

**Research on Corporate Sustainability:
Review and Directions for Future Research**

Jody Grewal and George Serafeim*

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Abstract

We review the literature on corporate sustainability and provide directions for future research. Our review focuses on three actions: *measuring*, *managing* and *communicating* corporate sustainability performance. Measurement is the least developed of the three and represents promising opportunities for research. Compelling evidence now exists on the role of management control systems, investor pressure and mandated disclosure in improving corporate sustainability outcomes. Research has moved beyond weighing the importance of all sustainability issues equally, with recent studies drawing distinctions between the *financial materiality* of different sustainability issues. Collectively, this new line of inquiry suggests that improving performance on material sustainability metrics is related to improved financial performance, helping to resolve four decades of inconclusive evidence on the relation between sustainability and financial outcomes. Finally, we review research on how disclosure mediums, accounting standards, information monitors and intermediaries shape the communication of sustainability performance. We conclude with a call for research on how to measure performance in the 21st century when corporate purpose extends beyond shareholder value maximization.

Keywords: sustainability; ESG; measurement; accounting; disclosure; management control systems

* Jody Grewal is an Assistant Professor at the University of Toronto. George Serafeim is the Charles M. Williams Professor of Business Administration at Harvard Business School. George Serafeim acknowledges financial support from the Division of Faculty Research and Development. George Serafeim has served on the standards council of the Sustainability Accounting Standards Board (SASB) mentioned in the article and has advised organizations that use ESG data. We thank the editor Stefan Reichelstein and our reviewer Hans Christensen for helpful suggestions. Contact information: Jody Grewal (jody.grewal@rotman.utoronto.ca), George Serafeim (gserafeim@hbs.edu).

1 Introduction

The last twenty years have seen an exponential increase in the number of companies that measure, manage and communicate their corporate sustainability performance. By corporate sustainability we refer to an *intentional* strategy to create long-term financial value through *measurable* societal impact. Key issues within this domain include climate change, resource efficiency, employee welfare, inclusion and diversity, product safety and quality and anticorruption, among others.

A few statistics illustrate the magnitude of the transformation we have witnessed. In the early 1990s fewer than twenty organizations produced corporate sustainability reports; by 2019 more than 10,000 publicly listed companies produced such a report (Serafeim and Grewal 2019). The fraction of firms that set sustainability targets is non-trivial, with 89% of the Global 500 having carbon emission targets in 2018, compared to 30% in 2009 (Freiberg et al. 2020). Institutional investors with more than \$80 trillion in assets under management (AuM) signed-on to the Principles for Responsible Investing and committed to incorporate environmental, social and governance (ESG) data in their investment and stewardship activities. In addition, 450 investor signatories with over \$39 trillion in AuM work with the companies in which they invest to ensure they are minimising and disclosing the risks and maximizing the opportunities presented by climate change and climate policy, “consistent with [their] fiduciary duty to [their] beneficiaries”.¹ These initiatives were non-existent before 2006. Sustainable funds in the United States attract new assets at an unprecedented pace, with estimated net flows into open-end and exchange-traded sustainability funds that are available to U.S. investors totaling \$20.6 billion in 2019, nearly four times the previous annual record set in 2018.² The number of reporting regulations and guidelines

¹ See: <http://www.climateaction100.org/>

² See: https://www.morningstar.com/articles/961765/sustainable-fund-flows-in-2019-smash-previous-records?mod=article_inline

for sustainability information provides another indication: it increased from fewer than 10 worldwide in 2000 to over 50 in 2017 (Serafeim and Grewal 2019).

In this paper we provide an overview of key papers in the corporate sustainability literature and directions for future research. We structure our review on three key themes. First, we review work on *measuring* corporate sustainability performance. A counterintuitive finding is that accounting researchers, although experts in performance measurement, have spent little effort to measure corporate sustainability performance. Given the substantial evidence casting doubt on the quality of existing measurements (Kotsantonis and Serafeim 2019; Berg, Kölbel and Rigobon 2019; Christensen, Serafeim and Sikochi 2019) we view this space as the single biggest opportunity for researchers to advance the field.

Second, we review work on *managing* corporate sustainability performance and how in turn corporate sustainability performance might improve corporate financial performance. Concerning the management of corporate sustainability performance, we focus on an emerging literature in management accounting studying target setting and other management control systems (Ioannou, Li and Serafeim 2016; Freiberg et al. 2020). On the financial accounting side, we review the literature on the role of institutional investors (Dimson, Karakas, and Li 2015) and disclosure regulation (Grewal 2019a; Rauter 2019; Christensen et al. 2017) on sustainability outcomes. In terms of how corporate sustainability performance might drive corporate financial performance, we focus our review on recent studies that differentiate between financially-*material* and financially-*immaterial* sustainability issues and on papers identifying sustainability issues that affect the competitive dynamics of industries (Khan, Serafeim and Yoon 2016; Grewal, Hauptmann and Serafeim 2020).

Third, we review work on communicating corporate sustainability performance. In particular, we review empirical research on the mediums of communicating sustainability information (Grewal 2019b) and the institutions that regulate the flow of information from firms to investors and other stakeholders, which include accounting standard setters (Grewal, Hauptmann and Serafeim 2020), regulators (Grewal, Riedl and Serafeim 2019), auditors (Simnett, Vanstraelen and Chua 2009) and financial analysts (Ioannou and Serafeim 2015).

Finally, we conclude with an aspirational and provocative section articulating a hypothesis that our concept of performance measurement is inherently flawed and not fit for purpose in the 21st century. We discuss a host of efforts and commentators that question whether the purpose of the corporation is to maximize shareholder value. According to this emerging viewpoint the purpose of the corporation is much broader, multi-dimensional and focuses on providing solutions to the world's pressing problems in a profitable way. We posit that for this new concept of the purpose of the corporation to be authentic, legitimate and efficient we need to be able to measure social impact and reflect that in financial statements. The outcome of this process would be impact-weighted financial accounts that allow business decision makers to optimize risk, return and impact (Serafeim, Zochowski and Downing 2019).

2 Measuring Performance

The measurement of corporate sustainability performance has drastically improved over the last two decades. Consider the fact that data on health and safety, gender diversity, carbon emissions, and water consumption were not widely available just a few years ago, whereas in 2020, thousands of companies disclose information that facilitates the measurement of how corporate activities impact a variable of sustainability issues. However, how to assess a corporation's *overall* sustainability performance is an unresolved and highly debated question. Before discussing the

measurement of corporate sustainability performance, we provide a short discussion of its definition.

The question of how to define a corporation's activities in relation to societal issues goes back several decades in the management literature. As discussed, corporate sustainability is an intentional strategy to create long-term value through improved social and environmental impact. The field has evolved from a corporate social responsibility approach, where a firm's societal impact was not embedded in strategy but was either an afterthought or operated in the periphery of the organization. Now, managers embed environmental and social considerations in the organization's core strategy with the intention of providing measurable environmental and social outcomes that strategically link to the organization's competitiveness and valuation. Throughout the paper we refer to the construct that measures the success of this strategy as *corporate sustainability performance*, and we refer to the scores provided by data companies and used by corporate sustainability researchers as *environmental, social and governance (ESG)* scores.

Going back to a time when most firms still focused on corporate social responsibility and had not exploited the strategic nature of those actions, an extensive stream of work (e.g. Wolfe and Aupperle 1991; Waddock and Graves 1997; Hillman and Keim 2001; Waldman, Siegel and Javidan 2006) viewed sustainability as a composite multidimensional construct capturing “a business organization's configuration of principles of social responsibility, processes of social responsiveness, and policies, programs, and observable outcomes as they relate to the firm's social relationships” (Wood 1991: p.693). An important insight from this definition is that sustainability performance encompasses three distinct concepts: (1) why an organization engages in certain activities (e.g. principles), (2) the inputs to generate an intended outcome (e.g. policies and processes), and (3) the outcomes themselves (e.g. greenhouse gas emissions). As we will see, the

distinctions between these concepts have been largely overlooked, which has had important implications for the measurement of corporate sustainability performance.

