A HOLISTIC EXAMINATION OF THE RELATIONSHIP BETWEEN ESG RATINGS AND CORPORATE FINANCIAL PERFORMANCE

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ABSTRACT

This paper examines the effect of Environmental, Social, and Governance (ESG) ratings and several of their component parts core accounting performance metrics, proxied by metrics in the DuPont decomposition. Further, I examine the idea of two-way causality, examining if strong accounting performance gives rise to improvement in ESG performance. Using a sample of 377 S&P 500 firms between January 2010 and September 2019, I find that environment components have a positive relationship with accounting performance, whereas the evidence for social and governance components is relatively more mixed. I also test whether strong accounting performance gives rise to improvement in ESG performance. My findings indicate that strong financial performance gives rise to marginal reductions in ESG performance. However, the evidence of reverse causality is relatively weak, suggesting the principal relationship involves ESG performance's impact on corporate financial performance rather than the other way around.

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Dedicated to my grandfathers,

Leander Burr McPheeters Jr. and Cecil Rush McInnis Jr.

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1. Introduction

Sustainable investing is rapidly gaining momentum across the globe. As of 2021, Environmental, Social, and Governance (ESG)-related assets account for one in three dollars managed globally, and the U.S. is now leading the push after Europe has historically been at the forefront (Kishan, 2021). By the end of September 2021, total inflows into sustainably-related funds had already topped $51.1 billion, toppling the annual record set in 2020 (Norman and Toms, 2022). Additionally, global media coverage of ESG investment witnessed a yearly increase of over 70% in 2020 (Cognito, 2021). Amidst this rapid growth in investor and media attention, the emphasis on corporate sustainability is becoming increasingly mainstream. As a byproduct of this trend, investors have increasingly relied on data that measure how firms perform against notions of best practices in environmental, social, and governance fields, with more than 140 data agencies attempting to codify firm- and fund-level ESG performance (the Impact Investor, 2020).

As corporate ESG practices are increasingly scrutinized by both investors and the general public, firms are increasingly investing in sustainable initiatives to bolster external perceptions and internal firm value. However, empirical evidence examining the relationship between frim ESG initiatives and enhanced firm value has largely proven indeterminate. Some of the extant literature has asserted a positive relationship between ESG performance and corporate financial performance (Friede, Busch, and Bassen, 2015). Other studies have maintained that ESG laggards notably underperform their peers (Glossner, 2021). However, this is not unilaterally accepted—other papers suggest timing and causation issues in linking ESG performance to improved financial standing (Halbritter and Dorfleitner, 2015; Damodaran and Cornell, 2020). Furthermore, some findings

indicate that ESG performance is excessively priced into firm valuations, suggesting that leaders in ESG performance already trade at a relative premium (Lee et al., 2009).

In tandem, these papers do not provide definitive results. However, this literature is primarily focused on ESG's overall impact on share price returns. This paper contributes to the current literature by providing a detailed analysis of how specific components of ESG relate to the financial performance of firms from primarily an accounting perspective. I use quarterly ESG data from the Sustainalytics database, as well as quarterly financial data obtained from Compustat on the Wharton Research Database Services (WRDS) platform. The data spans from 2010 to 2019, totaling 39 quarters of ESG and financial data from 377 unique U.S. firms within the S&P 500.

I begin by regressing excess quarterly returns on lagged total ESG scores and environmental, social, and governance scores. While aggregate ESG, environment, and social scores yield insignificant results, I find a positive and statistically significant relationship between the governance score and excess quarterly returns.

Further, I regress core accounting metrics from the traditional DuPont decomposition (i.e., return on equity, net profit margin, asset turnover, and the equity multiplier) on lagged aggregate ESG scores and disaggregated environment (E), social (S), and governance (G) component scores. Overall, I find that firm E scores have a positive and statistically significant relationship with all DuPont metrics, whereas the evidence for S and G scores is more mixed.

I then exploit the dataset to determine what specific environmental, social, and governance activities are associated with a firm's returns and accounting performance. I regress excess returns and DuPont decomposition ratios on a variety of disaggregated

metrics within each specific E, S, and G component scores. I find a positive and statistically significant relationship between the business ethics component of corporate governance and excess returns, but no other components are statistically significant from zero. Regarding the DuPont decomposition regressions, I several statistically significant findings of E, S, and G components affecting accounting performance, described in detail in section 4.3.

Lastly, I address the relatively under-analyzed notion of two-way causality between accounting performance and ESG. In much of the extant literature, there exists an apparent causation problem: researchers commonly examine the effect of ESG performance on financial performance, but few investigate the notion that superior financial performance gives rise to improved ESG performance. Thus, I regress changes in aggregate ESG score, along with changes in environment, social, and governance scores, on lagged financial metrics within the DuPont decomposition. I find a few significant results that indicate the presence of two-way causality. Still, these findings generally suggest that ESG influences accounting performance more than accounting performance's influence on ESG.

While many studies have focused on the association between ESG scores and returns, this paper contributes to the current literature by examining ESG and its respective components' impact on core accounting metrics. [1] Further, I disaggregate environment, social, and governance scores into the specific components that feed into these scores to determine what particular aspects of ESG drive the variation in share price and accounting performance. Additionally, the paper addresses the two-way causality problem that the

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[1] Alareeni and Hamdan (2020) examine ESG scores' relationship with accounting metrics including ROA, ROE, and Tobin's Q, but they do not break down ROE via the DuPont decomposition, as I do in this paper.

extant literature has largely ignored, namely that firms with strong accounting performance may have more capital to deploy into improving ESG performance.

This paper proceeds as follows. Section 2 examines the history of ESG investing and measurement and evaluates the relevant literature motivating this study. Section 3 outlines the data and empirical design. Section 4 presents the results of the empirical models and discussion. Section 5 concludes the paper and suggests directions for future research.

2. Motivating Literature and Hypotheses

Environmental, social, and governance (ESG) criteria measure how firms impact the natural world, manage relationships with existing stakeholders and society at large, and drive positive change at the board and executive levels. Recently, an academic and scholarly focus on ESG has gained significant traction. The interest in ESG from scholars in economics, accounting, and finance has increased just as ESG investing has blown up in practice. Global sustainability-related assets under management have ballooned from just over $10 trillion in 2014 to roughly $35 trillion by the end of 2021, and that metric is expected to grow to beyond $50 trillion by 2025 based on Bloomberg estimates (Kishan, 2022). Large-scale asset managers and banks have completely altered their investment approaches. Blackrock, which maintained $9.46 trillion assets under management as of 2021, has pledged net-zero carbon emissions by 2050 (Sorkin et al., 2022). Further, CEO Larry Fink has furthered the ideals of stakeholder capitalism, calling ESG a "defining factor" in all Blackrock investment assessments. (Sorkin et al., 2022). For companies that fail key ESG screens, Blackrock has threatened to sell its respective stake. In addition, Goldman Sachs has pledged $750 billion through 2030 to accelerate climate transition and inclusive growth (Goldman Sachs, 2022). These examples provide a general idea of how the investment landscape is rapidly changing in favor of ESG-related initiatives.

Below, I review the core historical underpinnings and evolution of ESG investing and address academic findings, using such information to make predictions in the specific context of my analysis.

2.1. History of Socially Responsible Investing and the Emergence of ESG

Over recent years, Environmental, Social, and Governance (ESG) factors have become increasingly popular in how institutional and retail investors align their values with their investment practices. However, though far less formalized, the tradition of socially responsible investing dates back several centuries. Religious concepts and rules set an early standard for what followers perceived as an ethical and socially responsible investment. As early as 1500 BCE, early biblical records refer to the Jewish legal concept of Tzedek (or "justice and equity"), which provided guidelines to correct inequality as a byproduct of human transactional behavior (CNote, 2019) In the context of Tzedek rules, investment implied a degree of property ownership, and such property owners had an obligation to prevent immediate or potential harm to those around them. (CNote, 2019) Centuries later, in the early seventh century, the Qur'an provided more explicit specifications as to what kinds of investments were forbidden for adherents of Islam, including alcohol, pork products, armaments, and certain precious metals (Tohmé, 2019). The Qur'an thus signifies one of the first codifications where its followers' investment practices had to resemble their lifestyle and consumption conventions (Tohmé, 2019). Fast forward to the eighteenth century, and one can see the Methodist movement enforcing socially responsible investment. Methodist founder John Wesley provided a sermon entitled "The Use of Money," in which he implored his followers to refrain from investing or partaking in business practices that may cause undue harm to other persons, focusing specifically on companies involved in tobacco, alcohol, or firearm distribution (The Wesley Center Online, 1999). In the United States specifically, the Quakers refrained from investing in business practices connected to slavery or war (Heaps, 2021).

In the more refined context of developed capital markets, socially responsible investing took hold in the early twentieth century. For example, in the 1940s, Boston-based Pioneer Fund, the second oldest mutual fund in the United States, became the first fund to focus on negative screening to avoid all tobacco, alcohol, and gambling stocks. (Pioneer Fund, 2022) Even with some seeds planted for socially responsible investing, two distinct nodes of capital investment still existed: fiduciary and philanthropic (Trelstad, 2016). Fiduciary capital providers sought maximum financial gain as their overarching goal, reinforced by Milton Friedman's assertion that a firm's overarching social responsibility is to increase profits and deliver value to its shareholders (Friedman, 1970). In contrast, philanthropic capital providers sought maximum environmental or social gain, with little to no focus on potential financial benefits (Trelstad, 2016). However, in the 1960s and 1970s, developments such as the Civil Rights Movement, the publication of Rachel Carson's Silent Spring, and the Vietnam War began to create overlap between these two nodes. In the wake of these events, faith-based activists, university students, environmentalists, and unions began to pressure larger-scale institutional investors to refrain from investing in firms they perceived as unethical (Lumberg, 2022). For instance, university students across the United States pressured universities to refrain from putting endowment capital into defense contractors or weapons manufacturers (Lumberg, 2022). Socially responsible investment initiatives via negative screening continued through the end of the twentieth century, most notably gaining national scale through the federal government's passage of the Comprehensive Anti-Apartheid Act of 1986 (Morningstar, 2020). The act created sizable disinvestment of U.S. capital in South Africa as a form of protest against the nation's practice of apartheid (Gethard, 2019).

