

**THE EFFECT OF ESG SCORES ON MARKET RETURNS FOLLOWING
FINANCIAL RESTATEMENTS**

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How Do Aggregate and Disaggregate ESG Scores Affect Market Returns Following a Restatement Event?

ABSTRACT

This paper examines the effects of Environmental, Social, and Governance (ESG) scores and their component parts on cumulative abnormal stock returns for 63 publicly traded firms. Using an event study I find a statistically significant and negative relationship between aggregate ESG scores and cumulative short-window abnormal returns, but no significant association was found for cumulative long-window abnormal returns. I also examine changes in ESG scores over time and find that ESG score increases are positively associated with short-window abnormal returns following income-decreasing restatements. However, longer-window abnormal returns following a restatement increase with ESG scores. Finally, results of an analysis of disaggregated E, S, and G scores show that S scores are negatively associated with abnormal returns following income-decreasing restatements. Further, G Scores tend to magnify short-window market reactions to restatements. This paper extends the current body of literature on how ESG scores are used by capital markets, and builds on the knowledge of what companies do to repair their reputation after a restatement event.

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*For my parents,
Ian and Madeleine Walker*

1. Introduction

This paper seeks to determine how aggregated ESG scores, change in ESG scores, and disaggregated E, S, and G component scores affect market returns for a firm following the occurrence of a financial restatement event. Research has shown that restatements result in negative outcomes for a firm and pose challenges that are difficult for companies to combat. Nguyen and Puri (2014) explain that in addition to causing damage to a company's reputation and demonstrating a lack of competency on behalf of management, restatements tend to lead to a significant reduction in firm share price. Moreover, Mao (2018) suggests that the reduction in share price may be attributable to the restating firm being categorized by the market as higher risk, as restatement events lead to an increase in the cost of equity capital for the restating firm. The Audit Analytics 2021 Financial Restatement Review explains that the recent explosion of restatement events, which increased 289% from 2020 to 2021, has been primarily spurred on by the increased prevalence of special purpose acquisition companies, or SPACs as they are more commonly known. In fact, SPACs comprise roughly 77% of all restatements in 2021, indicating that SPACs tend to restate financials more than other types of firms (2021 Financial Restatement Review).

Additionally, during recent years, environmental, social, and governance (ESG) factors have been significantly growing in popularity, and investors have increasingly been including ESG activities as part of their investment criteria (Woodings, 2021, 1). In response, many companies have chosen to adopt ESG reporting practices and voluntarily engage in other ESG initiatives, partly in order to take advantage of various new opportunities for financial benefit and risk mitigation (Wong, 2021). The main signaling

benefits of disclosing ESG initiatives primarily stem from the positive effects of ESG on firm reputation, and arguably firms that disclose bad news may engage in ESG activities to mitigate market reactions to the news. Given that the negative effects of restatements primarily stem from the damage caused to firm reputation as a result of the restatement, I examine whether ESG engagement can be used as an effective tool for a company to rebuild and restore reputational capital and mitigate the negative market effects of a financial restatement.

While many papers have explored relationships between ESG metrics and market returns in general, the literature is sparse in identifying the role of a firm's ESG scores as a mitigative factor following the occurrence of negative events (such as restatement) that damage a company's reputation and result in negative returns. Moreover, these other papers tend to focus on aggregate ESG ratings instead of considering disaggregated ESG information (i.e., component environmental, social, and governance scores) as well as change in ESG score over time. Examining these atypical factors, such as the change in a firm's ESG score in the time following the announcement of a restatement event, provides novel findings regarding how firms respond to and recover from restatement events. Instead of simply identifying relationships between aggregate ESG scores and returns, my findings provide actionable insights that can serve as the basis for company initiatives to mitigate the negative effects of financial restatement.

Using the Audit Analytics Restatement database, I find all companies that had restated financials from Q3 2018 through Q3 2022. From the 2,587 firms that had experienced restatement over this time, I identify 63 of these companies that had sufficient ESG ratings data that can be used to answer my research question. I then hand-

collect ESG scores from FTSE Russell's Mergent Online Sustainability database. Using this data, I regress short-window (10-day) and long-window (180-day) subsequent cumulative abnormal returns on aggregate ESG scores, change in ESG scores, individual E, S, and G component scores, while taking into account control variables such as the natural logarithm of sales, return on assets, and debt-to-total assets, adapted from Bouteska (2019).

For my short-window analysis, I find there to be a significant negative relationship between aggregate ESG scores and cumulative abnormal returns. Moreover, a significant negative relationship is also evident when examining the short-window effect of change in ESG score on cumulative abnormal returns for the sample firms. When looking at the results on the disaggregated E, S, and G component scores, I find no significant relationship between abnormal returns and E scores, and but both S and G scores show significantly negative associations with cumulative abnormal returns. I also find that the significant negative relationship between S scores and cumulative abnormal returns is driven by the firms whose restatements had a negative effect on income.