Recent research examines the question of what the measures of corporate sustainability performance reflect (Serafeim, Zochowski and Downing 2019; Christensen, Serafeim and Sikochi 2019; Kotsantonis and Serafeim 2020). The answer is that most ESG performance scores calculated by analysts and disseminated by data providers primarily reflect *inputs* into a process rather than *outcomes*. Therefore, the measures represent intentions, efforts and investments that organizations make to achieve an intended outcome rather than the outcome itself. For example, social scores reflect the dollars spent on diversity and inclusion programs, but not on how diversity in upper-management of the company has (or has not) improved. Similarly, environmental scores reflect policies that the firm has to fight deforestation but not the decrease (increase) in deforestation (reforestation).

This emphasis on inputs – as opposed to outcomes – has important implications. For one, it is not clear that the efforts and inputs will produce the desired outcomes, which raises doubts about the usefulness of the measures for their intended purpose. Even if efforts and investments achieve their intended outcomes, a timing lag likely exists between the input and the outcome, which is an important consideration for empirical research that uses these measures. In addition, it is harder to mitigate “goodwashing”, as cheap talk around inputs is easier than for outcomes. For example, it is easier to adopt a carbon reduction policy or a diversity target rather than to demonstrate a reduction in carbon emissions or a more diverse workforce. Consistent with this latter concern, research has found that ESG performance scores have converged over time because it is easier for competitors to imitate each other in terms of setting similar targets, policies and processes rather than improving actual outcomes. Accordingly, benchmarking sustainability

performance has become challenging as the within-industry variation has declined (Ioannou and Serafeim 2019b).

The multidimensionality of the sustainability performance construct and the absence of clear standards on what constitutes strong sustainability performance also give rise to inconsistent measurement. A recent literature documents that ESG performance scores vary greatly across data providers (Berg et al. 2019; Christensen et al. 2019). The source of the variation can be attributed to the fact that different analysts use different metrics to evaluate a firm's performance on the same issue, and that analysts disagree on the relative importance of different ESG issues, assigning different weights in their calculation of sustainability scores. For instance, on the former discrepancy, two analysts might both try to assess a firm's employee safety record but one analyst might use the lost time accident rate while the other might use the number of injuries or fatalities (Kotsantonis and Serafeim 2019). On the second discrepancy, one analyst might give more weight to a firm's record on climate change issues while the other might give more weight to the firm's record on diversity and inclusion.

Interestingly, while one might expect that greater transparency would reduce the disagreement, Christensen et al. (2019) show that the discrepancy in performance scores is exacerbated for firms that disclose a higher number of sustainability metrics. This is a troubling finding, as it indicates that more disclosure is unlikely to resolve this issue. Instead, it suggests that the lack of consensus on what constitutes strong sustainability performance is a major impediment to measuring performance consistently. Although some aspects of sustainability performance measurement are more well developed than others (climate change versus human capital), there is room to improve measurement across all sustainability metrics. For example, Cheema-Fox et al. (2020) show that there are multiple ways that an investor could seek to limit portfolio exposure to

climate change risks based on a company's disclosed climate-related metrics. Classifying firms based on their operational carbon intensity (scope 1 and 2 greenhouse gas emissions over sales), total value chain carbon intensity (scope 1, 2 and 3 greenhouse gas emissions over sales), or analyst ratings of climate change exposures and management of climate change risks and opportunities, the authors show that these metrics yield different portfolios with different risk-adjusted returns. Moreover, they show that portfolios that go long (short) on the firms with the best climate change performance within an industry overlap only by about 50% across strategies that use the three different performance metrics. Therefore, different metrics provide different assessments on a firm's climate change performance, begging the question of how best to measure climate change performance.

New sources of data on the human capital front have allowed researchers to improve measurement of the human capital dimension of ESG. For instance, using data across millions of employees in thousands of organizations from the Great Place to Work Institute, researchers constructed a measure of 'corporate purpose,' a much-discussed concept in the literature (Ghoshal and Bartlett 1994). Using actual employee beliefs rather than company public announcements, which research has shown to be cheap talk (Guiso, Sapienza and Zingales 2015), researchers explored the relationship between a strong sense of purpose and organizational performance (Gartenberg, Prat and Serafeim 2019), whether corporate purpose is stronger in public or private firms (Gartenberg and Serafeim 2019), and how purpose varies within an organization across people of different gender and race (Creary, Gartenberg and Serafeim 2019). In another paper, Kotsantonis and Serafeim (2020) provide a measurement of human capital based on growth in employee wages scaled by the investments an organization makes in training. They show that this outcome-based metric is strongly correlated with future productivity and growth in productivity

while an input-based metric, such as training dollars spent, is not correlated with measures of productivity.

Evidently, improving the measurement of corporate sustainability performance presents a promising opportunity to contribute to academic research and to practice. Specifically, which ESG metrics reflect strong performance for a particular issue, which ESG issues should be incorporated into an overall metric of performance, and how different issues should be weighted are all questions that neither the literature nor practice have attempted to answer, never mind resolve. We urge researchers to utilize new sources of data that speak to ESG issues more directly, in order to improve measurement across various ESG dimensions.

3 Incentivizing and Managing Performance

Over the last few decades companies have increasingly developed management tools that enable the management of sustainability outcomes. This trend was the result of multiple forces that put pressure and incentives in place for companies to improve their sustainability performance.

The first set of forces was pressure from stakeholders that sought to improve the accountability of companies for their social impact. Associated with that process was the belief that companies have an obligation to create beneficial outcomes for stakeholders other than shareholders, because corporate activities affect many constituents including employees, suppliers, customers and governments, as well as the communities and natural environments in which they operate (Freeman 1984). This sentiment that corporations should be held accountable for all their impacts on society has grown stronger as business has gained power over other institutions and as a result, many NGOs pressured large companies to act in ways that were more responsible.

These sentiments are consistent with several observations. At the start of the 21st century, the scale of economic activity performed by the private sector was at record levels owing to privatizations of state assets and deregulation. For example, the number of publicly traded companies almost doubled from about 26 thousand in 1991 to more than 47 thousand in 2012, and their market capitalization more than quadrupled from \$11.3 trillion to \$53.2 trillion in the same period (Grewal and Serafeim 2016). The largest 500 corporations in the world sold products and services worth over \$22 trillion in 2014, while controlling assets valued at more than \$100 trillion. This represented approximately 50% of all sales or assets of the approximately 50,000 publicly listed firms around the world. For example, in 2019, Walmart had more than \$514 billion in revenues. Each store stocked more than 120,000 products, supported by a network of more than 100,000 suppliers globally and accommodated more than 265 million US customer visits every week. Google is another example of a company with large presence and influence on society. Google's five-minute service lapse in August 2013 caused global internet traffic to drop by 40%. As of 2012, each month, more than 2.2 billion people performed more than 100 billion Google searches.

The second set of forces was the recognition that sustainability issues were important for an organization's competitiveness (Waddock and Graves, 1997; Cao, Liang and Zhan 2019). Therefore, many believed that companies should supplement the financial information they are required to report with other information that is of interest to shareholders, such as data on customers, human capital, innovation, and other intangible assets. Proponents of this 'financial materiality' perspective argued that financial information was a lagging indicator; a "rear-view mirror" of the company's performance and an imperfect predictor of future financial performance. Accordingly, sustainability information could provide insights into the company's expected future

financial performance. Moreover, for many companies, market value exceeded book value so additional reporting in the way of sustainability metrics could provide information on a company's intangible assets that were not captured on the balance sheet (Eccles 1991).

The two aforementioned forces spurred intriguing questions about how organizations manage sustainability outcomes. In particular, how do organisations improve sustainability performance, and does improving sustainability performance affect financial performance? On the first question, addressed in section 3.1, we focus our discussion on three mechanisms that are of importance to accounting researchers: management control systems, investor influence and disclosure regulations. We address the second question in section 3.2.