Events including the Bhopal gas tragedy, Chernobyl, and Exxon Valdez oil spill of the 1980s induced increased awareness of environmentally conscious investing. By the 1990s, the growth of socially responsible investing and related funds resulted in a gap in the marketplace where an unbiased third-party rater could provide quantifiable measures of corporations' environmental and social performance. This resulted in forming the Domini Social Index (now the MSCI KLD 400 Index) in 1990, which included 400 large- and mid-cap U.S. firms with a reputation of environmental and social responsibility. While many feared that broad-scale socially responsible investing would come with a tradeoff of decreased financial returns, early applications of social screening did not harm investment returns (Sauer, 1997).

The story of ESG investing took hold in 2004 when the UN Global Compact passed a series of publications to support an international increase in sustainable investing. By 2006, the UN had formed the Principles for Responsible Investment (PRI), which quickly gained a wide array of adherents. The six core principles for those that sign the UN Compact are listed as follows (PRI, 2006):

1. We will incorporate ESG issues into investment analysis and decision-making processes.

2. We will be active owners and incorporate ESG issues into our ownership policies and practices.

3. We will seek appropriate disclosure on ESG issues by the entities in which we invest.

4. We will promote acceptance and implementation of the Principles within the investment industry.

5. We will work together to enhance our effectiveness in implementing the Principles.

6. We will each report on our activities and progress towards implementing the Principles.

The emergence of the PRI was fundamental to ESG's development, especially from a data collection perspective. When firms and institutions alike signed the UN compact, a threshold degree of ESG disclosure became anticipated, and consequently rating agencies could then aggregate ESG-related data. Sustainalytics, MSCI, and Reprisk, the three largest and most established ESG data providers, began providing firm ESG ratings in the late 2000s to quantitatively evaluate ESG performance (Atkins, 2020). MSCI and RepRisk report ESG ratings on a scale of AAA to CCC, relatively similar to that of a traditional credit rating agency. Generally speaking, the investor landscape deems firms with scores between AAA and A "leaders," whereas firms with ratings between "BBB and CCC" are deemed relative "laggards" (Lev, 2022). On the other hand, Sustainalytics reports scores on a 1-100 scale, allowing for a more precise analysis of relative firm ESG performance. While the rating agencies' traction was relatively limited in the late 2000s, these firms have aggregated increasingly large sums of corporate sustainability data, serving an ESG data & analytics market with a market size of over $2.2 billion as of 2020 (Burton-Taylor, 2021). In today's market, there exist more than 140 total ESG rating agencies (The Impact Investor, 2020).

In 2011, the Sustainability Accounting Standards Board (SASB) emerged to develop sustainability accounting standards. Its primary goal is to provide a framework where investors can compare ESG performance and direct capital toward the most sustainable outcomes (Atkins, 2020). Further, in 2015, the Paris Climate Accords rapidly accelerated developed countries' emphasis on environmental initiatives, predominantly by limited global warming via substantial cuts in carbon dioxide emissions. As a byproduct

of signing the Paris Agreement, many developed countries have pledged carbon neutrality by 2050 (Guterres, 2020). These national initiatives have trickled down to the firm level, where companies face increasing pressure to generate and use energy in renewable and sustainable ways.

Regarding ESG investing, the U.S. has generally lagged behind Europe in emphasizing sustainable investing practices (LaForge, 2021). With that said, the European ESG markets are generally considered more mature, and growth in the U.S. has been exponential over the past decade. In 2010, there were 250 funds specifically citing the use of ESG criteria. In contrast, nearly 500 actively managed funds in the U.S. added ESG criteria to their prospectuses in 2019 alone (Breckenridge Capital Advisors, 2021). As of 2021, U.S. sustainable assets under management totaled $17.1 trillion, representing a 42% increase since 2018. Regarding longer-term growth, sustainably held assets under management have increased more than 25-fold since 1995, entailing a 14% compound annual growth rate since 1995 (SIF, 2020).

In conjunction with the rapid emergence of ESG from a political, social, and financial perspective, investors seek to utilize non-financial data to determine its potential impact on future share price and accounting performance. As a byproduct of this trend, a massive ESG research landscape has emerged, where academics and investors alike attempt to pinpoint the critical ESG performance indicators that drive firm value. In this study, I attempt to identify those components of an aggregate ESG score that play the most essential roles in influencing corporate financial performance from a returns and accounting perspective.

2.2. Linkage Between ESG Ratings and Financial Performance

Broadly speaking, the extant literature links overall ESG ratings and market performance (proxied by metrics such as share pricing, excess returns, and Tobin's Q). Earlier studies note that ESG scores and corporate financial performance are generally positively correlated and relatively stable over time (Friede, Busch, and Bassen, 2015), although more recent reviews of the literature suggest that the association between ESG and performance is not entirely conclusive. Atz et al. (2021) aggregate evidence from over 1,000 studies published between 2015 and 2020, finding that 58% of studies show a positive linkage between ESG and operational performance, 13% show a neutral impact, 21% show mixed results, and only 8% show a strictly negative relationship.

A number of studies offer positive, albeit often more nuanced, findings. For instance, corporate investments in environmental sustainability had no discernable effect on short-term financial performance but led to financial outperformance in the long term (Hang et al., 2019). Additionally, in specifically focusing on the 2008 financial crash and 2020 market downturn as a byproduct of the COVID-19 pandemic, strong ESG performers offer downside protection in recessionary periods due to management resiliency, superior risk management, and lower volatility in financial performance. (Chatterjee, 2018; Das et al., 2018; Morningstar, 2020). Ample literature implies that strong CSR and ESG performance reduces firm risk, lowers its cost of capital, and thus enhances its value. El Ghoul et al. (2011) helped initiate these findings, determining that firms with higher ratings of corporate social responsibility reduced the cost of equity financing. However, in the case of two notable "sin" industries, namely tobacco and nuclear energy, the cost of equity capital increased, suggesting a risk premium (El Ghoul et al., 2011). Using MSCI ESG

rating data, Giese et al. (2019) determine that strong ESG profiles affect firm valuation and performance through decreasing cost of capital (systemic risk), increasing profitability, and reducing tail risk (idiosyncratic risk). Based on a panel of 919 firms from 2010 to 2019, firms with greater ESG transparency and disclosure benefit from more favorable terms with third-party lenders, thus decreasing the cost of debt capital (Raimo et al., 2021). Glossner (2021) created a portfolio of firms with poor histories of violating ESG standards and reported negative excess returns of 3.5%, even after adjusting for the risk associated with industry characteristics. While Glossner's findings do not necessarily indicate that ESG leaders outperform their peers, they do suggest that ESG laggards stand to underperform their peers on financial performance.

In contrast, research also reports mixed or negative findings when connecting ESG ratings and corporate financial performance. For example, Halbritter and Dorfleitner (2015) find in an earlier study that the linkage between ESG ratings and financial performance is highly dependent on the specific time period analyzed. Further, Damodaran and Cornell (2020) determine that the evidence that markets incorporate social responsibility into pricing is weak. However, they find more substantial evidence that notable laggards are punished through negative stock price returns. Perhaps more notably, there is an apparent causation problem in much of the prevailing literature: it proves challenging to decipher whether successful firms adopt ESG practices heavily or if considerable investment in ESG leads to more successful firms (Damodaran and Cornell, 2020).

The relation between firm ESG ratings and market performance do not necessarily imply causal effects. That is, firms with superior financial performance in a base period

have excess resources to invest in corporate social responsibility initiatives in subsequent periods. Prior studies have introduced the idea of "slack resource availability," finding that corporate social performance is positively associated with prior financial performance (Waddock and Graves, 1997). In the context of ESG specifically, Hejri et al. (2021) find that firms with superior financial performance in one period are more likely to invest capital in ESG-related initiatives in subsequent periods. These results suggest that the ESG-financial performance dynamic is not necessarily causal but instead resembles more of a positive feedback loop. That is, superior corporate financial performance engenders increased investment in ESG-boosting strategies, in turn reinforcing first-rate financial performance relative to peers.

On the contrary however, an alternative explanation is that firm-level investment in ESG proves costly and ultimately proves detrimental to future financial performance. Humphrey et al. (2012) examine the performance of several firms in the United Kingdom, finding no relationship between improved ESG performance and excess returns. Zhang et al. (2021) examine ESG performance for Chinese firms, finding that improved ESG performance decreases firm's cost of capital, but harms future profitability. These studies align with the notion that investing in ESG has an indeterminate, perhaps adverse, effect on corporate financial performance. With that said, evidence addressing the reverse causality problem between ESG and financial performance for U.S.-listed firms is, to the best of my knowledge, nonexistent.

2.3. ESG Data Collection and Rating Agency Deviations

When looking at the findings from the existing literature above, two fundamental problems restrict interpretation and comparisons across studies: (1) inconsistencies in

ESG-pertinent data collection and (2) the use of ESG scores from a wide variety of rating agencies.

