effort and risk, and are costly in the short-term but may provide benefits in the future. We argue that when firm agents such as managers and employees are able to trust the board of directors, these agents are less likely to choose suboptimal ESG projects or behave myopically. In addition, trust within an organization may even reduce frictions in the transmission of knowledge flow (Sandvik, Saouma, Seegert, and Stanton 2020). The firm agents are less concerned about being dismissed or untimely project abandonment by the board. In a high trust environment, the managers and employees have less agency and myopia problems, and consequently productivity of ESG activities is likely higher, which could increase future firm value. Our empirical test therefore investigates whether the association between ESG activities and future stock return and accounting performance is stronger when perceptions of trustworthiness of the board of directors is higher.[3]

We select ESG ratings from MSCI Inc., the largest ESG data vendor, which has at least 31% of the market share for ESG ratings[4] to measure ESG activities. We label the empirical measure as *ESG Score*. To measure the perceived trustworthiness of the board of directors, we

[3] We do not mean to argue that all ESG activities can enhance firm value in all circumstances. For ESG activities that potentially decrease firm value, we do not expect trust to play a major role in moderating the relation between ESG ratings and shareholder value.

[4] See "ESG Data is Now Worth It" by *Opimas* (April 19, 2022). Available at: http://www.opimas.com/research/742/detail/.

follow Peng, Teoh, Wang, and Yan (2022) that use a machine learning algorithm to extract face impressions about an individual from the photograph of the face (See Section 3.1 for details). We take the photos of board directors from proxy statements and employ the same machine learning algorithm to construct a perceived trustworthiness face factor for each individual director and aggregate them to a board-year level construct which we call *Board Trust.* The key dependent variable for firm performance is next year's stock returns. Our final dataset contains *ESG Score* and *Board Trust* signals from 3,800 firm-years during the period between 2010 and 2018.

To test our key prediction that the interaction of *ESG Score* and *Board Trust* predicts positive future abnormal returns,[5] we conduct calendar-time portfolio regressions. We double sort firms independently by *ESG Score* and by *Board Trust*, and construct a long portfolio for firms in the top quartile of both ESG and trustworthiness and a short portfolio for firms in the bottom quartile of both signals. We compare the one-year ahead stock returns between the long-short portfolios adjusted for the Fama-French five factor risk model. We find that the long portfolio generates significantly positive alphas and outperforms the short portfolio by equal-weighted annual returns of 8.07% and value-weighted annual returns of 8.06%. Overall, the results provide evidence that for firms with high perceived trustworthiness for the board of directors, high ESG ratings are associated with high future abnormal stock returns.

We conduct several additional analyses to provide deeper understanding of the complementary effects of *ESG Score* and *Board Trust* as drivers of shareholder value. First, we consider whether perceptions of director trustworthiness derived from facial features are more important when the CEO is new and does not yet know the board of directors well. Peng et al.

[5] Our proxy for the board's perceived trustworthiness exhibits a low correlation to firm ESG rating (correlation 0.07). This suggests that the two measures contain very different information. There is an even lower correlation between boards' perceived trustworthiness and (1) a firm's governance score, and (2) the scores in the MSCI ESG rating pertaining specifically to directors.

(2022) report that perceived trustworthiness effects are strongest when the communicating parties are new to each other. We therefore rerun our tests for two separate groups of firms in our sample: one with long CEO tenure and one with short CEO tenure. The differential alphas between the high *ESG Score* and high *Board Trust* quartile relative to the low *ESG Score* and low *Board Trust* quartile is largest for the short CEO tenure subsamples, and the magnitude is noticeably larger than our main results. The results are robust to using short tenure cut-off below the 25th percentile or below the median tenure length for the sample.

Second, we examine whether our main results depend on the director type. We consider the trust face factor aggregated from a sub-sample of the board excluding the CEO and a sub-sample of the board containing only directors who are independent, because non-CEO directors and independent directors collectively have the power to change firm projects and strategies, and to terminate failed projects. We find that the interaction of *ESG Score* with *Board Trust* has a strong relation with future abnormal returns for the sub-sample of non-CEO directors, with almost similar magnitudes as when the CEO is also included. The magnitude of the differential alpha for the sub-sample of only independent directors is about two-thirds that of the all director sample despite the smaller number of independent directors. The results suggest that perceptions of trust of these non-CEO directors and independent directors are relevant and important for achieving good cooperation and productive collaboration, especially when there are fewer opportunities for interaction between management and employees with these types of directors.

Next, we take environmental and social categories of ESG ratings and separately evaluate them to see which yield the highest value improvement when board trust is present. We find that our main results are driven by the social activities. Given that these activities are harder to quantify and have higher risks than environment related activities, the finding suggests that board trust is

especially important for value creation when the consequences of ESG activities are harder to quantify and are riskier, involving sacrifice of short-term cash flows for long-term benefits. Overall, the additional analyses corroborate the relevance and importance of perceptions about board trust for management and employees to create shareholder value with ESG initiatives.

We conduct a series of robustness tests. We verify the robustness of our main finding to an alternative asset pricing risk factor model and other portfolio construction rules (tercile and quintile sorts for the hedge portfolios). We also find robust results when we include a wide set of firm-level controls including CEO ability in the Fama-Macbeth regressions.

Finally, we complement the stock returns results above with using accounting performance variables as the outcome variable. This is to address the potential that the returns results are driven by market hype rather than a follow through growth in firm fundamentals. We consider future growth in ROA and Sales as alternate accounting performance variables and find that our long portfolio (i.e., firms with high *Board Trust* and *ESG Score*) yields better one- and two-years ahead accounting performance than the short portfolio (i.e., firms with low *Board Trust* and *ESG Score*). In sum, the results corroborate that ESG activities create future value in firms where managers trust the board.

We note that this can happen for at least three non-mutually exclusive as well as potentially correlated reasons. First is that managers are likely to choose the type of ESG activity that they believe can generate long-term returns when they can trust the board can tolerate the short-term costs. Second is that managers are more likely to share information with board members that they trust and get appropriate feedback, so that operational efficiency can be higher with the better information. Third is that directors who are perceived to be more trustworthy are better able to promote organizational social capital with high trust, so that everyone is more diligent and more

effective in monitoring ESG, and thereby improve value. Overall, our findings are consistent with the idea that a more trusting environment can curb agency problems in the pursuit of socially desirable activities (Guiso et al. 2011).

In interpreting the results, it is crucial to keep in mind that we construct the face factor on trustworthiness using social psychology models that are explicitly developed to capture *perceptions* about character traits. This does not establish that these factors capture the *actual* character traits. We are making no such claim, nor do we advocate that firms hire directors with certain facial traits. The main thesis of our work is that the behavior of managers and employees responds to the perceived facial trustworthiness of directors, and that this has important implications for ESG activities and value creation.

Our study contributes to several streams of the existing literature. First, we provide evidence on how perceptions of the board shape ESG activities and firm performance. Our findings on this are related to recent papers such as Khan, Serafeim, and Yoon (2016) and Welch and Yoon (2022), which also explore the shareholder value implications of ESG activities. For example, Khan et al. (2016) document that firms that make more sector-relevant (i.e., financially material) ESG investments is associated with long-term shareholder value. Welch and Yoon (2022) documents that firms with CEOs who are viewed favorably by employees allocate resources to ESG in a way that enhances shareholder value. Building on this literature, we provide new evidence about the circumstances in which ESG creates shareholder value.

Second, our paper extends the nascent literature on how the board of directors contributes to firm ESG policies and sets ESG related vision. For example, Amiraslani, Deller, Ittner, and Keusch (2022) examine the relation between board risk oversight and firms' environmental and social (E&S) ratings and find that firms with more robust risk oversight have higher E&S ratings.

Iliev and Roth (2021) find that the board of directors has a strong effect on US firms' overall ESG performance and disclosure. We extend this literature by providing a new measure that incorporates the perceptions of traits of directors based on machine learning techniques, and by showing that perceived director trustworthiness is important for the firm's ESG activities and resulting return outcomes.

Next, we contribute to the emerging literature that examines the economic implications of impressions formed by facial traits (see Hanlon, Yeung, and Zuo (2022) for a review of the recent accounting research). For example, several papers examine the impact of facial impressions (e.g., executives' facial appearance) on firm-level factors such as valuation (Blankespoor et al. 2017), compensation contracting (Li et al. 2020), risk-taking (Kamiya et al. 2019), financial reporting (Jia et al. 2014), and audit pricing (Hsieh et al. 2020). Peng et al. (2022) find that key impressions about personality traits from analysts' LinkedIn profile photos are systematically related to analysts' access to information and performance. We add to this stream of literature by documenting that perception of the board impacts firm ESG activities, which is a nascent area.

Finally, we contribute to the literature on trust and social capital. Our interaction variable of board trust and ESG ratings can be viewed as an empirical proxy for organizational social capital of trust at the firm level,[6] and is analogous to civic capital for a community that is proposed by Guiso et al. (2011) (see Section 2 for further discussion). Our paper is related to Xue, Fernando, and Tam (2019) who examine the relation between trust measured using textual analysis of the Management Discussion and Analysis section of the 10-K with future Tobin's Q. Our paper is also related to Lins, Servaes, and Tamayo (2017). They use a measure of CSR intensity that is based

[6] Leana and van Buren (1999, p. 538) define organizational social capital as "…a resource reflecting the character of social relations within the firm. Organizational social capital is realized through members' levels of collective goal orientation and shared trust, which create value by facilitating successful collective action."

on the precursor to ESG ratings (i.e., the KLD Ratings) as a proxy for trust between the firm and stakeholders/investors to examine the relation between CSR intensity and stock return and accounting performance during the financial crisis. We focus instead on trust between agents (i.e., employees and managers) and monitors (i.e., directors) to study whether ESG ratings predict future firm performance.

2. Motivation, Related Research, and Hypotheses Development

2.1 Increasing Pressure to Engage in ESG Activities

Discussion of ESG issues has historically focused on the public good more than enhancement of shareholder value. More recently however, there is a growing recognition that ESG activities are a resource allocation decision that managers must make with important value consequences. BlackRock, Vanguard, and State Street Global Advisors—representing roughly one-quarter of S&P 500 Index votes—have made ESG efforts key in their management interactions and voting behavior. In his 2022 letter to corporate leaders, BlackRock CEO Larry Fink further clarifies that "*businesses that don't plan for a carbon-free future risk is left behind. The quest for long-term returns, and not politics, is what animates the money manager's efforts*."[7] Fink wrote in this letter that "*we focus on sustainability not because we are environmentalists, but because we are capitalists and fiduciaries to our clients*."

In tandem with the rise of interest in ESG on the part of investors, corporate ESG reporting has risen dramatically over the last decade. The percentage of S&P 500 companies issuing ESG-related reports grew from 20% in 2011 to 90% in 2019 (Rouen et al. 2022). This acceleration in reported ESG information over such a short time, however, does not mean that there has been a

[7] See "BlackRock's Climate Stance Is About Profits, Not Politics, Larry Fink Says" by *The Wall Street Journal* (January 17, 2022). Available at https://www.wsj.com/articles/blackrocks-climate-stance-is-about-profits-not-politics-larry-fink-says-11642478401.

commensurate increase in clarity regarding the ESG activities that a firm should undertake and the amount of resources that it should allocate to them.

2.2 The Complex Landscape of ESG Activities and Measurement

Managers and directors face complicated decisions in allocating resources to ESG. There is a lack of a clear definition on what qualifies as an ESG strategy and what makes something sustainable.[8] Under pressure from investors to act on ESG and without clear shareholder value motivations, managers are left to choose among different ESG options with little guidance. More importantly, many ESG projects (e.g., green innovations) may sacrifice short-term cash flows in exchange for (uncertain) long-term benefits. When investment decisions can be delayed and are even partially irreversible, myopic managers become cautious and hold back investment in the face of uncertainty (Ferracuti and Stubben 2019).

This challenge is further complicated by an ESG scoring system from data vendors that is based on an aggregate at a higher level, which often limits the ability to identify the link between a company's ESG activities and firm value. ESG activities that can both enhance firm value and improve ESG performance scores, then, are hard to identify. As Porter, Serafeim, and Kramer (2019) point out, the impact of these efforts on "*competition and economic-value creation are not fully understood or even considered*." Regardless of efficacy, firms generally convey positive statements about their ESG activities to the market; managers are eager to be seen as "doing the right thing."