Similar to the findings of Woodings (2021) and Halbritter and Dorfleitner (2015), I find no statistically significant relationship between aggregate ESG scores and cumulative abnormal returns in the long window, i.e., 180 days after the restatement event. However, the change in ESG scores shows a significant and positive relationship with cumulative abnormal earnings for the overall sample. Conversely, the coefficient on the change in ESG scores is significantly negative particularly for companies where income improved as a result of the restatement. More specifically, while a positive change in ESG score is associated with higher cumulative abnormal returns for the

sample as a whole, a positive change in ESG score is associated with more negative cumulative abnormal returns for the group of companies in the sample where the restatement event resulted in increased earnings.

From a broad perspective, the results of this study indicate that while the strengthening of ESG engagement may be able to help a firm recover in the long-term, the market perceives that focusing too much on ESG in the short-term after financial restatement may be detrimental to the company's performance, resulting in more negative returns for the firm. In these cases, the focus on ESG appears to magnify rather than mitigate the negative effects of restatement. It is useful to keep in mind that restatements are viewed by and large as negative events and may simply be looked upon unfavorably by the market in the short term, regardless of any increase to a company's ESG score, as the benefits of the increased score may have not yet had the chance to materialize.

By examining the effects of ESG scores on market returns following a restatement event, the results of this study extend the current body of literature regarding how ESG scores are used by the capital markets while also building upon the knowledge of what companies do to repair their reputation after a financial restatement event. Moreover, this paper offers directions for future research with regard to the use of ESG as a risk-mitigative tool in the wake of other adverse events. Repeating a similar study with larger samples and more machine-readable ESG data may reveal findings that build upon the ideas presented in this paper.

The remainder of this paper is structured as follows. Section 2 provides the motivation of this study by presenting the negative effects of restatement and the potential mitigative effects of ESG. Section 3 outlines the methodology I use for my

empirical tests, the research design for the study, and the sample selection process.

Section 4 presents the results and relevant discussion. Section 5 concludes the paper and offers suggestions for future research.

2. Motivation

Necessary restatements of financial statements have been shown to have a significant impact on a company's reputation, financial performance, and overall credibility (Zhang, 2021). Usually resulting from errors that have been made in its previous financial reporting periods, restatements raise questions regarding the credibility and reliability of the true financial position of the company. Restatements typically occur when a company discovers errors or inaccuracies in previous financial statements that require correction. This can be due to a variety of reasons such as accounting errors, fraud, or noncompliance with accounting standards. Restatements may also indicate lack of integrity of company management, which can lead to a loss of trust among investors, creditors, and other stakeholders. The loss of trust can also have a significant impact on a stock price, as investors may be hesitant to invest in companies that have needed to restate financial statements. The damage caused to the company's reputation as a result of necessary restatements can make it harder for businesses to attract and retain customers, partners, and employees.

2.1. Consequences of Financial Restatements

Restatements are generally costly and time-consuming. Companies often have to hire additional staff, consultants, or outside accounting firms in order to review and correct previously issued financial statements. This costly exercise can divert resources away from more productive activities such as business development and growth. The cost of restatements can also be a significant burden on a company's finances, especially for smaller companies that may not have sufficient resources to absorb these costs. Moreover, necessary restatements can also result in legal and regulatory consequences for

companies and their executives. Companies and executives may be subject to fines or other penalties for failing to comply with securities laws and regulations. Additionally, restatements can also lead to increased scrutiny from auditors and other regulators, which can further serve to reduce employee morale and divert resources away from productive activities. In addition to the effects mentioned above, restatements can also lead to a loss of trust among suppliers and other business partners, often leading to difficulties in gaining access to credit, delays in receiving goods and services, and other problems that can negatively impact a company's continuing operations. Restatements can also lead to higher contract costs, particularly if the restatement in question is related directly to a particular covenant or other business agreement (Karpoff, 2008, 606).

In addition to the reputational damage caused by financial restatements, there are additional costs of restatement that can directly impact a company's financing practices. More specifically, restatements often lead to a decrease in expected future earnings, thus increasing the company's cost of equity capital (Mao, 2018). This, in turn, makes it more expensive for companies that have experienced a restatement to borrow money, restricting the firm's access to growth capital. The increase in a company's cost of equity capital as a result of restatement signals outwardly that the company carries higher risk to potential investors. Due to the increased risk and uncertainty connected to restatements, markets tend to have a negative reaction to such events. As such, company share prices are known to drop significantly after the announcement of a restatement event (Nguyen and Puri, 2014).

2.2. Reputational Repair Following Restatements

There are, however, numerous steps that a company can take in an effort to mitigate negative outcomes in the wake of financial restatements. Chakravarty, DeHaan, and Rajgopal (2014) find that most mitigative efforts employed by firms seek directly to repair the reputational damages brought forth by restatement events. Firms focus on rebuilding reputational capital, defined as “the present value of the improvement in net cash flow and lower cost of capital that arises when a firm’s counterparties trust that the firm will uphold its explicit and implicit contracts, and will not act opportunistically to their detriment” (Karpoff, 2011, 363).