3.1 Driving Sustainability Performance

3.1.1 Management Control Systems

Recently, researchers have exploited emerging settings and utilized novel datasets on firm-specific actions and investments to understand how managers use control systems to improve sustainability performance. For example, Ioannou, Li and Serafeim (2016) examined how two important and widely used management control tools – target setting and the provision of monetary incentives – impact companies' ability to achieve high environmental performance.

Empirical tests of target difficulty and monetary incentives are usually limited by the lack of widely available and detailed data on such practices. Some prior studies provide valuable insights using proprietary data on performance targets and incentive provision within an organization, but it has been challenging for these studies to control for organization-level factors that affect both of these management control tools and firm performance, thus limiting the ability to widen the generalizability of such research findings. Using a novel dataset compiled by the

Carbon Disclosure Project (CDP), Ioannou et al. (2016) study target setting and provision of incentives across a large number of firms spread across a wide range of countries and industries, and explicitly control for organization-level factors that affect both of these management control tools and organizational performance. The authors document that firms setting more difficult targets or providing monetary incentives relating to target achievement are able to complete a higher percentage of their targets.

Furthermore, the authors document that the interaction effect between target difficulty and monetary incentives obtains a negative significant coefficient, suggesting that setting challenging targets while concurrently providing monetary incentives to management may negatively affect target completion. These effects hold while controlling for a firm's base level of carbon emissions, as a control for the starting point of an organization's environmental performance, total amount of investment into carbon emissions reduction projects, as well as time-varying firm characteristics, including other types of incentives (i.e. performance-based compensation and short versus long-term compensation for top executives) that could influence a firm's degree of target completion. The study also sheds light on the processes through which managers attempt to meet their environmental targets: both target difficulty and the provision monetary incentives are associated with projects relating to behavioral changes and transportation (i.e., activities that are "low-hanging fruit" for reducing carbon emissions since they typically require lower upfront investment and restructuring or existing operating procedures), while only target difficulty is associated with projects that require greater investment and novel process knowledge. This study is among the first to document the process through which managers allocate resources to projects with long-term environmental targets and how this process is associated with the firm's ability to achieve its targets, thus achieving strong environmental performance.

In another study on environmental targets, Freiberg, Grewal and Serafeim (2020) examine how the emergence of a standard methodology that guides and assesses whether firms' voluntary carbon emissions targets are aligned with climate science, affects target difficulty and investment to achieve the target. The Science Based Target initiative (SBTi) is a non-profit organization that independently assesses and approves companies' targets as being aligned with climate science (or science-based), meaning the targets are based on the level of decarbonization required to keep global temperature increase below 2 degrees Celsius compared to pre-industrial temperatures. Using the emergence of the SBTi, as well as the Carbon Disclosure Project (CDP) database, Freiberg et al. (2019) document that firms are more likely to set science-based targets if they have a track record of ambitious and successful target completion, and if they have economic incentives relating to the risks and opportunities created by climate change.

Using a difference-in-differences research design that compares the science and non-science targets of a firm, the authors find that targets become more difficult when firms adopt the science-based standard for the target, consistent with the standard increasing target difficulty. Moreover, the authors document that the increase in target difficulty is accompanied by increased investment in emission-reduction projects and higher expected emission savings and payback periods from these projects, consistent with firms undertaking real actions and making investments to achieve more difficult targets, and inconsistent with the targets being cheap talk. Given the challenges of setting tough but achievable targets and the complexity of meeting environmental targets for which managers have less experience with relative to financial targets, the results of the study suggest that the process of setting science-based targets expanded managers' information set and facilitated learning about how to achieve carbon reductions.

3.1.2 Investor Influence on Performance

Several papers have examined investor activism on sustainability issues. However, investor engagement with sustainability issues and which investors engage on sustainability issues has evolved over time. In the 1990s, most ESG engagement was driven by small investors, socially responsible funds, religious organizations and NGOs with specific interests. As of 2019, the majority of shareholder proposals on sustainability issues were sponsored by pension funds. Another important point is that most of the extant literature analyzes shareholder proposals, a very narrow set of investors' engagement efforts. Private engagement, which includes discussions between investors and management in private meetings and through phone calls, emails and other interactions, represents the bulk of the engagement activity but has been difficult to study given its unobservability. This poses severe barriers to research and limits our understanding for at least two reasons. First, as researchers, we are only able to observe and analyze investors that use shareholder proposals as an instrument of change. For example, the largest institutional investors, such as Blackrock, almost never file shareholder proposals; they engage directly and privately with management (Deshpande, Dey, and Serafeim 2020). Second, our knowledge is derived mainly from private engagement efforts that have been unsuccessful, in the sense that private negotiations did not satisfy investor interests and thereby led the investor to file a shareholder proposal. An exception is studying withdrawn proposals, which is often the result of the investor and the company reaching an agreement (Baloria, Klassen and Wiedman 2018).

Within this literature one study analyzed shareholder proposals regarding human rights and labor standards and found that proposals submitted between 1970 and 2003 asked for the adoption of codes of conduct rather than changes in practices (Proffitt and Spicer 2006). The same study also found that half of the proposals were sponsored or co-sponsored by religious groups. Religious groups as the major drivers of this early activism on ESG issues was later confirmed by another

paper that analyzed proposals to 81 U.S. companies between 2000-2003 (Monks et al. 2004). Another early study analyzed shareholder activism on social and environmental issues and found that they became increasingly frequent between 1970 and 1982 and that this increased frequency related to political and ideological processes and sentiments (Vogel 1983). Overall, many of these early and descriptive studies document that average support for ESG proposals was low, ranging from 6 to 8 percent (Campbell et al. 1999; Monks et al. 2004; Tkac 2006).

The results on the effect of this early activism are mixed. One study concluded that shareholder proposals on environmental issues had a negligible or even negative effect on firms' environmental performance (Clark et al. 2008). The same conclusion was reached by another study that investigated the effect of environmental and social proposals on firms' environmental and social performance (David et al. 2007). The authors' interpretation was that companies spend resources to resist the proposals taking resources away from improving their sustainability performance and that any changes that management agrees to make are symbolic rather than substantive. Similarly, a study of social activism by the public pension fund CalPERS failed to find any effect on shareholder value after the activism (Barber, 2006). One study found that shareholder proposals asking specifically for more ESG disclosure led to increases in transparency on ESG issues and the practice of more 'integrated reporting' (Serafeim 2015), and another documented that 20 percent of firms targeted by political spending-related shareholder proposals began disclosing in the subsequent year (Baloria et al. 2018).

Few papers have examined private engagements. In one study, the authors analyzed 31 engagements that were coordinated by the United Nations Principles for Responsible Investments (PRI). The data included 1,671 dialogues targeting 964 firms across 63 countries (Dimson, Karakas, and Li 2020). Given the coordinated nature of the engagements, 224 investors were

involved in the process. The results revealed that the probability that the engagement was a success was correlated with the presence of a local investor that took the lead in the engagement, larger investors holding more shares of the targeted companies, and for firms that had foreign investors on board. A limitation of the study was that success was subjectively measured by the investors rather than objectively through an outcome metric, such as reductions in carbon emissions, new sustainable products, or improvements in diversity.

More recently, a topic of significant interest has been the role of large index investors in influencing corporate sustainability performance. These investors have become the largest asset managers, holding a significant percentage of the shares across most companies on behalf of their clients. A recent theory postulates that these investors might have incentives to raise the standards for the whole industry on ESG issues, if improving sustainability performance across industry peers is value enhancing for the industry and if individual firms lack incentives to improve their own sustainability performance when peers do not follow (Serafeim 2018). Because large index investors own broadly diversified portfolios, have exposure to most companies in an industry and have longer investment horizons, they are able to surface above the free-rider problems that persist at the firm-level and promote practices that could benefit the industry as a whole. Examples where these dynamics are particularly salient are deforestation in the consumer packaged goods industry, corruption in the construction industry and water pollution in the apparel industry. This “investors as stewards of the commons” hypothesis (Serafeim 2019) still lacks robust empirical evidence. We believe this is a promising area for future work.