To help investors understand what firms may be doing on ESG activities, there has been a tremendous growth in spending on ESG data by investors and fund managers. For example, a

[8] Corporate Board Member (https://boardmember.com/) described the lack of clarity in the structure and rules for ESG efforts as follow: "*There are no hard and fast rules right now… in this wild-west environment*."

research firm Opimas reported that such spending exceeded $1 billion in 2021, up from $617 million in 2019.[9] The Environmental Resources Management (ERM) foundation estimated that there were more than 600 ESG ratings and rankings that existed globally as of 2018.[10] The growth of information about ESG activities has been accompanied by disagreements in the ratings among different rating agencies (Chatterji et al. 2016; Berg, Koelbel, and Rigobon 2022; Serafeim and Yoon 2022). The proliferation of inconsistent ratings has made it difficult for investors to evaluate whether ESG activities provide firm value.

2.3 ESG Activities and Firm Value

Empirical evidence on firm value and sustainability activities from a literature that spans decades is mixed and remains inconclusive. Some papers have found that ESG efforts can help firm access capital (Cochran and Wood 1984; Waddock and Graves 1997), attract higher quality employees (Turban and Greening 1997), and obtain better market products and services (Moskowitz 1972; Fombrun 1996). There is also evidence suggesting that sustainability practices are associated with the lower likelihood of regulatory and legislative action (Hillman and Keim 2001) and tail risk (Hoepner, Oikonomou, Sautner, Starks, and Zhou 2022), and can protect and enhance corporate reputation (Fombrun and Shanley 1990; Fombrun 2005; Freeman, Harrison, and Wicks 2007).

However, other papers have argued that sustainability investments are too costly, resulting in a competitive disadvantage in a competitive market (Friedman 1970; Jensen 2002). Some papers have provided evidence that found sustainability-related investments to be inefficient, likely due

[9] See "ESG Data is Now Worth It" by *Opimas* (April 19, 2022). Available at: http://www.opimas.com/research/742/detail/.
[10] See "Rate the Raters 2020: Investor Survey and Interview Results" by *SustainAbility* (March 2020). Available at: https://www.sustainability.com/thinking/rate-the-raters-2020/.

to managers' incentives to extract private benefits, so that such investments are undertaken to serve managers' political beliefs and agendas (Cheng, Hong, and Shue 2014; Di Giuli and Kostovetsky 2014). Our study contributes to this literature by identifying firm-level trust among employees, managers and directors as a key driver for ESG activities to enhance shareholder value.

2.4 The Role of the Board of Directors in Monitoring ESG Decisions

The current regulatory environment is premised upon board involvement with ESG decisions. The SEC commissioner Allison Lee declared that board members' oversight obligations now extend to the identification and assessment of ESG risks.[11] Federal securities laws require directors to carefully evaluate the effect of ESG matters on the financial statements and other corporate disclosures (Lee 2021). Directors also have the fiduciary duty of loyalty and care (i.e., to be well informed when making corporate decisions including ESG investments). Since boards have oversight obligations related to ESG activities, it is important to understand what board characteristics are associated with ESG monitoring effectiveness.

Company managers now link ESG to overall company strategy. A recent survey reports that more than half of directors believe that ESG issues have a financial effect on firm performance (PwC Survey 2021). When companies fall short of investor expectations for ESG, investors often put pressure on boards to act. This sometimes takes the form of shareholder proposals or replacing

[11] See "Climate, ESG, and the Board of Directors: You Cannot Direct the Wind, But You Can Adjust Your Sails" by SEC Commissioner Allison Lee (June 2021). Available at https://www.sec.gov/news/speech/lee-climate-esg-board-of-directors.

directors with candidates that are more experienced in mitigating ESG risks and maximizing return on ESG opportunities.[12, 13]

2.5 The Role of Perceived Trustworthiness

Decades of research have highlighted the central role of trust in organizations. At the individual level, trust has been linked to outcomes such as employee satisfaction (Edwards and Cable 2009), effort and performance (Colquitt et al. 2007), and leadership effectiveness (Gillespie and Mann 2004). At the firm level, trust has been shown as a driving force in organizational change and survival (Sonpar et al. 2009), strategic alliances (Ireland et al. 2002), mergers and acquisitions (Maguire and Phillips 2008), and Tobin's Q (Xue et al. 2019). The measure of trust in Xue et al. (2019) differs from ours in that they use the count of trust-related words in the Management Discussion and Analysis section of the 10-K.

In the ESG context, trust is critical because it would lead to risk taking. Schoorman et al. (2007) define trust as the "willingness to take risk.[14] Given the nature of ESG investments (e.g., short-term sacrifice of cash flows and uncertain long-term benefits) and their challenges in separately measuring economic benefits to shareholders and other stakeholders, employees and management would want a board they can trust so they will not be punished for inferior short-term accounting performance.

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[12] For example, in 2021, Engine No. 1, a small activist fund, attracted much public attention. It started a campaign to replace four members of ExxonMobil's board despite owning only 0.02% of the company's shares. It asserted that Exxon was not moving fast enough to address climate change, and that "*the company's focus on fossil fuels threatened future returns and that Exxon would face existential risks*." Given their small stake in the company, Engine No. 1's strategy relied on convincing Exxon's largest shareholders such as BlackRock. By mid-2021, Engine No. 1 secured three out of twelve board seats and Exxon made commitments to expedite its investments to climate issues.

[13] See "The director's new playbook: Taking on Change" by *PwC's 2021 Annual Corporate Directors Survey* (2021). Available at https://www.pwc.com/us/en/services/governance-insights-center/assets/pwc-2021-annual-corporate-directors-survey.pdf.

[14] Davis, Schoorman, and Donaldson (1997) argue that a key distinction between agency theory in economics versus stewardship theory in the management field is the use of trust versus control systems to manage risk, and these mechanisms need not be mutually exclusive.

A closely related paper to ours in studying trust effects on firm performance is Lins et al. (2017). Our research question is different in that we examine whether firm agent trust of the board mediates the ability of ESG activities to deliver better future performance for the firm. In contrast, they study whether the precursor to ESG ratings are associated with better financial performance during the financial crisis. They use CSR intensity as a measure of trust between the firm and stakeholders/investors and argue that the social capital for investors/stakeholders built through CSR activities serves as an insurance that pays off when market suffers a negative shock.

In our approach, we view trust between agents (employees and managers) and monitors (directors) as the ingredient that allows firm agents to choose ESG activities that enhance shareholder value. Many ESG activities require effort and new risks. Agency theory (Jensen and Meckling 1976) suggests that managers and rank-and-file employees are effort- and risk-averse, which discourage innovation, even if it is on average value-increasing. Specifically, new technology and new methods require additional effort to learn, and the possibility of short-term failure associated with risky innovation reduces the willingness to innovate.

Importantly, ESG activities are often hard to verify, involve multi-step efforts, and can take time to produce tangible value (Cho et al. 2015; Serafeim and Yoon 2022),[15] so short-term cash flow tradeoffs with long-term benefits are commonly present for ESG projects. In such situations, incentives for opportunistic behavior lead to dysfunctional outcomes. High trustworthiness can discourage managers from engaging in such opportunistic behavior, and instead encourage taking actions that lead to better firm outcomes. This is somewhat analogous to signal-jamming (Stein 1989) if the opportunistic behavior is taken to increase investor perceptions, e.g., by taking ESG initiatives that have low immediate costs and low future return rather than taking those that have

[15] Edmans (2011) provides evidence that stock prices do not immediately reflect the value implications of intangible assets (i.e., employee satisfaction).

high immediate cost and high long term benefit. A trusting environment can help break this dilemma.

We propose that perceived trustworthiness of the board is a crucial ingredient for managers and employees to be willing to invest effort and tolerate the risks associated with ESG innovation activities. Trust is a trait that is rooted in the human evolutionary past (Bowles and Gintis 2011) and is associated with the observer's perception of whether the observed has the intention to help or harm. When directors are perceived to be trustworthy, management and employees are more confident that the directors will be more tolerant of low short-term cash flows or even failure, which would encourage management and employees to be less myopic and to undertake the risky ESG ventures.

Moreover, directors who are perceived to be trustworthy are better able to promote congruent values and encourage cooperation among management and employees of a firm. Several studies have highlighted various elements of trust and shared values or cooperation as essential for firm productivity. In our study, we emphasize the incremental ingredient derived from the interaction of both trust and a culture of shared values that enhances productivity.

In a review of research on the neuroscience of trust, Zak (2017) reports that productivity is higher in high trust environments.[16] Graham et al.'s survey results (2022) indicate that CEOs view a corporate culture of collaboration and sense of community as very important for the firm's willingness to take on risky projects and achieving high firm productivity, and the executives identify a lack of trust among employees and coordination challenges as key impediments to building this cultural environment to achieve higher productivity. Guiso, Sapienza and Zingales

[16] Zak (2017, p. 84) writes that "employees in high-trust organizations are more productive, have more energy at work, collaborate better with their colleagues, and stay with their employers longer than people working at low-trust companies. They also suffer less chronic stress and are happier with their lives, and these factors fuel stronger performance."

(2011) argue that a community with high trust has shared values, and therefore experiences lower free-rider problems, which leads to higher economic productivity. They call a community with low free-rider problems as one with high civic capital.[17]

The impetus for ESG activities is rooted in caring about and sustaining the community at large to which the individuals belong to. Firms scoring high ESG ratings have more exposure, in addition to be able to manage those risks better. It seems plausible that management and employees of firms with high ESG ratings and a board they perceive as trustworthy are therefore more likely to cooperate, and less likely to free-ride on each other and pursue individual pecuniary goals.

Summarizing these arguments, we propose that both elements of shared values and a culture of trust complement each other to improve the productivity of ESG activity.[18] Therefore, we hypothesize that the interaction of ESG ratings, which we call *ESG Score*, with a measure for the perceived trustworthiness of the board of directors, which we call *Board Trust,* predicts future performance positively. This interaction variable can be viewed as an empirical proxy for firm-level organizational social capital,[19] and is analogous to civic capital for a community that is proposed by Guiso, Sapienza, and Zingales (2011).

The legendary crew coach Harry Parker said that winning in rowing requires utter dependence of the rowers on each other. No one person singly can make the boat go faster, whereas just one person can slow it down a lot. "So [rowers] really do learn to trust one another and depend on one another in a pretty unique way."[20] In the corporate setting, we expect that firm productivity

[17] Guiso et al. (2011, p. 419) define civic capital as "those persistent and shared beliefs and values that help a group overcome the free rider problem in the pursuit of socially valuable activities."
[18] We do not claim that all ESG activities can enhance firm value in all circumstances. For ESG activities that potentially decrease firm value, we do not expect shared values and trust to play a major role in moderating the relation between ESG ratings and shareholder value.
[19] Leana and van Buren (1999, p. 538) define organizational social capital as "…a resource reflecting the character of social relations within the firm. Organizational social capital is realized through members' levels of collective goal orientation and shared trust, which create value by facilitating successful collective action."
[20] Rowing Harry Parker Quotes for Players (sportsquotes.us).

will be high when agency costs are low, such as when all firm agents share common values and trust in one another so as to reduce free-rider problems in the pursuit of firm activities.

2.6 Perceived Trustworthiness and Face Impressions

We infer trust using facial trait impressions. Recent papers have examined the effect of facial trait impressions (e.g., impressions of executives' facial appearance) on firm-level outcomes such as valuation (Blankespoor et al. 2017), compensation contracting (Li et al. 2020), risk-taking (Kamiya et al. 2019), financial reporting (Jia et al. 2014), and audit pricing (Hsieh et al. 2020). Hsieh et al. (2020) find that auditors charge lower audit fees to firms with CEOs who are perceived to be trustworthy. Peng et al. (2022) find that key impressions about personality traits from analysts' LinkedIn profile photos are systematically related to analysts' behavior and performance.

Past literature points out that individual behavior (e.g., that of firm managers) may depend not only on economic incentives, but also on individual preferences and informal institutions; and perceptions of managers influence their decisions (see Hanlon, Yeung, and Zuo 2022). The neuroscience literature documents that trait judgments can be formed as little as in 38 milliseconds, and human amygdala plays a key role in the assessment of facial trustworthiness and is related to future-oriented activities (Engell, Haxby, and Todorov 2007; Todorov and Engell 2008; Hernádi, Grabenhorst, and Schultz 2015). Human trait perceptions has developed through natural selection over the evolutionary history and serve as shortcuts in cognitive processing to aid survival in the presence of threats and uncertainties (Oosterhof and Todorov 2008). More recent papers have documented that the impressions from facial traits affect important social and financial outcomes such as electoral success, peer-to-peer lending, and sentencing decisions (see Porter et al. 2008; Duarte et al. 2012; Rezlescu et al. 2012; Tingley 2014; Schlicht et al. 2010).