Firms take a variety of actions in order to rebuild their reputational capital following financial restatement. Firms often start first by publicly acknowledging the restatement event and establishing clear lines of communication with stakeholders, effectively increasing the transparency of a company’s accounting practices. Transparency on the part of management is notably important in the period of after financial restatement. The model put forth by Pfarrer in 2008 regarding organizational reintegration with stakeholders following the occurrence of negative events suggests that “the process by which organizations reintegrate with stakeholders and regain legitimacy cannot move forward until stakeholders are satisfied with their knowledge regarding what happened” (Guerber, 2019, 3).

After informing investors of the causes and severity of the restatement event, companies may engage in a variety of remedial actions in order to showcase that the firm is taking the necessary steps to ensure that events that led to the restatement in the first place do not repeat themselves. This may include introducing new training programs for

employees or the implementation of new internal controls in areas that were previously lacking. Following restatement, firms may often “implement changes to inventive or internal control systems both the reduce the likelihood of future restatements as well as to signal the firm’s commitment to preventing misconduct” (Chakravarty, DeHaan, and Rajgopal, 2014, 15).

Companies may also implement organizational changes in an effort to rebuild reputational capital following a restatement event. For example, Wilson (2008) postulates that “restating firms that dismiss their CEO or change their auditor recover their reporting credibility faster than firms that do not initiate these changes” (Chakravarty, DeHaan, and Rajgopal, 2014, 5). However, such organizational changes may not require a firm to dismiss top executives as “reducing the CEO’s option-based compensation after a restatement leads to less risk taking and improved profitability” (Chakravarty, DeHaan, and Rajgopal, 2014, 5).

Companies may also choose to engage in other reputation management initiatives following a restatement event, such as the launching of new advertising campaigns that directly target customers instead of potential investors. Companies may also choose to reevaluate branding efforts and present products differently in order to differentiate them from those offered during the restatement period (Chakravarty, DeHaan, and Rajgopal, 2014, 16). As such, by targeting customers directly, the company is able to simultaneously rebrand itself and signal profitability to potential investors.

Environmental, Social, and Governance (ESG)

One way that I conjecture firms can do to improve its reputation is to focus on and highlight its Environmental, Social, and Governance (ESG) activities, which I discuss below.

2.3. Environmental, Social, and Governance (ESG) Activities

ESG refers to three key areas of consideration when evaluating a company's overall impact on society and the environment. ESG has gained popularity in recent years as investors and stakeholders have become more aware of the potential risks and opportunities associated with a company's environmental, social, and governance practices. As such, company management has been paying more attention to these issues than ever before.

Environmental (E) refers to the aspects of the company that directly affect the natural environment. These factors would include areas such as greenhouse gas emissions, water conservation, energy efficiency, and waste management. Companies that are able to effectively manage their environmental impact can reduce a variety of costs and risks (Koller, Nuttall, and Henisz, 2019). For instance, companies championing environmental ideals can earn carbon credits and gain more affordable access to capital. Moreover, minimizing a firm's impact on the environment often helps to improve their reputation among the public and their credibility with stakeholders. Many governments around the world have recently introduced regulations and incentives to encourage businesses to adopt more sustainable practices. With many companies setting goals to lower or even eliminate their carbon footprint in the near future, environmental considerations are of the utmost importance to many of the world's top companies.

Social (S) refers to the aspects of the company that have the potential to impact society more broadly. These considerations are typically concerned with areas such as community engagement, employee relations, diversity and inclusion initiatives, and human rights (Koller, Nuttall, and Henisz, 2019). In addition, socially conscious companies may be better positioned to attract and retain top talent, which is critical in driving long-term future success. As more consumers and investors have been more frequently searching for companies that align with their values and are committed to making a positive impact on society, social considerations have become increasingly visible as priorities in many company initiatives.

Governance (G) factors refer to the top-down methods by which a company is managed and controlled. Generally set forth as objectives by the board of trustees, these considerations are typically concerned issues such as risk management, transparency, and accountability (Koller, Nuttall, and Henisz, 2019). Companies that practice strong governance procedures can reduce their risks, increase employee retention, and improve their reputation and credibility with stakeholders. Additionally, well implemented governance practices can also lead to better decision-making and operational performance within a company. Moreover, strong governance factors outwardly project signals of strength and competence, thus leading to an increased confidence in the company both from investors and the general public.

The overarching purpose of ESG is to generate long-term value for companies by taking into account a wide variety of factors that affect a company's performance and external impact. ESG focused practices can present companies with both opportunities and risks. Companies that can identify and manage these risks in a manner that is

consistent with their mission statement and business objectives will be able to take advantage of the shifting attitudes in favor of ESG. New opportunities for both financial benefit and risk mitigation have been primarily responsible for propelling the rise in popularity of ESG in recent years. For example, with climate change and other environmental issues becoming increasingly prominent topics of discussion, investors and stakeholders are increasingly searching for companies that are actively taking steps to address such issues. Additionally, the increasing awareness of the importance of social issues such as diversity and human rights has also led to a growing interest in ESG.