3.1.3 Disclosure Regulations and Performance

Over the past decade, policymakers across the world are mandating companies to report sustainability information. This has allowed researchers to study whether mandating disclosure of

information influences firms to change their investments and decision-making related to sustainability outcomes and the mechanisms through which these changes arise.

Research has shown that mandated disclosure was associated with improvements in operating performance relating to the environment, food and water safety, and patient health outcomes (Delmas, Montes-Sancho, and Shimshack 2010; Benneer and Olmstead 2008; Dranove, Kessler, McClellan and Satterthwaite 2002). One study examined the effect of an increase in product quality information through the placement of hygiene quality grade cards in restaurant windows (Jin and Leslie 2003). The placement of grade cards was found to be associated with increases in restaurant health inspection scores, consumer demand becoming more sensitive to changes in restaurants' hygiene quality and decreases in the number of foodborne-illness hospitalizations. Transparency has also been used to improve resource conservation. By sending customers information about how their energy usage compares to that of their neighbors, U.S. utility companies saw their customers' energy consumption decrease (Fagotto and Fung 2015). Rauter (2019) studied the consequences of regulation mandating disclosure of payments by European and Canadian extractive firms to foreign host governments, meant to curb bribery of foreign public officials and improve fiscal revenue collection in foreign countries. Using data on firms' extractive activities abroad and the staggered adoption of extraction payment reports across countries over time, the study reports that affected companies increase payments to host governments and public officials report a higher fraction of these payments. The effects are stronger for firms facing high media attention and firms that sell directly to end consumers, suggesting that the increased threat of public shaming could be a mechanism through which the mandated disclosures generate real effects. Interestingly, the paper also documents a decline in the

extraction companies' investments in the host countries, a plausibly unintended consequence of the now-reduced profitability of extraction projects.

Consistent with the idea that improved transparency allows investors and other stakeholders to monitor and pressure the reporting firm to change its behavior, Christensen et al. (2017) examines the effects of including mine-safety information in financial reports as part of the Dodd-Frank Act and finds that shifting information into a highly-disseminated disclosure channel decreased mine-site injuries relative to when the required information was disclosed elsewhere. In a similar vein, Downar et al. (2020) shows that a disclosure mandate requiring United Kingdom firms to aggregate and disclose greenhouse gas emissions data at the parent company-level (rather than at the installation-level) in annual financial reports, results in greenhouse gas emissions reductions. In another study, Chen, Hung and Wang (2017) study a Chinese setting in which the Shanghai Stock Exchange (SHSE) and the Shenzhen Stock Exchange (SZSE) mandated large firms (firms included in the Shenzhen 100 Index) to disclose ESG information for financial years ending on or after December 31, 2008. Although the affected firms are not required to increase their investment in sustainability, the authors posit that mandatory disclosure can make it easier for governments and interest groups to pressure firms to engage in more sustainability-related activities, potentially at the expense of shareholders. Consistent with this conjecture, the authors document that treated firms experience a decrease in profitability subsequent to the mandate. In addition, the cities most impacted by the disclosure mandate experience a decrease in their industrial wastewater and SO₂ emission levels. The authors' interpretation of these results is that mandatory sustainability disclosure in China altered firm behavior and generated positive social externalities at the expense of shareholders.

Tomar (2019) proposes a different mechanism for sustainability performance improvements following mandated reporting. Exploiting a new disclosure rule from the US Environmental Protection Agency's Greenhouse Gas Reporting Program requiring companies to disclose facility-level greenhouse gas emissions, Tomar (2019), documents that facilities reduced greenhouse gas emissions following mandated disclosure, and emissions reductions are larger for facilities with more disclosing peers nearby, suggesting that managers learn from their peers' disclosures and this "benchmark-learning" can improve environmental outcomes.

However, not all transparency programs have yielded the intended results. For instance, health care report cards that offered information on hospitals' and physicians' performance had limited effects on patients' choices (Dranove et al. 2002). Similarly, the Environmental Protection Agency (EPA) Toxic Release Inventory, which required companies to disclose toxic emissions, did not induce the anticipated community responses and action (Fagotto and Fung 2015). There is, however, documented heterogeneity in the responses to disclosure regulations. In the case of environmental disclosure regulations, greater improvements in environmental performance were found in establishments subject to internal and external pressure to improve and in establishments with greater access to the necessary capabilities (Doshi, Dowell and Toffel 2013).

An interesting feature of sustainability reporting is that many firms voluntarily released sustainability information before disclosure was mandated. For instance, over 3,000 companies around the world voluntarily disclosed environmental and social responsibility data in 2014 absent any regulation forcing them to do so. Grewal (2019a) exploits this variation in pre-regulation disclosure practices to study whether disclosure regulation generated real effects among firms that *already* voluntarily disclosed the mandated information. The paper uses the introduction of a mandate in the United Kingdom requiring firms to report greenhouse gas emissions (GHG) in

annual financial reports and examines whether firms that voluntarily disclosed GHG prior to regulation, and in a manner consistent with the regulation, reduce GHG after reporting is mandated. The analysis reveals that already-disclosing firms reduced GHG by 10% on average following mandated reporting, relative to matched firms that disclosed GHG voluntarily but are unaffected by GHG reporting regulation. While prior research focused on firms that did not disclose prior to regulation or on firms that improved transparency after regulation, the findings in Grewal (2019a) suggest that sustainability reporting mandates can be an effective tool to affect firm behavior even among voluntary disclosers. Moreover, it suggests that researchers, in studying firms that did not disclose before, should carefully consider whether it is appropriate to designate voluntary disclosers as the benchmark or control group, because voluntary disclosers may also be treated by mandated reporting.

3.2 Sustainability Performance as a Driver of Financial Performance

An early and extensive literature explored the relation between corporate sustainability and financial performance. This literature grew so large that various meta-studies tried to summarize and generate a consensus. Some of these efforts showed negligible relationships while other reviews pointed to a positive rather than a negative relationship. However, over the years this early literature has been criticized on various grounds including absence of appropriate controls for confounding factors, reverse causality, poor measurement of key independent variables and other concerns (McWilliams and Siegel 2000). Given the large number of contradicting studies, a meta-analysis of 52 studies from 1979-1998 sought to establish the relation between sustainability and financial performance by correcting for sampling and measurement error (Orlitzky et al. 2001). The study found a positive and non-trivial correlation, but did not succeed in resolving the doubts

and disagreements among researchers regarding the relationship between ESG and financial performance.

Theoretical research rooted in neoclassical economics argued that corporate sustainability efforts unnecessarily raise a firm's costs, putting the firm in a position of competitive disadvantage relative to its competitors (Friedman 1970; Aupperle et al. 1985; McWilliams and Siegel 1997; Jensen 2002). Some studies have argued that employing valuable firm resources to engage in sustainability efforts results in significant managerial benefits rather than financial benefits to the firm's shareholders (Brammer and Millington 2008).

In contrast, other scholars argued that corporate sustainability efforts can have a positive impact by providing better access to valuable resources (Cochran and Wood, 1984; Waddock and Graves, 1997), attracting and retaining higher quality employees (Turban and Greening, 1997; Greening and Turban, 2000), allowing for better marketing of products and services (Moskowitz, 1972; Fombrun, 1996), creating unforeseen opportunities (Fombrun et al., 2000), and contributing towards increased social legitimacy (Hawn et al., 2011). Furthermore, corporate sustainability efforts may function in similar ways as advertising does, increasing demand for products and services and/or reducing consumer price sensitivity (Dorfman and Steiner, 1954; Navarro, 1988; Sen and Bhattacharya, 2001; Milgrom and Roberts, 1986) and even enabling firms to develop intangible assets (Gardberg and Fombrun 2006; Hull and Rothernberg 2008; Waddock and Graves 1997). From a stakeholder theory perspective (Freeman, 1984; Freeman et al. 2007; Freeman et al. 2010), scholars have argued that corporate sustainability efforts can mitigate the likelihood of negative regulatory action (Freeman 1984; Berman et al. 1999; Hillman and Keim 2001), attract loyal consumers (Hillman and Keim 2001), and improve access to finance (Ioannou and Serafeim

2014). Additionally, corporate sustainability efforts may lead to value creation by protecting and enhancing corporate reputation (Fombrun and Shanley 1990; Fombrun 2005; Freeman et al. 2007).