Under such a case, managers could form perceptions about the board of directors based on their facial traits. This suggests that managers may be more willing to incur short-term costs to generate long-term returns and be more open to sharing information and receiving guidance when a firm's directors look more trustworthy. Such effects are especially likely for ESG investments, because there is a lack of "hard" information related to the output of ESG activities as well as the lack of clear guidance on defining ESG goals and consensus on how to bring ESG metrics into executive compensation. If so, managers' perception of directors' trustworthiness can amplify the monitoring and advising role that directors play, and even serve as a distinct and complementary mechanism to formal governance mechanisms (e.g., contracts). Put differently, given the low contractibility of ESG activities (performance), trust could be a powerful alternative to formal governance mechanisms that align incentives and address free-rider agency problems (Puranam and Vanneste 2009). As the board of directors has the fiduciary duty to protect shareholder value and ensure the long-term success of the company, trust could be a pivotal factor (Blair and Stout 2001), and managers could be more willing to undertake ESG activities that creates future value.

3. Data and Sample

Our sample contains 3,800 firm-years between 2010 to 2018 that is at the intersection of board-level facial trustworthiness data, ESG scores from MSCI, and various control variables used in the regression analyses (see Appendix A1 for detailed variable definitions). Although 2009 was the first year when the ESG scores from MSCI ESG Ratings database became available, we do not include that year as only a small number of firms were initially covered. Our sample period ends in 2018 but we use one-year ahead stock returns to examine the valuation implications of ESG

performance. Thus, we include stock returns data until 2019, shortly before the 2020 stock market crash due to the COVID-19 pandemic.

3.1 Board Facial Trustworthiness Data

We create a firm-year variable to capture the average perceived trustworthiness of the directors in a board to proxy for managers' willingness to invest in risky ESG projects. We follow Peng et al. (2022) and use machine learning technology to measure each director's perceived trustworthiness and then take the average of directors' trustworthiness to arrive at *Board Trust*. Appendix A2 discusses in detail the face factors extraction procedure.

To get at this, we first create a database of director photos by writing a web crawler script to retrieve proxy statements from the SEC EDGAR database. To match director faces from proxy statement with BoardEx data, we use a proprietary Python algorithm to search director names in image filenames and HTML tagging where the image is embedded (see appendix A3 for more details). For unmatched images, we hire five freelancers from Upwork to manually match them with BoardEx data. We use proxy statements because they are a centralized source, and the advantage of director photos to measure perceived trustworthiness is that this measure is unlikely to be correlated with other attributes of directors (e.g., ability or diligence).[21]

We perform a three-step procedure to ensure the integrity of this director photo database. First, we employ a Python deep-learning face detector toolkit "dlib" to ensure each image has only one human face. Second, we ensure that the number of recognized director photos is the same as the number of directors identified in BoardEx. Third, for proxy statements with no director photos

[21] There is belief that facial appearance can be used to infer the nature of the mind and personality. This idea dates back over centuries to ancient Greece, Rome, and China (see McNeil 2000). For example, Cesare Lombroso, the founder of criminal anthropology in the 19th century, claimed that "each type of crime is committed by men with particular physiognomic characteristics" (see Lombroso 2006). Modern science has largely discarded such notion (Oosterhof and Todorov 2008). However, the notion that people form impressions about others based on their facial traits has strong support in neuroscience (Todorov and Engell 2008).

identified by "dlib" toolkit, we hire two additional Upwork freelancers to manually verify that these proxy statements indeed do not include any director photos.

Finally, we create individual director's trustworthiness score via the following approach. First, we resize all the cropped photos to 200 × 200 pixels and standardize the location of faces in photos. Second, we locate 68 facial landmarks from each director photo and combine them with HSV (Hue, Saturation, and Value) properties of pixels for the corresponding facial area to calculate the 65 facial attributes for the face (Peng et al. 2022). Third, we normalize the 65 facial attributes to improve comparability among photos and derive raw scores for trustworthiness following the model presented in Vernon et al. (2014). We take the average of this construct for each board-year to arrive at our final proxy *Board Trust*.

3.2 ESG Data

We obtain firm-year level ESG data from MSCI ESG Ratings (formerly MSCI IVA Ratings). This dataset offers several advantages. First, MSCI has the largest market share in the investment community. MSCI has more than 1,200 investment firms as its clients and 46 of the 50 largest asset managers ranked by assets under management are its clients (Christensen, Sikochi, and Serafeim 2022). Also, we are allowed with the greatest number of observations against the director photo data when compared to the other commonly used ESG datasets (e.g., Sustainalytics and Refinitiv). Second, recent papers document that there are discrepancies in the ESG ratings across different data vendors (Berg et al., 2022). Considering this issue, Serafeim and Yoon (2022) find that MSCI ESG Ratings dataset is the most informative in predicting future ESG news among different ratings, and this predictive ability can be used to forecast future stock returns. Third, MSCI reports that its dataset is not backfilled.

MSCI ratings are based on 37 important issues that are selected annually for each of the 156 GICS subindustries and weighted according to their materiality-mapping framework. MSCI uses sources such as annual reports, investor presentations, and financial and regulatory filings as a base for their assessment. Similarly, risk-management and opportunity-related data are culled from sources such as corporate documents, government data, and the media. MSCI also engages in direct communication with companies and invites them to participate in the data-review process—including discussions of the accuracy of the data. MSCI aggregates the data to an overall score, in which each issue is weighted according to assessed materiality in each industry. MSCI updates firms in each industry on an annual basis unless there is a material event to the firm. The final ESG score ranges from 0 to 10 and starts from 2009.

Consistent with the current literature, we use MSCI ESG scores to capture the firm ESG related activities and performance. This practice is consistent with the literature and reflects the fact that it is not possible to disentangle firm ESG investment activities and ESG output using any of the existing ESG datasets. All ESG scores from major data vendors are designed to capture firm ESG performance (except that from Bloomberg, which captures ESG disclosure).

3.3 Other Variables and Descriptive Statistics

We obtain firm-level characteristic data from Compustat, stock-price data from CRSP, Fama-French five factors from Ken French's website, employee views on CEO data from Glassdoor.com, and board and governance related data from BoardEx and Institutional Shareholder Services (ISS) dataset. These datasets are used to construct the control variables for our regression analyses.

Table 1 provides information about the sample. Panel A shows that the number of sample firms increases monotonically over time, ranging from 122 firms in 2010 to 712 firms in 2018.

This pattern reflects MSCI's expanding firm coverage since the launch of their ESG ratings. Panel B presents the sample distribution by GICS industry. We find that the most heavily represented industry in our sample is Industrial (18%), followed by Financials (15%) and Consumer Discretionary (13%).

Table 2 Panel A presents the summary statistics. *Board Trust* has a mean of 0.06 and median of 0.06, respectively. *ESG Score* has a mean and median of 4.5 and 4.4, respectively. Decomposing the *ESG Score* into its three components (i.e., *Environmental Score*, *Social Score* and *Governance Score*), we find that *Governance Score* has the highest mean value (5.63) whereas *Social Score* has the lowest mean value (4.28). An average firm has a *Size* (log of market cap) of 15.80, *MTB* of 3.40, *ROE* of 0.11, *SG&A/Sales* of 0.17, *Adv Exp/Sales* of 0.01, *R&D/Sales* of 0.02, and *CAPEX/PPE* of 0.08.

Panel B presents the correlation table. Interestingly, *Board Trust* exhibits very low correlation with *ESG Score* (0.07), *Environmental Score* (0.06), *Social Score* (0.06), and *Governance Score* (0.02). In an untabulated test, we examine the correlations between *Board Trust* and all available director and board related sub-scores from the MSCI ESG Ratings dataset (e.g., corporate governance score and board percentile rank) and note that these sub-scores are not available for 80% of MSCI dataset and that the non-missing observations also exhibit a very low correlation to *Board Trust*. Overall, we conclude that our *Board Trust* proxy may potentially reflect a dimension that is not captured by traditional governance measures, and the two could be independent signals.

4. Research Design and Results

4.1 Calendar-Time Portfolio Regression

We construct a double-sorted portfolio based on the two signals—*ESG Score* from MSCI, which proxies for firm ESG activities and performance, and *Board Trust*, which proxies for the perceived trustworthiness of the board. We take the two scores in the base year and construct portfolios at the beginning of January of next year and hold the portfolio for twelve months. We include firms that score high (above median) on both *ESG Score* and *Board Trust* in our long portfolio and include firms that score low (below median) on both dimensions in our short portfolio. We use an annual signal to reduce multiple rebalancing during the year, because MSCI updates their ESG data on an annual basis unless there is a material event to a focal firm. Given that we propose that perceived trustworthiness of the board is a crucial ingredient for managers and employees to be willing to invest effort and tolerate the risks associated with ESG activities, we predict that the long will outperform the short portfolio. To test this prediction, we use the following equation:

$$R_{it} = \alpha_{it} + \beta_{MKT} MKT_{it} + \beta_{SMB} SMB_{it} + \beta_{HML} HML_{it} + \beta_{RMW} RMW_{it} + \beta_{CMA} CMA_{it} + \varepsilon_{it,} \quad (1)$$

where R_{it} is the return on portfolio i in month t in excess of the risk-free rate. MKT_{it} is the market excess return; SMB_{it} and HML_{it} are the Fama and French (1993) size and book-to-market factors, respectively; RMW_{it} and CMA_{it} are the profitability and investment factors, respectively, from Fama and French (2016). The intercept α_{it} captures the abnormal risk-adjusted return. This research design adopts controls for standard risk factors and tests whether the long-short portfolio in the focal characteristic yields alpha. Standard errors are calculated using Newey and West (1986), which allows for ε_{it} to be heteroskedastic and serially correlated.

Table 3 presents the first set of results from equation (1). We use both equal-weighted and value-weighted approaches to construct portfolios in Panels A and B, respectively. We first discuss the results using equal-weighted approach. We find that firms with high *ESG Score* and *Board*

Trust significantly outperform those with low scores on both dimensions. Specifically, the long portfolio (column 4) yields an annualized alpha of 2.97% (t = 1.86) when the short portfolio (column 1) yields an annualized alpha of -4.75% (t = -1.70). The difference in alphas between the long and short portfolios is 8.07% (t = 2.89). These results are consistent with the following (non-mutually exclusive) possibilities: (1) managers are likely to choose ESG activities that are value-improving when they can trust the board to tolerate short-term costs; (2) managers are more likely to share information with board members that they trust and seek guidance on their investment decisions on ESG activities; and/or (3) directors who appear more trustworthy are efficient monitors on ESG issues and thereby inducing managers to choose projects that improve value. The fact that there is return predictability further suggests that the market does not fully and immediately impound these value creation effects (Edmans 2011).

The results using value-weighted approach in Panel B are similar to the results using equal-weighted approach in Panel A. Specifically, the long portfolio (column 4) yields an annualized alpha of 3.08% (t = 2.04). In contrast, the short portfolio (column 1) yields an annualized alpha of -4.65% (t = -1.73). The difference in alphas between the long and short portfolios is 8.06% (t = 2.96). In an untabulated test, we re-run our analysis on larger firms (firms above median in market capitalization) and find that the difference in alphas between the long and short portfolios among larger firms is 8.44% ($p < 0.01$) and 8.25% ($p < 0.01$) using equal- and value-weighted approach, respectively. Overall, we conclude that our phenomenon is present across all firms in our sample regardless of size.

Finally, in another set of untabulated tests, we sort firms only based on their *ESG Score* (i.e., unidimensional sorting). We find that firms with high ESG scores do not significantly outperform the firms with low ESG scores, which is consistent with prior literature (e.g., Khan et

al. 2016; Welch and Yoon 2022). We also find that if we sort firms only based on *Board Trust*, there is also no significant difference in alphas between the portfolios of firms with high and low perceived board trustworthiness. This suggests that directors' perceived trustworthiness is especially important for ESG investments, since these are much harder to quantify and monitor than most other investments, such as R&D and CAPEX.

4.2 Cross Sectional Tests

4.2.1 By Tenure

In Table 4 Panel A, we examine whether the shareholder value effects of perceived trustworthiness on ESG activities depend on CEOs tenure at the firm. We view this to be an important test because prior literature pointed out that perceived trustworthiness effects are stronger when the communicating parties are new to each other (Peng et al. 2022). If so, our main results would likely be stronger when CEO interactions with the board directors are limited.

To examine for this possibility, we partition our sample into two groups. First, we use the median years of CEO tenure (i.e., 4 years) as a cutoff. Consistent with our expectation, the relationship between perceived trustworthiness, ESG and abnormal returns is present only for the subsample with shorter CEO tenure. Specifically, the long portfolio outperforms the short portfolio by 17.91% ($p < 0.01$) and 16.70% ($p < 0.01$) using equal-weighted and value-weighted portfolios, respectively. In contrast, we do not detect a significant difference in abnormal returns for the long and short portfolios of firms with longer CEO tenure.