Another reason for the rise popularity of ESG is the recognition that strong environmental, social, and governance practices can lead to improved financial performance (Gillan, Koch, and Starks, 2021). For example, companies that are able to effectively manage their environmental impact can improve their reputation among the public, potentially attracting new investors. Furthermore, companies that have strong governance practices can reduce firm risk by increasing employee retention and improving credibility among stakeholders. It is not uncommon for ESG-minded companies to enjoy lower costs of capital, primarily because they are viewed as less risky investments. As investors and stakeholders have been increasingly looking for companies that align with their values and that are committed to making a positive impact on society, ESG minded companies are being viewed as more valuable than other companies that do not engage in ESG activity.

ESG has also garnered attention in the context of sustainable investing, which notably has become increasingly popular in recent years. Sustainable investing is an investment strategy that takes into account various environmental, social, and governance

factors when strategically selecting companies in which to invest. Companies that practice sustainable investing typically select firms that have strong ESG practices, while avoiding companies that appear to have neglected these issues in recent years.

Although not required by law, companies may choose to disclose information related to ESG practices for several reasons. In general, firms hope that voluntarily reporting ESG metrics will improve their reputation and brand image. Through publicly announcing their ESG initiatives and reporting on their progress, companies are able to signal to stakeholders that they are socially responsible and committed to sustainably generating long-term value. This may help the firm attract and retain customers, employees, and investors who are increasingly interested in investing in or working for companies that are conscious of their impact on society and the environment. Reporting ESG information can also provide companies with additional opportunities to manage risk. Climate change, for example, can have a significant impact on a company's operational performance and reputation. By publicly reporting on greenhouse gas emissions and company strategies for reducing them in the future, firms can demonstrate that they are proactively managing environmental risks. Similarly, reporting on labor practices, diversity, and other social issues can help a company identify and address potential reputational risks.

Reporting ESG information can also help a company identify and capitalize on new business opportunities. As demand for sustainable products and services increases, companies that can demonstrate their commitment to sustainability may be better positioned to win business over more complacent peers. Voluntarily reporting of ESG information can potentially help companies identify areas to improve their operations and

become more efficient, which can lead to a variety of cost savings. Moreover, institutional investors are demanding ESG disclosures and factoring them into their investment decisions now more than ever before. Before investing, sustainable investors factor in a company's exposure to environmental and social risks, in addition to its governance practices, in order to make the most informed investment decisions. By reporting ESG information, a company can provide investors with the information they seek, potentially allowing the company to attract a wider range of investors. On the other hand, companies that do not report ESG information may be viewed as less transparent and less committed to sustainability, potentially cause them to lose business and miss out on capital from socially and environmentally minded investors.

2.4. ESG and Financial Restatements

In general, "higher ESG scores predict lower probabilities of restatement due to fraud, clerical errors, or SEC investigation" (Zhang, 2021, 6). Additionally, companies that have strong governance practices in place may be more effective at identifying and addressing issues in advance that could lead to a restatement in future periods.

Companies that have experienced a restatement may also be more likely to prioritize ESG issues in order to rebuild trust and confidence with stakeholders. For example, a company that has experienced a restatement due to an environmental issue may be more likely to prioritize and report on its environmental performance in order to demonstrate that it is taking steps to address the issue and to prevent similar issues from occurring again in the future.

There are numerous ways through which focusing on ESG initiatives can help a company mitigate and recover from the negative effects of restatement. As disclosure of

ESG information at this time is entirely voluntary, choosing to disclose ESG related information is often viewed as a signal of strength. Voluntary disclosure can also be known to “improve the quality of corporate information, reduce information asymmetry in firm value and signal compliance with societal norms concerning sustainable business conduct, which is assumed to lead to increased legitimacy and reduced idiosyncratic risks” (Reber, 2021, 1). As a result of the reduction in information asymmetry, companies with high ESG scores are typically viewed as more transparent and tend to have greater stock price awareness among investors than firms that do not prioritize ESG.

ESG has also been known to have negative effects on idiosyncratic volatility and downside tail risk in the market (Reber, 2021). Therefore, it would be logical to suppose that investing in high ESG-rated companies would be considered safer than investing in the same company if it did not focus on ESG. Additionally, higher ESG scores can result in a lower cost of capital to the firm by reducing the firm’s susceptibility to systematic risk. As such, firms with higher ESG scores often receive higher valuations due to the reduction in the firm’s cost of capital (Giese, 2019).