Rating agencies face considerable challenges in measuring aggregate ESG scores for companies because firm data reporting varies widely (Kotsantonis and Serafeim, 2019). In their research, Kotsantonis and Serefeim (2019) list more than 20 different ways companies report their employee health and safety data, highlighting that this variation can lead to significantly different rating results. Additionally, a given rating agency maintains its own proprietary approach to measure relative ESG performance. As a result, ESG ratings for the same firm often diverge based on the rating agency conducting the evaluation, and the number of rating agencies continues to proliferate as the ESG movement gains momentum. As a result, there is an evident lack of convergence in ESG measurement, and different agencies' ratings fail to coincide in terms of both distribution and relative risk (Dorfleitner et al., 2015). Berg et al. (2020) cross-examine six of the prominent ESG rating agencies, determining that agency ratings deviate from each other due to measurement (i.e., different raters measure the performance of the same firm in the same category differently) and scope (i.e., raters consider certain categories, whereas other raters do not). Regarding measurement divergence specifically, Berg et al. (2020) find a rater effect, which implies that when the judgment of a company is favorable for one particular indicator, it is also likely to be positive for another. This signifies that rating agencies' implicit perceptions of a given firm can compound inter-agency rating divergence. Christensen, Serafeim, and Sikochi (2022) determine that firms with greater ESG disclosure lead to more significant rating disagreement, with rating disagreement, in turn, suggesting higher return volatility, larger absolute price movements, and a lower

likelihood of issuing external financing. While studies have attempted to determine why ratings diverge, Gibson, Krueger, and Schmidt (2021) focus specifically on firms where the degree of rating disagreement is high and the associated impact disagreement has on stock returns. They determine that stock returns relate positively to higher rating disagreement, suggesting risk premiums for firms whose ESG ratings display greater variance across different rating agencies.

These findings imply a high degree of disparity and subjectivity based on the specific rating agency providing an ESG score, leading to substantially different empirical results. To illustrate, consider the global credit rating industry. The industry is highly concentrated, with Moody's, Standard & Poor's, and Fitch operating in a three-firm oligopoly. These rating agencies assign letter ratings to bonds and firms based on tangible and relatively objective accounting metrics, leading to rather limited rating disagreement between the three agencies. In contrast, ESG rating agencies are far more nascent and abundant, using considerably different measurement approaches to determine an aggregate ESG rating. Thus, it proves crucial for stakeholders in environmentally and socially responsible investing to critically evaluate the validity of a particular ESG-scoring model (Dorfleitner et al., 2015).

In this study, I rely on ESG data specifically from Sustainalytics, generally considered one of the most widely utilized and well-reputed rating agencies in the ESG space. Given the potential differences in the various rating agencies' methodologies in determining their respective ESG scores, I acknowledge that my empirical tests, results, and interpretations of my findings may not necessarily be generalizable when ESG data from other databases are utilized. Thus, a caveat that more fundamental underlying issues

associated with the subjectivity and variation in ESG ratings fall outside the scope of my analysis in this paper.

2.4. Predictions

Using Sustainalytics ratings for S&P 500-listed companies across a 10-year time span (2010-2019), I strive to present intertemporal empirical findings related to two core research questions posited below.

2.4.1. ESG Scores and Subsequent Accounting Performance

First, how does a firm's aggregate ESG score impact both operational accounting performance? As previously mentioned, the majority of studies find that ESG ratings have a positive influence on returns and share prices, but few examine how ESG scores are associated with future firm operational performance. I examine how ESG affects ROE and its component parts using a traditional DuPont ROE decomposition (Hargrave, 2022). ROE is a fundamental measure of how efficiently a firm generates profits, and the DuPont decomposition enables segmentation of ROE into that of profitability, asset efficiency, and financial leverage. On one hand, an organization's focus on ESG metrics could lead to improved future financial performance. Environment-related initiatives enable firms to bolster their reputation in their existing markets and expand into new markets (Berg et al., 2015). Additionally, strong social performance enhances customer perceptions of the firm and works to bolster employee productivity, helping firms' top and bottom lines (Chaudary, Zahid, Shahid, Khan, and Azar, 2016). Further, good governance practices reduce regulatory risk and result in firms deploying their assets more efficiently, in turn driving long-run value (Khan, 2019).

Conversely, ESG initiatives can be potentially costly and steer a company's focus away from its overall organizational strategy, which could in turn lead to poor subsequent financial performance. Given the two possible outcomes, I make no directional predictions between ESG scores and operational accounting performance.

Further, a McKinsey study (Henisz et al., 2019) list five primary ways in which a strong ESG proposition creates value: top-line growth, cost reductions, reduced regulatory and legal risk, employee productivity uplift, and asset optimization. To provide greater detail the mechanisms through which ESG scores influence accounting metrics, I break down the ESG scores into its three components, and within each component, explore the particular factors that are associated with stronger (or poorer) subsequent financial performance.

2.4.2. Accounting Performance and Subsequent ESG Scores

I also strive to answer the following question: do firms with stronger financial performance invest more in ESG initiatives, consequently boosting their ESG scores? This approach attempts to address the issues of endogeneity and reverse causality that may be present in much of the prevailing literature. I hypothesize that firms that perform well (either from a market perspective in terms of returns or from an accounting perspective in terms of ROE) show an improved ESG score in the subsequent year. There is scant literature present that differentiates ESG leaders from ESG improvers, but Khan, Serafeim, and Yoon (2016) highlight the importance of firm investment in their respective ESG issues to emphasize ESG momentum or improvement. Additionally, Clark (2020) conducted an analysis of U.S. all-cap equities from 2010 to 2020, determining that the top quintile of ESG' improvers outperformed the bottom quintile of ESG' decliners by 3.8% in annualized

terms. I postulate that firms with stronger accounting performance have the ability to improve ESG scores by wider margins.

3. Research Design

3.1. Data

My sample consists of 377 S&P 500 firms using quarterly data between January 2010 and September 2019, totaling 39 unique quarters. All of these firms were members of the S&P 500 for the duration of the time period observed.

ESG data was collected using Sustainalytics. A unique advantage of the Sustainalytics database is that, unlike many other ESG rating agencies and data providers in the prevailing market today, Sustainalytics is remarkably well-established and contains very few missing observations. As a result, there are virtually no non-zero total ESG score, environment score, social score, and governance score. In addition, Sustainalytics reports total ESG scores, environment scores, social scores, and governance scores on a 1-to-100 percentile range. A score of 50 indicates that the firm's score directly aligns with the median firm in its respective industry.

3.2. ESG Scores and Subsequent Performance

In order to determine whether ESG scores are related to future financial performance, I conduct the following regressions.

$$y_t = \beta_0 + \beta_1 ESG\_Score_{t-1} \tag{1a}$$

$$y_t = \beta_0 + \beta_1 E\_Score_{t-1} + \beta_2 S\_Score_{t-1} + \beta_3 G\_Score_{t-1} \tag{1b}$$

In the above regressions, the independent variables include the aggregate ESG scores in regressions 1(a) and the disaggregated E, S, and G scores in regressions 1(b). All independent variables are lagged one quarter. As previously discussed, ESG scores and their subcomponents are collected from Sustainalytics.

I use several dependent variables in regressions 1(a) and 1(b). The dependent, or y, variable in the first set of tests I conduct are excess quarterly returns. Values for excess quarterly returns were obtained using the Beta Suite application on the Wharton Research Database Services (WRDS) platform. The method used to calculate excess returns comes from the Fama-French 3-Factor Approach. This approach is an asset pricing model that expands upon the traditional capital asset pricing model (CAPM). In short, it adds proxies for size (market capitalization) and value (book-to-market) risk along with the traditional proxy of market risk to account for the idea that value and small-cap stocks tend to outperform the overall market. Excess quarterly returns are measured one quarter after the given ESG disclosure, since new ESG disclosure in the measured quarter is more likely to influence excess returns in the quarter that follows.

To test for the association between ESG scores and accounting performance, I use return on equity (ROE) and the standard ROE components (i.e., net profit margin (NPM), asset turnover (ATO), equity multiple (EQM)) from the DuPont decomposition (Hargrave, 2022).

Further, I also use as dependent variables in regressions represent a variety of accounting metrics, including percentage change in quarterly revenue, SG&A expenditure as a percentage of sales, R&D expenditure as a percentage of sales, percentage change in quarterly SG&A expenditure, and the percentage change in quarterly R&D expenditure. The inclusion of these variables is aimed at determining if ESG scores are associated with specific forward-looking firm actions.

3.3. Analysis of E, S, and G Subcomponent Scores

I build on the initial analyses by exploiting the data on the various sub-components of the E, S, and G scores from the Sustainalytics. In addition to the aggregate and specific E, S, and G scores, Sustainalytics also provides scores of the subcomponents that feed into each E, S, and G score, and these scores are also reported on a 100-point scale. While I am not privy to how each sub-component is measured, nor its weight in contributing to the total E, S, or G score, Sustainalytics provides some descriptors that I use to label each of the sub-components. For reference, see the Appendix for all relevant sub-components that I use in my analysis. These sub-components represent the core explanatory variables in the following regression and are described in more detail within the results section.

$$y_t = \beta_0 + \beta_{1,2,3}E\_Score\_Components_{\,t-1} + \beta_{4,5,6,7,8}S\_Score\_Components_{\,t-1}$$
$$+ \beta_{9,10,11}G\_Score\_Components_{\,t-1}$$

(2)

The dependent variables that I use in regression (2) include forward excess returns, ROE, NPM, ATO, and EQM.

3.4. Financial Performance and Subsequent ESG Scores

Finally, I address the notion of two-way causality between ESG and accounting performance using the following regressions.

$$y_t = \beta_0 + \beta_1 Excess\_Returns_{t-1} + \beta_2 ROE_{\,t-1} \tag{3a}$$

$$y_t = \beta_0 + \beta_1 Excess\_Returns_{\,t-1} + \beta_2 NPM_{t-1} + \beta_3 ATO_{\,t-1} + + \beta_4 EQM_{\,t-1} \tag{3b}$$

The dependent variables in these regressions are quarterly changes in the aggregate ESG score, as well as the individual E, S, and G scores. I used lagged values of the excess returns, as well as the ROE and the DuPont decomposition components (NPM, ATO, and EQM) as independent variables.

