Restatement of CSR Reports: Frequency, Magnitude, and Determinants

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In the absence of credible, verifiable information…it is difficult for shareholders, investors, and pension fund managers to make meaningful assessments and decisions about the CR [corporate responsibility] practices. (ISO 2002, page IV).

1.   Introduction

A growing number of corporations invest a substantial amount in social and environmental activities, and many of them report on their activities using voluntarily produced and unregulated Corporate Social Responsibility (CSR) reports. KPMG (2013) reports that 71% of the 4,100 large firms they sampled worldwide prepare CSR reports, including 93% of the largest 250 firms.[1] Reliability of the reported information is critical for their usefulness. However, concerns have been raised about the credibility of the CSR disclosures and opportunistic reporting (e.g, Laufer 2003; O'Dwyer 2002). Given these concerns and the large volume of academic literature that has examined CSR reports, surprisingly little is known about the reports' reliability. Through an examination of CSR restatements, we provide the first analysis of the magnitude and nature of the unreliability of quantified information disclosed in CSR reports. We approach this through an examination of the frequency, magnitude, and determinants of restatements of CSR reports for the Fortune Global 250 (G250) from 2006 to 2013.

Reflecting the importance of disclosure reliability, the financial accounting literature has extensively examined the quality of reported earnings (Dechow and Skinner 2000; Healy and Whalen 1999; Dechow, Ge, and Schrand 2010). Within this line of inquiry, a stream of papers has examined determinants and consequences external financial report restatements.[2] However, restatements of CSR reports are likely to differ substantially from those of external

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[1] According to the Corporateregister.com, as of 2015, over 30,000 CSR reports were issued by firms and other organizations around the world.
[2] For example Kinney and McDaniel (1989); Dechow, Sloan, and Sweeney (1996); Hribar and Jenkins (2004); Palmrose, Richardson, and Scholz (2004); Palmrose and Scholz (2004); Srinivasan (2005), Efendi, Srivastava, and Swanson. (2007); Stanley and DeZoort (2007); Gleason, Jenkins, and Johnson (2008); Wilson (2008); and Cao, Meyers, and Omer (2012).

financial reports. Unlike accrual accounting, in most countries, CSR reports are voluntary and unregulated, with no generally accepted reporting principles and standards.[3] Managers thus have much discretion about how to measure and report CSR performance and can change measurement methods from year to year. Finally, the uncertainty associated with environmental and social performance is high and is likely to be substantially greater than that associated with estimating accruals.[4]

Our study has three main sections. The first section is descriptive and documents the frequency and magnitude of restatements in CSR reports. The second section is an exploratory investigation of determinants and economic incentives associated with the reporting frequency of CSR restatements. The third section examines factors associated with the reporting bias in misstatements towards overstatement of CSR performance. We focus on the role of the auditor and measurement standards in guarding against intentional misrepresentation. Our sample of firms comprises the Global Fortune 250 (G250). This enables us to examine the role of cross-country factors as a determinant of CSR restatements, while holding constant size and self-selection characteristics of firms that decide to produce CSR Reports.[5]

Across our sample period, we find that 39% of the G250 CSR reports have been restated.[6] The frequency of restatements increases monotonically across time, from 29% in 2006 to 53% in 2013. When a CSR report is restated, the median number of line items in the report that are changed is four, and the median magnitude of the restatement of each line item

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[3] Exceptions include required CSR reporting for some categories of firms in China and the required issuance of Integrated Reports for publicly listed firms in South Africa. In these countries, the reports do not have a required format.

[4] For example, when measuring carbon emissions, companies must determine the scope of activities to include and whether to include indirect emissions, such as emissions resulting from generating the electricity used by the company. If they decide to include the indirect emissions, they must consider the methods used to generate that electricity (natural gas, coal, hydro-electric, wind, or solar), which have tremendous variation in carbon production. Social performance includes qualitative and subjective components, which are difficult to measure.

[5] Firm size has been regularly established as a determinant of voluntary disclosure in the literature, mainly due to scale effects, so its effects must be controlled for. As effectively all of the G250 prepare CSR reports this enables us to control for self-selection issues associated with the decision to produce a CSR report.

[6] KPMG (2011) notes that the frequency of CSR report restatements far exceeds the frequency of financial statement restatements, which was 3.1% for the Fortune 1000 in 2010.

is 9.8%. The type of the restatement can be split approximately in half, between change in calculation methodology and correction of estimates due to error. We find evidence of a bias in the direction of restatement errors toward overstatement of social but not environmental performance.

To explore the determinants and economics incentives associated with the frequency and direction of CSR restatements, we use a framework similar to that employed in the financial reporting restatement literature. Kinney and McDaniel (1989) argue that the two preconditions necessary for issuance of a restatement are that the firm has issued a report containing an error and that management or the auditor detect the error and decide that public disclosure of the error is desirable or necessary. Using this framework, we develop predictions for the determinants of the *frequency* and *direction* of CSR restatements.

We argue that the frequency of CSR restatements will be positively related to fundamental firm complexity and stakeholder demand for CSR information, since these factors could increase the complexity and volume of information supplied and thus the probability of reporting errors occurring. Furthermore, we expect the frequency of restatements will be positively associated with the level of CSR performance and with reporting incentives related to having specified targets due to errors associated with opportunistic choices. Finally, in relation to discovery and disclosure of errors, we predict a positive association between greater auditor and firm-level corporate governance monitoring mechanisms and the probability of an error both being detected and reported. [7]

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[7] We note that the "audit" of a CSR report differs from a financial statement audit. Instead, CSR reports are "assured," following a different set of standards for engagement (e.g., AA1000, developed by Accountability, and ISA 3000, developed by the International Accounting and Auditing Standards Board) than for financial statement audits. See Potter and Soderstrom (2014) for a discussion of assurance within the context of integrated reporting. Similar issues arise for CSR reports. For ease of explication and comparison to the financial accounting literature, we refer to the assurance engagement as an "audit" and the professional or firm providing the assurance as the "auditor."

In relation to the *direction* of restatement errors, we predict that the occurrence of errors will be biased toward overstatement of CSR performance and consistent with intentional misrepresentation. We argue that this bias will be negatively related to adoption of measurement standards, as they reduce the flexibility for opportunistic reporting. We also argue that the bias will be positively associated with having the CSR report audited, since due to litigation concerns, the auditor has incentives to invest more effort in discovery and disclosure of errors that represent overstatements. For all our predictions, we recognize that, due to the voluntary and thus endogenous nature of CSR reporting, we cannot establish causality. Thus, it is plausible that the impact of the factors we examine could be in the opposite direction from our predictions.

The main findings from an examination of the determination of *frequency* are that restatements are significantly more frequent in firms with significant inherent fundamental uncertainty associated with estimating environmental and social performance. We find no evidence of industry- or country-level demand for CSR information increasing restatements. In addition, restatement frequency is positively associated with firms that have reported a high level of social performance and those that report an environmental target. These results are consistent with firms facing an increasing demand for CSR performance and, in turn, reporting a higher level of performance being more likely to issue a CSR report that is subsequently changed.

Our multivariate results also provide evidence of a positive association between restatement frequency and firm-level monitoring. Specifically, there is positive association with having an auditor and restatements, which is consistent with an auditor increasing probability of an error being detected and being reported. However, the quality of firm-level corporate governance has no association with CSR restatements. Finally, frequency of restatements is positively associated with firms that reside in strong rule of law countries. This

is consistent with firms facing litigation threats being more likely to decide that public disclosure of an error is desirable or necessary.

In our analysis of the direction of restatements, we find evidence of a bias in the direction of restated errors toward overstatement of social and environmental performance. Our multivariate examination of factors associated with restatement bias indicates a negative association between adoption of Global Reporting Initiative (GRI) reporting guidelines and the likelihood of an overstatement.[8] Guidelines such as GRI restrict reporting choice and thus may prevent opportunistic choice of measurement methods, improve accuracy, and reduce opportunities to bias reported numbers. We also find a positive association between having the CSR report audited and the likelihood of the restatement errors being overstatements. Potentially due to concerns about litigation risk,[9] auditors may invest more time and effort in minimizing over- than understatement of performance. Finally, there is a positive association between the magnitude of the restatement and the likelihood of the restatement errors being overstatements. This is consistent with the initially reported numbers being overstated to make performance appear better than it actually is, which in turn implies an incentive to manage the magnitude.

We make several contributions to the academic literature and policy debates in relation to the regulation of CSR reports. We conduct the first rigorous analysis of the frequency and extent of restatements and provide insights into the level of reliability of the quantitative values

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[8] GRI is a nonprofit organization that has developed voluntary reporting standards. In its standard development, GRI has enlisted the help of representatives from many stakeholder groups, including corporations, governments, nongovernmental organizations, consultancies, accounting firms, business associations, rating organizations, universities, and research institutes. Current GRI guidelines are updated periodically and are now in their fourth generation (G4) (GRI 2013).

[9] While we are unaware of auditors being sued for sustainability-related reporting issues, some companies have been sued for providing misleading statements in their reports. For example, in the case In Re BP P.L.C. Securities Litigation (2013), plaintiffs cite the incorrect representation, in BP's sustainability report, of the company's system for managing safety (specifically, the scope of operations covered by the system) as misleading investors as to the quality of risk management at the company. In Dana v. Hersey (2016), the plaintiff points out an inconsistency in policies reported in a CSR report and other company disclosures and in practices related to child slave labor in a company's supply chain.

reported in CSR reports.[10] Research has focused on examination of disclosure quality in CSR reports from a qualitative perspective, including tone and framing of discussion (Cho, Roberts, and Patten 2010; Michelon, Pilonato, and Ricceri 2015). We extend this inquiry to the quantitative values reported and conclude that this information could be very unreliable, due to both the error magnitude and bias.

Second, we provide the first systematic evidence regarding factors associated with CSR restatements. This evidence matters because CSR report reliability is of interest to a wide range of stakeholders. For example, from a public policy perspective, the level of reliability determines the value of CSR reports as a mechanism for monitoring managers and firms. Our findings will thus be of interest to regulators and standard setters (both in the United States and worldwide), due to increasing interest in providing sustainability reporting guidelines and enhancing the reliability of reporting.[11] Report reliability is also important for shareholders who are interested in considering the CSR performance of companies.

Third, we contribute to the large volume of archival academic literature that examines CSR reports and the recent growing stream of accounting literature on CSR. This literature has generally examined whether CSR reports are relevant for a range of economic constructs such as future performance. As recognized in the Conceptual Framework for external financial reports, for information to be decision useful, it must be relevant and reliable. To our knowledge, we provide the first direct evidence in relation of the level and determinants of the reliability of CSR reports. Specifically, we contribute to an emerging literature that examines the

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[10] A survey by KPMG (2011) discusses the extent of restatements and qualitatively addresses the phenomenon.
[11] Examples of voluntary standards for CSR reporting include the Global Reporting Initiative (GRI 2013), the United Nations' Global Compact (https://www.unglobalcompact.org/participation/report/cop), the International Integrated Reporting framework (IIRC 2013), and Sustainability Accounting Standards Board (https://navigator.sasb.org). Regarding mandatory reporting standards, the Securities and Exchange Commission has called for companies to be more forthcoming in their 10K's about the climate risks that they face (SEC 2010).

development of standards for reporting of sustainability information (Khan, Serafeim, and Yoon 2016; Grewal, Hauptmann, and Serafeim 2017).