There is some evidence, however, that ESG-related practices signal that managers are not acting in the interests of shareholders. For instance, Masulis and Reza (2015) find that corporate giving results in reduced firm value. Barnea and Rubin (2010) suggest that managers may have incentives to overinvest in corporate social responsibility (CSR) activities to the extent that doing so improves their reputation but actually reduces firm value.

2.5. Predictions

Companies that prioritize and report their ESG practices may be less likely to experience restatements in their financial statements due to management taking a more proactive role in addressing environmental and social risks. Moreover, companies with strong ESG practices in place may receive greater returns in the post restatement period than counterparts not championing ESG ideals. This is especially true among companies with strong governance practices in place. Additionally, companies that have experienced a restatement in the past may be more likely to prioritize ESG disclosures in order to rebuild trust and confidence among the public. Not only may companies with strong ESG performance be less likely to face regulatory scrutiny and legal action, but also they may be more attractive to investors, thus potentially minimizing stock price volatility and leading to increased financial performance overall.

On the contrary, it is possible that investors may view an increased focus on ESG to be detrimental, particularly after a restatement. Since a restatement event often results in a loss of trust in management and a more pessimistic outlook for the firm overall, investors may perceive that spending on ESG initiatives may be a misuse of company resources.

Given that results may go either way, I make no directional prediction on how the emphasis on ESG mitigates or exacerbates the negative market reactions following restatements.

3. Methodology

3.1. Research Design

In order to determine the effects of ESG scores on market returns in the period of and immediately subsequent to restatement in financial statements, I conduct an event study. The event study consists of three parts: a 180-day estimation window, an event window, and a gap of 50 days separating the two. During the estimation window, I use market returns to estimate a Fama-French 3-factor model for the restating firm. The main purpose of the 50-day gap is to reduce any contaminative effects the restatement may have on the estimation process. More specifically, the gap functions to ensure that no estimations were affected by any information related to the restatement. Following the gap, I use the coefficients from the Fama-French 3-factor model estimation arrived at using the estimation window data to estimate expected returns for the company during the event window. Then, after estimating the returns for the event window, I compare actual returns with expected returns to derive the cumulative abnormal returns (CAR) for the sample. I then run the regressions presented in Equation (1) and (2) below.

$$\text{Dependent Variable} = a + b \text{ ESG Rating} + \text{Controls} \quad (1)$$

$$\text{Dependent Variable} = a + b_1 \text{ E Rating} + b_2 \text{ S Rating} + b_3 \text{ G Rating} + \text{Controls} \quad (2)$$

I use cumulative abnormal returns (as a measure of market reactions to financial restatement) in the period immediately following a restatement event as the Dependent Variable in both regressions. Cumulative abnormal returns were derived using data from WRDS Beta Suite. For the event window, I examine cumulative abnormal returns for two different time frames following the restatement event: 10 days after the restatement event (short window) and 180 days after the restatement event (long window). The event

window begins 10 days before the restatement event date and ends either 10 or 180 days after the restatement event, depending on whether I was testing for short- or long-window results.

I use total ESG and disaggregated E, S, and G scores for restating firms during the year restatement event, as well as the change in ESG scores compared with that of the year prior to the restatement year in order to identify trends between ESG scores. ESG data are hand-collected from the FTSE Russell's Mergent Online Sustainability database. The ratings, which take into account both ESG performance and risks, are determined by an independent external committee of experts. Component scores measure a firm's ability to deal with issues related to each pillar of ESG, with companies receiving a score between 0 and 5. These component scores are then averaged together into a more-holistic ESG score, which is designed to measure the overall quality of a company's ESG activities.

Finally, similar to Bouteska (2019), I use the natural logarithm of sales, return on assets, and debt-to-assets as the control variables in this experiment.

3.2. Sample Selection

Using the Audit Analytics Restatement database, I fielded a search that presented all companies that have experienced a restatement event from Q3 2018 through Q3 2022. From the 2,587 firms that had experienced restatement over this time, I identified 63 of these companies with sufficient ESG ratings data to include in the sample. I classify restatements in two ways—Adverse or Improve—depending on the effect of the restatement on company earnings during the year of restatement. Restatements had a

negative effect on income for companies in the Adverse group while having a positive impact on income for the Improve group.

4. Results

Descriptive statistics for the entire sample are presented in Table 1.

TABLE 1
Descriptive Statistics

Variable	N	Mean	Median	Std Dev	Min	Max
ESG Score	63	3.1	3.2	0.8	1.0	4.6
E Score	63	2.5	2.6	1.4	0.0	5.0
S Score	63	2.8	2.8	0.9	0.7	5.0
G Score	63	3.8	4.0	0.7	2.5	5.0
Total Assets (\$000)	63	71.5	19.2	294.5	1.7	2,291.4
Total Debt (\$000)	61	11.0	5.0	32.8	0.0	257.5
Net income (\$000)	63	1.5	1.1	3.6	-10.2	22.0
Sales (\$000)	63	15.3	11.1	14.0	0.8	80.6
Cumulative Abnormal Returns (10 days)	63	1.3%	0.2%	9.9%	-17.0%	38.5%
Buy-and-Hold Abnormal Returns (10 days)	63	1.2%	0.0%	10.3%	-16.9%	44.2%
Cumulative Abnormal Returns (180 days)	62	5.8%	0.0%	23.4%	-49.4%	102.9%
Buy-and-Hold Abnormal Returns (180 days)	62	7.5%	-2.1%	34.9%	-36.5%	216.5%

The average aggregate ESG score in the sample was 3.05 (range of 1.0 to 4.6).