3.5. Descriptive Statistics

Table 1 presents the descriptive statistics of the data used in the financial tests.

TABLE 1
Summary Statistics

Panel A: Descriptive Statistics

Variable	N	Mean	Median	Std Dev	Min	Max
ESG	13,061	0.59	0.58	0.09	0.33	0.88
E_Score	13,061	0.56	0.55	0.13	0.23	0.98
S_Score	13,061	0.57	0.57	0.11	0.26	0.93
G_Score	13,061	0.65	0.65	0.09	0.36	0.95
exret	11,217	0.21	0.31	5.35	-37.91	53.71
ROE	10,945	0.21	0.14	0.73	-34.65	37.04
NPM	11,214	0.11	0.10	0.14	-5.26	1.14
ATO	11,209	0.79	0.61	0.73	0.04	5.91
EQM	10,943	1.94	1.10	13.71	-126.89	1,111.00
PctChgRev	10,640	0.07	0.05	0.33	-0.78	26.70
SGA	9,831	0.24	0.22	0.19	-0.04	7.45
RD	13,058	0.04	0.00	0.12	0.00	4.12
ChgESG	11,217	0.01	0.00	0.04	-0.30	0.23
ChgEnv	11,217	0.01	0.00	0.06	-0.50	0.38
ChgSoc	11,217	-0.07	-0.08	0.11	-0.50	0.28
ChgGov	11,217	0.00	0.00	0.04	-0.28	0.27

Panel B: Correlation Table

	ESG	E_Score	S_Score	G_Score	exret	ROE	NPM	ATO	EQM	PctChgRev	SGA	RD	ChgESG	ChgEnv	ChgSoc	ChgGov
ESG	1															
E_Score	0.87	1														
S_Score	0.87	0.59	1													
G_Score	0.56	0.30	0.37	1												
exret	0.01	0.02	0.01	0.00	1											
ROE	0.01	0.02	-0.02	0.01	-0.04	1										
NPM	0.02	0.07	-0.03	-0.04	-0.06	0.21	1									
ATO	-0.09	-0.10	-0.12	0.05	-0.01	0.09	-0.14	1								
EQM	0.04	0.04	0.02	0.01	0.03	-0.24	-0.01	0.01	1							
PctChgRev	-0.11	-0.08	-0.10	-0.08	-0.01	0.01	0.10	0.01	-0.02	1						
SGA	0.04	0.14	-0.01	-0.10	0.03	-0.02	0.17	-0.27	0.03	0.05	1					
RD	0.06	0.16	0.02	-0.09	-0.01	-0.05	0.18	-0.22	0.03	0.30	0.69	1				
ChgESG	0.16	0.10	0.16	0.12	-0.02	-0.02	-0.04	0.02	-0.01	-0.01	0.00	-0.01	1			
ChgEnv	0.14	0.20	0.05	0.02	0.01	-0.02	-0.01	0.02	0.00	-0.01	0.02	0.00	0.72	1		
ChgSoc	0.52	0.38	0.76	-0.20	0.00	-0.02	-0.01	-0.15	0.01	-0.05	0.05	0.08	0.27	0.08	1	
ChgGov	0.08	-0.01	0.04	0.28	-0.04	0.01	-0.03	0.01	-0.01	-0.02	0.00	-0.01	0.46	0.11	0.25	1

4. Regression Results and Discussion

4.1. ESG Scores and Excess Returns

Table 2 reports the regressions on excess returns on lagged aggregate ESG scores in Column 1, and on E, S, and G components scores in Column 2.

TABLE 2
Regressions of Excess Returns on Lagged ESG Score and 3 Components

VARIABLES	(1)	(2)
E_Score		-0.301
		(0.508)
S_Score		0.543
		(0.333)
G_Score		1.473**
		(0.020)
ESG	0.872	
	(0.126)	
Constant	-0.298	-0.890**
	(0.375)	(0.028)
Observations	11,217	11,217
R-squared	0.000	0.001

p-values in parentheses
*** p<0.01, ** p<0.05, * p<0.1*

The coefficient on ESG in Table 1 Column 1 is positive but not significant (p = 0.126), suggesting no evident statistical relationship between total ESG scores and forward excess returns.

However, to touch on the concern of omitted variables, researchers have attempted to control for various factors in attempting to isolate ESG's impact on excess returns, but with limited success. Torre et al. (2020) studied the impact of ESG on excess returns between 2010 and 2018 for firms listed on the EuroStoxx50 exchange, controlling for

macro variables such as changes in the Euribor rate, changes in unemployment rates, and firm dividend yields. They find no significant results on ESG's impact on excess returns. Diaz et al. (2021) examine the impact of ESG scores on excess returns for S&P 500 firms between 2016 and 2021. After controlling for all variables in the Fama-French 3-factor model (i.e., market risk, size risk, and value risk), they find mixed results by industry. In their study, ESG scores had a generally positive and statistically significant impact on excess returns for firms in the Communications, Consumer Staples, and Technology sectors, but had a negative and statistically significant impact on excess returns for firms in the Consumer Discretionary, Industrials, Financials, and Real Estate industries. Through only two papers, one can begin to gain intuition over a relatively simple idea: it proves extremely difficult to clearly understand what specific factors drive recurring excess returns. With this in mind, the study of ESG's impact on excess returns is not the central focus of this study.

I then examine the effect of three disaggregate components of the total ESG score on excess returns, and present the results in Table 1 Column 2. The coefficients on the E and S scores are negative and positive, respectively, but both are statistically insignificant. Thus, while environmental and social performance may indeed prove important on excess returns in a firm-specific context, macro data suggests that their relative effect on excess returns is indeterminate over the long term.

Conversely, the positive and statistically significant coefficient on G suggests that governance activities have a positive impact on excess returns. This finding aligns with the prevailing literature examining stock performance over comparable time frames. The general intuition is relatively straightforward: good governance breeds long-run financial

discipline over capital allocation decisions, leaving more capital to be returned to shareholders. When shareholders obtain relatively more capital over the long run, stock performance responds in (abnormally) positive ways. Khan (2019) affirms this intuition with evidence on global firms between 2009 and 2017, constructing a portfolio of firms that rank within the top quartile of corporate governance out of the entire sample. Using all public firms within the MSCI (another prominent ESG rating agency and data provider) database, he determined that firms in the top quartile of governance scores considerably outperformed the overall database. Further, he noted that the average annualized top-quartile-bottom-quartile return spread for the governance score was 3.96% over the period. In contrast, the spreads were considerably lower across top and bottom quartiles for environmental and social performance. These results has a number of implications. Firstly, firms that perform particularly well in terms in governance are disproportionately rewarded, whereas firms that perform particularly poorly are disproportionately punished. Second, the similarity of my results with those of Khan (2019) suggests that there is some degree of agreement between two major rating agencies, given the data in my analysis is from Sustainalytics, while Khan (2019) uses MSCI. Third, the common findings suggest that variability in governmental performance breeds more variability in abnormal share price returns relative to environmental and social performance.

While the results suggest that better governance equates with better long-run share price performance, note that the R-squared value in the regression is notably low (R-square < 0.000). This markedly low R-squared value is by no means uncommon in the prevailing ESG literature; it simply proves important to note that these regressions explain so little of the variability in firm excess returns over the time period analyzed.

4.2. ESG Scores and Accounting Performance

I examine the relationship between total ESG score, along with the individual E, S, and G scores, on key accounting metrics. The key accounting metrics that I use include ROE and the DuPont components that comprise ROE—NPM, ATO, and EQM. The regression results are provided in Table 3. Panel A presents the results of regressions of the various accounting metrics on the aggregate ESG score, while Panel B presents the regression results for the individual E, S, and G scores.

Table 3 Panel A shows that the lagged total ESG score has no statistically significant impact on ROE on a standalone basis (Column 1). Aggregate ESG scores show a positive and statistically significant relationship with net profit margin (Column 2) and the equity multiplier (Column 4). On the contrary, Column (3) shows that the total ESG score has a negative and statistically significant relationship on asset turnover.

TABLE 3
Regressions of Dupont Metrics on Total ESG Score and 3 Components

Panel A: Aggregate ESG Score

VARIABLES	(1) ROE	(2) NPM	(3) ATO	(4) EQM
ESG	0.076	0.030**	-0.520***	3.166**
	(0.335)	(0.047)	(0.000)	(0.033)
Constant	0.162***	0.088***	1.098***	0.091
	(0.001)	(0.000)	(0.000)	(0.917)
Observations	10,945	11,214	11,209	10,943
R-squared	0.000	0.000	0.004	0.000

Panel B: Disaggregated E, S, and G Scores

VARIABLES	(1) ROE	(2) NPM	(3) ATO	(4) EQM
E_Score	0.226***	0.050***	0.348***	3.064***
	(0.000)	(0.000)	(0.000)	(0.009)
S_Score	-0.264***	0.054***	-1.939***	2.610*
	(0.001)	(0.000)	(0.000)	(0.072)
G_Score	0.061	-0.156***	1.640***	-6.332***
	(0.485)	(0.000)	(0.000)	(0.000)
Constant	0.192***	0.148***	0.643***	2.861***
	(0.001)	(0.000)	(0.000)	(0.006)
Observations	10,945	11,214	11,209	10,943
R-squared	0.002	0.009	0.073	0.002

p-values in parentheses

*** p<0.01, ** p<0.05, * p<0.1

In Table 3 Panel B, I break the ESG score into its component parts to determine how each component score is associated with the various accounting metrics. Column 1 of Table 3, Panel B demonstrates that the environment score has a positive and statistically significant relationship on ROE, whereas the social score has a negative and statistically significant relationship. Additionally, the governance score exhibits a positive relationship with ROE, but this coefficient is not statistically significant from zero. I discuss the results in Columns 2, 3, and 4 of Table 3, Panel B below, segmenting the analysis through the lens of environmental scores, social scores, and governance scores.