Finally, we contribute to the audit literature examining sustainability assurance. As recognized by O'Dwyer (2011), most of this literature has examined the content and demand for assurance statements (O'Dwyer and Owen 2005; Simnett, Vanstraelen, and Chua 2009). Furthermore, as noted by Cohen and Simnett (2015), to date there has been a paucity of research relative to traditional financial reports to inform assurance related to CSR reporting. We provide the first evidence of the consequences of having a CSR report assured for the quality of information reported. A limitation of our study is, because of the endogenous nature of CSR reporting, identifying factors having a causal effect on reliability is difficult. Thus, the study should be read as a descriptive and exploratory investigation of the factors associated with the reporting frequency of CSR restatements.

The remainder of this paper is organized as follows. Section 2 presents the background and develops our hypotheses. Section 3 discusses sample selection and presents descriptive statistics. Section 4 describes our research design and presents the results of multivariate tests. Section 5 summarizes and concludes.

2.   Prior Research, Institutional Setting, and Exploratory Hypotheses

2.1   Prior research on CSR disclosures

There is a significant stream of CSR accounting literature that examines the informativeness of CSR disclosure (CSR reports and more general disclosures, typically related to environmental performance) for predicting environmental performance and future operating performance, and for firm valuation (Al-Tuwaijri, Christensen, and Hughes 2004; Hughes, Anderson, and Golden 2001, Patten 2002; Clarkson, Li, Richardson, and Vasvari 2008;

Dhaliwal, Li, Tsang, and Yang 2011).[12] Findings from this literature are mixed, and there is no clearly established link between CSR performance and financial performance. These studies can be considered as a joint test of the relevance and reliability of the reported CSR information. The absence of a relation could be either due to the information not being relevant or that the information is unreliable.[13]

However, only a few studies that have examined the quality or reliability of CSR disclosures. As noted by Huang and Watson (2015, p. 11), in a review of the corporate social responsibility literature, "compared to research on the existence or quantity of CSR disclosure, research on CSR quality is quite limited … there is little evidence on the determinants of CSR disclosure quality" Cho et al. (2010) find that poor environmental performers are more likely to have optimistic and uncertain tones in their environmental disclosures. Rupley, Brown, and Marshall (2012) find that good corporate-governance and environmental media coverage have positive effects on environmental disclosure quality. Plumlee, Brown, Hayes, and Marshall (2015) develop a measure based upon GRI Content as a measure of the quality of the firms' voluntary environmental disclosure and find a positive association between environmental disclosure quality and firm value. Closest to our work is that of Michelon et al. (2015), who develop a disclosure quality index based upon the items reported, semantics of the disclosure, and framing of the discussion around specific disclosures. The common theme across this limited number of studies is examination of disclosure quality from a qualitative perspective. (For example, while disclosure indices may include whether CSR information is disclosed

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[12] In a meta-analysis of 251 studies that examined the association between CSR and financial performance, Margolis, Elfenbein, and Walsh (2009) find that 28 percent report a positive association, 59 percent report nonsignificant associations, 2 percent report a negative association, and 10 percent did not report statistical evidence. Some studies have found evidence consistent with CSR reporting being informative to investors (Griffin, Lont, and Sun 2017; Clarkson et al. 2013; Dhaliwal et al. 2011, 2014; Dhaliwal, Radhakrishnan, Tsang, and Yang 2012; Matsumura, Prakash, Vera-Muñoz 2014).

[13] For example, if the reason for CSR investments is delegated philanthropy by the consumer to the corporation, then the information would not be relevant for predicting operating performance. Alternatively, there may be no relation between CSR investments and performance, because of the findings in recent literature show there is likely to be over-investment in CSR, due to agency problems (Masulis and Reza 2014).

qualitatively or quantitatively, the values of the quantitative measures are ignored.) Unlike prior studies, we focus on reliability of the quantified information.

In contrast to the CSR literature, there is an extremely large volume of financial accounting literature that directly examines the quality or reliability of reported earnings numbers (Dechow and Skinner 2000; Healy and Whalen 1999; Francis, Olsson, and Schipper 2006; Dechow et al. 2010). A significant subset of this literature has examined the determinants and consequences of restatements of financial reports by public companies.[14] In a review of the restatement literature, Dechow et al. (2010) conclude that the generally weak and mixed evidence across restatement determinants suggests that they generally do not arise due to *intentional* misstatements. As Dechow et al. (2010) note, support for this conclusion comes from the work of Kinney and McDaniel (1989), who find that firms that restate are smaller, less profitable, and more indebted and face more serious uncertainties. They interpret their evidence as suggesting that accounting errors are the outcome of weak accounting systems (i.e. weak internal controls), rather than opportunistic earnings management.[15] Research also suggests that firms monitored by external auditors and other sophisticated market participants (e.g., analysts) are more likely to disclose restatements (Myers, Scholz, and Sharp 2013).

The magnitude and determinants of restatements in CSR reports could differ substantially from that of external financial reports for three reasons. CSR reports are voluntary and subject to very limited regulatory guidance and oversight. Furthermore, in contrast to accrual accounting, there are no well-established principles and standards for how CSR

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[14] The literature includes the work of Kinney and McDaniel (1989), Dechow et al. (1996), Hribar and Jenkins (2004), Palmrose et al. (2004), Palmrose and Scholz (2004), Srinivasan (2005), Efendi et al. (2007), Stanley and DeZoort (2007), Gleason et al. (2008), Wilson (2008), and Cao et al. (2012). The stock price reaction to restatements has been consistently economically significant (Hribar and Jenkins 2004; Palmrose et al. 2004).

[15] Further support for this comes from the work of Kinney, Palmrose, and Scholz (2004) and Seetharaman, Sun, and Wang (2011), who find that non-audit services relate negatively to restatements, which is consistent with knowledge spillovers from non-audit services enhancing financial reporting system.

performance should be measured.[16] Finally, as recognized by Ramanna (2013), environmental performance and social performance are difficult to measure. Unlike financial performance, which is presented in financial statements using a common unit of measurement (i.e., dollars), CSR performance is multi-dimensional and is represented by both quantitative and qualitative measures.[17] Taken together, these three factors imply that managers have a considerable amount of discretion over what is reported and how the items reported are measured.

2.2 Exploring determinants of CSR restatements

To explore determinants and economics incentives associated with the reporting of CSR restatements, we use a framework similar to that employed in the financial reporting restatement literature. This stream of literature has recognized that two conditions must precede a restatement (Kinney and McDaniel 1989; Asbaugh-Skaife, Collins, and Kinney 2007; Srinivasan, Wahid, and Yu 2014). First, the firm must issue a report containing an error. Second, management, the auditor, or both must detect the error and decide that public disclosure of the error is desirable or necessary (Dyck, Morse, and Zingales 2010; Keune and Johnstone 2015). We explore potential factors that could impact of each of these conditions for restatements of CSR report.[18] For the first condition (occurrence of the error), we examine the

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[16] As recognized by Ramanna (2013), two significant accounting principles that have evolved over time to address the potential unreliability of external financial reports are that the information must be verifiable (i.e., auditable) and conservative (i.e., there is a higher standard of verifiability is required for recognizing gains relative to losses). However, whether any such principle exists in relation to CSR Reports is an open question.

[17] Quantitative measures are based upon different units (e.g., tons of emissions, kilowatt hours of electricity, employee turnover percent), and include subjective aspects (e.g., employee or customer satisfaction). Further, the scope of activities that should be included in the performance measures is unclear. For example, for energy usage, should all of the firm's facilities be included? What about energy used by suppliers (i.e., indirect impacts), or transportation impacts for third party shipments of the final products to customers? As measurement systems develop, with changes in methodology and more careful scrutiny from both within the firm and by external stakeholders, there may be a greater number of restatements, both due to error corrections and changes in measurement methods.

[18] Although we classify the determinants of misstatement reporting into two broad categories of risk exposure and then discovery and disclosure incentives we recognize that several of the variables we use could proxy for both risk effects and incentive effects.

role of complexity, incentives to misstate, and measurement standards. For the second condition (discovery and decision to disclose), we examine the role of the auditor, corporate governance, and country-level laws.

We examine the impact of these factors on both the *frequency* of restatements and *bias* of the restatements toward correction of overstatements. Restatement frequency is a function of both unintentional errors and intentional misrepresentations. We expect that restatements will exhibit bias related to correction of overstatements stemming from intentional misrepresentation. Our analysis focuses on the roles of the auditor and measurement standards. This is because both factors are on standard setters' policy agendas and a primary reason for existence of standards and audit requirements in traditional financial reporting is to guard against opportunistic reporting. We therefore seek to provide some evidence about the role of these two factors in preventing opportunistic CSR reporting.

2.2.1 Factors associated with occurrence of a misstatement: complexity, incentives to misstate, and measurement standards

We argue that reporting errors are more likely to occur in firms where reporting is more complex. Complexity can result in a larger volume of numbers being reported, greater difficulty in deriving the measures reported, or both. The complexity of CSR reporting will vary as a function of both innate firm environmental and social complexity and stakeholder demand for detailed, complex information. We measure innate complexity using asset intensity and predict that those firms with a greater level of plant and equipment are more likely to be environmentally complex, increasing the difficulty of measurement and thus the occurrence of errors.[19]

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[19] For example, capital-intensive firms are those involved in cement clinker production and oil and gas extraction as opposed to low asset-intensity firms, such retailers. Capital-intensive firms not only face reporting complexity related to direct environmental impacts and regulation but are also more likely to have complex social reporting related to worker health and safety and other social impacts.

As the level of stakeholder demand for CSR reporting increases, so will the length and complexity of the CSR report supplied and thus the probability of errors (and potential restatements).[20] We examine variables at the country and industry levels that proxy for stakeholder demand and are likely to be associated with restatements. Whether a country is more stakeholder- or shareholder-oriented will influence the demand for CSR reports. Companies domiciled in countries that are more stakeholder-oriented are likely to demand more information in CSR reports, as contrasted with companies domiciled in countries that are more shareholder-oriented (Van der Laan Smith, Adhikari, and Tondkar 2005). Companies in stakeholder-oriented countries therefore may have a greater frequency of restatements. However, stakeholder countries could also invest in greater country-level regulation, which may increase the quality of reported CSR information and lower the incidence of restatements.[21]

We make similar predictions at the industry level. Companies belonging to industries that are more exposed to environmental or social risks will have a greater need to manage these risks by producing more information, implying a greater probability of an error. They therefore may be more likely to restate. However, as Simnett et al. (2009) note, these types of industries may have incentives to invest in systems and mechanisms to increase the credibility of the information they report in their CSR reports. This may imply fewer restatements.[22]

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[20] Because CSR reporting is voluntary and standards are still evolving, as firms increase the level and complexity of reporting, they are likely to refine their systems and update practices. These updates could result in more restatements due to changes in metrics. However, if the firms with more complex reporting have more mature performance measurement systems, then they may not have more restatements due to metric changes.