Broken down by component parts, the sample had an average score of 2.4 (range of 0 to 5), 2.8 (range of 0.7 to 5), and 3.8 (range of 2.5 to 5) for E, S, and G, respectively. The firms in the sample had average total assets of \$71.5 billion. The firms also had average total sales of \$15.3 billion, average net income of \$1.5 billion, and average earnings before taxes of \$3.6 billion (untabulated).

Market data shows an average cumulative abnormal return of +1.26% in the 10 days following the restatement, with a range of -16.97% to +38.53% for the sample. Average cumulative abnormal returns for the 90 days following the restatement is 5.77%, with a range of -49.36% to 102.95%. The average buy and hold abnormal return for the sample was 1.23%, with a range of -16.92% to 44.19%. Average buy and hold returns for the 90 days following the restatement event was 7.51% with a range of -36.49% to

216.54%. Although I do not use the buy and hold returns data in my reported analysis, results are qualitatively similar if I used buy-and-hold abnormal returns instead of cumulative abnormal returns.

4.1. Short Window Results

Table 2 shows results for my short-window analysis.

TABLE 2
Regressions of 10-Day Cumulative Abnormal Returns on ESG Scores

VARIABLES	(1) <i>Full Sample</i>	(2) <i>Adverse</i>	(3) <i>Improve</i>	(4) <i>Full Sample</i>	(5) <i>Adverse</i>	(6) <i>Improve</i>
ESG Score	-0.039** (0.037)	-0.044** (0.040)	-0.009 (0.914)			
Change in ESG				-0.061 (0.199)	-0.095** (0.045)	0.227 (0.527)
Ln(Sales)	0.013 (0.308)	0.014 (0.371)	0.035 (0.351)	0.004 (0.812)	0.001 (0.963)	0.023 (0.482)
ROA	-0.553*** (0.002)	-0.490** (0.019)	-1.125 (0.132)	-0.483*** (0.004)	-0.469*** (0.007)	-1.249* (0.057)
Debt-to-Assets	0.026 (0.691)	0.035 (0.645)	-0.037 (0.833)	0.040 (0.589)	0.051 (0.553)	-0.006 (0.954)
Constant	0.033 (0.780)	0.037 (0.773)	-0.168 (0.584)	0.003 (0.985)	0.015 (0.919)	-0.080 (0.797)
Observations	63	50	13	48	40	8
R-squared	0.275	0.296	0.448	0.242	0.276	0.714

Robust p-values in parentheses

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

Table 2, Column 1 shows a statistically significant negative relationship between aggregate ESG scores and cumulative abnormal returns in the short term (10-Day CAR). Columns 2 and 3 break the sample down into two groups of restatements, Adverse (Column 2) and Improve (Column 3), depending on the effect of the restatement on the income of the restating firm. As evident from the table, the statistically significant and

negative coefficient on ESG suggests that the results are primarily driven by firms in the Adverse group.

These findings suggest that higher aggregate ESG scores lead to more negative short-term returns for the companies in the full sample. One potential reason behind the negative relationship between aggregate ESG scores and cumulative abnormal returns may be that the firms in the sample are being punished by the market for focusing too much attention on ESG matters that are unrelated to their core businesses. The results are consistent with the notion that the market believes that managers of the restating firm ought to spend more time and attention on their core business instead of promoting ESG initiatives.

Columns 4 through 6 of Table 2 present the results of changes in ESG scores as the independent variable of interest. There is no statistically significant association between the Change in ESG score and short-window cumulative abnormal returns (Table 2, Column 4). While the results for the sample as a whole are not statistically significant, the coefficients on the ESG Score variable is negative, suggesting that change in ESG score has a negative overall effect on cumulative abnormal returns in the 10 days following a restatement event. Moreover, results in Table 2, Column 5 show a significant negative relationship between change in ESG score and cumulative abnormal returns in the short term for companies in the Adverse group.

These findings suggest that positive changes in ESG scores would typically result in more negative returns for companies in the adverse group. Following a similar reasoning to the discussion of the short-term effects of aggregate ESG scores, the results here suggest that firms were being punished by the market for playing too high an

emphasis on ESG practices without simultaneously strengthening other aspects of their core business following a restatement.

4.2. Long-Window Results

Table 3 presents the results of regressing cumulative abnormal returns 180 days after the restatement on ESG scores and changes in ESG scores.