4.2.1. Environment Scores and Accounting Performance

The coefficients on E_Score are positive and statistically significant, suggesting the firms with higher environment scores perform better in terms of net profit margin, asset turnover, and the equity multiplier. The traditional neoclassical theory rejects the notion

that environmental performance is linked to improved profitability and asset efficiency. Proponents of the theory believe that firms should be principally focused on maximizing shareholder wealth and investment in the environment will prove detrimental to financial performance (Friedman, 1970). However, Porter and Van Linde (1995) offer an alternative argument, postulating that the neoclassical view neglects the productivity gains associated with innovation offsets. Their theory suggests that environmental investment can simultaneously enhance asset productivity and improve environmental quality. The results on the E_Score presented in regression Table 3 Panel B align more closely with the latter view, suggesting that positive environmental impact and accounting performance are not mutually exclusive.

Further, regarding net profit margin, it proves crucial to consider the concept of tax advantages for environmentally friendly firms. The Obama Administration expanded investment tax credits for solar energy, production tax credits for wind energy, and issued various government grants for green energy projects (The White House, 2012). In addition, the Regional Greenhouse Gas Initiative (RGGI), which began in 2009, has taken hold as a cap-and-trade scheme among several northeastern and mid-Atlantic states to foster a shift to cleaner forms of energy production. While clean energy usage and carbon dioxide emissions alone do not comprise an environmental score, several exogenous political factors enable more environmentally friendly firms to capitalize and thus improve their bottom line. As a caveat, there are several other explanations as to why environment scores are linked to improved margin profiles in the results, such as naturally higher-margin industries happening to be more environmentally friendly simply due to the nature of their business. The evidence on environmental performance being causally linked to improved

profitability and asset efficiency is mixed at best. Still, these findings lend support to the idea that environmental friendliness is not as expensive as many perceive it to be.

Regarding the positive relationship between environment scores and the equity multiplier, studies corroborate that more environmentally friendly firms enjoy a lower cost of borrowing (Chiesa, McEwen, and Barua, 2021), and that firms with better environmental risk management practices tend to shift from equity to debt financing (Sharfman and Fernando, 2008). This view is widely held across much of the prevailing literature.

Note that the EQM variable is not treasury stock adjusted, which could potentially explain why, as evident in Table 1, some values on EQM are quite high or even negative in some cases. Further, the correlation between firm environment score and total treasury stock on hand is 0.20 (untabulated). While examining the relationship between environment scores and share buybacks is beyond the scope of this study, adjusting the EQM for treasury stock effects may influence on the positive relationship between the equity multiplier and environment scores.

4.2.2. Social Scores and Accounting Performance

The coefficients on S_Score in Columns 2, 3, and 4 of Table 3, Panel B indicate that social scores have a positive and statistically significant impact on net profit margin, a negative and statistically significant impact on asset turnover, and a positive and statistically significant impact on the equity multiplier. However, the negative relationship between social scores and asset turnover is so pronounced in magnitude that social scores ultimately have a negative and statistically significant relationship on ROE, as shown in Column 1 of Table 3, Panel B.

The overall negative relation between ROE and S_Score warrants a closer look. I further explore some potential mechanisms behind the coefficients on S_Score by running the following regression:

$$y_t = \beta_0 + \beta_1 E\_Score_t + \beta_2 S\_Score_t + \beta_3 G\_Score_t \tag{4}$$

where I use a number of dependent variables that capture activities that impact the revenues of the firm for a specific quarter, including the quarterly percentage change in revenues (PctChgRev), and spending on selling, general, and administrative expenses or SG&A (SGA) and research and development or R&D (RD), scaled by the quarterly sales. Given the positive association of S_Score on profit margin and the negative association with asset turnover, I conjecture that a firm that focuses its attention on initiatives that increase its S_Score may compromise on activities that aim to increase its revenues. The independent variables are the contemporaneous quarterly E, S, and G scores.

Results from the regressions are presented in Table 4.

Column 1 of Table 4 shows the results of a regression of PctChgRev on the E, S, and G component scores, and indicates a negative and statistically significant coefficient on both S_Score and G_Score. The coefficient on E_Score is negative and marginally significant. Thus, firms with relatively high social and governance scores exhibit lower revenue growth than firms with lower social scores. Given that asset turnover reflects how well a firm is utilizing their assets to generate revenues, the negative relationship between firm social scores and revenue growth shows that the numerator for asset turnover (i.e., revenues) will be lower over time, all else equal. Overall, this suggests that firms with high social scores are relatively inefficient in utilizing their assets to generate sales over time, helping explain the negative relationship between social scores and asset turnover.

TABLE 4
Regressions of Revenue and Expense Ratio Metrics on ESG Component Scores

VARIABLES	(1) PctChgRev	(2) SGA	(3) RD
E_Score	-0.050*	0.274***	0.182***
	(0.08)	(0.000)	(0.000)
S_Score	-0.249***	-0.195***	-0.158***
	(0.000)	(0.000)	(0.000)
G_Score	-0.130***	-0.247***	-0.093***
	(0.002)	(0.000)	(0.000)
Constant	0.325***	0.358***	0.090***
	(0.000)	(0.000)	(0.000)
Observations	10,640	9,831	13,058
R-squared	0.012	0.030	0.036

p-values in parentheses
*** $p<0.01$, ** $p<0.05$, * $p<0.1$*

Columns 2 and 3 of Table 4 present statistically significant findings that suggest firms with relatively high social scores report lower SG&A and R&D expenses as a percentage of sales. Since firms with higher social scores tend to have lower operating expense margins, this would have an overall positive effect on net profit margin, all else equal.

The literature relating to this phenomenon is generally inconclusive. For example, Chen, Feldmann, and Tang (2015) examine a cluster of public industrial firm and find a relationship between corporate social performance and ROE, but the evidence of social performance on sales growth proves inconclusive. Further, Lahouel, Zaied, Song, and Yang (2021) find a negative relationship between corporate social performance and sales growth in the airline industry. While other literature suggests the opposite effect (Chaudary

et al., 2016), few examine the relationship between corporate social performance and sales growth in a sample that uses various industries.

4.2.3. Governance Scores and Accounting Performance

In Columns 2, 3, and 4 of Table 3, Panel B, the coefficients on G_Score show that governance scores have a negative and statistically significant impact on net profit margin, a positive and statistically significant impact on asset turnover, and a negative and statistically significant effect on the equity multiplier. Although the negative coefficient on NPM is surprising, the positive relationship between governance and asset turnover relates to the intuition described in section 4.1. (i.e., good governance relates to more efficient capital allocation decisions from management). The prevailing literature widely supports this intuition: good managers tend to deploy capital into infrastructure and other fixed assets more efficiently (Brown et al., 2013) and make better decisions regarding acquisition opportunities and intangible asset investments (Khanchel, 2007).

Addressing the negative relationship between governance and the equity multiplier, studies find that firms in developed nations that exhibit good governance are likely to maintain lower levels of debt financing (Saona, Vallelado, and San Martín, 2020). Additionally, firms with more board diversity and separation between management and board roles are more likely less likely to engage in share buybacks to achieve earnings per share beats (Farrell and Zhang, 2013). Other studies suggest that good governance lowers the cost of debt capital because it creates more stable cash flows and lower probability of default (Aldamen, 2010), thus increasing the incentive to finance the firm with debt. However, good governance has also been shown to decrease the cost of equity capital

(Skaife, Collins, and LaFond, 2004) and the cost of capital more generally (Al Hares 2020). Thus, it appears that, on average, good governance lends itself to lower equity multiples.

4.3. ESG Sub-Components and Returns and Accounting Performance

Building on the results from the previous sections, I evaluate how the subcomponents of each E, S, and G scores drive excess financial returns and accounting performance. In determining aggregate environment, social, and governance scores for firms, Sustainalytics breaks down each classification into multiple sub-sections. For environment, the rating agency determines composite scores through scoring across three primary groups. For social, it determines composite scores through scoring across five primary groups. Finally, for governance, it determines scoring across three primary groups. Note that Sustainalytics is does not label each of these components that feed into the E, S, and G scores. Specifically, in the dataset, the sub-components of each specific score are simply listed as follows:

- Environment: E1, E2, E3

- Social: S1, S2, S3, S4, S5

- Governance: G1, G2, G3

However, Sustainalytics provides descriptions of key performance indicators that make up each non-descript sub-component score. Thus, I was able to critically examine these drivers of each sub-component and then assign a label to the sub-components, even if it may be an oversimplification to classify the subcomponents in this manner. For **E1**, key metrics considered include, but are not limited to: percentage of primary energy use from renewables, environmental management system, greenhouse gas reduction initiatives, programs & targets to reduce hazardous waste generation, etc. These measures are all

principally linked to how a firm internally conducts business and its environmental impact. Thus, I opted to call E1 "**Operations**." For **E2**, key metrics include formal program on green procurement, environmental supply incidents, percentage of recycled/reused raw materials, programs to improve environmental performance of suppliers, etc. Intuitively, I elected to call E2 "**Supply Chain**." For **E3**, key metrics include sustainability-related products and services, products with environmental or human health concerns, organic products, product- and service-related controversies or incidents, etc. Thus, I elected to name E3 "**Products and Services**."

Moving to the social subcomponents, **S1** included metrics such as policy on freedom of association, formal policy on working conditions, employee turnover rate, employee training, employee-related controversies and incidents, etc. Thus, S1 was named "**Employees**." For **S2**, key drivers included: quality of social supply chain standards, supply chain audits, fair trade products, supply chain management, etc. Thus, S2 was named "**Supply Chain**." It proves important to note that while both E2 and S2 are called supply chain, E2 relates specifically to environmental issues, whereas S2 emphasizes socially-related supply chain concerns. For **S3**, key drivers included: position statement on responsible marketing, advertising ethics, public statements on data privacy, health consequences of products, etc. Thus, S3 was named "**Customers**." **S4** included metrics such as human rights policy, activities in sensitive countries, community engagement programs, policies on access to health care, policy on indigenous people and land rights, etc. S4 was thus named "**Society/Communities**." Finally, for **S5**, key metrics included: guidelines for philanthropic activities, corporate foundations, and percentage of pretax income cash donations. S5 was thus called "**Philanthropy**."