[21] Ramanna (2013) suggests that corporate reporting of environmental practices is likely to be more effective in reducing carbon footprints in Europe versus United States, due to stricter environmental enforcement in the former jurisdiction. For example, Germany introduced the Accounting Law Reform Act in 2004, which mandates inclusion and audit of significant CSR performance metrics in financial reports.

[22] Specifically, Simnett et al. (2009) suggest these types of industries may have an incentive to purchase assurance to increase user confidence in the credibility of the information contained in their sustainability reports.

Our discussion has been based upon *unintentional* errors in reporting (which should be unbiased). However, political-market and other socio-political theories, including political-economy, legitimacy and "green-washing" (Hemingway and Maclagan 2004; Adams 2004; Deegan 2002; Patten 2002; Cho and Patten 2007) all suggest that social and political pressures could create incentives to bias reported CSR performance. Because CSR reporting is unregulated, managers can respond to these incentives and report opportunistically (Holder-Webb, Cohen, Nath, and Wood 2009; Hobson and Kachelmeier 2005).

To examine the effect of intentional bias on restatements, we predict that firms with CSR targets and those with better CSR performance will have both more restatements and a greater bias in the direction of restatements toward correction of overstatements of performance. There is now a substantial body of accounting literature that documents that having specific performance targets, such as beating last year's earnings, creates incentives to bias reported performance to achieve the targets (Burgstahler and Dichev 1997; Bartov, Givoly, and Hayn 2002). We predict that firms will behave similarly with CSR reporting, such that firms with CSR targets will restate more often, with a bias towards correction of overstatements. We also predict that firms with better CSR performance will have more restatements either because the performance reflects opportunistic reporting or because of unintentional errors, due to a greater breadth of CSR initiatives.

Disclosures in traditional financial reports are largely driven by standards. A substantial body of research has examined the effect of these standards on economic outcomes, and it is recognized that they play an important role in the development of capital markets and efficient allocation of capital (Barth, Landsman, and Lang 2008; Healy and Palepu 2001; Agoglia, Doupnik, and Tsakumis 2011; Dye, 2002; Schipper 2003). Standards can increase the quality and comparability of reported information across firms and time

(Barth et al. 2008; Grewal et al. 2017). While there are not yet worldwide mandated reporting standards guiding sustainability disclosure, international organizations, such as the Global Reporting Initiative, seek to enhance the quality and comparability of CSR reporting by issuing guidelines for sustainability reporting. To signal and increase user confidence in the credibility of information contained in their CSR, firms may follow measurement standards. This implies that firms adopting measurement standards should have a lower frequency of restatements.

However, Plumlee and Yohn (2010) identify lack of clarity of an accounting standard as one of the main reasons for a financial reporting restatement. CSR reporting standards are still being developed. (e.g., GRI reporting standards are now in their fourth generation, with continuing development). As firms try to report using these evolving standards, they may have more frequent restatements to align their historically reported numbers with current practice. We therefore make no directional prediction and simply predict there will be an association between the frequency of restatements and adoption of measurement standards.

With regard to intentional misrepresentation, we predict that firms adopting measurement standards will be less likely to have restatements due to overstatements. This is because, after adoption of a measurement standard, the firm is more open to litigation for overstatement of CSR performance, since there is a disclosure guideline against which their reporting decision can be judged. As a result, the firm will have a lower incentive to report opportunistically.

2.2.2 Factors associated with discovery and decision to disclose a misstatement: role of the auditor, corporate governance, and country-level laws

The second condition for restatements is detection and self-reporting of the misstatement. This requires both a technology for detection and a decision by management to disclose the restatement. As recognized by Srinivasan et al. (2014), without enforcement

that ensures the prudent correction of existing misstatements, there will likely be systematic underreporting of restatements. We therefore argue that the frequency of restatements will be higher when the firm engages an auditor, both because the auditor is more likely to detect the error and will encourage management to report the error. Financial report restatements involve trade-offs for both management and auditors in deciding whether to disclose errors discovered in interim information (Kinney and McDaniel 1989). Disclosing an error may give rise to legal liability for management. However, auditors may also face liability if they discover an error and do not require management to correct it. Furthermore, by requiring disclosure, the auditor may enhance its reputation as an effective monitor.[23] Consistent with these arguments, Ashbaugh-Skaife et al. (2007) examine disclosure of internal control deficiencies under the Sarbanes-Oxley Act of 2002. Consistent with stronger incentives to disclose, they find that disclosing firms are more likely to use a dominant audit firm.

Following this line of argument, we predict that audited CSR reports are more likely to be restated both because the auditor increases the probability of detection and because the auditor is more likely to pressure management to disclose any error/method change. However, auditor appointment in this setting is endogenous. This feature of our setting leads to conflicting predictions. Firms may voluntarily choose to have an auditor in response to misstatement risk, implying a positive association between having an auditor and restatement. Consistent with this, Simnett et al. (2009) argue that companies with a greater exposure to environmental risk will have a greater need to manage these risks by purchasing assurance. However, firms also may voluntarily demand assurance of their CSR reports to signal the credibility of their report (Simnett 2014; Pflugrath, Roebuck, and Simnett 2011) or if they are domiciled in stakeholder-oriented countries (Zhou et al. 2016). If a firm chooses to have an auditor because it has a high

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[23] We are unaware of any specific cases where auditors/assurers have incurred legal liability related to auditee CSR reporting. However, footnote 8 above lists court cases where management claims in CSR reports have been cited in lawsuits.

quality, reliable CSR report, then hiring an auditor will be associated with a lower frequency of restatements. Overall, while there are some alternative arguments, the bulk of the arguments and the empirical evidence from traditional financial reports leads us to predict that audited CSR reports are more likely to be restated.

Regarding intentional misrepresentation, we predict there will be a positive association between having the CSR report audited and the likelihood of the restatement errors being overstatements. This is because for litigation reasons, the auditors will invest more time and effort to identify overstatement than understatement of performance (Basu 1997; Ball and Shivakumar 2006; Watts 2003a). Watts (2003b) observes that courts generally punish overstatement more than understatement because relevant stakeholders (especially shareholders) are more likely to suffer losses when earnings/assets are overstated than when they are understated.

Similar arguments and predictions to those made for the auditor apply for corporate governance mechanisms, which are also endogenous. To the extent that choice of corporate governance is a response to misstatement risk, both corporate governance and likelihood of eventual misstatement will both increase. However, if stronger corporate governance is reflected in higher quality information systems, there should be fewer reporting errors and less ability of managers to bias reported performance, resulting in fewer restatements.[24]

Following prior literature (Ball, Kothari, and Robin 2000), we argue that a company's home country shapes the incentives of managers and auditors and in turn their reporting behavior in relation to restatements. Research by Ball et al. (2000) and Leuz, Nanda, and

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[24] As noted by Kim, Park, and Wier (2012), corporate governance and CSR environmental and social performance may be completely different constructs. They suggest this is because CSR activities that improve social and environmental conditions have the objective of serving the interests of all stakeholders. Good corporate governance, in contrast, ensures the firm operates in the best interest of shareholders. Therefore, depending on how one defines shareholders' best interest, corporate governance and CSR performance may diverge. They also suggest the relation between corporate governance and CSR may depend on CSR incentives. If CSR is motivated by managers' self-interest and good corporate governance works as a disciplinary mechanism, then corporate governance and CSR could be negatively associated.

Wysocki (2003) documents cross-country variation in accounting quality driven by the strength of domestic legal institutions. Consistent with this, Srinivasan et al. (2014) examine when firms are more likely to admit their mistakes and find that countries with a strong rule of law are more likely to restate traditional financial reports. We therefore predict that the probability of restatements is positively associated with the level of home country rule of law.[25]

In summary, we expect a positive association between the frequency of restatements and fundamental environmental and social complexity, the setting of targets, the level of environmental and social performance; and stronger monitoring measured by auditor engagement, and firm location in strong rule of law countries. We predict an association (but no predicted direction) between frequency of restatements and external stakeholder demand for CSR information, adoption of standards, and governance.[26] We predict a bias in the direction of restatements toward correction of overstatements, which is positively associated with setting specific targets, CSR performance, and having a CSR audit. We expect a negative association between bias and adoption of measurement standards.

3.   Data and Sample

Our sample comprises CSR reports voluntarily issued by the G250 over the period from 2006 to 2013. We use the G250 as our starting population to address self-selection in the decision to produce a CSR report and control for firm size. Mainly due to scale effects, firm size has been regularly established as a determinant of voluntary disclosure in the literature (Hahn and Kühnen 2013). Effectively all of the G250 prepare CSR reports, which enables us to both address self-selection issues associated with the decision to produce a CSR report and control for size.

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[25] We use a country-level measure of the rule of law as a summary indicator of the extent of compliance with laws and regulations that can shape a firm's reporting by impacting factors such as auditor effort, investor protection, and managerial self-dealing, among others. Empirically, we use the rule of law index from the World Bank's Worldwide Governance Indicators (see Kaufmann, Kraay, and Mastruzzi 2004 for a discussion of index specifics). Earlier periods of this index were used by La Porta, Lopez-de-Silanes, Shleifer, and Vishny (2006).
[26] We recognize that several of these proposed factors are endogenous and are not mutually exclusive to just one of the three conditions necessary to observe a restatement.

We begin our sample in 2006 because of the tremendous growth in CSR reporting since then. KPMG (2005) reports that, between 2002 and 2005, the percentage of G250 companies providing standalone CSR reports grew from 40 to 52. In its 2008 report, KPMG finds that 79 percent of G250 companies provided these reports, and, in 2011, it reports that 95 percent did so.[27] This period represents a time when CSR reporting became pervasive but was still evolving and was thus more likely to exhibit variation in quality.[28] The reports were collected from the Global Reporting Initiative's disclosure database (http://database.globalreporting.org/search), company websites, and, if not publicly available, via email request to the company. Our initial sample consists of 1,480 firm-year observations from 221 firms. We match hand-collected standalone CSR report data to the Thomson Reuters Asset4 database and Compustat Global, resulting in a sample of 845 firm-years representing 151 firms.[29]

Classification of CSR Restatements

We hand-code restatements by reading each sustainability report to identify environmental and social data that was changed from the prior year's report. Such changes are disclosed through footnotes to tables or notes appended to reported data. The footnotes and notes typically state a reason for the restatement. We separate individual restatements into three types: 1) changes that reflect correction of errors in reported data from past reports (hereafter estimation error); 2) changes that reflect a change in calculation method/metric (hereafter metric change); and 3) other unspecified changes. Each CSR report-year can have more than

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[27] KPMG (2011) does not separate out different forms of reporting, so this figure includes companies that provide integrated reports, provide information within their financial statements, or provide disclosures through various online resources.

[28] As CSR reporting matures, we expect that there will be fewer restatements.