These inferences are similar, and even stronger, when we use 25th percentile of CEO tenure (i.e., 2 years) as the cutoff to separate the sample into long versus short CEO tenure groups. We find that the long portfolio outperforms the short portfolio by 34.28% ($p < 0.01$) and 39.73% ($p < 0.01$) using equal-weighted and value-weighted portfolios, respectively. Overall, the result in

Table 4 Panel A reinforces the notion that a stronger CEO perception of directors' trustworthiness is associated with more value improving ESG investment choices as manifested in subsequent returns, and that this effect is stronger when the CEO and the board have had limited interactions.

4.2.2 Separate Tests by Director Type and Firm Governance

We run several robustness tests in Table 4 Panel B. First, we exclude the CEO from the board of directors to ensure that our results are not driven by the CEO's facial trustworthiness. When the CEO is removed from the board of directors, the long portfolio continues to outperform the short portfolio by 6.02% ($p < 0.05$) and 6.63% ($p < 0.05$) using equal-weighted and value-weighted portfolios, respectively. Second, we check whether our results would hold if we restrict the analyses to independent directors. Inside directors are likely to already have a closer working relationship with the management, and the perception of trust may be less important. When we remove these inside directors from our sample, we still find that the long portfolio outperforms the short portfolio in a statistically and economically significant way using both equal-weighted and value-weighted portfolios.

Third, we separate the firms in our sample into two groups based on the good and bad governance. We measure governance quality using the *G-Index* developed by Aggarwal et al. (2011). When examining firms with bad governance (i.e., those firms-years with below average *G-Index*), the long portfolio outperforms the short portfolio by 14.43% ($p < 0.01$) and 13.35% ($p < 0.01$) using equal-weighted and value-weighted portfolios, respectively. However, we do not find such a pattern for firms with above average *G-Index*. The long portfolio exhibits 5.39% and 5.54% higher alpha than the short portfolio using equal-weighted and value-weighted portfolios, respectively; however, the alphas are not statistically significant. This has two important implications. First, trust is not necessary when a firm has a well-functioning governance system.

Second, the trust between managers and the board can lead managers to choose ESG projects that create shareholder value even when the firm suffers from poor governance. We view this result as important, because our measure of trust complements traditional measures of governance and highlights another facet of governance that could not be captured by the traditional governance metrics.

4.2.3 Examining E and S

Our prediction is that the effects of perceived trustworthiness are likely to be the greatest for activities and investments whose payoffs are relatively long deferred and hard to quantify given the high likelihood of managers speaking to directors for advice and guidance. In this subsection, we examine E and S investments that firms make. Among E and S issues, it is commonly accepted that environmental issues are easier to quantify (e.g., CO2 emission) than social issues (e.g., employee well-being, diversity, equality, and inclusion) that are based on less objective metrics. If so, there is a potential for perceived trustworthiness to play a bigger role for social issues than environment related issues.

In Table 4 Panel C, we test for this possibility. We *examine* environmental and social scores individually. We find that our main results in Table 3 are predominantly driven by social activities rather than environmental related activities. For example, for social activities, the long portfolio outperforms the short portfolio by 7.63% ($p < 0.01$) and 7.31% ($p < 0.05$) using equal-weighted and value-weighted portfolios, respectively. However, when we examine environmental -related investments, we find no such outperformance. Overall, the results suggest that trust within a board plays a bigger role in guiding managers on ESG issues that are less straightforward.

4.2.4 Other Cross-sectional Tests

Prior literature documented that trait inferences from social interactions can differ by gender and that female are perceived to be more trustworthy (see Peng et al. 2022). If so, there is a possibility that our results could be driven by gender, instead of actual trust within a board.

To address this potential concern, we first create two subsamples based on gender and re-run our main test. We find that the shareholder value creation is driven by the male directors. Specifically, the long portfolio outperforms the short portfolio by 7.32% ($p < 0.01$) and 7.13% ($p < 0.01$) using equal-weighted and value-weighted portfolios, respectively. However, we do not find a statistically and economically meaningful effect when examining the female directors.

Second, we use gender diversity, which is the proportion of female directors in a board, instead of *Board Trust* to create the two portfolios. In this test, the long (short) portfolio would include the firms with high (low) gender diversity and ESG. We find no evidence of the long portfolio outperforming the short portfolio. Overall, we conclude that gender is not the key driver for our main effect and omit these tests for brevity.

4.3 Robustness Tests

4.3.1 Using Alternative Factor Model Benchmarks and Portfolio Break-Points

We conduct a series of additional tests to assess the robustness of our main finding that firms with high *ESG Score* and *Board Trust* significantly outperform those that are low on both dimensions. In Table 5, we assess the robustness of our results to different factor model benchmarks. We estimate portfolio alphas using the three-factor model as in Fama and French (1993) and the four-factor model as in Carhart (1997). When we use the three factor model, we find that the long portfolio outperforms the short portfolio by 7.35% ($p < 0.01$) and 7.32% ($p < 0.01$) using equal-weighted and value-weighted portfolios, respectively. When we use the four

factor model, we find that the long portfolio outperforms the short portfolio by 6.73% ($p < 0.01$) and 6.74% ($p < 0.01$) using equal-weighted and value-weighted portfolios, respectively.

Next, we analyze the portfolio performance using different portfolio formation break points (i.e., tercile and quintile instead of the quartile cut approach taken in Table 3). When we use the tercile cut, the long portfolio outperforms the short portfolio by 4.98% ($p < 0.05$) and 4.98% ($p < 0.05$) using equal-weighted and value-weighted portfolios, respectively. When we use the quintile cut, we find that the long portfolio outperforms the short portfolio by 9.28% ($p < 0.01$) and 9.01% ($p < 0.01$) using equal-weighted and value-weighted portfolios, respectively. Overall, we conclude that our results are robust to alternative factor models and portfolio creation methods.

4.3.2 Fama MacBeth Regressions

We note that the factor model approach in the previous sections does not allow us to control for firm-specific covariates that may drive ESG, trust, and stock returns. To control for them, we use Fama MacBeth cross-sectional regressions approach. Specifically, we estimate the following equation each year and calculate the average coefficients across all annual regressions:

$$R_{it} = \beta_0 + \beta_1 \, High\,ESG \;\&\; High\,Board\,Trust + \beta_2 \, Low\,ESG \;\&\; Low\,Board\,Trust + \beta_3 \, Z_{it} + \varepsilon_{it}, \quad (2)$$

where R_{it} is the monthly stock return for firm i measured as in the calendar-time portfolios for every month beginning in January to December of the next year as in equation (1). *High ESG & High Board Trust* (*Low ESG & Low Board Trust*) capture the firms that have both high (low) ESG scores and board members that are perceived to be more trustworthy during the base year.

The base group of firms are firms that are in the Compustat universe. Z_{it} is the vector of firm-level covariates. *Size* is the natural logarithm of market capitalization. *MTB* is the market value at the end of the calendar year divided by book value of equity. *ROE* is the net income divided by average shareholder equity. Because our focus is on ESG projects, we control for other

firm investments using *SG&A/Sales*, *Adv Exp/Sales*, *R&D/Sales* and *CAPEX/PPE*. *SG&A/Sales* is the selling, general, and administrative expense divided by sales. *Adv Exp/Sales* is the advertising expense divided by sales. *R&D/Sales* is the R&D expense divided by sales. *CAPEX/PPE* is the capital expenditure divided by property, plant, and equipment. To control for the momentum effect, we add *Last Year's Return* as a control, which is the stock return during the last 12 months. *PRC* is the price at the end of month *t*-2 following Edmans (2011). *DVOL* is the dollar trading volume (in millions) in month *t*-2 following Edmans (2011). To separate the management competency and their relationship with the board, we control for the CEO's ability using the average employee rating of senior managers' ability from Glassdoor.com following Welch and Yoon (2022). *High CEO Ability* indicates the firm-years in the top quartile of CEO ability.

The results are presented in Table 6. The long portfolio generates a monthly return of 0.39% (t = 2.52) while the short portfolio generates a negligible monthly return of 0.02% (t = 0.09). The difference between the two portfolios is significant at the 10% level. In annualized terms, the long portfolio outperforms the short portfolio by 4.78%.[22] This confirms that managers choose more value enhancing ESG projects when there is trust and shared values within an organization.

4.4 Accounting Performance

So far, we have examined future stock market performance to understand how directors' perceived trustworthiness is associated with more value increasing ESG activities. However, one potential concern with the results so far would be that they are driven by sustainability-conscious investors exerting upward stock price pressure on firms with trustworthy directors. If so, firms with high *ESG Score* and *Board Trust* would be exhibiting superior stock market growth without

[22] This is calculated as $(1 + 0.0039)^{12} - 1$.

a follow through growth in accounting performance. On the other hand, if trust induces managers to choose ESG projects that enhance firm value, firms with high *Board Trust* and *ESG Score* would exhibit superior long-term growth in fundamental performance.

In Table 7, we examine the relation between *Board Trust*, *ESG Score*, and future accounting performance. In Panel A, we compare the *ROA Growth* of the long and short portfolios. *ROA Growth* of 1-Year (2-year) is earnings of year *t*+1 (earnings of year *t*+2) minus earnings of year *t*, divided by total asset of year *t*. We find that our long portfolio exhibits significantly higher one and two year growth in ROA. In a one year window, the long portfolio exhibits a 1.59% growth in ROA while the short portfolio exhibits a 0.17% growth, and the difference is statistically significant at the 5% level. In a two year window, the long portfolio exhibits a 10.83% growth in ROA while the short portfolio exhibits a 4.95% growth, and the difference is statistically significant at the 1% level.

In Panel B, we compare the *Sales Growth* of the long and short portfolios. *Sales Growth* of 1-Year (2-year) is sales of year *t*+1 (sales of year *t*+2) minus sales of year *t*, divided by sales of year *t*. We find that our long portfolio exhibits significantly higher one and two year growth in Sales. In a one year window, the long portfolio exhibits a 12.25% growth in Sales while the short portfolio exhibits a -2.72% growth, and the difference is statistically significant at the 1% level. In a two year window, the long portfolio exhibits a 379% growth in Sales while the short portfolio exhibits an 232% growth, and the difference is statistically significant at the 1% level. Overall, we conclude that higher future stock returns presented in Tables 3-6 is coupled with a follow through growth in accounting performance.

5. Conclusion

In recent years, firm managers have experienced a growing pressure to allocate greater firm resources to ESG activities. Because the value implications of ESG investments are often long deferred and highly uncertain, these leaders are faced with difficult decisions regarding how much to allocate to ESG activities and which ones to undertake. This suggests that the board of directors is likely to play an important role in guiding and monitoring ESG activities in ways that are value increasing either for shareholders or other stakeholders.

We use a machine learning methodology to create a measure of board trust and use a calendar-time portfolio regression approach to test how managerial perceptions of directors influence the value consequences of ESG activities. We find that firms with high *ESG Score* and *Board Trust* subsequently obtain significantly positive alpha and outperform those with low *ESG Score* and *Board Trust*. These findings are consistent with our hypothesis that the combination of high shared values, as reflected by high ESG ratings, and a high-trust corporate culture, are associated with greater value creation in the firm.

This effect is mainly driven by firms with shorter CEO tenure, which is consistent with the prediction that perception of trustworthiness is more important for relatively new relationships between CEO and directors. Our result holds when the CEO is excluded from the board, which suggests that our results are not driven purely by perceptions of the CEO's trustworthiness per se. We also find that our results are driven by firms with better governance, suggesting that robust governance is an important condition for managers trusting the board and choosing ESG projects that create shareholder value. We find that our results are driven by activities which are harder to quantify and more subjective in nature such as investment in social projects.

Our results are robust to using alternative factor models and portfolio formation methods, as well as accounting for a battery of firm-level covariates including CEO ability in Fama-Macbeth regressions. Finally, we find that firms with high *ESG Score* and *Board Trust* exhibit significantly better accounting performance than the firms with low *ESG Score* and *Board Trust*.

Our paper makes the following contributions to the literature. We provide new insight into the shareholder value implications of firm ESG activities. We contribute to the literature regarding the importance of leadership for producing shareholder value. In addition to the role of monitoring ESG investments on behalf of the shareholders, our results are consistent with board of directors playing another important role of providing leadership that firm agents trust; this engenders cooperation, increases productivity of firm agents, and induces the agents to share information and seek guidance from board members, which would likely promote shareholder value. Our findings contribute to the literature that examines the economic implications of facial trait impressions by documenting that firm agents' perception of the board of directors affects ESG activities and shareholder value. Finally, we suggest that the interaction of *ESG Score* with *Board Trust* as a novel measure of organizational social capital at the firm level.