In our view, this debate suffers from a fundamental flaw; wishful thinking that, somehow, firms behaving sustainably will “magically” do well. This thinking is, in our opinion, as naïve as the opposite belief that firms behaving unsustainably will somehow outperform. This obsession of proving or disproving the relation between corporate sustainability and financial performance obscured the more important question of *how* sustainability issues may become drivers of costs, revenues, risks, opportunities and asset quality. Rather than studying how sustainability issues become financially relevant, researchers focused on trying to establish an on-average relation between a broad measure of financial performance (e.g., accounting or market performance) and a broad measure of sustainability performance, encompassing a myriad of sustainability metrics.

More recent thinking has emphasized an understanding of how sustainability issues become financially material. For example, Freiberg, Rogers and Serafeim (2019) provide a framework of materiality pathways. In their framework, sustainability issues are originally financially immaterial and the industry is in an equilibrium where the misalignment between firm and societal interests is tolerated by stakeholders. They suggest that sustainability issues are more likely to become material when it is easier for stakeholders to receive information about the true alignment between societal and business interests (actionable information), when media and NGOs have more power and when politicians are more responsive to this power. Other conditions include companies lacking the ability to self-regulate and address the issues of misalignment between firm and societal interests (i.e. effective self-regulation), new regulations being effectively enforced and companies having a higher capacity for innovation that addresses the misalignment by offering a differentiated service/product (i.e. innovation to disrupt the competitive landscape). An important

take-away from this framework is that different sustainability issues will be financially material across different industries.

Recent research suggests that not every sustainability issue is financially relevant to every firm, and that some issues matter more than others (e.g. a mining company has a larger environmental footprint than a financial institution). This research was spurred by the advent of the Sustainability Accounting Standards Board (SASB), a non-profit organization founded in 2012, which developed and disseminated *industry-specific* sustainability reporting standards to encourage companies to disclose financially material sustainability issues in compliance with Securities and Exchange Commission (SEC) requirements. In contrast to the multi-stakeholder focus of pre-existing sustainability reporting standards, such as the Global Reporting Initiative (GRI), SASB adopted an investor viewpoint and, as a result, an issue could be immaterial from an investor standpoint, but still important to other stakeholders. Consequently, the number of metrics that SASB advocated an organization should report was significantly lower compared to GRI standards. SASB used the SEC definition of materiality as “presenting a substantial likelihood that the disclosure of the omitted fact would have been viewed by the reasonable investor as having significantly altered the total mix of information made available.”³

Studies examined the value of distinguishing material from immaterial sustainability investments. In the first study using a materiality framework, Khan, Serafeim and Yoon (2016) mapped industry-specific guidance on materiality from SASB to firm-level ESG data, in order to identify, for the 2,307 firms in their sample, investments made on material and immaterial sustainability issues. The authors constructed portfolios of firms that performed well along

³ TSC Industries v. Northway, Inc., 426 U.S. 438, 449 (1976). See also Basic, Inc. v. Levinson, 485 U.S. 224 (1988).

material and immaterial dimensions, and found that firms with improving performance on material issues outperformed firms with declining performance on material issues. In contrast, a firm's performance on immaterial issues was not predictive of a firm's future financial performance (i.e. risk-adjusted stock returns and changes in return-on-sales). The firms that had the best future financial performance were the ones that followed a focused strategy, selectively improving their performance only on material issues. The authors ruled out alternative explanations for their findings by conducting predictive, rather than contemporaneous stock return tests; orthogonalizing the materiality score to several firm characteristics; and controlling for firm characteristics and time effects in their models.

Other studies have shown that differentiating sustainability issues across industries based on their likely materiality illuminates relations that would have otherwise been obscured. Grewal, Hauptmann and Serafeim (2020) show that only the disclosure of information classified as financially material is associated with increased stock price informativeness, as proxied by the inverse of a firm's stock return synchronicity with market and industry returns. Moreover, the same study documented that following the release of SASB standards, firms increased disclosure on material issues and that those firms experienced improved stock price informativeness. In addition, Grewal, Riedl and Serafeim (2019) showed that around the announcement of the European nonfinancial directive that mandated the disclosure of sustainability information, stock prices of firms with poor sustainability performance declined and that this effect was more pronounced for firms where their industrial, geographic and business strategy exposures made sustainability risks more material.

In another study, Matsumura, Prakash and Vera-Muñoz (2018) examine whether managers' decisions to disclose climate change risks credibly reflect their private risk materiality

assessments. Two factors in the climate change risks context exacerbate the market's difficulty in assessing whether managers are truthfully revealing their private risk materiality assessments: (1) the inherent complexity of climate change risks; and (2) the SEC's historically inconsistent enforcement of climate change disclosures in regulatory filings. Using SASB standards to construct a proxy for imputed market expectations of climate change risk materiality, the authors test whether the association between disclosing climate change risks in Form 10-K and firm risk (proxied by a composite cost of equity measure) varies with market expectations. The authors find that the market rewards (penalizes) the firms for disclosing (not disclosing) climate change risks in their 10-K filings. However, the penalty for nondisclosure when the market expects climate change risks to be material is two-and-a-half times larger than the reward for disclosure when the market does not expect climate change risks to be material. These results indicate that imputed market expectations about climate change risks materiality serve as a "cross-check" on the credibility, and thus, informativeness, of managers' climate change risk disclosure decisions.

Further research is needed to enhance our understanding of how sustainability issues become financially material. For instance, how do evolving carbon pricing mechanisms affect cost structures across industries? Does employee activism affect employee morale and productivity, and does activism impede the ability to implement organizational strategy? Under what conditions do consumers shift their purchases towards products with less negative or more positive environmental and social impacts? These, and other related questions, present promising avenues for future research.

4 Communicating Performance

Our review thus far has focused on the *measurement* of corporate sustainability performance, the *management* of sustainability issues and how sustainability performance is related to firm financial

performance. In this section, we review the literature on how firms *communicate* sustainability performance and the important role of information intermediaries.

4.1 How Firms Communicate Sustainability Performance

4.1.1 Voluntary Standards and Transparency

As discussed earlier in this review, firms face demands for transparency on sustainability performance from a variety of stakeholders. However, in the early days of corporate sustainability reporting, the absence of regulatory guidance and requirements led firms to communicate sustainability information that varied widely in terms of structure and content. This void created by the absence of mandated disclosure – and the need to standardize disclosures – spurred the development of investor- and stakeholder-driven disclosure standards and guidelines that firms could voluntarily adopt, with the objective of providing comparable, standardized information across firms.

To our knowledge, the first set of formalized voluntary reporting standards relate to environmental performance. Following the 1989 Exxon Valdez disaster, the U.S.-based Coalition for Environmentally Responsible Economies (CERES) developed the “CERES/Valdez Principles” on behalf of the Social Investment Forum (SIF), and subsequently introduced the first set of environmental reporting guidelines for large organizations. The first organization to provide guidance on disclosure of a *broad* set of sustainability metrics was the Global Reporting Initiative (GRI), launched in 1997 by CERES and the United Nations Environment Program (UNEP). The stated objective of the GRI was to develop and establish reporting guidelines for the “triple bottom line”: accounting for economic, as well as environmental and social performance by corporations. The GRI aspired to gradually evolve sustainability reporting to a point that it would be at par with

financial reporting in terms of rigor, credibility and comparability. The GRI Guidelines included materiality guidelines to help firms determine the threshold at which sustainability issues were sufficiently important to stakeholders that they should be reported.