[29] Asset4 is a Thomson Reuters data vendor that provides environmental, social, and governance performance rankings of large corporate entities across the world. ASSET4 provides environmental, social and governance performance rankings based on 250+ key performance indicators (KPIs) and 750+ individual data points. The database covers more than 3,000 companies globally since 2002. Scores are based on the relative performance of each company, compared to the universe of companies covered by ASSET4. The performance indicators measure the following attributes of each construct: governance (board functions, board structure, compensation policy, vision and strategy, shareholder rights), environment (emission reduction, product innovation, resource reduction), and social (product responsibility, community, human rights and opportunity, employment quality, health and safety, and training and development).

one line item that has been restated. For example, in a single report, both the line items for greenhouse gas emissions and fatalities at managed operations could be restated, in which case that report would be recorded as having two line items restated.

Figure 1 provides examples of the first two types of restatements. In both panels, the highlighted fields indicate the original and restated data. Panel A provides an example of restatement due to an estimation error from Rio Tinto. Rio Tinto's social performance for 2013 includes a footnote indicating that prior-year numbers for new cases of occupational illness and for employee exposure to noise have been restated due to data verification. The number of new cases of occupational illness originally reported for 2012 changed from 13 to 15, a 15% increase. For employee exposure to noise, the restatements ranged from an increase of 0.7% to a decrease of 7.3%. It is interesting to note that, in the original data panel, some of the numbers that were subsequently restated had already been restated from prior years.

Panel B of Figure 1 provides an example of a restatement due to metric change. In the footnote to the table on accidents worldwide, Exxon-Mobil notes a change in its metric to compute greenhouse gas (GHG) emissions from the direct equity method to the net equity method, which includes direct and imported GHG emissions and excludes emissions from exports. In this case, the GHG measures from the prior 2010 year decrease by 5% when restated. Another type of metric change is a change in the scope of the measure. For example, Toyota Motor Corporation (2009, p. 46) indicates that measurement of air and quality data started including non-operational hours in calculation of discharge volume.

4.   Results

Frequency and Magnitude of Restatements

Our first analysis explores basic distributional frequency characteristics of restatements. Table 1 Panel A reports the frequency of restatements across time. Across the

sample period 39% (307) of the sample CSR reports include restatements of prior years' data. There has been a general increase in the frequency of restatements across time from 29% in 2006 to 53% in 2013. This level of restatements is substantial and is significantly greater than restatement frequency of financial reports.

For the sample of 307 reports with restatements, Table 1 Panel B aggregates the items restated by report and categorizes the overall nature of restatement into solely estimation error corrections, solely metric corrections, a mix of both types, or unspecified. Across the sample, 33% (101) of reports are restated solely due to an estimation error; 33% (100) are solely due to metrics changes; and 30% (93) include both error corrections and metric changes. Four percent (13) could not be classified.

Each CSR Report may include restatements of more than one line item. For example, both the line items for greenhouse gas emissions and fatalities at managed operations could be restated. Table 2 reports the descriptive statistics for individual line items that were restated in each report, averaged at the report level. The mean (median) number of line items restated in each CSR report was 8 (4). The mean (median) value of the absolute magnitude of the restatement was 94% (9.8%). The distribution of restatement magnitudes indicates that the mean is driven by a few extreme observations. These observations notwithstanding, the magnitude of restatements appears to be of economic significance.[30] Further evidence in Table 2 indicates that, within each report, more items tend to be restated due to metric changes (mean and median of 8 and 3 line items respectively) versus error corrections (mean and median of 4 and 2 line items, respectively). The magnitude of metric changes tends to be higher than that of error corrections, both at the mean (238% versus 17.8%, respectively) and the median

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[30] The vast majority of the restated measures are not stated in monetary terms, making use of standard calculations of monetary impacts to ascertain economic significance problematic. Arguably, restatements of different types of items may have variation in economic impact, and the materiality of a restatement can depend on the stakeholder's viewpoint. For example, large revisions to reported numbers of employee fatalities or injuries may be very material to employee readers of the reports. Large revisions of emission numbers may be material to regulators and activist shareholders.

(10.8% versus 8.6%, respectively).[31] This is consistent with evolving standards for reporting of CSR performance as companies refine their systems and the relative immaturity of companies' social and environmental performance information systems.

Determinants of Restatement Frequency

Our first investigation examines factors associated with restatement frequency. We test for differences in characteristics of CSR reports that restate prior performance versus those that do not. Our baseline logit regression is:

*(1)   RESTAT$_{i,t}$ = β_1 – β_4 (COMPLEXITY AND DEMAND FOR CSR) +
        β_5 – β_7 (CSR_ PERFORMANCE) + β_8(MEASUREMENT_STANDARDS) +
        β_9 – β_{11} (MONITORING) + $\varepsilon_{i,t}$,*

where the variables are defined as follows (with sign predictions as appropriate).

RESTAT   Dummy variable that equals 1 if the CSR report for firm *i* in year *t* included restatements of prior CSR reports and 0 otherwise.

*COMPLEXITY AND DEMAND FOR CSR***:**

ASSET_TURN   The ratio of sales to total assets, with an expected negative coefficient. This variable measures asset intensity, and it is predicted firms with a greater level of plant and equipment are more likely to be environmentally complex and sensitive, increasing both the difficulty of measurement and the demand for CSR information.
SENSITIVE_IND   Dummy variable for companies belonging to industries that are exposed to greater environmental or social risks (oil, gas, and consumable fuels; chemicals; metals and mining.
STAKE_COUNTRY   Dummy variable that takes the value of 1 if a firm is from a stakeholder country and zero otherwise.

CSR_PERFORMANCE:

TARGET   Dummy variable that takes the value of 1 if a firm sets a target for its environment performance, with an expected positive coefficient.
ENV_PERF   ASSET4 percentage score, based on the relative environmental performance of firm *i* in year *t*, compared to the universe of firms covered by ASSET4, with an expected positive coefficient. The

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[31] Both the number and magnitude are statistically different between errors and metrics at the 5% level.

	environmental performance attributes measured are Emission Reduction, Product Innovation, and Resource Reduction. [32]
SOCIAL_PERF	ASSET4 percentage score, based on the relative social performance of firm i in year t compared to the universe of firms covered by ASSET4, with an expected positive coefficient. The social performance attributes measured are: Product Responsibility, Community, Human Rights and Opportunity, Employment Quality, Health & Safety, Training and Development. [33]

MEASUREMENT STANDARDS:

GRI	Dummy variable that takes the value of 1 if a firm adopts the Global Reporting Initiative's (GRI) measurement standard in its reporting of CSR information and 0 otherwise. There are several measurement standards we could use, as certifications and standards have been issued by various bodies. We use the GRI Sustainability Reporting Guidelines, as they are among the most high-profile standards worldwide (Ramanna 2013) and the most widely used CSR reporting framework (KPMG 2013). [34]

MONITORING:

AUDIT	Dummy variable that takes the value of 1 if the CSR reported is audited and 0 otherwise, with an expected positive coefficient.
GOVERNANCE	ASSET4 percentage score, based on the relative corporate governance performance of firm i in year t, compared to the universe of firms covered by ASSET4. The corporate governance performance attributes measured are: Board Functions, Board Structure, Compensation Policy, Vision and Strategy, Shareholder Rights. [35]

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[32] ASSET4's environmental performance metric is intended to measures a company's impact on living and nonliving natural systems, including the air, land, and water, as well as complete ecosystems. It reflects how well a company uses best management practices to avoid environmental risks and capitalize on environmental opportunities to generate long-term shareholder value.

[33] ASSET4's social performance metric is intended to measure a company's capacity to engender trust and loyalty with its workforce, customers, and society, through its use of best management practices. It reflects the company's reputation and the health of its license to operate, which are key factors in determining its ability to generate long-term shareholder value.

[34] There are many other certifications and standards issued by private and nonprivate sector organizations. However, as discussed, GRI is the most recognized. See, for instance, the International Organization for Standardization (ISO) 14000 family regarding "Environmental Management" http://www. iso.org, the Global Reporting Initiative http://www.globalreporting.org/, the Sustainability Accounting Standards Board http://www.sasb.org/, the Carbon Disclosure Project http://www.cdproject.net, the International Integrated Reporting Council http://www.theiirc.org, the Climate Disclosure Standards Board http://www.cdsb.net, or social rating agencies, such as MSCI http://www.msci.com/products/esg/stats or Thomson Reuters http://thomsonreuters.com/esg-research-data.

[35] ASSET4's corporate governance metric is intended to measure a company's systems and processes, which ensure that its board members and executives act in the best interests of its long-term shareholders. It reflects a company's capacity, through its use of best management practices, to direct and control its rights and

STRONG_LAW   Dummy variable that takes the value of 1 for countries with strong rule of law. A positive coefficient is expected. We use the rule of law index from the World Bank's Worldwide Governance Indicators (Kaufmann, Kraay, and Mastruzzi 2003), with countries above the median being classified as strong.

In our exploratory analysis of bias in restatements, we adapt the model to focus at the line-item level. We restrict the analysis to firms that had a restatement, replace the dependent variable with OVERSTAT, which is a dummy variable that takes value 1 for restatements that represent correction of a prior overstatement of performance, and add the magnitude of the restatement (MAGNITUDE) as an independent variable. The baseline logistic regression takes the following form:

(2) $OVERSTAT_{i,t} = \beta_1 - \beta_4 \ (COMPLEXITY\ AND\ DEMAND\ FOR\ CSR) +$
$\beta_5 - \beta_7 \ (CSR\_PERFORMANCE) + \beta_8(MEASUREMENT\_STANDARDS) +$
$\beta_9 - \beta_{11} \ (MONITORING) + \beta_{12} \ (MAGNITUDE) + \varepsilon_{i,t}.$

Univariate Results

In Table 3, we report the sample distribution by country and industry. Table 3 Panel A reports the percentage of restatements by industry. Reviewing those industries with more than 20 reports indicates that the industries with the most frequent restatements are Electric Utilities, Pharmaceuticals, Oil and Gas & Consumable Fuels, and Technology Hardware, Storage and Peripherals with 70.0%; 62.7%, 62% and 53.1% of their reports being restated respectively. The high incidence of restatements for both the Electric Utilities, Pharmaceuticals and Oil and Gas industries is consistent with these industries having greater demand for CSR information and being more fundamentally complex with respect to measurement of environmental and social performance. This, in turn, creates a greater possibility for errors and prompts the development of new measurement systems.

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responsibilities through the creation of incentives and checks and balances to generate long-term shareholder value.

Panel B reports the percentage of restatements by country. Among countries with more than 20 reports, the countries with the highest incidence of restatements are the Netherlands and Spain, with 75% and 70% of CSR reports being restated, respectively. The countries with the lowest incidence of restatements are Japan, Switzerland, and France with 11.6%, 23.1%, and 24.7% of CSR reports being restated, respectively. The frequency of restatements even among the lowest of these countries is far in excess of financial reporting restatement frequency.