TABLE 3
Regressions of 180-Day Cumulative Abnormal Returns on ESG Scores

VARIABLES	(1) <i>Full Sample</i>	(2) <i>Adverse</i>	(3) <i>Improve</i>	(4) <i>Full Sample</i>	(5) <i>Adverse</i>	(6) <i>Improve</i>
ESG Score	-0.017 (0.659)	0.012 (0.784)	-0.241 (0.159)			
Change in ESG				0.232** (0.034)	0.268** (0.020)	-1.560** (0.019)
Ln(Sales)	-0.045 (0.172)	-0.051 (0.187)	0.002 (0.981)	-0.084** (0.024)	-0.076** (0.038)	0.166** (0.011)
ROA	0.027 (0.949)	0.075 (0.857)	-1.876 (0.218)	-0.025 (0.948)	-0.042 (0.913)	1.069 (0.260)
Debt-to-Assets	0.114 (0.557)	0.282 (0.245)	-0.092 (0.742)	0.165 (0.445)	0.337 (0.178)	-0.637*** (0.006)
Constant	0.491* (0.078)	0.400 (0.138)	0.908 (0.307)	0.819** (0.016)	0.696** (0.029)	-1.109** (0.050)
Observations	62	49	13	47	39	8
R-squared	0.045	0.077	0.324	0.163	0.214	0.855

Robust p-values in parentheses

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

Table 3, Column 1 shows no statistically significant relationship between aggregate ESG score and long-window (180-day) cumulative abnormal returns. Table 3, Column 2 showcases a statistically insignificant but positive correlation between aggregate ESG scores and cumulative abnormal returns for the Adverse group, while Column 3 shows a negative (but statistically insignificant) relationship between

cumulative abnormal returns and aggregate ESG scores for companies in the Improve group. Here, perhaps the reason for a lack of statistical significance is due to “the countervailing effects of the different pillars that make up the ESG score” (Woodings, 2021, 21). It is possible that the act of combining component E, S, and G scores into a single aggregate score can negate the potential effects of the component scores. In essence, it is possible that the effects of the individual E, S, and G component scores may cancel each other out, resulting in no discernable relationship for the sample as a whole based on aggregate scores.

The effects of change in ESG score on market returns following financial restatement show significant relationships for all groups in the sample, as evidenced in Columns 4 through 6 of Table 3. Changes in ESG scores are positively associated with long-window cumulative abnormal returns for the overall sample (Column 4) and the Adverse group (Column 5). Conversely, change in ESG scores have a significantly negative relationship with long-window cumulative abnormal returns for companies in the Improve group.

These findings indicate that increase in ESG scores is positively associated with longer-window cumulative abnormal returns for all companies in the sample. In essence, these findings suggest that improving ESG scores can be used as an effective tool for risk mitigation in the post-restatement period, provided that the restatement originally had a negative effect on income. However, it is important to note that positive changes in ESG scores are significantly negatively associated with cumulative abnormal returns for companies in the improve group. As such, companies with restatements that improved income can expect to receive a negative cumulative abnormal return in the post-

restatement period. After inspection of the results, however, I remain unsure as to why this may be the case. Perhaps these results are due to the general nature of restatements, as the fact that a firm needed to restate its financials, regardless of whether the change impacted income positively or negatively, can be viewed as a failure on behalf of company management.

4.3. Analysis of Disaggregated E, S, and G Scores

I regress the short-window cumulative abnormal returns on disaggregated E, S, and G scores, and present the results in Table 4. Table 4, Columns 1 through 3 show a negative but statistically insignificant relationship between Environmental (E) score and 10-day cumulative abnormal returns for the entire sample and for the two subsamples. Table 4, Column 4 shows a significant negative relationship between S scores and short-window cumulative abnormal returns for the full sample, and a negative and moderately significant relationship for companies in the Adverse group in Column 5.

In Table 4, Column 7, the coefficient on G Score is not statistically significant. However, in Column 8, the coefficient on G Score is significantly negative for firms in the Adverse subsample, while the coefficient is positive and marginally significant for firms in the Improve subsample presented in Column 9.

While no significant relationships were identified for E score, the results indicate significant relationships between short-window cumulative abnormal returns and both S and G scores. Consistent with previous short-term findings, the negative relationship between S score and cumulative abnormal returns suggests that firms were being punished by the market for focusing too much of their attention particularly on social issues that may not be perceived to be pertinent to the core business of the restating firm

(consistent with the arguments of Barnea and Rubin, 2010). In other words, the company may have misallocated time and resources to social initiatives while ignoring certain internal processes that may have prevented the restatement from occurring.

Notably, the significant relationship between G scores and short-term cumulative abnormal returns in the post-restatement period is particularly interesting. While one may expect a positive relationship between G scores and returns, companies with higher G scores typically experience lower cumulative abnormal returns in the 10 days following the announcement of a restatement event for an adverse restatement. Conversely, for companies whose restatements resulted in improvements in income, higher G scores were associated with higher 10-day cumulative abnormal returns. These results that a company's G scores serve to magnify both the positive and negative effects of restatement in the post-restatement period.