References

Aggarwal, R, I. Erel, M. Ferreira, and Matos P. (2011). Does governance travel around the world? Evidence from institutional investors. Journal of Financial Economics 100(1): 154-181.

Amiraslani, H., Deller, C., Ittner, C. D., & Keusch, T. (2022). Board risk oversight and environmental and social responsibility. *Available at SSRN 3695535*.

Berg, F., Koelbel, J. F., & Rigobon, R. (2022). Aggregate confusion: the divergence of ESG ratings. Working Paper.

Blair, M. M., & Stout, L. A. (2001). Director accountability and the mediating role of the corporate board. *Wash. ULQ*, *79*, 403.

Blankespoor, E., Hendricks, B. E., & Miller, G. S. (2017). Perceptions and price: Evidence from CEO presentations at IPO roadshows. *Journal of Accounting Research*, *55*(2), 275-327.

Bowles, S., & Gintis, H. (2011). A cooperative species. In *A Cooperative Species*. Princeton University Press.

Carhart, M. M. (1997). On persistence in mutual fund performance. *Journal of Finance*, 52(1), 57-82.

Chatterji, A. K., Durand, R., Levine, D. I., & Touboul, S. (2016). Do ratings of firms converge? Implications for managers, investors and strategy researchers. *Strategic Management Journal*, *37*(8), 1597-1614.

Cheng, I. H., Hong, H., & Shue, K. (2014). Do managers do good with other people's money? (No. w19432). National Bureau of Economic Research.

Cho, C. H., Laine, M., Roberts, R. W., & Rodrigue, M. (2015). Organized hypocrisy, organizational façades, and sustainability reporting. *Accounting, Organizations and Society*, 40, 78-94.

Christensen, H. B., Hail, L., & Leuz, C. (2019). Adoption of CSR and sustainability reporting standards: Economic analysis and review (Vol. 623, pp. 1-121). Cambridge, MA, USA: National Bureau of Economic Research.

Christensen, D., Serafeim, G., & Sikochi, A. (2022). Why is corporate virtue in the eye of the beholder? The case of ESG ratings. Forthcoming at *The Accounting Review.*

Cochran, P. L., & Wood, R. A. (1984). Corporate social responsibility and financial performance. *Academy of Management Journal*, 27(1), 42-56.

Colquitt, J. A., Scott, B. A., & LePine, J. A. (2007). Trust, trustworthiness, and trust propensity: a meta-analytic test of their unique relationships with risk taking and job performance. *Journal of Applied Psychology*, *92*(4), 909.

Davis, J. H., Schoorman, F. D., & Donaldson, L. (1997). Davis, Schoorman, and Donaldson reply: The distinctiveness of agency theory and stewardship theory. *Academy of Management Review*, 22(3), 611.

Di Giuli, A., & Kostovetsky, L. (2014). Are red or blue companies more likely to go green? Politics and corporate social responsibility. *Journal of Financial Economics*, 111(1), 158-180.

Duarte, J., Siegel, S., & Young, L. (2012). Trust and credit: The role of appearance in peer-to-peer lending. *The Review of Financial Studies*, *25*(8), 2455-2484.

Edmans, A. (2011). Does the stock market fully value intangibles? Employee satisfaction and equity prices. *Journal of Financial Economics*, 101(3), 621-640.

Edwards, J. R., & Cable, D. M. (2009). The value of value congruence. *Journal of Applied Psychology*, *94*(3), 654.

Engell, A. D., Haxby, J. V., & Todorov, A. (2007). Implicit trustworthiness decisions: automatic coding of face properties in the human amygdala. *Journal of Cognitive Neuroscience*, 19(9), 1508-1519.

Fama, E. F., & French, K. R. (1993). Common risk factors in the returns on stocks and bonds. *Journal of Financial Economics*, 33, 3-56.

Fama, E. F., & French, K. R. (2016). Dissecting anomalies with a five-factor model. *Review of Financial Studies*, 29(1), 69-103.

Ferracuti, E., & Stubben, S. R. (2019). The role of financial reporting in resolving uncertainty about corporate investment opportunities. *Journal of Accounting and Economics*, *68*(2-3), 101248.

Fombrun, C.J. (1996). Reputation: Realizing value from the corporate image. Harvard Business School Press: Harvard.

Fombrun, C. J. (2005). A world of reputation research, analysis and thinking-building corporate reputation through CSR initiatives: evolving standards. *Corporate Reputation Review*, 8(1), 7-12.

Fombrun, C. J., and M. Shanley. (1990). What's in a name? Reputation building and corporate strategy. *Academy of Management Journal* 33 (2): 233-258.

Freeman, R. E., Harrison, J. S., & Wicks, A. C. (2007). Managing for stakeholders: Survival, reputation, and success. Yale University Press.

Friedman, M. (1970). The social responsibility of business is to increase profits. *New York Times Magazine*. September 13, 1970.

Fukuyama, F. (1995) Trust: The Social Virtues and the Creation of Prosperity. *New York: Free Press.*

Gillespie, N. A., & Mann, L. (2004). Transformational leadership and shared values: The building blocks of trust. *Journal of Managerial Psychology*.

Glaeser, E. L., Laibson, D. I. and Sacerdote, B. (2002) "An Economic Approach to Social Capital". *The Economic Journal* 112: 437−458.

Graham, J. R., Grennan, J., Harvey, C. R. & Rajgopal, S., (2022). Culture: Evidence from the field. Working Paper.

Guiso, L., Sapienza, P., & Zingales, L. (2006). Does culture affect economic outcomes?. *Journal of Economic Perspectives*, 20(2), 23-48.

Guiso, L., Sapienza, P., & Zingales, L. (2011). Civic capital as the missing link. *Handbook of Social Economics*, *1*, 417-480.

Hanlon, M., Yeung, K., & Zuo, L. (2022). Behavioral economics of accounting: A review of archival research on individual decision makers. *Contemporary Accounting Research.*

Hernádi, I., Grabenhorst, F., & Schultz, W. (2015). Planning activity for internally generated reward goals in monkey amygdala neurons. *Nature Neuroscience*, 18(3), 461-469.

Hillman, A. J., & Keim, G. D. (2001). Shareholder value, stakeholder management, and social issues: What's the bottom line?. *Strategic Management Journa*l, 22(2), 125-139.

Hoepner, A. G., Oikonomou, I., Sautner, Z., Starks, L. T., & Zhou, X. (2022). ESG shareholder engagement and downside risk. Working Paper.

Hsieh, T. S., Kim, J. B., Wang, R. R., & Wang, Z. (2020). Seeing is believing? Executives' facial trustworthiness, auditor tenure, and audit fees. *Journal of Accounting and Economics*, *69*(1), 101260.

Iliev, P., & Roth, L. (2021). Do directors drive corporate sustainability?. *Available at SSRN 3575501*.

Ireland, R. D., Hitt, M. A., & Vaidyanath, D. (2002). Alliance management as a source of competitive advantage. *Journal of Management*, *28*(3), 413-446.

Jia, Y., L. Van Lent, and Y. Zeng. (2014). Masculinity, testosterone, and financial misreporting. *Journal of Accounting Research* 52(5): 1195-1246.

Jensen, M. C. (2002). Value maximization, stakeholder theory, and the corporate objective function. *Business Ethics Quarterly*, 12(2), 235–256.

Jensen, M. C., & Meckling, W. H. (1976). Theory of the firm: Managerial behavior, agency costs and ownership structure. *Journal of Financial Economics*, *3*(4), 305-360.

Kamiya, S., Y.H. Kim, and S. Park. (2019). The face of risk: CEO facial masculinity and firm risk. *European Financial Management* 25(2): 239-270.

Khan, M., Serafeim, G., & Yoon, A. (2016). Corporate sustainability: First evidence on materiality. *The Accounting Review*, 91(6), 1697-1724.

Leana III, C. R., & Van Buren, H. J. (1999). Organizational social capital and employment practices. *Academy of Management Review*, *24*(3), 538-555.

Lee, Allison. (2021, June). *Climate, ESG, and the board of directors: You cannot direct the wind, but you can adjust your sails.* SEC. https://www.sec.gov/news/speech/lee-climate-esg-board-of-directors.

Li, M., M. Triana, S-Y. Byun, and O. Chapa. (2020). Pay for beauty? A contingent perspective of CEO facial attractiveness on CEO compensation. *Human Resource Management*.

Lins, K. V., Servaes, H., & Tamayo, A. (2017). Social capital, trust, and firm performance: The value of corporate social responsibility during the financial crisis. *Journal of Finance*, 72(4), 1785-1824.

Lombroso, C. (2006). *Criminal man*. Duke University Press.

Matsumura, E. M., Prakash, R. and Vera-Munoz, S. C. (2014). "Firm-value effects of carbon emissions and carbon disclosures." *The Accounting Review*, 89(2), 695-724.

Maguire, S., & Phillips, N. (2008). 'Citibankers' at Citigroup: A study of the loss of institutional trust after a merger. *Journal of Management Studies*, *45*(2), 372-401.

McNeill, D. (2000). *The Face: A Natural History.* Back Bay Books.

Moskowitz, M. (1972). Choosing socially responsible stocks. *Business and Society*, 1: 71-75

Newey, W. K., & West, K. D. (1986). A simple, positive semi-definite, heteroskedasticity and autocorrelation consistent covariance matrix. *Econometrica* 55,703–708.

Oosterhof, N. N., & Todorov, A. (2008). The functional basis of face evaluation. *Proceedings of the National Academy of Sciences*, *105*(32), 11087-11092.

Peng, L., Teoh, S. H., Wang, Y., & Yan, J. (2022). Face value: Trait impressions, performance characteristics, and market outcomes for financial analysts. Forthcoming *Journal of Accounting Research*.

Porter, M., Serafeim, G., & Kramer, M. (2019). Where ESG fails. *Institutional Investor*, 16.

Porter, S., England, L., Juodis, M., Ten Brinke, L., & Wilson, K. (2008). Is the face a window to the soul? Investigation of the accuracy of intuitive judgments of the trustworthiness of human faces. *Canadian Journal of Behavioural Science*, *40*(3), 171.

Puranam, P., & Vanneste, B. S. (2009). Trust and governance: Untangling a tangled web. *Academy of Management Review*, *34*(1), 11-31.

PwC (2021). *The director's new playbook: Taking on change.* Annual Corporate Directors Survey. https://www.pwc.com/us/en/services/governance-insights-center/assets/pwc-2021-annual-corporate-directors-survey.pdf.

Rezlescu, C., Duchaine, B., Olivola, C. Y., & Chater, N. (2012). Unfakeable facial configurations affect strategic choices in trust games with or without information about past behavior. *PloS One*, *7*(3), e34293.

Rouen, E., Sachdeva, K., & Yoon, A. (2022). Anatomy and Evolution of ESG Reports. Working paper.

Sandvik, J. J., Saouma, R. E., Seegert, N. T., & Stanton, C. T. (2020). Workplace knowledge flows. *The Quarterly Journal of Economics*, *135*(3), 1635-1680.

Serafeim, G. & Yoon, A. (2022). Stock price reactions to ESG news: The role of ESG ratings and disagreement. Forthcoming at *Review of Accounting Studies.*

Schlicht, E. J., Shimojo, S., Camerer, C. F., Battaglia, P., & Nakayama, K. (2010). Human wagering behavior depends on opponents' faces. *PloS One*, *5*(7), e11663.

Schoorman, F. D., Mayer, R. C., & Davis, J. H. (2007). An integrative model of organizational trust: Past, present, and future. *Academy of Management Review*, *32*(2), 344-354.

Sonpar, K., Handelman, J. M., & Dastmalchian, A. (2009). Implementing new institutional logics in pioneering organizations: The burden of justifying ethical appropriateness and trustworthiness. *Journal of Business Ethics*, *90*(3), 345-359.

Stein, J. C. (1989). Efficient capital markets, inefficient firms: A model of myopic corporate behavior. *The Quarterly Journal of Economics*, *104*(4), 655-669.

Tingley, D. (2014). Face-off: Facial features and strategic choice. *Political Psychology*, *35*(1), 35-55.

Todorov, A., & Engell, A. D. (2008). The role of the amygdala in implicit evaluation of emotionally neutral faces. *Social Cognitive and Affective Neuroscience*, 3(4), 303-312.