The GRI launched its first version of its Guidelines in 2000 after multiple negotiations and consultations with over 3,000 experts from business, civil society and the labor movement. At the time of this paper's publication, the GRI is the most widely and globally adopted set of reporting guidelines for sustainability information with over 7,000 organizations having voluntarily adopted the GRI Guidelines for their 2018 sustainability reports.⁴ Given the influence of the GRI in shaping corporate sustainability disclosure, most extant research on the consequences of voluntarily sustainability reporting are joint tests of voluntary disclosure and GRI adoption (e.g., Dhaliwal et al. 2010; Dhaliwal et al. 2011).

In contrast to the GRI's focus on reporting stand-alone sustainability information, the International Integrated Reporting Council (IIRC) was established in 2010 to *integrate* corporate disclosures of financial and sustainability information. Accordingly, the information provided by integrated reports (IR) was ideally not just of interest to non-equity stakeholders; rather it should be relevant from a financial perspective and linked to long-run corporate profitability and value. The global coalition of regulators, investors, standard setters and NGOs that founded the IIRC also intended for IR to raise the credibility of sustainability data since the information would be voluntarily disclosed as part of regulatory filings that were scrutinized by regulators and, to a greater extent, by auditors. An often cited objective of IR was to achieve "integrated thinking" within an organization, meaning the incorporation of all types of capital – such as human, natural,

⁴ GRI guidelines have been translated into over 10 languages, including Japanese, Spanish, Chinese, Bahasa Indonesian, Vietnamese, German, Simplified Chinese, French, Arabic and Italian. See: <https://www.globalreporting.org/standards/gri-standards-translations/>

intellectual, social, manufactured, and financial – in organizational decision making. Globally, the number of companies that specifically label their reports as "integrated" grew slowly but steadily: 15% of the Global Fortune 250 issued Integrated Reports in 2015, and 19% did so in 2017 (KPMG 2017).

Research on IR suggest that firms with IR attract more long-term investors and shape a more long-term investor base. For instance, Serafeim (2015) hypothesizes and finds that firms with IR have a more long-term oriented investor base with more dedicated investors and fewer transient ones. Serafeim examines the possibility that dedicated investors drove the adoption of IR, but finds evidence consistent with IR adoption driving a more dedicated investor base. In another study, Knauer and Serafeim (2014) suggest that firms can use IR to credibly communicate the commitment of its leadership to diffusing integrated thinking across the organization, and in turn, attract investors with longer-term horizons and incentives that are more consistent with the firms' long-term strategies.

A more recent set of voluntary standards was developed by the Sustainability Accounting Standards Board (SASB). As mentioned in section 3.2, SASB has an investor focus, whereas the GRI has a multi-stakeholder focus. SASB's mission was to develop and disseminate *industry-specific* sustainability accounting standards to help publicly listed corporations disclose "material" sustainability information in compliance with the Securities and Exchange Commission (SEC) requirements. SASB's board comprised a mix of regulators, academics, lawyers, and investors, including two former Chairwomen of the SEC and a former Chairman of the Financial Accounting Standards Board (FASB). With the emergence of SASB, a few recent studies apply a materiality lens to the disclosure of sustainability information and the management of sustainability issues; we provide a review of these extant studies in section 3.2. Although these studies explicitly control

for GRI reporting, no study (to our knowledge) compares the antecedents and consequences of SASB or IR adoption relative to GRI adoption; such an inquiry has the potential to provide important insights into both managers' incentives to disclose, as well as the usefulness of these different voluntary standards to capital market participants.

4.1.2 Disclosure Regulations and Transparency

Mandatory requirements for the disclosure of sustainability information have emerged in recent years. As of 2017, 23 countries mandated disclosure of sustainability information, and stock exchanges in six countries required sustainability information as part of listing requirements (KPMG 2017). In this section, we discuss these regulations and related research.

In the U.S., despite 89% of firms on the S&P 500 Index voluntarily disclosing sustainability information in 2018 (up from 20% in 2011) the SEC has not followed in the footsteps of other regulators that mandate disclosure of a broad set of sustainability metrics. However, a number of regulations in recent years have focused on increasing the transparency of U.S. companies on particular sustainability matters such as employee safety, greenhouse gas emissions and corruption. Moreover, there are signs that a broad sustainability reporting mandate could take effect in the near future. For instance, a part of the SEC's revision of Regulation S-K which lays out reporting requirements for publicly listed companies, the SEC's Investor Advisory Committee proposed the mandatory disclosure of sustainability information in the form of environmental, social and governance (ESG) data. The Investor Advisory Committee has called for Regulation S-K to be modified such that ESG issues are subject to the same materiality standards as other sources

of business risks.⁵ Moreover, with over 1,000 organizations publicly declaring support for the Financial Stability Board’s Task Force on Climate-related Financial Disclosure (chaired by Michael Bloomberg) in February 2020, regulators face less resistance by companies that increasingly see the benefits to themselves as well as to their investors, lenders, insurers and other stakeholders, of standardized, consistent disclosures.⁶

Recent regulatory interventions in the U.S. have increased the supply of mandated sustainability information among firms incorporated in, or listed in, the U.S. For example, new rules from the US Environmental Protection Agency’s Greenhouse Gas Reporting Program (“US Program”) require companies, since 2010, to disclose greenhouse gas emissions if their facilities have emissions that exceed a certain threshold. In addition, Section 1503 of the Dodd-Frank Wall Street Reform and Consumer Protection Act of 2010 required SEC-registered firms to include information on mine-safety performance – specifically citations for violations of mine-safety regulations – in their financial reports.⁷ A second section of the Dodd-Frank Act – Section 1504 – required that U.S.-listed firms in extractive industries disclose project-level payments made to foreign governments, in an effort to address concerns about corruption and weak governance in resource-rich countries. Healy and Serafeim (2020) examine this latter setting and document negative stock price reactions at the announcement of mandated disclosure of payments to host governments for natural resources, suggesting that managers and investors perceive such disclosures will generate private costs despite any anti-corruption benefits. The study also finds that firms increase disclosure through industry self-regulation efforts, and such disclosures are

⁵ Letter from SEC Investor Advisory Committee, to SEC Division of Corporation Finance (June 15, 2016). Accessed from: <https://www.sec.gov/spotlight/investor-advisory-committee-2012/iac-approved-letter-reg-sk-comment-letter-062016.pdf>

⁶ See: https://www.fsb-tcfd.org/wp-content/uploads/2020/02/PR-TCFD-1000-Supporters_FINAL.pdf

⁷ Please see section 3.2 for a discussion of Christensen, Floyd, Liu and Maffett (2017) which exploits this setting.

associated with lower country corruption ratings, suggesting that collective action may allow companies to respond to public pressure for transparency while managing the private costs of disclosure.

Concerning mandated sustainability reporting outside of the U.S., Ioannou and Serafeim (2019a) study the adoption of sustainability disclosure regulations in China, Denmark, Malaysia and South Africa. The authors investigate the extent to which mandatory sustainability disclosure regulations have an impact on corporate disclosure practices (i.e. the level of transparency) given that many companies voluntarily disclose such information *prior* to regulation, and whether such regulations ultimately affect firm valuations. They discuss that the answers to these questions are not *a priori* obvious: these regulations typically include a “comply or explain” clause and hence, provide firms with the option of not increasing sustainability disclosure. In addition, for sustainability reporting, the potential sanctions resulting from non-disclosure are not usually clearly postulated and little guidance, if any, exists regarding the metrics and disclosures that a firm needs to quantify and release. Finally, some firms that had already been disclosing some sustainability information prior to the regulation may continue at the same level of disclosure given that the disclosure regulations do not typically prevent them from claiming that pre-existing disclosure patterns are sufficient to satisfy the regulatory disclosure requirements. Using difference-in-differences estimation, the authors find that, relative to a sample of control firms (matched on industry membership, profitability, size, leverage and pre-regulation sustainability disclosure) treated firms significantly increased disclosure following regulation relative to two alternative control groups consisting of (a) firms from the rest of the world, and (b) firms from the U.S. only. Treated firms were also more likely to voluntarily receive assurance and adopt reporting guidelines, thereby enhancing the quality of disclosure in terms of credibility and comparability.