For the subcomponents of governance, **G1** included metrics such as programs to combat bribery and corruption, signatory to UN Global compact, tax transparency, policy on animal welfare, business ethics related controversies, etc. With this in mind, I opted to call G1 "**Business Ethics**." For G2, key metrics included: Corporate Social Responsibility Reporting Quality, oversight of ESG issues, executive compensation related to ESG performance, board diversity, separation of board chair and CEO roles, etc. Thus, I elected to call G2 "**Management and Board.**" Lastly, for **G3**, key measures included: policy on political involvement and contributions, total value of political contributions, public policy related controversies, etc. Therefore, I choose to call G3 "**Public Policy**."

Descriptive statistics of these sub-components are provided in Table 5, Panel A. The list of sub-component variables is rather expansive, which may result in multicollinearity in the tests that are being run. Based on the correlations presented in Table 5, Panel B, it seems that multicollinearity is not particularly problematic in this context. While there are indeed some correlations between sub-components, none are correlated to a degree that would be alarming. Thus, the notion of multicollinearity skewing regression outcomes is, to a large extent, avoided.

Regressions of returns and accounting metrics on these sub-components are provided in Table 6.

TABLE 5
Summary Statistics for E, S, and G Score Sub-Components

Panel A: Descriptive Statistics

Variable	N	Mean	Median		Min	Max
Environmental Factors						
Operations	13,061	0.95	0.89	0.43	0.29	5.07
Supply Chain	13,061	1.56	1.50	0.50	0.50	5.00
Products and Services	13,061	2.95	3.00	1.11	0.60	9.44
Social Factors						
Employees	13,061	1.01	0.94	0.43	0.11	3.50
Supply Chain	13,061	1.36	1.13	0.71	0.20	5.00
Customers	13,061	3.27	3.00	1.39	0.00	9.44
Society/Communities	13,061	1.94	2.00	0.67	0.00	8.50
Philanthropy	7,313	0.58	0.56	0.37	0.00	1.67
Governance Factors						
Business Ethics	13,061	1.30	1.24	0.32	0.17	2.53
Management and Board	13,061	0.80	0.66	0.37	0.30	2.64
Public Policy	13,061	1.02	0.75	0.74	0.27	5.00

Panel B: Correlation Table

	Environmental Factors			Social Factors					Governance Factors		
	Operations	Supply Chain	Products and Services	Employees	Supply Chain	Customers	Society/Communities	Philanthropy	Business Ethics	Management and Board	Public Policy
Environmental Factors											
Operations	1										
Supply Chain	0.27	1									
Products and Services	-0.32	-0.42	1								
Social Factors											
Employees	0.11	-0.03	0.01	1							
Supply Chain	0.14	0.59	-0.30	0.01	1						
Customers	-0.16	-0.43	0.17	0.06	-0.38	1					
Society/Communities	-0.05	-0.12	-0.07	-0.07	-0.07	0.47	1				
Philanthropy	0.09	0.18	0.03	-0.05	0.05	-0.20	-0.13	1			
Governance Factors											
Business Ethics	0.09	-0.20	0.17	0.22	-0.11	0.30	0.21	-0.07	1		
Management and Board	0.40	0.01	0.03	0.28	0.13	-0.05	-0.03	0.15	0.30	1	
Public Policy	-0.26	0.17	-0.08	-0.40	-0.06	0.03	0.10	0.22	-0.25	-0.43	1

TABLE 6
Regressions of Dupont Metrics on E, S, and G Score Sub-Components

VARIABLES	(1) exretlead	(2) roelead2	(3) npmlead2	(4) atolead2	(5) eqmlead
Environmental Factors					
Operations	0.331	0.016	0.024***	-0.189***	1.337*
	(0.197)	(0.698)	(0.001)	(0.000)	(0.084)
Supply Chain	-0.250	0.045	-0.006	0.129***	-0.138
	(0.201)	(0.146)	(0.255)	(0.000)	(0.815)
Products and Services	-0.075	0.012	0.018***	-0.033***	0.554***
	(0.260)	(0.270)	(0.000)	(0.000)	(0.007)
Social Factors					
Employees	-0.342	0.160***	0.061***	-0.311***	1.376*
	(0.175)	(0.000)	(0.000)	(0.000)	(0.070)
Supply Chain	0.049	0.081***	0.003	0.458***	0.407
	(0.716)	(0.000)	(0.371)	(0.000)	(0.315)
Customers	-0.018	0.009	0.011***	0.024***	0.279
	(0.768)	(0.337)	(0.000)	(0.003)	(0.120)
Society/Communities	-0.087	-0.036**	-0.013***	-0.132***	-0.274
	(0.444)	(0.041)	(0.000)	(0.000)	(0.422)
Philanthropy	0.027	-0.008	0.015***	-0.164***	0.792
	(0.886)	(0.796)	(0.005)	(0.000)	(0.159)
Governance Factors					
Business Ethics	1.141***	0.015	-0.022***	0.297***	-0.317
	(0.000)	(0.707)	(0.003)	(0.000)	(0.674)
Management and Board	1.215	-0.435***	-0.074***	-0.114	-2.528
	(0.151)	(0.001)	(0.002)	(0.306)	(0.322)
Public Policy	0.316	0.054	0.025***	0.278***	-0.766
	(0.220)	(0.184)	(0.001)	(0.000)	(0.325)
Constant	-1.547**	0.086	0.015	0.283***	-0.465
	(0.040)	(0.466)	(0.499)	(0.004)	(0.839)
Observations	7,154	7,026	7,152	7,150	7,024
R-squared	0.005	0.009	0.037	0.199	0.003

p-values in parentheses

*** $p<0.01$, ** $p<0.05$, * $p<0.1$

Recall from Table 2 that the total governance score was the only measure that had a positive and statistically significant relationship with excess returns. Examining Table 6, Column 1, one can get a better understand the particular factor driving this trend. Notably, Business Ethics has a positive and statistically significant relationship with excess returns and is the only significant finding. As both intuition and the evidence suggest, firms that score poorly in business ethics witness especially adverse financial returns, whereas those that notably outperform observe stronger long-term returns. While prevailing literature suggests top ethical performers witness marginally positive abnormal returns (Brammer, Brooks, and Pavelin, 2009), there is more agreement that poor ethical performance and ethical-related scandals breed particular negative returns (Rao and Hamilton 1996; Engelen 2011; Jory, Ngo, Wang, and Saha, 2015).

4.3.1. Environmental Component Scores and Accounting Performance

Table 6, Column 2 shows that no environmental components have a statistically significant impact on ROE. Although the total E_Score is positively associated with ROE (Table 3, Panel B, Column 1), the specific components driving environment scores' impact on ROE is indeterminate. All of the coefficients are positive, but none are statistically significant from zero.

The coefficients reported in Table 6, Column 3 indicate that while the supply chain component is not statistically significant, there are positive and statistically significant impacts of both the Operations and Products and Services environmental sub-components on net profit margin. These two sub-components are driving the positive relationship between E_Score and NPM reported on Table 3, Panel B, Column 2. That is, firms operating and distributing goods in more environmentally sustainable ways are, on average,

more profitable. This finding deviates from the views of Friedman and other neoclassical economists who suggested that firm environmental investments and enhanced profitability are not mutually exclusive.

Further, I find that the Supply Chain component has a positive and statistically significant impact on asset turnover (Table 6, Column 4). In contrast, the Operations and Products and Services components have a negative and statistically significant impact. Thus, environmental supply chain practices are driving this overall effect observed in Table 3, Panel B, Column 3. On average, firms that invest to ensure their supply chains are sustainable utilize their assets more efficiently to generate revenues. While pursuing a low-cost strategy may negatively impact firms' ability to invest in environmental supply chain management (Laosirihongthong et al., 2013), poor environmental performers are more likely to have inefficiencies in their manufacturing processes (Nehrt, 1996). This adds to the notion that environmentally-friendly supply chains help firms generate revenues from their inventories in a relatively more efficient manner.

Lastly, in Table 6, Column 5, I find that the Operations and Products & Services components have a positive and statistically significant impact on the equity multiplier. The supply chain component has no statistically significant impact. In Panel B of Table 3, the E_Score has a positive and statistically significant impact on the equity multiplier. These results show that the Operations and Products and Services components drive the positive relationship between E_Scores and EQM. Eliwa et al. (2021) determine that out of all ESG key performance indicators, environmentally friendly operational performance has the largest impact on the cost of debt. Additionally, green bonds offer relatively cheap forms of debt for firms engaging in environmentally sustainable projects. This holds in the

context of the products and services component as well, for firms distributing environmentally friendly goods (e.g., renewable energy) are more likely to obtain green bonds and thus be able to hold higher debt burdens with a relatively lower cost of debt capital.

4.3.2. Social Component Scores and Accounting Performance

Looking at the social sub-components, I find that the employee and supply chain components of the social score have a positive and statistically significant impact on ROE, as viewed in Table 6, Column 2. In contrast, the Society/Communities component has a negative impact. The customers and philanthropy components have no statistically significant impact. Recall from Column 2 of Table 3, Panel B that S_Score has a negative and statistically significant association with ROE. Thus, these results prove mixed, for some social components share a positive relationship with ROE, whereas others have a counteracting effect.