Turban, D. B., & Greening, D. W. (1997). Corporate social performance and organizational attractiveness to prospective employees. *Academy of Management Journal*, *40*(3), 658-672.

Vernon, R.J., C.A. Sutherland, A.W. Young, and T. Hartley. (2014). Modeling first impressions from highly variable facial images. *Proceedings of the National Academy of Sciences* 111(32): E3353-E3361.

Waddock, S. A., & Graves, S. B. (1997). The corporate social performance-financial performance link. *Strategic Management Journal*, 18(4), 303-319.

Welch, K., & Yoon, A. (2022). Do high ability managers choose ESG projects that create shareholder value? Evidence from employee opinions. Forthcoming at *Review of Accounting Studies.*

Xu, Q., Fernando, G. D., & Tam, K. (2019). Trust and firm performance: A bi-directional study. *Advances in Accounting*, 47, 100433.

Zak, P. J. (2017). The neuroscience of trust. *Harvard Business Review*, *95*(1), 84-90.

Table 1. Sample Description

This table describes the sample. Panel A presents the number of observations by year. Panel B presents the number of observations by sector.

Panel A. By Year

Year	# of Firm
2010	122
2011	173
2012	335
2013	364
2014	417
2015	482
2016	554
2017	641
2018	712
Total	3,800

Panel B. By Sector

GICS Industry	# of Firm
Energy	285
Materials	295
Industrials	687
Consumer Discretionary	478
Consumer Staples	238
Health Care	352
Financials	569
Information Technology	326
Communication Services	93
Utilities	348
Real Estate	129
Total	3,800

Table 2. Descriptive Statistics

This table presents descriptive statistics. *Board Trust* is the average facial trustworthiness of the board of directors. *ESG Score* is the ESG rating from MSCI. *Env Score*, *Soc Score*, and *Gov Score* are environmental, social, and governance scores from MSCI. *Size* is the log of market capitalization. *MTB* is market value at the end of the calendar year divided by book value of equity. *ROE* is defined as net income divided by average shareholder equity. *SG&A/Sales* is selling, general, and administrative expense divided by sales. *Adv Exp/Sales* is advertising expense divided by sales. *R&D/Sales* is R&D expense divided by sales. *CAPEX/PPE* is capital expenditure divided by property, plant, and equipment.

Panel A. Summary Statistics

Variable	N	Mean	S.D.	25%	Median	75%
Board Trust	3800	0.06	0.25	-0.09	0.06	0.21
ESG Score	3800	4.50	2.11	2.90	4.40	5.90
Env Score	3800	4.94	2.26	3.30	4.80	6.40
Soc Score	3800	4.28	1.69	3.20	4.20	5.30
Gov Score	3800	5.63	2.00	4.30	5.40	6.70
MTB	3800	3.40	6.38	1.27	2.15	3.66
Size	3800	15.80	1.52	14.68	15.80	16.81
ROE	3800	0.11	4.64	0.07	0.12	0.20
SG&A/Sales	3800	0.17	0.17	0.03	0.14	0.26
Adv Exp/Sales	3800	0.01	0.03	0.00	0.00	0.01
R&D/Sales	3800	0.02	0.06	0.00	0.00	0.02
CAPEX/PPE	3800	0.08	0.06	0.05	0.07	0.10

Panel B. Correlation Table

This table presents the correlation table. *Board Trust* is the average facial trustworthiness of the board of directors. *ESG Score* is the ESG rating from MSCI. *Env Score*, *Soc Score*, and *Gov Score* are environmental, social, and governance scores from MSCI. *Size* is the log of market capitalization. *MTB* is market value at the end of the calendar year divided by book value of equity. *ROE* is defined as net income divided by average shareholder equity. *SG&A/Sales* is selling, general, and administrative expense divided by sales. *Adv Exp/Sales* is advertising expense divided by sales. *R&D/Sales* is R&D expense divided by sales. *CAPEX/PPE* is capital expenditure divided by property, plant, and equipment. The bold font indicates when the *p*-value is less than 5%.

		1	2	3	4	5	6	7	8	9	10	11	12
1	*Board Trust*	1.00											
2	*ESG Score*	**0.07**	1.00										
3	*Env Score*	**0.06**	**0.40**	1.00									
4	*Soc Score*	**0.06**	**0.54**	**0.08**	1.00								
5	*Gov Score*	0.02	**0.22**	**-0.12**	-0.01	1.00							
6	*MTB*	0.02	**0.12**	**0.11**	0.03	-0.02	1.00						
7	*Size*	0.00	**0.20**	**0.30**	**0.04**	**-0.06**	**0.15**	1.00					
8	*ROE*	-0.02	0.00	-0.01	-0.02	0.01	0.02	-0.01	1.00				
9	*SG&A/Sales*	**0.03**	**0.09**	**0.04**	-0.01	**-0.08**	**0.14**	-0.01	-0.01	1.00			
10	*Adv Exp/Sales*	0.01	**0.07**	**0.06**	0.00	**-0.05**	**0.17**	**0.13**	-0.02	**0.42**	1.00		
11	*R&D/Sales*	0.03	**0.07**	**0.08**	**0.04**	**-0.09**	**0.12**	**0.09**	-0.01	**0.61**	**0.11**	1.00	
12	*CAPEX/PPE*	0.00	**0.07**	**0.13**	**0.06**	-0.02	**0.09**	0.02	0.00	**0.12**	**0.13**	**0.15**	1.00

Table 3. Calendar-Time Portfolios Using Rating on Director Trustworthiness and MSCI Score

This table reports alphas, factor loadings, and *t*-statistics from monthly calendar-time Fama-French regressions for equal-weighted and value-weighted portfolios. Classifications are based on *ESG Score* and *Board Trust*. *Board Trust* is the average facial trustworthiness of the board of directors. *ESG Score* is the ESG rating from MSCI. The intersections of quartile portfolios are formed to estimate the regressions. Firms scoring at the bottom and top quartiles of the signal are included as the short and long portfolios, respectively. The regressions are estimated from January 2011 to December 2019. *Market* is the market excess return; *SMB* and *HML* are the Fama and French (1993) size and book-to-market factors; *RMW* and *CMA* are profitability and investment factors from Fama and French (2016). The *t*-statistics are calculated using Newey-West standard errors. ***, **, and * on difference in alphas indicate two-tailed *p*-value less than 1%, 5%, and 10%, respectively.

Panel A. Equal-Weighted Approach

	(1)		(2)		(3)		(4)		(5)	
	Low *ESG Score* & Low *Board Trust*		Low *ESG Score* & High *Board Trust*		High *ESG Score* & Low *Board Trust*		High *ESG Score* & High *Board Trust*			
	Short Portfolio						Long Portfolio		Long/Short	
Parameter	Estimate	*t*	Estimate	*t*	Estimate	*t*	Estimate	*t*	Estimate	*t*
Intercept	-0.0040	-1.70	0.0022	1.21	0.0008	0.49	0.0024	1.86	0.0065	2.89
Market	1.1524	15.89	0.8394	14.61	0.9325	21.69	0.9540	21.18		
SMB	0.1043	4.70	0.0720	4.09	0.0306	2.11	0.0699	5.24		
HML	0.0694	2.88	0.0314	1.71	0.0316	2.09	0.0313	2.24		
RMW	0.0868	2.40	0.0039	0.11	-0.0196	-0.77	-0.0014	-0.07		
CMA	0.0670	1.78	0.0317	1.13	0.0656	2.54	0.0828	3.52		
N	108		108		108		108		108	
Annualized Alpha	-4.75%		2.66%		0.93%		2.97%		8.07%	

Panel B. Value-Weighted Approach

	(1)		(2)		(3)		(4)		(5)	
	Low *ESG Score* & Low *Board Trust*		Low *ESG Score* & High *Board Trust*		High *ESG Score* & Low *Board Trust*		High *ESG Score* & High *Board Trust*			
	Short Portfolio						Long Portfolio		Long/Short	
Parameter	Estimate	*t*	Estimate	*t*	Estimate	*t*	Estimate	*t*	Estimate	*t*
Intercept	-0.0039	-1.73	0.0020	1.14	0.0008	0.51	0.0025	2.04	0.0065	2.96
Market	1.1393	16.71	0.8356	14.78	0.9268	22.30	0.9437	21.98		
SMB	0.0987	4.67	0.0659	3.89	0.0244	1.74	0.0601	4.64		
HML	0.0665	2.83	0.0302	1.67	0.0258	1.77	0.0252	1.99		
RMW	0.0800	2.28	0.0030	0.09	-0.0136	-0.55	-0.0040	-0.21		
CMA	0.0657	1.81	0.0279	1.01	0.0636	2.53	0.0774	3.57		
N	108		108		108		108		108	
Annualized Alpha	-4.63%		2.44%		0.94%		3.08%		8.06%	

Table 4. Cross-sectional Tests

Panel A. By Tenure

This table reports alphas, factor loadings, and *t*-statistics from monthly calendar-time Fama-French regressions for equal-weighted and value-weighted portfolios. Classifications are based on *ESG Score* and *Board Trust*. *Board Trust* is the average facial trustworthiness of the board of directors. *ESG Score* is the ESG rating from MSCI. The intersections of quartile portfolios are formed to estimate the regressions. Firms scoring at the bottom and top quartiles of the signal are included as the short and long portfolios, respectively. The regressions are estimated from January 2011 to December 2019. The following factors are from Fama and French (2016), which are omitted for brevity: *Market* is the market excess return; *SMB* and *HML* are the Fama and French (1993) size and book-to-market factors; *RMW* and *CMA* are profitability and investment factors. *CEO Tenure* is the number of years that CEO served for the firm. The *t*-statistics are calculated using Newey-West standard errors. ***, **, and * on difference in alphas indicate two-tailed *p*-value less than 1%, 5%, and 10%, respectively.

	(1)	(2)			(3)	(4)		
	Equal-Weighted Annualized Alpha				**Value-Weighted Annualized Alpha**			
	Low *ESG Score* & Low *Board Trust*	High *ESG Score* & High *Board Trust*	Difference in Alpha		Low *ESG Score* & Low *Board Trust*	High *ESG Score* & High *Board Trust*	Difference in Alpha	
Using Median (4 Years)								
Short *CEO Tenure*	-21.71%	-3.81%	17.91%	***	-20.01%	-3.31%	16.70%	***
Long *CEO Tenure*	0.96%	-1.34%	-2.30%		0.69%	-0.91%	-1.60%	
Using p25 (2 Years)								
Short *CEO Tenure*	-35.31%	-1.03%	34.28%	***	-33.70%	6.03%	39.73%	***
Long *CEO Tenure*	-1.02%	-3.52%	-2.50%		-0.86%	-2.93%	-2.06%	

Panel B. By Director Type and Governance

This table reports alphas, factor loadings, and *t*-statistics from monthly calendar-time Fama-French regressions for equal-weighted and value-weighted portfolios. Classifications are based on *ESG Score* and *Board Trust*. *Board Trust* is the average facial trustworthiness of the board of directors. *ESG Score* is the ESG rating from MSCI. The intersections of quartile portfolios are formed to estimate the regressions. Firms scoring at the bottom and top quartiles of the signal are included as the short and long portfolios, respectively. The regressions are estimated from January 2011 to December 2019. The regressions are estimated from January 2011 to December 2019. The following factors are from Fama and French (2016), which are omitted for brevity: *Market* is the market excess return; *SMB* and *HML* are the Fama and French (1993) size and book-to-market factors; *RMW* and *CMA* are profitability and investment factors. *G-Index* is the governance index following Aggarwal et al. (2011). The *t*-statistics are calculated using Newey-West standard errors. ***, **, and * on difference in alphas indicate two-tailed *p*-value less than 1%, 5%, and 10%, respectively.

	(1)	(2)			(3)	(4)		
	Equal-Weighted Annualized Alpha				**Value-Weighted Annualized Alpha**			
	Low *ESG Score* & Low *Board Trust*	High *ESG Score* & High *Board Trust*	Difference in Alpha		Low *ESG Score* & Low *Board Trust*	High *ESG Score* & High *Board Trust*	Difference in Alpha	
By Director Type								
Excluding CEOs	-3.55%	2.47%	6.02%	**	-3.99%	2.64%	6.63%	**
Indep Directors Only	-1.99%	3.65%	5.64%	**	-2.23%	3.79%	6.02%	**
By Governance								
High *G-Index*	-2.84%	2.55%	5.39%		-3.05%	2.49%	5.54%	
Low *G-Index*	-7.49%	6.95%	14.43%	***	-6.33%	7.03%	13.35%	***

Panel C. By E and S

This table reports alphas, factor loadings, and *t*-statistics from monthly calendar-time Fama-French regressions for equal-weighted and value-weighted portfolios. Classifications are based on *ESG Score* and *Board Trust*. *Board Trust* is the average facial trustworthiness of the board of directors. *ESG Score* is the ESG rating from MSCI. The intersections of quartile portfolios are formed to estimate the regressions. Firms scoring at the bottom and top quartiles of the signal are included as the short and long portfolios, respectively. The regressions are estimated from January 2011 to December 2019. The regressions are estimated from January 2011 to December 2019. The following factors are from Fama and French (2016), which are omitted for brevity: *Market* is the market excess return; *SMB* and *HML* are the Fama and French (1993) size and book-to-market factors; *RMW* and *CMA* are profitability and investment factors. The *t*-statistics are calculated using Newey-West standard errors. ***, **, and * on difference in alphas indicate two-tailed *p*-value less than 1%, 5%, and 10%, respectively.