Finally, the authors use an instrumental variable model where, in the first stage, the direct effect of the regulation on disclosure is estimated and, in the second stage, the effect of the predicted (i.e. instrumented) disclosure on firm value (Tobin's Q) is estimated. Their results provide evidence consistent with a positive relation between Tobin's Q and the predicted component of the sustainability disclosure, suggesting that the net effect of mandatory sustainability reporting – in the four countries examined – is, on average, value-enhancing rather than value-destroying for treated firms.

Regulatory efforts on sustainability reporting do not always improve transparency. For instance, the SEC issued interpretive Guidance in 2010 on climate change disclosures, explicitly reminding companies of their obligation to disclose on the material effects of climate change, from both an upside value creation and downside risk perspective (SEC 2010). Eccles et al. (2012) examine whether the issuance of this Guidance affected climate change disclosures. Based on an analysis of 10-K filings in six industries, the study finds that, even within a given industry, there was substantial variation in terms of how firms responded to the Guidance, which included: no disclosure, boilerplate disclosure, industry-specific reporting, and in rare cases, the disclosure of quantitative metrics. However, most of the disclosure after the Guidance was in the form of boilerplate language and did not provide adequate information for investors to assess the risks and opportunities relating to climate change, which was the intention of the Guidance. The authors attribute to their findings to the lack of SEC enforcement of the Guidance, and the lack of direction from the SEC as to how firms should disclose material climate change information.

The most significant reporting mandate occurred in 2014, when the European Union (EU) adopted Directive 2014/95/EU on sustainability disclosure requiring approximately 6,000 large companies to disclose, from 2018 onwards, information on policies, risks and performance on

environmental issues, social and employee aspects, respect for human rights, anticorruption and bribery issues, and diversity in their board of directors (European Commission, 2015). The directive applies to firms either (i) listed on EU exchanges or having significant operations in the EU, (ii) defined to be “large” (i.e., having 500 or more employees), or (iii) designated as public-interest entities by EU Member States due to the nature of their activities, size, or number of employees. Grewal et al. (2019c) document an average negative market reaction to the passage of the directive, concentrated in firms with weak pre-regulation sustainability disclosure and performance, while firms with strong pre-regulation sustainability disclosure and sustainability performance exhibit an average *positive* return. Similar to Ioannou and Serafeim (2019a), Grewal et al. (2019c) exploit the fact that many firms voluntarily disclosed information about sustainability matters *prior* to regulation mandating them to do so. Feichter, Hitz and Lehmann (2019) document that firms within the scope of Directive 2014/95/EU anticipate the disclosure mandate by increasing their sustainability performance *before* the first mandatory disclosures. Their cross-sectional tests suggest that the increase in sustainability performance is larger for firms that anticipate more adverse stakeholder reactions, namely firms with low sustainability performance in the pre-regulation period and high product visibility.

In our view, a promising avenue exists to build on Ioannou and Serafeim (2019) and Grewal et al. (2019c), and study whether mandated disclosure of sustainability information mitigates managers’ opportunistic disclosure of sustainability outcomes. For instance, when firms are mandated to disclose sustainability metrics – such as greenhouse gas emissions or gender pay gaps – how does this affect the firms’ *voluntary* disclosure of environmental performance and gender equality? Do firms have less opportunity to engage in cheap talk or “greenwashing” once objective, mandated information has been revealed? These, and other related questions, present interesting

and fruitful opportunities for future research. We also believe an opportunity exists to explore how EU members are implementing Directive 2014/95/EU. For instance, while some EU countries require sustainability disclosure in annual financial reports, others allow disclosures to be made in standalone reports (GRI, 2018).⁸ In addition, certain EU countries require more extensive auditor involvement (e.g., Belgium, Denmark, France), a broader definition of entities that are required to report, and so on. Researchers could exploit this rich setting to examine how nuances in how directives are adopted into law affect the transparency of sustainability information.

4.2 Where Firms Communicate Sustainability Performance

Sustainability disclosure typically relates to social and environmental issues such as employee safety, corruption, greenhouse gas emissions, diversity, pollution, and so on. Because such information can be of interest to a broad set of stakeholders, including employees, NGOs, environmental groups and customers, firms report this information in channels that are more visible and accessible to these non-equity stakeholders, such as sustainability reports. Moreover, since much of this disclosure is voluntary, managers exert discretion in deciding what sustainability information to provide in financial reports. This was precisely the basis for the SEC's Interpretive Guidance on Climate Reporting, which explicitly reminded companies of their obligation to report value-relevant climate change information in regulated filings and not only in their voluntary sustainability reports (SEC 2010).

Researchers have started to uncover reporting differences across financial and sustainability reports, with one study documenting a distinct timing difference between when firms disclose certain climate change information in their financial reports, relative to their sustainability

⁸ We thank our reviewer, Hans Christensen, for raising this important point.

reports. Specifically, Grewal (2019b) performs textual analysis of sustainability reports and 10-Ks and documents that on average, firms delay disclosing climate change business opportunities ('green opportunities') in the MD&A section of the 10-K until 2.5 years after disclosing green opportunities in their sustainability report. While it may seem that the information is less reliable when it is provided only in the sustainability report, Grewal (2019b) documents that both disclosure channels provide reliable information about future revenues from low-carbon products. However, withholding disclosure from the 10-K has capital market implications: a value-weighted portfolio of firms disclosing only in the sustainability report earned an annual alpha of 3.09%, while a portfolio of 10-K disclosers did not earn abnormal returns. Moreover, earnings announcement returns accounted for a meaningful proportion of the outperformance which is consistent with the price change (alpha) being realized as green opportunities paid-off through observable metrics such as higher sales revenues and profits. Since Grewal (2019b) does not have a natural experiment with random assignment of the variable of interest to firms, green opportunities may proxy for other variables that are positively related to stock returns and also misvalued by the market. However, the alpha or outperformance is concentrated in firms that disclose green opportunities only in the sustainability report; later, when these same firms disclose green opportunities in the 10-K, a more credible and visible reporting channel, the outperformance disappears. This helps to alleviate concerns that time-invariant unobservables (such as good management) account for the majority of the results. An alternative explanation would have to coincide with the sustainability-report green opportunity disclosure and cease precisely when disclosure begins in the 10-K.

Researchers have only just begun to examine the discretion that managers exert in deciding what sustainability-related information to provide in regulated financial reports versus voluntary

sustainability reports. An interesting extension of Grewal (2019b) would be to examine whether this timing discrepancy exists for other types of sustainability disclosures, such as climate change risks. In addition, *why* this timing difference arises across disclosure channels is an interesting topic for future research. We believe that the significant leeway managers have in deciding where and when to disclose sustainability-related information can be exploited to provide novel insights into how managers make these decisions, the motivations behind them, and their implications.

4.3 Information intermediaries and sustainability information

The increased supply of voluntary and mandated sustainability information in recent years has created a market for the assurance of sustainability disclosure, as well as an interesting question as to whether – and how – financial analysts utilize sustainability information in their assessments of firms' future financial performance. In this section, we review the literature on the role of information intermediaries in the market for sustainability information.