Table 4 Panel A provides sample descriptive statistics. Consistent with our sample comprising the world's largest and most visible companies, social responsibility appears to be a general focus. The average company scores relatively high on ASSET4's CSR indexes (an average of 90%, 87%, and 64% for environmental, social, and governance performance, respectively) and has specified social and environmental targets (95%). Almost all of the companies follow GRI reporting guidelines (96%), and the majority have their CSR reports assured (82%). This does not appear to be driven by industry factors, since only 20% of the firm-years represent firms that are in industries that have higher social and environmental risks.

Table 5 reports bivariate correlations for the sample, which are largely as expected between the explanatory variables. For example, the correlation between social and environmental performance (*SOCIAL_PERF* and *ENV_PERF*) is 0.30. Correlation between companies in stakeholder-oriented countries and social performance (*SOCIAL_PERF* and *STAKE_COUNTRY* is 0.31. Correlation between having a target and the level of environmental and social performance (*TARGET* and *ENV_PERF/SOCIAL_PERF*) is 0.14 and 0.13, respectively. Companies in strong law countries are more likely to have stronger governance (*GOVERNANCE*), with a correlation of 0.51.

Table 6 Panel A compares the mean and median level for the variables of interest between restatement and non-restatement samples and tests the difference between the two

samples. The mean and median level of *ASSET_TURN*, defined as sales scaled by total assets, is lower for restatement firms and is statistically different (a mean of 0.69 for restatement firms, compared to 0.79 for non-restatement firms and p <0.01). This is consistent with reliable CSR performance measurement being more difficult to achieve for low asset-turnover industries. These types of firms typically have large investments in plant and equipment and have significant uncertainty associated with estimating and measuring environmental and social performance.

There is weak statistical evidence of a significantly higher level of restatements of CSR reports in sensitive industries (*SENSITIVE_IND*) (21%), compared to non-sensitive ones (16%). This is consistent with either sensitive industries being more complex, having a higher demand for CSR information, or both, which gives rise to a greater probability of an error that ends up being restated.

Compared to non-restatement firms, firms that restate are more likely to have a performance target (*TARGET*) (98% versus 94%) and have a higher level of social performance (*SOCIAL_PERF*) (88.8 versus 87.13). This is consistent with higher performance or higher expectations of performance leading to a greater potential for errors. However, there is no statistical evidence of a difference between restatement and non-restatement firms in the level of environmental performance (*ENV_PERF*).

Finally, firms that restate are more likely to have an audit (*AUDIT*), be from strong-law countries (*STRONG_LAW* = 1), and have strong corporate governance (*GOVERNANCE*). In summary, the univariate evidence is consistent with restatements being a positive function of our proxies for fundamental complexity, levels of performance and reporting incentives, and monitoring and detection mechanisms.

We separate the type of restatements into those due to estimation errors and those due to metric changes and report the univariate results in Table 6 Panels B and C.[36] For the majority of variables, there is no difference between the estimation-error and metric restatements. In untabulated results, there are only three differences in the characteristics of firms reporting estimation errors versus metric errors. The mean and median level of *ASSET_TURN* is lower for metric-related restatements than estimation-error related restatements and is statistically different (a median of 0.65 for metric restatements, compared to 0.70 for estimation errors and $p < 0.05$). Estimation error-related misstatements are more likely to be from companies in sensitive industries (*SENSITIVE_IND* = 1) than metric-related misstatements (a mean percent of 0.29 versus 0.16, respectively). Finally, metric-related misstatements are more likely to be reported than estimation-errors for companies located in stakeholder-oriented (*STAKE_COUNTRY* = 1) countries.

Logistic Regression

Table 7 reports the results from the estimation of the logistic regression model (1). Because the residuals can be correlated across firm, over time, or both, for all multivariate analyses we report test statistics and significance levels based on standard errors clustered by industry and with year fixed effects. Column (i) reports the results from our base-line regression model. Columns (ii) and (iii) reports results from estimation of the models for subsamples based on restatements due to estimation errors and metric changes.

The results in Column (i) provide evidence that restatements are negatively related to asset turnover, which is consistent with a greater difficulty of reliably measuring CSR performance in firms with large investments in plant and equipment (*ASSET_TURN* = -0.40, $p < 0.01$). The coefficients of *SENSITIVE_IND* and *STAKE_COUNTRY* are statistically

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[36] Reports are classified as having error (metric) restatements if any restatement is an error (metric restatement) Therefore reports with both error and metric restatements will be included in both the error-restated and metric-restated samples.

insignificant. Overall there is strong evidence that *firm-level* complexity, associated demand, or both are associated with restatements. However, there is little evidence that our proxies for industry- and country-level demand are associated with restatements. A possible explanation for this is that stakeholder demand is reflected in the reporting choices of corporate entities and the variables that reflect reporting choices (*TARGET, ENV_PERF* and *SOCIAL_PERF*) are subsuming stakeholder demand.

Related to our performance construct, we find a statistically significant positive association between restatements and social performance (*SOCIAL_PERF* = 0.023, $p < 0.1$) and having a target (*TARGET* =0.937, $p<0.01$) but not *ENV_PERF*. Thus, we find reasonably strong evidence that restatements are significantly associated with the level of CSR performance. Results for our monitoring and measurement construct indicate a positive association with monitoring, as there is a positive association between restatements and rule of law strength (*STRONG_LAW* = 0.731, $p < 0.05$) and whether the statements are audited (*AUDIT* = 0.678, $p<0.1$).

In columns (ii) and (iii), we examine estimation error and metric restatements separately. For estimation errors, a report that has been restated could have either an estimation error only, an estimation error and metric change, or an unclassified error. Therefore, to isolate the factors associated with estimation error restatements, we include a dummy variable, *NONERR_RESTAT*, that takes the value of 1 for any report that had a non-estimation error restatement (e.g., metric restatement, unclassified restatement). We adopt a similar approach for metric changes. The results show that, with exception of *GRI*, the signs of the coefficients of all variables are the same between error and metrics. We find no statistical difference between the coefficient magnitudes.

Determinants of Bias in the Direction of CSR Restatements

In this section, we examine whether there is a directional bias in the restatement errors. Restatement errors were classified as either over- or understatement of the underlying environmental and social performance. We follow the financial accounting literature, where overstatements are defined as changes to numbers reported in prior year performance such that reported performance in the restated disclosure is worse than originally reported. For example, assume, in the 2010 CSR report, carbon dioxide emissions were originally reported as 7.34, and then, in the 2011 CSR report, they were restated to 7.56. This restatement error would be classified as an overstatement, since environmental performance was made to appear better than it actually was. Note that changes to reported numbers must be considered in context; increases to reported numbers can reflect worse performance, as in the carbon dioxide example above, or better performance (e.g., number of hours employees contribute to charities). The same is true for decreases in reported numbers.

Table 8 Panel A reports a univariate examination of the percentage of line items that were overstatements versus understatements. Across the total sample of 1,079 restated line items, on average a greater percentage were overstatements. Specifically, 54% (47%) of the reports were, on balance, overstatements (understatements), and the difference is statistically different ($p < 0.05$). The univariate evidence is consistent with a distinct bias in the direction of the errors and, in turn, possibly consistent with the original statements containing intentional errors. Examination of social versus environment restatements shows that there is a bias toward overstatement of social performance information (62% and 38% of the restatements are overstatements and understatements, respectively) but no bias in the direction of restatement of environmental performance information. When we examine whether the overstatements vary by type (Table 8 Panels B and C), the results indicate a statistically significantly greater level of overstatements than understatements for estimation errors but no difference in direction

of restatements metric changes. Specifically, for estimation error corrections, 56% (43%) of the restatements were due to overstatements (understatements), and the difference is statistically different ($p < 0.05$).

The finding there is a bias in the direction of estimation errors—and thus possibly intentional opportunistic reporting—but no bias in metric changes is consistent with the theories explaining choice of earnings management methods in the financial accounting literature. This literature argues that, given a choice between using discretionary accrual versus accounting policy changes, firms will always use discretionary accruals. This is because choice of measurement methods must be disclosed, and thus the earnings management becomes visible and will not be successful. For this reason, our multivariate examination of the reasons for a bias in the direction of restatements focuses on estimation errors.

We use logistic regression model (2) to conduct an exploratory analysis of the hypothesized reasons for the direction of restatement of estimation errors. We restrict the sample to those CSR reports that had a restatement due to estimation error. The primary explanatory variables of interest are the hypothesized variables of *GRI* measurement standard and *AUDITOR*. We estimate the model across three samples: (i) for all restatements estimation errors, (ii) environmental estimation error only restatements, and (iii) social estimation error only restatements.

Results from estimation of the logistic regression model across the three samples are reported in Table 9. The results for the sample of all restatements indicate a negative association between adoption of GRI reporting guidelines and the likelihood of an overstatement (*GRI* = -0.999 $p < 0.001$). This is consistent with measurement guidelines restricting choice and thus guarding against managers making errors that overstate performance. There is a positive association between the having the CSR report audited and the likelihood of the restatement errors being overstatements (*AUDIT* = 0.545, $p < 0.10$). This is consistent with auditors

investing more time and effort in to identify overstatement than understatement of performance for litigation reasons. Finally, there is a positive association between social performance and having had overstatements (*SOCIAL_PERF* = 0.025, $p < 0.05$).

Table 9 also reports the results from the estimation of the logit model across sample split between environmental and social restatements. We find a positive association between having the CSR report audited and the likelihood of the restatement errors being overstatements for social error restatements but not for environmental error restatements. We also find a positive association with the magnitude of the error for restatements of social information but not environmental information. This is consistent with overstatements being intentional (i.e., to make the performance appear better than it actually is), which in turn implies an incentive to manage the magnitude. Having an auditor and magnitude of error are associated with overstatements of social but not environmental information is consistent with this category of CSR information having greater availability of discretion and in turn greater opportunistic reporting. Finally, we find a negative association between the adoption of GRI reporting guidelines and the likelihood of an overstatement for environmental but not social errors. A possible explanation for this is the measurement guidelines are better developed for environmental than for social performance, constraining managerial choices and thus preventing errors that overstate performance.

Conclusion

Firm stakeholders increasingly demand disclosure of sustainability information. Given the voluntary nature of disclosure and lack of mandatory reporting rules, understanding the reliability of this information is important. This paper examines the frequency, magnitude, and determinants of restatements of CSR reports for the G250 from 2006 to 2012. We provide the first direct analysis of the magnitude and determinants of unreliability of CSR reports, as reflected in restatements. We find that that a significant proportion of CSR reports have been

restated and this frequency increases monotonically across time. We find a bias in the direction of the restatement error toward overstatement, making the social and environmental performance appear better than it actually was. The frequency and magnitude together imply CSR information can be unreliable.

Our main findings from an exploratory investigation of determinants and economic incentives associated with the reporting of CSR restatements are first, that the frequency of restatements is positively associated with environmental and socially complex firms and higher levels of social performance. This is consistent with firms facing an increasing demand for CSR performance being more likely to issue a CSR report containing an error. Second, the frequency of restatements is positively associated with the likelihood that firms have their CSR report audited and reside in strong law countries. Our examination of the factors associated with the bias finds a negative association between the adoption of GRI reporting guidelines and the likelihood of an overstatement of environmental information. This is consistent with measurement guidelines restricting choice and thus guarding against opportunistic choice of measurement methods. There is a positive association between the having the CSR reported audited and the likelihood of social restatement errors being overstatements. This is consistent with auditors investing more time and effort in identifying overstatements than understatements.