Results presented in Table 6, Column 3 show that the employee, customer, and philanthropy components of the social score have a positive and statistically significant impact on net profit margin, whereas the society/communities component has a negative and statistically significant impact. The supply chain component has no statistically significant impact. Based on Table 3, Panel B, Column 2, S_Score shows a positive association with net profit margin. Thus, it is likely that employee, customer, and philanthropy components of the social score are driving this overall effect. Regarding the employee component, the idea that better employee treatment breeds enhanced profitability is generally supported by prevailing literature. Faleye and Trahan (2010) determine that employee treatment bolsters labor productivity and thus firm profitability, and Sirota and

Klein (2013) determine that responsiveness to employee needs bolsters employee motivation, morale, and thus performance. Further, addressing the customer component, those that market and advertise to their customers in more ethical and transparent ways are, on average, more profitable. These results are consistent with the conjecture that pursuing ethical marketing and advertising may bear short-term economic costs, but may be profitable to the firm in the long-run (Laczniak, 2012). Overall, this evidence suggests that firms who opt to protect, rather than manipulate, their consumers tend to be more profitable in the long-run. Lastly, addressing the philanthropy component, studies indicate that charitable activity by firms bolsters impressions of all stakeholders involved, generating indirect avenues to increased firm profitability (Brammer and Millington, 2005). Overall, philanthropic activity may be indirectly used to aid marketing and employee satisfaction initiatives, increasing firms' bottom lines. Further, charitable expenditure is partially offset by tax advantages, mitigating the overall cost of donating imposed by the firm. However, the two-way causality issue proves pertinent in the context of philanthropy, for more profitable firms generate higher cash flows and thus have more "organizational slack," allowing them to make more charitable donations (Seifert et al., 2004).

I find that the supply chain component has a positive and statistically significant impact on asset turnover (Table 6, Column 4). In contrast, the employees, customers, society & communities, and philanthropy aspects of the social score all demonstrate a negative and statistically significant relationship. With the exception of supply chain, all core components of the social score demonstrate the same negative relationship drive the negative relationship between S_Score and asset turnover that is evident in Table 3, Panel B, Column 3.

Lastly, I find that the employee component of social scores has a positive and statistically significant impact on the equity multiplier (Table 6, Column 5). In contrast, all other components demonstrate no statistically significant relationship. Hanka (1998) shows that firms with higher debt generally reduce employment more often, pay lower wages, and fund pension plans less generously. However, Boubaker et al. (2019) show that firms with high levels of employee welfare tend to use debt financing with larger and longer-term instruments, suggesting that firms who treat their employees better have more leverage. Further, Dang et al. (2021) shows that firms with greater employee protection tend to repurchase shares more often to prevent rent extraction behavior from the better protected employees. While the evidence is mixed on this issue, some extant literature helps explain the relationship found through this paper's empirical analysis.

4.3.3. Governance Component Scores and Accounting Performance

Table 6, Column 2 shows a negative and significant association of ROE and Management and Board, while none of the other sub-components are related to ROE.

In Table 6, Column 3, I find that Public Policy has a positive and statistically significant association with net profit margin. In contrast, the coefficients on Business Ethics and Management and Board are negative and statistically significant, and thus appear to drive the overall relationship between a firm's G_Score and profit margin as depicted in Table 3, Panel B, Column 2. Note, however, that the magnitude of the coefficient is quite low. Further, while scoring higher in ethical transparency and disclosure may prove marginally detrimental to below the line profitability in this dataset, the positive coefficient between business ethics and asset turnover appears to overpower the negative relationship on profitability.

Table 6, Column 4 suggests the business ethics and public policy components are positively associated with asset turnover, while the coefficient on Management and Board is not statistically significant. Recall from column (6) of Table 3 that total governance score demonstrates a positive relationship with asset turnover. Firms with more ethical business practices attract more customers, whereas unethical internal practices have far-ranging impacts on customer and company stakeholder perceptions (McMurrian and Matulich, 2016). All else equal, more ethical and transparent business builds stronger customer relationships, aiding revenue generation and bolstering asset efficiency. The public policy suggests that less politically motivated spending and comingling of business and politics breeds enhanced profitability and efficiency. Overall, reduced involvement in politics allows firm managers to reduce public scrutiny and maintain a more streamlined focus on deploying resources for the direct benefit of their companies (Lund and Strine, 2022).

Finally, although all coefficients are negative, no governance component is statistically significantly related with the equity multiplier. This deviates from the result in Column 4 of Table 3, Panel B, which shows that the total governance score has a negative and statistically significant relationship with the equity multiplier. It proves noteworthy that all coefficients are negative, just not statistically significant from zero. These results imply that it is difficult to determine what specific aspects of governance are driving the result in Table 3.

4.4. Impact of Accounting Performance on ESG Score Improvements

Within the final section of the results analysis, I address the idea of two-way causality. Abnormal share price returns and particularly strong accounting performance may enable firms to invest more in ESG-related initiatives, thus boosting their ESG scores.

Conversely, an argument can also be made that firms that perform poorly on financial metrics (including returns and any accounting measures) may take a "big bath" and improve their E, S, and G scores to win fervor with the market.

The results shown in Table 7 provide no statistically significant evidence of excess returns having an impact on aggregate ESG performance or individual E, S, and G scores. The regressions show positive and statistically significant impacts of asset turnover on environment scores (Column 6) and net profit margin on social scores (Column 7). Additionally, ROE is not associated with changes in a firm's aggregate ESG score and E_Score (Table 7, Columns 1 and 2), but has a negative relation with S_Score and G_Score (Columns 3 and 4). In examining ROE's components, asset turnover is likely driving this effect. Table 7, Columns 7 and 8 show that previous quarter asset turnover is negatively linked to social and governance scores. These results suggest that firms exhibiting lower asset turnover metrics also show increases in social and governance scores.

Regarding governance, Table 3, Panel B, Column 3 shows that lagged governance scores maintained a positive and statistically significant relationship with asset turnover. However, the negative impact that asset turnover has on changes in corporate governance scores, albeit quite low in magnitude, suggests that the relationship observed in Table 3 may likely be causal. That is, good governance breeds more robust accounting performance as measured by asset turnover, but not the other way around.

Overall, based on Table 7 in tandem with the other regression analyses presented in Tables 3 and 4, it is more likely that ESG and its respective components impact accounting performance, rather than accounting performance influencing ESG improvements.

TABLE 7
Impact on ESG of Returns and Accounting Performance

VARIABLES	(1) ChgESG	(2) ChgEnv	(3) ChgSoc	(4) ChgGov	(5) ChgESG	(6) ChgEnv	(7) ChgSoc	(8) ChgGov
exret	0.000	-0.000	-0.000	0.000	0.000	-0.000	-0.000	0.000
	(0.898)	(0.591)	(0.337)	(0.492)	(0.897)	(0.565)	(0.389)	(0.420)
NPM					0.003	0.005	0.032***	0.003
					(0.150)	(0.118)	(0.000)	(0.244)
ATO					0.000	0.002**	-0.040***	-0.001**
					(0.835)	(0.017)	(0.000)	(0.026)
EQM					-0.000	0.000	0.000**	-0.000
					(0.701)	(0.454)	(0.048)	(0.241)
ROE	-0.000	0.001	-0.004**	-0.002***				
	(0.935)	(0.329)	(0.021)	(0.006)				
Constant	0.007***	0.013***	-0.071***	-0.000	0.006***	0.011***	-0.043***	0.000
	(0.000)	(0.000)	(0.000)	(0.369)	(0.000)	(0.000)	(0.000)	(0.913)
Observations	10,966	10,966	10,966	10,966	10,963	10,963	10,963	10,963
R-squared	0.000	0.000	0.001	0.001	0.000	0.001	0.074	0.001

p-values in parentheses

*** p<0.01, ** p<0.05, * p<0.1

5. Conclusion

This paper builds on the extant literature by examining Sustainalytics ESG and component data for 377 S&P 500 firms over a 10-year period between January 2010 and September 2019, to determine the relevant impact of ESG scores on excess share price returns and accounting metrics, as proxied by the DuPont decomposition. My findings suggest that total ESG, environment, and social scores exhibit no significant long-run relationship with excess returns. However, I determine that governance score has a positive and statistically significant relationship with excess returns, aligning with the findings in Khan (2019). Further, this relationship appears to be principally driven by the Business Ethics component of the overall governance score, providing additional empirical grounding to the idea that firms with strong ethical governance witness particularly favorable share price performance (Brammer et al., 2009).

Regarding accounting performance, results affirmed that environmental performance drives above-average return on equity (ROE), profitability (proxied by net profit margin), asset efficiency (proxied by asset turnover), and leverage (proxied by the equity multiplier). Further, above-average social performance is linked to lower return on equity, predominantly due to a strongly negative relationship between social scores and asset efficiency. While relatively strong social scores are linked to enhanced profitability and leverage, higher social scores are associated with weaker asset efficiency, consistent with the finding that strong social performance is linked to relatively weaker sales growth. Further, governance scores have no discernable relationship with return on equity, but strong governance performance proves connected to lower profitability, higher asset efficiency, and relatively lower degrees of leverage. I also conduct exploratory analysis

that provides an in-depth overview of the respective aspects of environment, social, and governance scores driving these overall phenomena.

Lastly, my findings suggest that two-way causality exists, but limitedly. Specifically, more robust profitability gives rise to slightly better social scores, but greater asset efficiency counteracts this effect. Further, above-average asset efficiency drives marginal increases in the environment score, whereas it is linked to marginal decreases in firm governance scores. These findings imply that the ESG-financial performance paradigm involves correlations, and one should be wary of asserting causal relationships, as Damodaran and Cornell (2020) suggest.

This paper builds on the extant literature by confirming several statistical relationships between ESG components and corporate financial performance. It also provides novel contributions by uncovering the fundamental components of the environment, social, and governance scores, providing relative clarity as to what specific firm-level aspects amalgamate into a total ESG score and are related to various measures of performance. Finally, I provide a baseline analysis of the notion of two-causality between firm financial performance and ESG performance, an empirical shortcoming that the prevailing literature has tended to overlook entirely.