	(1)	(2)			(3)	(4)		
	Equal-Weighted Annualized Alpha				**Value-Weighted Annualized Alpha**			
	Low *ESG Score* & Low *Board Trust*	High *ESG Score* & High *Board Trust*	Difference in Alpha		Low *ESG Score* & Low *Board Trust*	High *ESG Score* & High *Board Trust*	Difference in Alpha	
Examining E and S Separately								
Environmental	-2.25%	1.82%	4.08%		-2.24%	1.97%	4.21%	
Social	-3.17%	4.46%	7.63%	***	-2.93%	4.38%	7.31%	***

Table 5. Robustness Test- Alternative Factor Models and Portfolio Cuts

This table reports alphas, factor loadings, and *t*-statistics from monthly calendar-time Fama-French regressions for equal-weighted and value-weighted portfolios. Classifications are based on *ESG Score* and *Board Trust*. *Board Trust* is the average facial trustworthiness of the board of directors. *ESG Score* is the ESG rating from MSCI. The intersections of quartile portfolios are formed to estimate the regressions. Firms scoring at the bottom and top quartiles of the signal are included as the short and long portfolios, respectively. The regressions are estimated from January 2011 to December 2019. The regressions are estimated from January 2011 to December 2019. The following factors are from Fama and French (2016), which are omitted for brevity: *Market* is the market excess return; *SMB* and *HML* are the Fama and French (1993) size and book-to-market factors; *RMW* and *CMA* are profitability and investment factors. The *t*-statistics are calculated using Newey-West standard errors. ***, **, and * on difference in alphas indicate two-tailed *p*-value less than 1%, 5%, and 10%, respectively.

	(1)	(2)			(3)	(4)		
	Equal-Weighted Annualized Alpha				**Value-Weighted Annualized Alpha**			
	Low *ESG Score* & Low *Board Trust*	High *ESG Score* & High *Board Trust*	Difference in Alpha		Low *ESG Score* & Low *Board Trust*	High *ESG Score* & High *Board Trust*	Difference in Alpha	
Alternative Factor Models Using Quartile Cut								
3-factor alpha (Fama-French 1993)	-3.58%	3.77%	7.35%	***	-3.52%	3.81%	7.32%	***
4-factor alpha (Carhart 1997)	-2.26%	4.47%	6.73%	***	-2.29%	4.45%	6.74%	***
Alternative Portfolio Cut								
Tercile	-1.90%	3.09%	4.98%	**	-1.86%	3.12%	4.98%	**
Quintile	-5.44%	3.84%	9.28%	***	-5.14%	3.88%	9.01%	***

Table 6. Robustness Test- Fama MacBeth Regression

Monthly Return is the monthly stock return for each firm measured as in the calendar-time portfolios for every month beginning in January to December of *t*+1. High *ESG Score* & High *Board Trust* (Low *ESG Score* & Low *Board Trust*) indicates firms scoring at the top (bottom) quartile of *ESG Score* and *Board Trust*. *Last Year's Return* is the stock return during the last 12 months. *PRC* is the price at the end of month t-2. *DVOL* is the dollar trading volume (in millions) in month *t*-2. Remaining controls are additional firm level controls. *Size* is the log of market capitalization. *MTB* is market value at the end of the calendar year divided by book value of equity. *ROE* is defined as net income divided by average shareholder equity. *SG&A/Sales* is selling, general, and administrative expense divided by sales. *Adv Exp/Sales* is advertising expense divided by sales. *R&D/Sales* is R&D expense divided by sales. *CAPEX/PPE* is capital expenditure divided by property, plant, and equipment. *High CEO Ability* indicates the firm-years that are at the top quartile of CEO ability, where CEO ability is the average employee view on senior managers for the firm from Glassdoor.com. The regressions are estimated from January 2011 to December 2019. The *t*-statistics are calculated using Newey-West standard errors. ***, **, and * on difference between long and short portfolio indicate one-tailed *p*-value less than 1%, 5%, and 10%, respectively.

	(1)		
	Dep Var: Monthly Return		
	Estimate		*t*
High ESG Score & High Board Trust	0.0039		2.52
Low ESG Score & Low Board Trust	0.0002		0.09
Last Year's Return	0.0002		0.08
PRC	0.0006		0.57
DVOL	-0.0011		-1.21
MTB	0.0000		-0.72
Size	0.0006		0.62
ROE	0.0020		4.69
SG&A/Sales	-0.0035		-3.34
Adv Exp/Sales	0.0170		1.06
R&D/Sales	0.0000		-0.12
CAPEX/PPE	0.0071		0.96
High CEO Ability	0.0032		4.11
Difference (long/short): *p*-value	0.0711	*	
N	428,601		

Table 7. Accounting Performance

Panel A. ROA Growth

ROA Growth of 1-Year (2-year) is defined as earnings of year *t*+1 (earnings of year *t*+2) minus earnings of year *t*, divided by total asset of year *t*. High *ESG Score* & High *Board Trust* (Low *ESG Score* & Low *Board Trust*) indicates firms scoring at the top (bottom) quartile of *ESG Score* and *Board Trus*t. *MTB* is market value at the end of the calendar year divided by book value of equity. *Size* is the log of market capitalization. *SG&A/Sales* is selling, general, and administrative expense divided by sales. *Adv Exp/Sales* is advertising expense divided by sales. *R&D/Sales* is R&D expense divided by sales. *CAPEX/PPE* is capital expenditure divided by property, plant, and equipment. *High CEO Ability* indicates the firm-years that are at the top quartile of CEO ability, where CEO ability is the average employee view on senior managers for the firm from Glassdoor.com. The regressions are estimated from January 2011 to December 2019. The *t*-statistics are calculated using standard errors that are robust to heteroskedasticity and clustered by firm. ***, **, and * on difference between long and short portfolio indicate one-tailed *p*-value less than 1%, 5%, and 10%, respectively.

	ROA Growth			
	t=0 to *t*=1		*t*=0 to *t*=2	
	Estimate	*t*	Estimate	*t*
High ESG Score & High Board Trust	0.0159	2.67	0.1083	5.02
Low ESG Score & Low Board Trust	0.0017	0.27	0.0495	3.14
MTB	0.0000	0.71	0.0000	-0.76
Size	-0.0144	-5.66	-0.0457	-5.51
SG&A/Sales	-0.0001	-0.77	0.0002	0.27
Adv Exp/Sales	0.0289	0.20	0.2895	1.16
R&D/Sales	0.0006	0.78	0.0027	1.13
CAPEX/PPE	0.0069	1.55	0.0094	2.04
High CEO Ability	0.0010	0.14	0.0364	1.49
Difference (long/short): *p*-value	0.0230 **		0.0006 ***	
Year Fixed Effects	Yes			
N	34,789		34,069	

Panel B. Sales Growth

Sales Growth of 1-Year (2-year) is defined as sales of year *t*+1 (sales of year *t*+2) minus sales of year *t*, divided by sales of year *t*. High *ESG Score* & High *Board Trust* (Low *ESG Score* & Low *Board Trust*) indicates firms scoring at the top (bottom) quartile of *ESG Score* and *Board Trus*t. *MTB* is market value at the end of the calendar year divided by book value of equity. *Size* is the log of market capitalization. *SG&A/Sales* is selling, general, and administrative expense divided by sales. *Adv Exp/Sales* is advertising expense divided by sales. *R&D/Sales* is R&D expense divided by sales. *CAPEX/PPE* is capital expenditure divided by property, plant, and equipment. *High CEO Ability* indicates the firm-years that are at the top quartile of CEO ability, where CEO ability is the average employee view on senior managers for the firm from Glassdoor.com. The *t*-statistics are calculated using standard errors that are robust to heteroskedasticity and clustered by firm. ***, **, and * on difference between long and short portfolio indicate one-tailed *p*-value less than 1%, 5%, and 10%, respectively.

	Sales Growth			
	t=0 to *t*=1		*t*=0 to *t*=2	
	Estimate	*t*	Estimate	*t*
High ESG Score & High Board Trust	0.1225	2.01	3.7947	6.97
Low ESG Score & Low Board Trust	-0.0272	-0.53	2.3164	5.27
MTB	0.0000	0.70	0.0000	0.12
Size	-0.2055	-8.14	-1.8946	-9.27
SG&A/Sales	0.0117	1.23	0.0679	1.02
Adv Exp/Sales	2.0471	1.33	17.5160	1.20
R&D/Sales	0.2185	7.21	1.5407	7.15
CAPEX/PPE	-0.0069	-1.48	-0.0618	-1.43
High CEO Ability	-0.0544	-0.70	-0.6179	-1.32
Difference (long/short): *p*-value	0.0067 ***		0.0016 ***	
Year Fixed Effects	Yes			
N	34,789		34,069	

APPENDIX

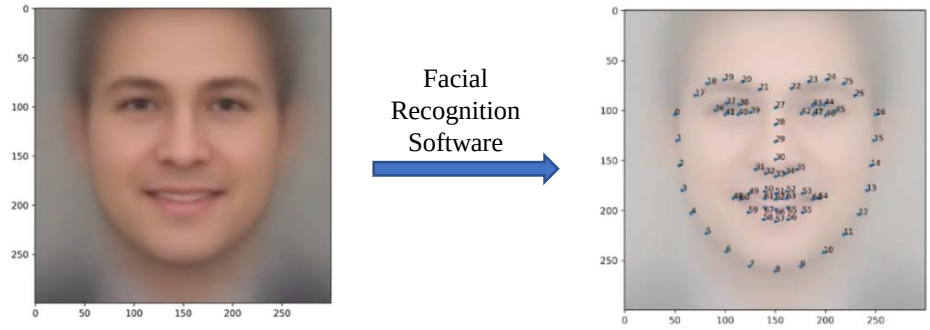
A1. Variable Definitions

Variable	Definition
Board Trust	Average facial trustworthiness of the board of directors for firm *i* in year *t* (see Appendix A2).
ESG Score	ESG score from MSCI ESG Ratings (formerly MSCI IVA Ratings) for firm *i* in year *t*.
Env Score	Environmental score from MSCI ESG Ratings (formerly MSCI IVA Ratings) for firm *i* in year *t*.
Soc Score	Social score from MSCI ESG Ratings (formerly MSCI IVA Ratings) for firm *i* in year *t*.
Gov Score	Governance score from MSCI ESG Ratings (formerly MSCI IVA Ratings) for firm *i* in year *t*.
Size	Natural logarithm of market capitalization for firm *i* in year *t*.
MTB	Market value at the end of the calendar year divided by book value of equity for firm *i* in year *t*.
ROA	Net income divided by average total assets for firm *i* in year *t*.
ROE	Net income divided by average shareholder equity for firm *i* in year *t*.
SG&A/Sales	Selling, general, and administrative expense divided by sales for firm *i* in year *t*.
Adv Exp/Sales	Advertising expense divided by sales for firm *i* in year *t*.
R&D/Sales	R&D expense divided by sales for firm *i* in year *t*.
CAPEX/PPE	Capital expenditure divided by property, plant, and equipment for firm *i* in year *t*.
G-Index	Governance index for firm *i* in year *t* following Aggarwal et al. (2011).
Last Year's Return	Stock return during the last 12 months.
PRC	Price at the end of month t-2 for firm *i* in year *t* following Edmans (2011).
DVOL	Dollar trading volume (in millions) in month *t*-2 for firm *i* in year *t* following Edmans (2011).
CEO Ability	Average employee view on senior managers from Glassdoor.com for firm *i* in year *t*.
CEO Tenure	Number of years that CEO served for firm *i* in year *t*.