Results from the study are descriptive and are only indicative. Future research should develop theoretically based hypotheses to further explain the reasons underlying the frequent restatements of these voluntary reports. In addition, this research can explore the consequences (if any) of the restatements.

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Figure 1
Restatement Examples

Panel A: Example of a restatement that is due to error correction from Rio Tinto Summary of Social Performance 2013 and 2012, with restated numbers.

Rio Tinto Sustainability Report 2012, p. 83 (original numbers)

Social

	2012	2011	2010	2009	2008
Employees (average)	71,000	68,000	77,000	102,000	106,000
Fatalities at managed operations	3***	6**	3	4	18
All injury frequency rate (AIFR) (per 200,000 hours worked)	0.67	0.67	0.69	0.81	0.94*
Lost time injury frequency rate (LTIFR) (per 200,000 hours worked)	0.37	0.37	0.38*	0.42*	0.49*
Fines and prosecutions – safety (US$ '000)	536.1	18.3*	92.3*	190.6	207.4
New cases of occupational illness (per 10,000 employees)	13	12*	20*	39*	48*
Employees potentially exposed to an average eight hour noise dose of more than 85db(A) (per 10,000 employees)	3,410	3,602*	3,605*	3,626*	3,582*
Fines and prosecutions – health (US$ '000)	23.2	0.0	0.46	0.0	0.0

* Numbers corrected from those published in previous year following data verification
** Six fatalities at Rio Tinto managed operations or operations held for divestment in 2011. Includes one fatality at Zululand Anthracite Colliery (identified for divestment)
*** Two fatalities due to safety incidents and one fatality due to an occupational illness

Rio Tinto Sustainability Report 2013, p. 104 (restated numbers)

Social

	2013	2012	2011	2010	2009
Employees (average)	66,000	71,000	68,000	77,000	102,000
Fatalities at managed operations from safety incidents	3	2	6	3	4
Fatalities at managed operations from health incidents	–	1	–	–	–
All injury frequency rate (AIFR) (per 200,000 hours worked)	0.65	0.67	0.67	0.69	0.81
Lost time injury frequency rate (LTIFR) (per 200,000 hours worked)	0.42	0.37	0.37	0.38	0.42
Fines and prosecutions – safety (US$ '000)	145.5	536.1	18.3	92.3	190.6
New cases of occupational illness (per 10,000 employees)	16	15*	13*	20	39
Employees exposed to an 8-hour noise dose of more than 85db(A) (per 10,000 employees)	3,276	3,398*	3,587*	3,629*	3,360*
Fines and prosecutions – health (US$ '000)	0.0	23.2	0.0	0.46	0.0

* Numbers corrected from those published in previous year following data verification

** Six fatalities at Rio Tinto managed operations or operations held for divestment in 2011. Includes one fatality at Zululand Anthracite Colliery (identified for divestment)

Figure 1
Restatement Examples

Panel B: Example of a restatement that is due to metric change from Exxon-Mobil greenhouse gas emissions 2010 and 2011

Exxon-Mobil Corporate Citizenship Report 2010, p. 11 (original numbers)

	2007	2008	2009	2010	Interpretation	Page #
Managing Climate Change Risks*						
[2]Greenhouse gas emissions, absolute (direct equity, CO_2-equivalent emissions), millions of metric tons	139	130	128	**132**	■	34
[2]Greenhouse gas emissions, normalized (direct equity, CO_2-equivalent emissions, excluding cogeneration and Hong Kong Power), metric tons per 100 metric tons of throughput or production						
Upstream	19.8	18.7	18.1	**18.5**	■	34
Downstream	17.4	17.0	16.7	**16.6**	■	34
Chemical	42.0	39.8	40.2	**38.2**	■	34
Energy intensity, normalized versus *Global Energy Management System* (GEMS) base year (2000) – refining	93.2	93.4	92.6	**91.4**	■	34
Energy intensity, normalized versus GEMS base year (2001) – chemical steam cracking	90.6	91.3	90.3	**89.3**	■	34
Cogeneration capacity in which we have interest, gigawatts	4.5	4.6	4.9	**4.9**	■	35
[2]Hydrocarbon flaring (worldwide activities), millions of metric tons	8.0	5.7	4.4	**3.6**	■	34

Exxon-Mobil Corporate Citizenship Report 2011, p. 8 (restated numbers)

CITIZENSHIP DATA

	2008	2009	2010	**2011**	Interpretation	Page #
Managing Climate Change Risks*						
[1,2]Greenhouse gas emissions, absolute (net equity, CO_2-equivalent emissions), millions of metric tons	126	124	125	**129**	■	23
[1,2]Greenhouse gas emissions, normalized (net equity, CO_2-equivalent emissions), metric tons per 100 metric tons of throughput or production						
Upstream	21.0	20.2	20.3	**20.7**	■	24
Downstream	21.0	21.0	20.8	**20.4**	■	24
Chemical	59.8	60.7	57.9	**57.1**	■	24
Energy intensity, normalized versus *Global Energy Management System* (GEMS) base year (2000) – refining	93.4	92.6	91.4	**90.2**	■	23
Energy intensity, normalized versus GEMS base year (2001) – chemical steam cracking	91.3	90.3	89.3	**87.8**	■	23
Cogeneration capacity in which we have interest, gigawatts	4.6	4.9	4.9	**5.0**	■	24
Hydrocarbon flaring (worldwide activities), millions of metric tons	5.7	4.4	3.6	**4.1**	■	23

Notes on performance table:

1 The above net equity greenhouse gas (GHG) emissions metric was introduced in 2011 as a replacement for the direct equity GHG metric. Information has been restated back to 2008 according to this new metric. The net equity GHG metric includes direct and imported GHG emissions and excludes emissions from exports, including Hong Kong Power.

2 ExxonMobil reports GHG emissions on a net equity basis for all our business operations, reflecting our percent ownership in an asset. Environmental, health, and safety data are reported for our affiliates and those operations under direct ExxonMobil management and operational control.

Table 1: CSR report restatement frequency

Panel A: Frequency of reports containing restatements

Year	2006	2007	2008	2009	2010	2011	2012	2013	Total
% restated	0.29	0.30	0.29	0.34	0.41	0.41	0.41	0.53	**0.39**
Restated Reports	10	22	30	37	49	52	50	57	**307**
N	35	73	102	110	121	126	123	107	**797**

Panel B: Distribution of restatements overtime

Reason	2006	2007	2008	2009	2010	2011	2012	2013	Total
Error	4	11	12	13	15	13	17	16	**101**
Metric Change	2	5	9	12	12	20	16	24	**100**
Multiple*	4	6	8	12	21	15	14	13	**93**
Unclassified^	0	0	1	0	1	4	3	4	**13**
Total	**10**	**22**	**30**	**37**	**49**	**52**	**50**	**57**	**307**

*These reports include some mix of error, metric, and/or unclassified restatements.

^The reasons for these restatements are not clarified in these CSR reports.

Table 2: Descriptive statistics of frequency and magnitude of types of restatements

Reason		N	mean	p50	sd	min	max
Errors only	No. of items restated	101	4.3	2.0	4.9	1.0	26.0
	Restatement magnitude (absolute % change)	101	17.8	8.6	26.9	0.0	198.5
Metric Changes only	No. of items restated	100	7.7	3.0	13.0	1.0	81.0
	Restatement magnitude (absolute % change)	100	238.1	10.8	1112.3	0.0	8642.9
Multiple types of restatements	No. of items restated	93	11.7	8.0	10.6	2.0	67.0
	Restatement magnitude (absolute % change)	93	33.9	9.9	115.5	0.3	966.1
Unclassified	No. of items restated	13	6.1	4.0	6.8	1.0	24.0
	Restatement magnitude (absolute % change)	13	8.3	6.6	8.7	0.4	30.8
Total	**No. of items restated**	**307**	**7.7**	**4.0**	**10.3**	**1.0**	**81.0**
	Restatement magnitude (absolute % change)	**307**	**94.0**	**9.8**	**643.9**	**0.0**	**8642.9**

Table 3: Degree of Restatements by Industry and Country

Panel A: Restatements by Industry

Global Industry Classification	Reports N	Restated N	Restated %	Error Restated * N	Metric Restated ^ N
Oil, Gas, & Consumable Fuels	79	49	62.0	35	28
Chemicals	19	3	15.8	2	1
Metals & Mining	42	11	26.2	9	4
Aerospace & Defense	10	0	0.0	0	0
Building Products	4	3	75.0	0	3
Construction & Engineering	10	1	10.0	0	1
Electrical Equipment	4	0	0.0	0	0
Industrial Conglomerates	21	5	23.8	3	1
Machinery	8	0	0.0	0	0
Trading Companies & Distributors	24	2	8.3	1	1
Air Freight & Logistics	14	12	85.7	7	9
Airlines	2	1	50.0	1	0
Marine	6	4	66.7	1	4
Auto Components	6	2	33.3	2	0
Automobiles	63	24	38.1	15	12
Household Durables	16	0	0.0	0	0
Media	7	0	0.0	0	0
Multiline Retail	2	1	50.0	1	0
Food & Staples Retailing	49	10	20.4	6	5
Beverages	8	1	12.5	0	1
Food Products	16	1	6.3	0	1
Pharmaceuticals	51	32	62.7	27	21
Banks	91	44	48.4	27	25
Capital Markets	28	12	42.9	3	8
Insurance	29	12	41.4	8	7
Internet Software & Services	7	3	42.9	1	0
IT Services	16	4	25.0	4	0
Software	6	1	16.7	0	1
Communications Equipment	14	10	71.4	8	7
Technology Hardware, Storage, & Peripherals	32	17	53.1	8	14
Electronic Equipment, Instruments, & Components	8	0	0.0	0	0
Semiconductors & Semiconductor Equipment	7	0	0.0	0	0
Diversified Telecommunication Services	35	8	22.9	5	5
Wireless Telecommunication Services	19	12	63.2	5	10
Electric Utilities	20	14	70.0	7	12
Multi-Utilities	24	8	33.3	2	7
Total	**797**	**307**	**38.5**	**188**	**188**

Panel B: Restatements by Country

Country	Reports N	Restated N	Restated %	Error Restated* N	Metric Restated^ N
Australia	26	9	34.6	8	1
Belgium	2	0	0.0	0	0
Brazil	20	12	60.0	9	6
Denmark	6	4	66.7	1	4
Finland	7	4	57.1	2	2
France	89	22	24.7	10	14
Germany	91	44	48.4	22	28
Hong Kong	7	5	71.4	0	5
India	6	3	50.0	1	2
Italy	28	11	39.3	7	9
Japan	146	17	11.6	13	8
Republic of Korea	28	12	42.9	7	6
Netherlands	24	18	75.0	13	15
Norway	6	3	50.0	3	1
Spain	30	21	70.0	7	17
Sweden	6	0	0.0	0	0
Switzerland	39	9	23.1	6	3
Taiwan	2	0	0.0	0	0
Thailand	2	2	100.0	2	2
United Kingdom	61	34	55.7	22	20
United States	171	77	45.0	55	45
Total	**797**	**307**	**38.5**	**188**	**188**