The research has a number of limitations. First, the omission of non-ESG and industry-level controls may impact some of the findings of the study. Note that Sustainalytics scoring convention is done relative to an industry mean rather than on an absolute basis, and thus this concern is mitigated. However, it might prove valuable to segment the analysis conducted above by industry to enrich the findings, understanding the specific industry contexts in which ESG performance has the most substantial effect on

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financial performance. Additionally, I do not use many control variables in the models I used in the study. This is a deliberate design choice, as implementing accounting metrics as controls when an accounting metric is a dependent variable may immediately give rise to the issue of endogeneity within the empirical model. The lack of controls, however, means that the results found in this paper should be scrutinized heavily, for statistically significant findings do not necessarily entail causal effects. Primarily, this paper examines associations and does not assert that statistically significant relations between variables are causally linked.

Additionally, this paper limits its approach specifically to large-cap U.S. firms. Hence, the scope of this paper is limited by firm size and geography. Thus, future literature should continue to explore the endogeneity problem present in much of the extant literature when evaluating ESG's impact on corporate financial performance. It should also examine whether these findings hold in other geographies or for firms of relatively smaller size.

Further, in considering how many components drive E, S, and G scores, there is possibly some overlap in measurement of these factors, and this may introduce endogeneity in the tests. For instance, the Sustainalytics social score includes data points such as "policy on conflict minerals" and "human rights policy" Comparatively, the governance score has data points such as "policy on animal welfare" and "clinical trial protocols." These items seem like they fall under the same general umbrella, yet, according to Sustainalytics ratings, they emerge in entirely separate metrics. Thus, from an empirical perspective, researchers should be more cautious of what data actually comprises an aggregate ESG score and how rating agencies decide to classify such data.

In more practical terms, one should consider if investors truly value ESG ratings themselves or if they simply use the data to formulate their own decisions. For example, an ESG fund manager recently stated, "we don't want a single rating in 20 years, we just want data." (Petroy and Wong, 2020). Another claimed, "an investor's value is in their own interpretation of data" (Petroy and Wong, 2020). Thus, at least from a returns perspective, one should be wary about equating aggregate ESG performance with aspirations of strong future performance, for a rating agency's interpretation of what matters does not necessarily match that of the broader investing universe.

Appendix
Components of Sustainalytics ESG Score

	Total ESG Score	
Total Environment Score	**Total Social Score**	**Total Governance Score**
E1 ("Operations") Components	**S1 ("Employees") Components**	**G1 ("Business Ethics") Components**
Formal Environmental Policy	Policy on Freedom of Association	Policy on Bribery and Corruption
Carbon Intensity Trend	Formal Policy on Working Conditions	Programmes to Combat Bribery and Corruption
% Primary Energy Use from Renewables	Formal Policy on the Elimination of Discrimination	Whistleblower Programmes
Reporting Quality Non-Carbon Environmental Data	Programmes to Increase Workforce Diversity	Signatory to UN Global Compact
Operations Related Controversies or Incidents	Percentage of Employees Covered by Collective Bargaining Agreements	Signatory to UN Principles for Responsible Investment
Environmental Management System	Employee Turnover Rate	Policy on Responsible Investment
Programmes and Targets to Protect Biodiversity	Percentage of Temporary Workers	Member of UNEP Finance Initiative
Guidelines and Reporting on Closure and Rehabilitation of Sites	Top Employer Recognition	Membership in Initiatives Promoting Sustainable Buildings
Environmental and Social Impact Assessments	Employee Training	Equator Principles and Related Reporting
Oil Spill Reporting and Performance	Programmes and Targets to Reduce Health and Safety Incidents	Responsible Investment Programme-Weighted Score
Waste Intensity	Health and Safety Management System	Tax Transparency
Mineral Waste Management-Weighted Score	Programmes to Address HIV/AIDS Among its Workforce	Policy on Money Laundering
Water Intensity	Health and Safety Certifications	Policy on Animal Testing
Percentage of Certified Forests Under Own Management	Trend in Lost-Time Incident Rate	Policy on Animal Welfare
External Certification of EMS	Number of Fatalities	Policy on Genetic Engineering

Emergency Response Programme-Weighted Score	Employee Related Controversies or Incidents	Clinical Trial Protocols
Programmes & Targets to Reduce Hazardous Waste Generation		Business Ethics Related Controversies or Incidents
Programmes & Targets to Reduce Air Emissions	**S2 ("Supply Chain") Components**	
Programmes & Targets to Reduce Water Use	Scope of Social Supply Chain Standards	**G2 ("Management and Board") Components**
Other Programmes to Reduce Key Environmental Impacts	Quality of Social Supply Chain Standards	CSR Reporting Quality
Environmental Fines and Non-monetary Sanctions	Membership in the Electronic Industry Citizenship Coalition (EICC)	Audit Committee Independence
Participation in Carbon Disclosure Project (Investor CDP)	Policy on Conflict Minerals	Audit Committee Structure-Weighted Score
Scope of Corporate Reporting on GHG Emissions	Conflict Minerals Programmes	Non-Audit Fees Relative to Audit Fees
Programmes and Targets to Reduce GHG Emissions from own operations	Supply Chain Monitoring System	Auditor Fees-Weighted Score
GHG Reduction Programme	Supply Chain Audits	Compensation Committee Independence
Programmes and Targets to Improve the Environmental Performance of Own Logistics and Vehicle Fleets	Reporting on Supply Chain Monitoring and Enforcement	Remuneration Committee Effectiveness-Weighted Score
Programmes and Targets to Phase out CFCs and HCFCs in Refrigeration Equipment	Supply Chain Management	Governance Related Controversies or Incidents
Programmes and Targets to Increase Renewable Energy Use	External Social Certification of Suppliers	External Verification of CSR Reporting
Carbon Intensity	Fair Trade Products	Disclosure of Directors Remuneration
	Social Supply Chain Incidents	Remuneration Disclosure-Weighted Score
E2 ("Supply Chain") Components		Disclosure of Directors Biographies
Formal Policy or Programme on Green Procurement	**S3 ("Customers") Components**	Director Disclosure-Weighted Score

Programmes to Improve the Environmental Performance of Suppliers	Public Position Statement on Responsible Marketing	Oversight of ESG Issues
Food Retail Initiatives	Periodic Occupier Satisfaction Surveys	In-house Team Dedicated to Responsible Investment/Finance
External Environmental Certification Suppliers	Programmes and Targets to Reduce Energy/Water Use by Customers	Executive Compensation Tied to ESG Performance
Programmes and Targets to Stimulate Sustainable Agriculture	Adherence to WHO Ethical Criteria for Medicinal Drug Promotion	Board Diversity
Programmes and Targets to Stimulate Sustainable Aquaculture/Fisheries	Public Policy Statement on Advertising Ethics	Board Diversity-Weighted Score
Food Beverage & Tobacco Industry Initiatives	Policy Statement on Data Privacy	Separation of Board Chair and CEO Roles
Programmes and Targets to Reduce GHG Emissions from Outsourced Logistics Services	Programmes to Minimise Health Impact of Electronic and Magnetic Fields	Board Leadership-Weighted Score
Data on Percentage of Recycled/Re-used Raw Material Used	Outsourcing of Core Editorial Tasks	Board Independence
Data on Percentage of FSC Certified Wood/Pulp as Raw Material	Corporate Wide Editorial Guidelines	Board Independence-Weighted Score
Programmes and Targets to Promote Sustainable Food Products	Policy on Conflicts of Interest	
Environmental Supply Chain Incidents	Percentage of Flights Delayed More Than 15 Minutes	G3 ("Public Policy") Components
	Public Position Statement on Health Consequences of Products	Policy on Political Involvement and Contributions
E3 ("Products and Services") Components	External QMS Certifications	Total Value of Political Contributions or Political Spending
Sustainability Related Products & Services	Customer Related Controversies or Incidents	Transparency on Payments to Host Governments
Environmental & Social Standards in Credit and Loan Business		Public Policy Related Controversies or Incidents

Responsible Asset Management	S4 ("Society/ Communities") Components	
Use of Life-Cycle Analysis (LCA) for New Real Estate Projects	Activities in Sensitive Countries	
Programmes and Targets to Increase Investments in Sustainable Buildings	Human Rights Policy	
Share of Property Portfolio Invested in Sustainable Buildings	Policies and Programmes to Promote Access to Basic Services	
Sustainability Related Financial Services	Local Community Development Programmes	
Products with Important Environmental/Human Health Concerns	Programmes to Address Digital Divide	
Carbon Intensity of Energy Mix	Policy on Drug Donations	
Revenue from Clean Technology or Climate Friendly Products	Value of Drug Donations Relative to EBIT	
Automobile Fleet Average CO_2 Emissions	Community Engagement Programmes	
Trend Automobile Fleet Average Fleet Efficiency	Programmes and Targets to Promote Access to Financial Services for Disadvantaged People	
Products to Improve Sustainability of Transport Vehicles	Policies and Management Systems on Access to Medicines	
Systematic Integration of Environmental Considerations at R&D Stage (Eco-design)	Programmes and Initiatives to Develop Medicines for Neglected Diseases	
Programmes and Targets for End-of-Life Product Management	Equitable Pricing Programmes for Medicines	
Organic Products	Policies on Access to Health Care	
Policy on Use of Genetically Modified Organisms (GMO) in Products	Programmes to Support Independent Media	

Products & Services Related Controversies or Incidents	Policy on Indigenous People and Land Rights	
	Society & Community Related Controversies or Incidents	
	S5 ("Philanthropy") Components	
	Guidelines for Philanthropic Activities and Primary Areas of Support	
	Corporate Foundation	
	Percent Cash Donations of NEBT	

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