A2. Face Factors Extraction Procedure

The procedures to extract trustworthy factor scores using directors' photos from proxy statements are as follows:

1. **Preprocessing**: We standardize the size of the photo to 200px × 200px, adjust the orientation, and locate the head area in the center.
2. **Fiducial Landmark Points**: We apply the automated facial point annotation tool (IBUG) to delineate 68 fiducial landmark points and obtain the corresponding 2-D coordinates for each photo.
3. **Physical Features**: Based on Table S1 of Vernon et al. (2014), we use the coordinates of the 68 fiducial landmark points to construct 65 physical features. See Online Appendix A3 for the mapping from landmark points to physical attributes.
4. **Face Factor**: We apply the neural network model of Vernon et al. (2014) and use the 65 physical features to obtain the raw face factor score of trustworthiness.



1. Preprocessing

2. Fiducial Landmark Points

65 Physical Features (e.g.)

Eyebrow area	Area enclosed by points 17:21, 22:26
Head width	Horizontal distance between centroid of 15:16 and centroid of 0:1
……	……

Neural Network Model

4. Face Factor

3. Physical Features

A3. DEF14A and BoardEx Matching Procedure

Procedure 1: Match by filename

Step 1: Extract Photos from DEF 14A complete submission file (Example retrieved from https://sec.report/Document/0001000229-19-000039/a2019proxy.htm)

INFORMATION ABOUT OUR SUPERVISORY DIRECTORS AND DIRECTOR COMPENSATION

Board of Supervisory Directors

Set forth below as of March 15, 2019 is the biographical information for our Supervisory Directors who will serve following the annual meeting and their respective committee assignments following the meeting, including individuals who have been nominated for reelection or election as Class II Supervisory Directors. You may vote for each of the nominees, for one or more of the nominees or for none of the nominees.

Nominees for Class II Supervisory Directors (Term To Expire 2022)

Martha Z. Carnes

Ÿ Supervisory Director since 2016
Ÿ Chairman of Audit Committee
Ÿ Age: 58

Ms. Carnes retired from PricewaterhouseCoopers LLP ("PwC") in June 2016, where she had a thirty-four year career with the firm. She was an Assurance Partner serving large, publicly traded companies in the energy industry. Ms. Carnes held a number of leadership positions with PwC including the Houston office Managing Partner. She also served as PwC's Energy and Mining leader for the United States where she led the firm's energy and mining assurance, tax and advisory practices. In these roles, she was responsible for leading the design and execution of the market and sector strategies, business development, compensation, professional development, succession planning, and client satisfaction. As an Assurance Partner, Ms. Carnes had vast experience with capital markets activities and was the lead audit partner on some of the largest merger and acquisition transactions completed in the energy sector. Ms. Carnes also served as one of PwC's Risk Management Partners and was PwC's United States representative on the firm's Global

Communities Board. She is a member of the American Institute of Certified Public Accountants and the Texas Society of Certified Public Accountants. Since September 1, 2017, she has served as a director of SunCoke Energy Partners GP LLC, the general partner of SunCoke Energy Partners LP. Since July 2017, Ms. Carnes has also served as a director of Matrix Service Company, a services company that provides engineering, fabrication, infrastructure, construction, and maintenance services primarily to the oil, gas, power, petrochemical, industrial, agricultural, mining and minerals markets, where she chairs the Audit Committee and is a member of the Compensation and Nominations and Governance Committees. Her financial expertise and experience in working with and auditing public companies in the energy industry, and her operational experience at PwC, a professional services firm, allow her to provide important insight to the Company.

Michael Straughen

Ÿ Supervisory Director since 2016
Ÿ Chairman of Compensation Committee and member of the Audit Committee
Ÿ Age: 69

Following an extensive career in oilfield services, Mr. Straughen retired from executive office at the end of 2014 and now has various non-executive positions. He currently serves on the boards of Glacier, an Aberdeen based offshore services company; the Glasgow based Denholm Oilfield Services Group; and ASCO, an Aberdeen based logistics

Step 2: the files are named by board members' last names, directly match image to BoardEx data by image filename.

Procedure 2: HTML Tag Matching

Step 1: Extract Photos from DEF 14A complete submission file (Example retrieved from https://www.sec.gov/Archives/edgar/data/1359841/000120677420000827/hbi3632041-def14a.htm)


hbi3632041-def14a4x2x1.jpg.jpg


hbi3632041-def14a4x2x2.jpg.jpg


hbi3632041-def14a4x3x1.jpg.jpg


hbi3632041-def14a4x3x2.jpg.jpg

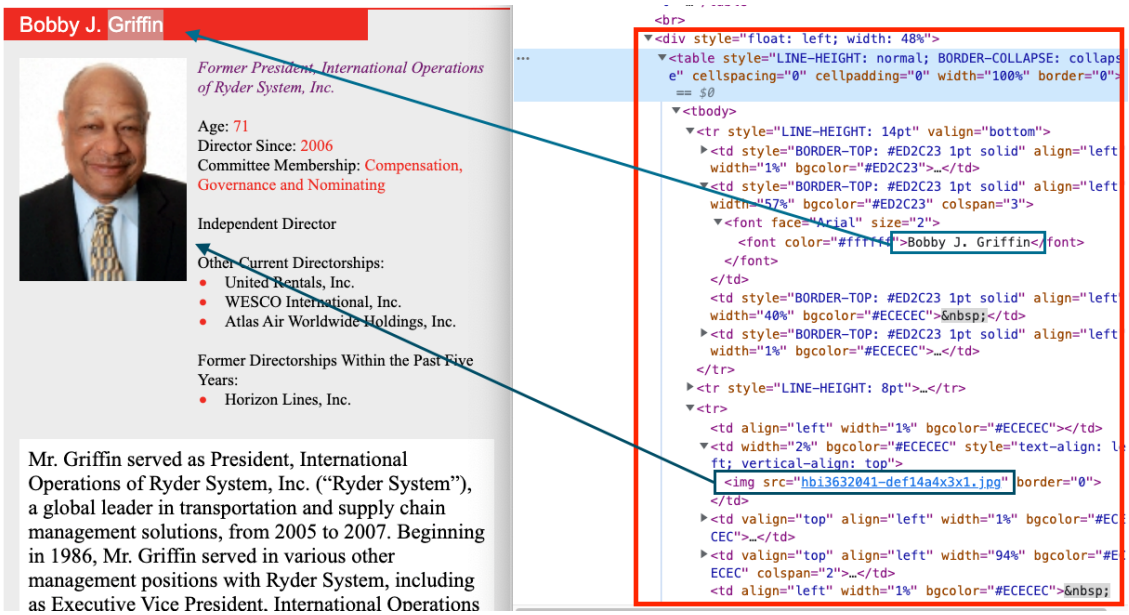

hbi3632041-def14a4x4x1.jpg.jpg


hbi3632041-def14a4x4x2.jpg.jpg


hbi3632041-def14a4x5x1.jpg.jpg


hbi3632041-def14a4x5x2.jpg.jpg

Step 2: Parse DEF 14A HTML filing using BeautifulSoup into XML tree structure and identify the photo location using <img src="filename.jpg"> tagging.



Step 3: Match board names extracted BoardEx with names the HTML filing by firm and year. Specifically, for each image extracted, perform the following searching procedures:

- Find the <img> node
- Search board names up to five parent nodes
  - 1st parent node: <td>
  - 2nd parent node: <tr>
  - 3rd parent node: <tbody> *[In the example above, stop here, found board name Boddy Griffin]*
  - 4th parent node: <table>
  - 5th parent node:
- Match BoardEx data to the image file if *only one* board member can be matched.

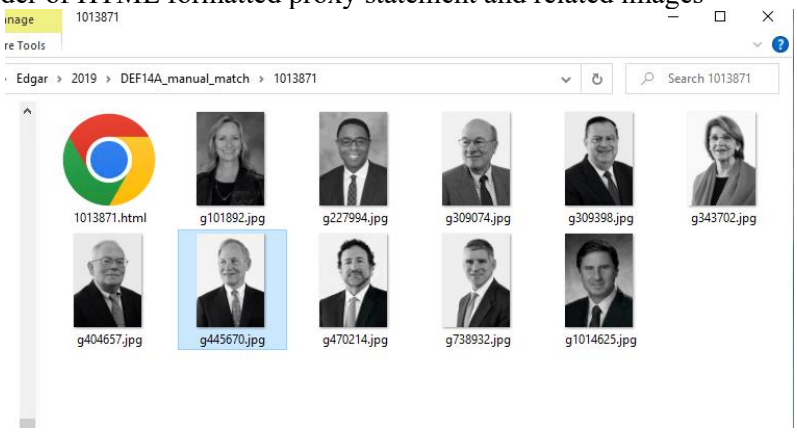
Procedure 3: Manual matching

For those cannot matched by algorithm, we perform manual match. For each firm, we provide freelancers from Upwork one Excel file and one data file containing proxy statements of each firm. The structure of Excel file and data file is as follows:

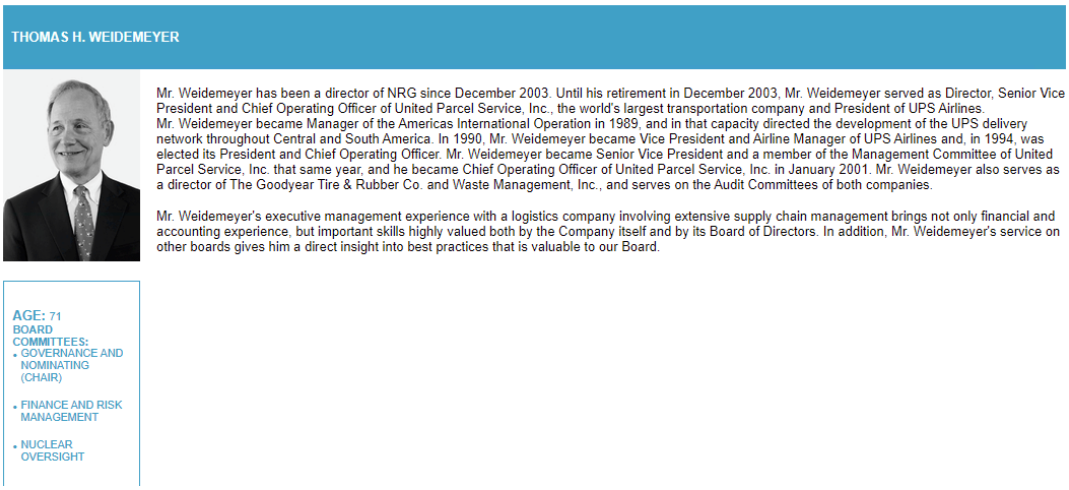
- <Year><CIK><BoardID><Name><Filename to be matched>
- <2019><1013871><33374><Charles wilder>< g445670.jpg >

	A	B	C	D	E
	Year	CIK	BoardID	Name	FileName
	2019	1013871	33374	tom weidemeyer	
	2019	1013871	39726	charles wilder	
	2019	1013871	51701	terry dallas	
	2019	1013871	141721	paul hobby	
	2019	1013871	160043	kirbyjon caldwell	
	2019	1013871	204664	bill hantke	

- Data folder of HTML formatted proxy statement and related images



The freelancer opens the HTML file, the images are automatically loaded within text. They are asked to read the surrounding text and match with BoardEx data. For example, the file "g445670.jpg" should be Thomas Weidemeyer, and "g445670.jpg" is filled to the missing cell in Excel.



THOMAS H. WEIDEMEYER

Mr. Weidemeyer has been a director of NRG since December 2003. Until his retirement in December 2003, Mr. Weidemeyer served as Director, Senior Vice President and Chief Operating Officer of United Parcel Service, Inc., the world's largest transportation company and President of UPS Airlines. Mr. Weidemeyer became Manager of the Americas International Operation in 1989, and in that capacity directed the development of the UPS delivery network throughout Central and South America. In 1990, Mr. Weidemeyer became Vice President and Airline Manager of UPS Airlines and, in 1994, was elected its President and Chief Operating Officer. Mr. Weidemeyer became Senior Vice President and a member of the Management Committee of United Parcel Service, Inc. that same year, and he became Chief Operating Officer of United Parcel Service, Inc. in January 2001. Mr. Weidemeyer also serves as a director of The Goodyear Tire & Rubber Co. and Waste Management, Inc., and serves on the Audit Committees of both companies.

Mr. Weidemeyer's executive management experience with a logistics company involving extensive supply chain management brings not only financial and accounting experience, but important skills highly valued both by the Company itself and by its Board of Directors. In addition, Mr. Weidemeyer's service on other boards gives him a direct insight into best practices that is valuable to our Board.

AGE: 71
BOARD COMMITTEES:
- GOVERNANCE AND NOMINATING (CHAIR)
- FINANCE AND RISK MANAGEMENT
- NUCLEAR OVERSIGHT