*Reports with error-only restatements or multiple-types of restatements that include error restatement(s)

^Reports with metric-only restatements or multiple-types of restatements that include metric restatement(s)

Table 4: Descriptive Statistics

Restated reports

Variable	N	Mean	Std. Dev.	Min	Max
RESTAT	797	0.385195	0.486947	0	1
ERROR_RESTAT	797	0.23590	0.42480	0	1
METRIC_RESTAT	797	0.23590	0.42480	0	1
ASSET_TURN	797	0.756402	0.534987	0.027	2.36
SENSITIVE_IND	797	0.175659	0.380769	0	1
STAKE_LAW	797	16.01018	6.023586	7.63	25.63
TARGET	797	0.953576	0.210534	0	1
ENV_PERF	797	90.63138	5.161767	69.56	95.95
SOCIAL_PERF	797	87.77812	9.513736	56.11	97.69
GOVERNANCE	797	64.37359	27.1752	9.14	96.13
GRI	797	0.956085	0.205034	0	1
AUDIT	797	0.816813	0.387063	0	1
STRONG_LAW	797	0.555834	0.497185	0	1

RESTAT is an indicator variable that equals 1 if the CSR report for firm *i* in year *t* included restatements of prior CSR reports and 0 otherwise. *ERROR_RESTAT* is an indicator variable that equals 1 if the CSR report for firm *i* in year *t* included restatements of prior CSR reports related to correction of estimates and 0 otherwise. *METRIC_RESTAT* is an indicator variable that equals 1 if the CSR report for firm *i* in year *t* included restatements of prior CSR reports related to changes in measurement method and 0 otherwise. *ASSET_TURN* is the ratio of sales to total assets. *SENSITIVE_IND* is an indicator variable for companies belonging to industries that are exposed to greater environmental or social risks (Oil, Gas & Consumable Fuels, Chemicals, and Metals & Mining). *STAKE_COUNTRY* is an indicator variable that takes the value of 1 if a firm is a from a stakeholder country and zero otherwise. *TARGET* is an indicator variable that takes the value of 1 if a firm sets a target for its environment performance. *ENV_PERF* is from ASSET4 and is a percentage score based on the relative environmental performance of firm *i* in year *t* compared to the universe of firms covered by ASSET4. *SOCIAL_PERF* is from ASSET4 and is a percentage score based on the relative social performance of firm *i* in year *t* compared to the universe of firms covered by ASSET4. *GOVERNANCE* is from ASSET4 and is a percentage score based on the relative corporate governance performance of firm *i* in year *t*, compared to the universe of firms covered by ASSET4. *GRI* is an indicator variable that takes the value of 1 if a firm adopts the GRI measurement standard in its reporting of CSR information. *AUDIT* is an indicator variable that takes the value of 1 if the CSR reported is audited and 0 otherwise. *STRONG_LAW* is the rule of law index the World Bank's Worldwide Governance Indicators.

Table 5: Correlations

	RESTAT	ERROR_ RESTAT	METRIC_ RESTAT	ASSET_ TURN	SENSITIVE_ IND	STAKE_ LAW	TARGET	ENV_ PERF	SOCIAL _ PERF	GOVER- NANCE	GRI	AUDIT
ERROR_RESTAT	0.7019*	1.0000										
METRIC_RESTAT	0.7019*	0.2621*	1.0000									
ASSET_TURN	-0.0915*	-0.0306	-0.1062*	1.0000								
SENSITIVE_IND	0.0615	0.1008*	-0.0002	0.1976*	1.0000							
STAKE_LAW	-0.0264	-0.0947*	0.0207	-0.1584*	-0.0711*	1.0000						
TARGET	0.1011*	0.0805*	0.0664	-0.0177	0.0078	0.026	1.0000					
ENV_PERF	0.0416	0.0154	0.0285	-0.1120*	-0.2478*	0.0561	0.1442*	1.0000				
SOCIAL_PERF	0.0858*	0.051	0.1075*	-0.1518*	-0.1227*	0.3141*	0.1342*	0.2967*	1.0000			
GOVERNANCE	0.1773*	0.1371*	0.1155*	-0.1415*	-0.0279	-0.0675	0.0206	0.1433*	0.1744*	1.0000		
GRI	0.0438	-0.0107	0.0325	0.0036	0.0828*	0.1198*	-0.0182	0.0083	0.0212	-0.0226	1.0000	
AUDIT	0.1016*	0.0416	0.0874*	-0.0661	0.1163*	0.2373*	0.0188	0.0329	0.0707*	-0.1339*	0.1834*	1.0000
STRONG_LAW	0.1835*	0.1636*	0.1101*	0.0197	-0.0054	-0.2013*	0.0908*	0.0291	-0.0313	0.5112*	-0.0683	-0.2536*

*Significant at 5%. *RESTAT* is an indicator variable that equals 1 if the CSR report for firm i in year t included restatements of prior CSR reports and 0 otherwise. *ERROR_RESTAT* is an indicator variable that equals 1 if the CSR report for firm i in year t included restatements of prior CSR reports related to correction of estimates and 0 otherwise. *METRIC_RESTAT* is an indicator variable that equals 1 if the CSR report for firm i in year t included restatements of prior CSR reports related to changes in measurement method and 0 otherwise. *ASSET_TURN* is the ratio of sales to total assets. *SENSITIVE_IND* is an indicator variable for companies belonging to industries that are exposed to greater environmental or social risks (Oil, Gas & Consumable Fuels, Chemicals, and Metals & Mining). *STAKE_COUNTRY* is an indicator variable that takes the value of 1 if a firm is a from a stakeholder country and zero otherwise. *TARGET* is an indicator variable that takes the value of 1 if a firm sets a target for its environment performance. *ENV_PERF* is from ASSET4 and is a percentage score based on the relative environmental performance of firm i in year t, compared to the universe of firms covered by ASSET4. *SOCIAL_PERF* is from ASSET4 and is a percentage score based on the relative social performance of firm i in year t, compared to the universe of firms covered by ASSET4. *GOVERNANCE* is from ASSET4 and is a percentage score based on the relative corporate governance performance of firm i in year t, compared to the universe of firms covered by ASSET4. *GRI* is an indicator variable that takes the value of 1 if a firm adopts the GRI measurement standard in its reporting of CSR information. *AUDIT* is an indicator variable that takes the value of 1 if the CSR reported is audited and 0 otherwise. *STRONG_LAW* is the rule of law index the World Bank's Worldwide Governance Indicators.

Table 6: Univariate Differences in Characteristics between Restatement and Nonrestatement Groups

Panel A: Nonrestated Vs Restated

		Non-restated			Restated		Difference		
	N	Mean	Median	N	Mean	Median	t stat	p- value	z- stat*
ASSET_TURN	490	0.7951	0.7459	307	0.6946	0.6136	**2.5912**	**0.0097**	2.8388
SENSITIVE_IN	490	0.1571	0.0000	307	0.2052	0.0000	-1.7366	0.0829	-1.7344
STAKE_LAW	490	16.1361	13.0000	307	15.8091	13.2500	0.7457	0.4561	1.4599
TARGET	490	0.9367	1.0000	307	0.9805	1.0000	**-2.8659**	**0.0043**	-2.8531
ENV_PERF	490	90.4614	92.2400	307	90.9027	92.3800	-1.1750	0.2403	0.3487
SOCIAL_PERF	490	87.1327	90.3900	307	88.8083	91.9800	**-2.4272**	**0.0154**	-2.5438
GOVERNANCE	490	60.5623	68.7550	307	70.4567	81.0300	**-5.0795**	**0.0000**	-4.8792
GRI	490	0.9490	1.0000	307	0.9674	1.0000	-1.2365	0.2166	-1.2361
AUDIT	490	0.7857	1.0000	307	0.8664	1.0000	**-2.8787**	**0.0041**	-2.8656
STRONG_LAW	490	0.4837	0.0000	307	0.6710	1.0000	**-5.2627**	**0.0000**	-5.1766

Panel B: Nonrestated Vs Error-Restated

		Non-restated			Error-Restated		Difference		
	N	Mean	Median	N	Mean	Median	t stat	p- value	z- stat*
ASSET_TURN	490	0.7951	0.7459	188	0.7270	0.5963	1.4629	0.1440	1.9542
SENSITIVE_IN	490	0.1571	0.0000	188	0.2447	0.0000	**-2.6577**	**0.0081**	**-2.6459**
STAKE_LAW	490	16.1361	13.0000	188	14.9841	13.0000	**2.2440**	**0.0252**	**2.8791**
TARGET	490	0.9367	1.0000	188	0.9840	1.0000	**-2.5349**	**0.0115**	**-2.5248**
ENV_PERF	490	90.4614	92.2400	188	90.7744	92.5800	-0.6851	0.4935	0.4974
SOCIAL_PERF	490	87.1327	90.3900	188	88.6514	92.5650	**-1.8080**	**0.0711**	**-2.5794**
GOVERNANCE	490	60.5623	68.7550	188	71.0728	82.6300	**-4.4660**	**0.0000**	-4.6523
GRI	490	0.9490	1.0000	188	0.9521	1.0000	-0.1679	0.8667	-0.1680
AUDIT	490	0.7857	1.0000	188	0.8457	1.0000	**-1.7586**	**0.0791**	-1.7559
STRONG_LAW	490	0.4837	0.0000	188	0.7021	1.0000	**-5.2066**	**0.0000**	**-5.1090**

Panel C: Non-restated Vs Metric-Restated

		Non-restated			Metric-Restated		Difference		
	N	Mean	Median	N	Mean	Median	t stat	p- value	z- stat*
ASSET_TURN	490	0.79513	0.745924	188	0.6542	0.5942	**3.1666**	**0.0016**	**3.0501**
SENSITIVE_IN	490	0.1571	0.0000	188	0.1755	0.0000	-0.5807	0.5616	-0.5810
STAKE_LAW	490	16.1361	13.0000	188	16.2346	15.8300	-0.1900	0.8493	0.5811
TARGET	490	0.9367	1.0000	188	0.9787	1.0000	**-2.2167**	**0.0270**	**-2.2104**
ENV_PERF	490	90.4614	92.2400	188	90.8960	92.1900	-0.9581	0.3384	0.5291
SOCIAL_PERF	490	87.1327	90.3900	188	89.6180	91.9550	**-3.1177**	**0.0019**	**-2.7288**
GOVERNANCE	490	60.5623	68.7550	188	70.0187	77.4450	**-4.1077**	**0.0000**	**-3.6902**
GRI	490	0.9490	1.0000	188	0.9681	1.0000	-1.0655	0.2870	-1.0654
AUDIT	490	0.7857	1.0000	188	0.8777	1.0000	**-2.7498**	**0.0061**	-2.7366
STRONG_LAW	490	0.4837	0.0000	188	0.6543	1.0000	**-4.0259**	**0.0001**	**-3.9814**

*Z-statistic from testing the hypothesis that the two samples are from populations with the same distribution using the Wilcoxon rank-sum test. *RESTAT* is an indicator variable that equals 1 if the CSR report for firm *i* in year *t* included restatements of prior CSR reports and 0 otherwise. *ASSET_TURN* is the ratio of sales to total assets. *SENSITIVE_IND* is an indicator variable for companies belonging to industries that are exposed to greater environmental or social risks (oil, gas, and consumable fuels; chemicals; and metals and mining). *STAKE_COUNTRY* is an indicator variable that takes

the value of 1 if a firm is a from a stakeholder country and 0 otherwise. *TARGET* is an indicator variable that takes the value of 1 if a firm sets a target for its environment performance. *ENV_PERF* is from ASSET4 and is a percentage score based on the relative environmental performance of firm i in year t, compared to the universe of firms covered by ASSET4. *SOCIAL_PERF* is from ASSET4 and is a percentage score based on the relative social performance of firm i in year t, compared to the universe of firms covered by ASSET4. *GOVERNANCE* is from ASSET4 and is a percentage score based on the relative corporate governance performance of firm i in year t, compared to the universe of firms covered by ASSET4. *GRI* is an indicator variable that takes the value of 1 if a firm adopts the GRI measurement standard in its reporting of CSR information. *AUDIT* is an indicator variable that takes the value of 1 if the CSR reported is audited and 0 otherwise. *STRONG_LAW* is the rule of law index the World Bank's Worldwide Governance Indicators.