TABLE 4
Analysis of 10-Day Cumulative Abnormal Returns on Disaggregated E, S, and G Component Scores

VARIABLES	(1) <i>Full Sample</i>	(2) <i>Adverse</i>	(3) <i>Improve</i>	(4) <i>Full Sample</i>	(5) <i>Adverse</i>	(6) <i>Improve</i>	(7) <i>Full Sample</i>	(8) <i>Adverse</i>	(9) <i>Improve</i>
E Score	-0.016 (0.162)	-0.019 (0.179)	-0.010 (0.714)						
S Score				-0.030** (0.042)	-0.030* (0.095)	-0.022 (0.578)			
G Score							-0.026 (0.127)	-0.044** (0.033)	0.071* (0.068)
Ln(Sales)	0.015 (0.297)	0.018 (0.341)	0.036 (0.308)	0.012 (0.353)	0.011 (0.458)	0.034 (0.349)	0.001 (0.964)	-0.004 (0.774)	0.031 (0.363)
ROA	-0.533*** (0.003)	-0.473** (0.026)	-1.190** (0.042)	-0.533*** (0.005)	-0.476** (0.034)	-1.158** (0.032)	-0.558*** (0.003)	-0.548** (0.012)	-0.804* (0.054)
Debt-to-Assets	0.029 (0.690)	0.045 (0.596)	-0.029 (0.842)	0.034 (0.610)	0.056 (0.490)	-0.036 (0.755)	0.021 (0.768)	0.017 (0.846)	-0.170 (0.206)
Constant	-0.066 (0.583)	-0.093 (0.509)	-0.175 (0.566)	0.008 (0.946)	0.003 (0.980)	-0.133 (0.664)	0.137 (0.355)	0.239 (0.176)	-0.414 (0.219)
Observations	63	50	13	63	50	13	63	50	13
R-squared	0.233	0.239	0.459	0.266	0.263	0.467	0.230	0.280	0.608

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

5. Conclusion

This paper expands on the current body of ESG literature by examining the effects of both composite ESG scores and individual E, S, and G component scores on market returns for 63 firms that have recently experienced a restatement event. In addition to expanding on extant literature, examination and analysis of the results also provide novel insights. Contrary to what some may logically believe, ESG scores appear to be negatively correlated with cumulative abnormal returns in the short-term following restatement. This means that high ESG scores lead to more negative returns for the companies in the full sample, reflecting a negative market reaction and suggesting that markets perceive a firm's focus on ESG initiatives may be misguided or skewed given that a restatement took place. Additionally, I find that positive change in ESG score is positively correlated with long-window cumulative abnormal returns, provided that the restatement had an adverse effect on income. Thus, if the restatement event actually resulted in lower earnings for the firm, a positive change in ESG score following the restatement event would lead to higher returns for the company. As such, it is possible for companies to recover more effectively from a negative restatement event if the firm is able to strategically increase their aggregate ESG score in the post-restatement period. However, it is important to note that in the cases where the restatement events lead to an increase in income for the firm, an increase in ESG scores following the restatement would result in lower cumulative abnormal returns for the firm.

When examining the effects of the disaggregated E, S, and G component scores on short-window abnormal returns, I find that G scores that indicate strong governance practices prior to restatement actually serve to magnify the effects of restatement for the firm in the post-restatement period. That is, higher G scores result in more negative (positive) cumulative

abnormal returns 10 days following the restatement when the restatement reduces (increases) income.

Based on the combination of results, it is difficult to say whether ESG itself is an effective tool that can be used to mitigate the negative effects of financial restatement. Over the short window, results suggest that the market penalizes greater ESG activity; however, over a longer window, it seems that higher ESG scores leader to better returns. There may be confounding variables over the long window—firms that have higher ESG scores may be doing things to mitigate the risk (as suggested by Reber, 2021).

Nonetheless, this paper adds clarification with respect to the risk mitigative effects of aggregate ESG scores, disaggregated scores, and change in ESG scores in the context of financial restatement. Moreover, this paper identifies and isolates the effects of ESG on market returns over both short and long windows, which can be used in part to formulate an approach for firms to recover from financial restatement more effectively.

There are a few areas of future research that would yield fruitful discussion if this body of research where to be expanded. For example, research on the effects of ESG on market results subsequent to the occurrence of other adverse events can extend the results of my study. For instance, scholars can examine whether ESG has mitigative effects in the wake of missing analyst forecasts, making large asset impairments, or forced C-suite and board turnover—all of which have been shown to result in negative market reactions. Finally, using a larger sample to test the effects of ESG on market reactions for restating firms would strengthen the generalizability of my results. Machine-readable data can also be utilized to increase the sample size and augment the reliability of the results in this paper.

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