Table 7: Restatements

Panel A: Main model for restatements

Dependent Variable:	Logit Regressions		
	RESTAT (1= Restated)	ERROR_RESTAT (1= Restated)	METRIC_RESTAT (1= Restated)
ASSET_TURN	-0.339*	-0.100	-0.406*
	(0.198)	(0.208)	(0.225)
SENSITIVE_IND	0.468	0.707**	0.058
	(0.573)	(0.313)	(0.518)
NONERR_RESTAT		1.163***	
		(0.170)	
NONMET_RESTAT			1.118***
			(0.158)
STAKE_LAW	-0.019	-0.044**	-0.001
	(0.019)	(0.018)	(0.018)
TARGET	0.937***	1.015*	0.427
	(0.329)	(0.567)	(0.356)
ENV_PERF	0.006	0.003	-0.005
	(0.027)	(0.029)	(0.021)
SOCIAL_PERF	0.023*	0.016	0.032***
	(0.013)	(0.018)	(0.010)
GOVERNANCE	0.008	0.004	0.003
	(0.005)	(0.005)	(0.006)
GRI	0.145	-0.286	0.144
	(0.499)	(0.491)	(0.702)
AUDIT	0.678***	0.433	0.478*
	(0.219)	(0.311)	(0.254)
STRONG_LAW	0.731**	0.571*	0.448
	(0.291)	(0.313)	(0.328)
Constant	-5.716***	-4.450**	-5.491***
	(2.069)	(2.102)	(1.980)
Year FE	Yes	Yes	Yes
Observations	797	797	797
Pseudo-R-squared	0.0868	0.108	0.107
Chi-squared	160.4	287.5	290.0
Number of clusters	36	36	36

Standard errors in parentheses (Clustered by industry). *** p<0.01, ** p<0.05, * p<0.1 *RESTAT* is an indicator variable that equals 1 if the CSR report for firm *i* in year *t* included restatements of prior CSR reports and 0 otherwise. *NONMET_RESTAT* is an indicator variable that equals 1 if the CSR report for firm *i* in year *t* included restatements of prior CSR reports related to correction of estimates and 0 otherwise. *NONERR_RESTAT* is an indicator variable that equals 1 if the CSR report for firm *i* in year *t* included restatements of prior CSR reports related to changes in measurement method and 0 otherwise. *ASSET_TURN* is the ratio of sales to total assets.

SENSITIVE_IND is an indicator variable for companies belonging to industries that are exposed to greater environmental or social risks (Oil, Gas & Consumable Fuels, Chemicals, and Metals & Mining). *STAKE_COUNTRY* is an indicator variable that takes the value of 1 if a firm is a from a stakeholder country and 0 otherwise. *TARGET* is an indicator variable that takes the value of 1 if a firm sets a target for its environment performance. *ENV_PERF* is from ASSET4 and is a percentage score based on the relative environmental performance of firm i in year t, compared to the universe of firms covered by ASSET4. *SOCIAL_PERF* is from ASSET4 and is a percentage score based on the relative social performance of firm i in year t, compared to the universe of firms covered by ASSET4. *GOVERNANCE* is from ASSET4 and is a percentage score based on the relative corporate governance performance of firm i in year t, compared to the universe of firms covered by ASSET4. *GRI* is an indicator variable that takes the value of 1 if a firm adopts the GRI measurement standard in its reporting of CSR information. *AUDIT* is an indicator variable which takes the value of 1 if the CSR reported is audited and 0 otherwise. *STRONG_LAW* is the rule of law index the World Bank's Worldwide Governance Indicators.

Table 8: Nature of restatements: Overstatement/Understatement in t-1 for each line item[a]

Panel A: All Restatements

				Diff. from understated	
				t-stat	p-value
Type of restatement:		<u>All</u>			
Nature of the t-1 restatement item		**N**	**%**		
Overstated in *t-1*		**1079**	**0.535**	**2.2877**	**0.0223**
Understated in *t-1*		**1079**	**0.465**		
Type of restatement:		Environmental			
Nature of the t-1 restatement item		N	%		
Overstated in *t-1*		810	0.507	0.4214	0.6736
Understated in *t-1*		810	0.493		
Type of restatement:		Social			
Nature of the t-1 restatement item		N	%		
Overstated in *t-1*		269	0.617	**3.9437**	**0.0001**
Understated in *t-1*		269	0.383		

Panel B: Error Restatements

				Diff. from understated	
				t-stat	p-value
Type of restatement:		<u>All</u>			
Nature of the t-1 restatement item		N	%		
Overstated in *t-1*		446	0.554	**2.2836**	**0.0229**
Understated in *t-1*		446	0.446		
Type of restatement:		Environmental			
Nature of the t-1 restatement item		N	%		
Overstated in *t-1*		304	0.500	0.0000	1.0000
Understated in *t-1*		304	0.500		
Type of restatement:		Social			
Nature of the t-1 restatement item		N	%		
Overstated in *t-1*		142	0.669	**4.2649**	**0.0000**
Understated in *t-1*		142	0.331		

Panel C: Metric Restatements

				Diff. from understated	
				t-stat	p-value
Type of restatement:		<u>All</u>			
Nature of the t-1 restatement item		N	%		
Overstated in *t-1*		624	0.518	0.8805	0.3789
Understated in *t-1*		624	0.482		
Type of restatement:		Environmental			
Nature of the t-1 restatement item		N	%		
Overstated in *t-1*		509	0.511	0.4872	0.6263
Understated in *t-1*		509	0.489		
Type of restatement:		Social			
Nature of the t-1 restatement item		N	%		
Overstated in *t-1*		115	0.548	1.0260	0.3071
Understated in *t-1*		115	0.452		

[a]Restatements are classified as overstatements if the correction makes prior-year performance worse than was originally reported.

Table 9: Sign of restatements

Panel A: Sign of error restatements

Variables	$OVERSTAT$[a] (1= Overstatement in $t-1$)		
	Logit Model		
	(i) All Error Restatements	(ii) Environmental Error Restatements	(iii) Social Error Restatements
ASSET_TURN	0.304	0.076	3.451***
	(0.200)	(0.249)	(1.215)
SENSITIVE_IND	0.151	0.424	-2.142**
	(0.275)	(0.329)	(0.933)
STAKE_LAW	-0.023	-0.017	-0.063
	(0.023)	(0.025)	(0.051)
TARGET	-0.335	-0.522	
	(1.532)	(1.574)	
ENV_PERF	-0.013	0.026	-0.196***
	(0.026)	(0.030)	(0.070)
SOCIAL_PERF	0.025**	0.016	-0.019
	(0.011)	(0.011)	(0.048)
GOVERNANCE	0.010**	0.010*	0.024*
	(0.004)	(0.006)	(0.014)
GRI	-0.999***	-1.261***	0.788
	(0.261)	(0.388)	(0.857)
AUDIT	0.545*	0.002	3.685***
	(0.293)	(0.311)	(1.077)
STRONG_LAW	0.229	-0.030	0.639
	(0.267)	(0.305)	(0.552)
MAGNITUDE	0.225	0.111	1.594*
	(0.282)	(0.252)	(0.922)
Constant	-1.786	-3.488	11.590
	(3.112)	(3.429)	(8.093)
Year FE	Yes	Yes	Yes
Observations	446	304	142
Pseudo-R-squared	0.0859	0.0683	0.2712
Chi-squared	110.74	57.82	
Number of clusters	71	61	39

Standard errors in parentheses (Clustered by firm). Variable definitions are in the notes to Table 7 and in the appendix.

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

[a]Restatements are classified as overstatements (OVERSTATE = 1) if the correction makes prior-year performance

worse than was originally reported. *RESTAT* is an indicator variable that equals 1 if the CSR report for firm *i* in year *t* included restatements of prior CSR reports and 0 otherwise. *ERROR_RESTAT* is an indicator variable that equals 1 if the CSR report for firm *i* in year *t* included restatements of prior CSR reports related to correction of estimates and 0 otherwise. *METRIC_RESTAT* is an indicator variable that equals 1 if the CSR report for firm *i* in year *t* included restatements of prior CSR reports related to changes in measurement method and 0 otherwise. *ASSET_TURN* is the ratio of sales to total assets. *SENSITIVE_IND* is an indicator variable for companies belonging to industries that are exposed to greater environmental or social risks (Oil, Gas & Consumable Fuels, Chemicals, and Metals & Mining). *STAKE_COUNTRY* is an indicator variable that takes the value of 1 if a firm is a from a stakeholder country and zero otherwise. *TARGET* is an indicator variable that takes the value of 1 if a firm sets a target for its environment performance. *ENV_PERF* is from ASSET4 and is a percentage score based on the relative environmental performance of firm *i* in year *t*, compared to the universe of firms covered by ASSET4. *SOCIAL_PERF* is from ASSET4 and is a percentage score based on the relative social performance of firm *i* in year *t*, compared to the universe of firms covered by ASSET4. *GOVERNANCE* is from ASSET4 and is a percentage score based on the relative corporate governance performance of firm *i* in year *t*, compared to the universe of firms covered by ASSET4. *GRI* is an indicator variable that takes the value of 1 if a firm adopts the GRI measurement standard in its reporting of CSR information. *AUDIT* is an indicator variable that takes the value of 1 if the CSR reported is audited and 0 otherwise. *STRONG_LAW* is the rule of law index the World Bank's Worldwide Governance Indicators. *MAGNITUDE* is the average percentage change in the line item from the prior year.