4.3.1 Auditors and Sustainability Information

Currently, no regulation mandates the assurance of a broad set of sustainability metrics, although some pieces of information – including greenhouse gas emissions – are audited as part of existing regulations (e.g. European Union Emissions-Trading Scheme; U.S. EPA Greenhouse Gas Emissions Program). Accordingly, research has focused on firms' *voluntary* decisions to obtain independent assurance over their sustainability reports. For example, Simnett, Vanstraelen and Chua (2009) examine the factors associated with the decision to voluntarily obtain assurance and hypothesize that a company's need to enhance credibility of reported sustainability information through assurance will be a function of firm-, industry- and country-related factors. For the period 2002-2004, based on 2,113 sustainability reports, the authors document that 31 percent of

sustainability reports are assured and members of the auditing profession assure 42 percent of these. Multivariate results demonstrate a strong link between companies with a higher need to enhance credibility (e.g., firms belonging to industries with high environmental and social risks) and sustainability report assurance. With regard to the choice of assurance provider, the study finds that companies domiciled in more stakeholder-orientated countries are more likely to choose a member of the auditing profession, as opposed to an environmental consultant.

Another study exploits the proliferation of procedures, standards and third-party verifiers for the assurance of sustainability reporting to obtain insights into the various aspects inherent to the diffusion of assurance standards for sustainability information (Perego and Kolk 2012). In contrast to the cross-sectional analyses adopted in Simnett et al. (2009), Perego and Kolk (2012) adopt a longitudinal approach to analyze how sustainability assurance diffused over time, in different national contexts, and taking into account various auditor types and standards used. Using a panel of Fortune Global 250 firms from 1998-2008, the authors' evidence suggests the relevance of external institutional pressures as well as internal resources and capabilities as underlying factors driving the adoption of assurance. For instance, in countries with more stringent legislation on social and environmental reporting (e.g., Japan and France), there was more adoption of assurance, suggesting that increased regulatory pressure can act as a powerful coercive mechanism and lending support to the institutional theory perspective of assurance adoption. At the same time, the authors found that national contexts characterized by high litigation costs had lower adoption of assurance, suggesting that high levels of litigation in the legal environment could be an impediment to emerging auditing practices. Their results also suggest that several companies project a decoupled or symbolic image of accountability through assurance, thereby undermining the credibility of these verification practices.

The question of what is considered *material* in sustainability report assurance engagements is important, as materiality affects the reliability of the reported numbers and has long been considered a key concept in audit theory and audit practice (e.g., Messier 1983). With the rise of assurance over sustainability reports, Moroney and Trotman (2016) develop an experiment to understand how audit materiality judgments on sustainability data are made and what factors impact these materiality judgments. In their experiment, the authors manipulate the type of engagement (financial versus water) within-subjects, and two qualitative factors between-subjects: risk of breaching a contract (present/absent) and community impact (present/absent). Eighty-two Big 4 audit managers and seniors were provided information for both a financial statement audit and a water report assurance engagement, and were asked to assess the materiality of the audit difference in each case. Both cases contain an audit difference of the same magnitude uncovered by the auditor (6.6 percent of the relevant base). The authors predict and find evidence consistent with auditors assessing the materiality of an audit difference significantly higher for a financial case than for a water case, and this between-case difference is significantly greater when there is no risk of breaching a contract than when there is a risk of breaching a contract. The authors find no evidence of a community impact main effect, but document significant interactions between breach and community impact such that the risk of breaching a contract has a stronger effect on the difference in auditors' materiality assessments in the no community impact treatment than in the community impact treatment. Overall, their findings suggest that qualitative factors have a greater impact on sustainability materiality assessments than on financial statement materiality assessments, consistent with auditors taking qualitative factors more into account due to the broader set of intended users of sustainability reports.

4.3.2 Financial Analysts and Sustainability Information

Financial analysts play a critical role in processing the plethora of information about firms, industries, markets and economies, and communicating their projections and recommendations about individual companies to investors. As firms provide more sustainability information and as governments, asset owners and high-net worth investors increasingly consider the impact of sustainability factors on their investments and economies, financial analysts' roles have evolved. The Chartered Financial Analyst (CFA) Institute believes that "...more thorough consideration of ESG factors by financial professionals can improve the fundamental analysis they undertake and ultimately the investment choices they make".⁹ The CFA Institute is currently developing an ESG industry standard that would build a framework for investment managers to communicate, and to help investors understand, the nature and characteristics of ESG-centric funds and investment strategies (CFA Institute 2020).

Researchers have, for a number of years, been interested in the relationship between the disclosure of sustainability information and the forecasts and recommendations of financial analysts. For example, using a sample of 213 U.S. firms that voluntarily released stand-alone sustainability reports from 1993 to 2007, Dhaliwal, Li, Tsang and Yang (2011) found firms that initiated sustainability reporting attracted more analyst coverage, and these analysts had lower forecast errors and dispersion. In a follow-up study, Dhaliwal, Radhakrishnan, Tsang and Yang (2012) used an international sample of firms from 31 countries and documented that the issuance of stand-alone sustainability reports is associated with lower analyst forecast error. Interestingly, this relation was stronger for firms and countries with more opaque financial disclosure, indicating that sustainability information plays a role that is *complementary* to financial disclosure.

⁹ See: <https://www.cfainstitute.org/en/research/esg-investing>

Researchers also examined the impact of sustainability performance ratings on analysts' assessments of firms' future financial performance. In one study, Ioannou and Serafeim (2015) adopt a social constructionist view of financial markets and examine how the weakening of the prevalent agency logic, due to the emergence of a stakeholder focus, is associated with a shift in the way analysts respond to ESG performance scores over a 15-year time horizon. Specifically, the authors posit that when analysts perceive sustainability as serving managerial objectives (i.e., an agency cost) rather than serving shareholders' interests, analysts will issue more pessimistic recommendations for firms with higher sustainability performance ratings. However, they argue for a *gradual weakening* of this agency-based institutional logic over time through the emergence of a stakeholder orientation. Using a large sample of publicly traded U.S. firms over 15 years, the authors confirm that, in the early 1990s, analysts issue more pessimistic recommendations for firms with high sustainability ratings. Over time and leading to 2007, analysts issue increasingly less pessimistic and, eventually, optimistic recommendations for firms with higher sustainability scores. The evidence is consistent with sustainability becoming more legitimate in the eyes of both shareholders and analysts over time and being perceived as positively contributing towards profitability, rather than an agency cost.

5 Corporate Purpose and Accounting for Performance

We conclude this paper with a section on the future of the role of the corporation in society and how accounting can evolve to fit that role. This section reflects our opinions on both of these matters. The literature has long debated what purpose is served by accounting. Some have argued that the purpose of accounting is to help with valuation and the pricing of securities in markets (Barth, Beaver and Landsman 2001). Others have argued that the purpose of accounting is to enable contracts to be written that align incentives and enable parties to transact (Holthausen and

Watts 2001). Either school of thought should feel comfortable with the idea that societal impacts should be measured and disclosed. For the value relevance school of thought, the vast majority of invested capital is managed by investors that ask for sustainability disclosure and have committed to incorporate sustainability information in investment decisions because it is relevant to understanding risks and opportunities.¹⁰ For the contracting school of thought, an increasing number of banks tie interest rates and covenants to ESG metrics and the fraction of companies that tie executive incentives to ESG outcomes more than tripled in the past decade (Flammer, Hong and Minor 2019).

But, what if accounting has the potential to serve a broader purpose in society? What if the assumptions and measurements underlying the very definition of firm performance are flawed? If the purpose of the corporation in society is to maximize its own short-term profits, then of course it is suffice to use earnings and a few other core financial metrics to assess whether corporate performance has improved. This is the definition we have been using for several decades; it is therefore no surprise that corporate earnings and stock prices are at record-high levels. We have built an economy that focuses on the performance that we were taught to maximize: financial.

However, there are growing calls to contemplate the broader purpose of the corporation in society. Writings from prominent practitioners such as the Delaware Supreme Court Judge Leo Strine and the CEO of the largest asset management firm Larry Fink, and from distinguished scholars, such as law school professor Lynn Stout and Nobel Laureate and economist Oliver Hart, all suggest that the purpose of the corporation extends beyond shareholder value maximization to

¹⁰ As of 2019, there are close to 2,500 investor signatories to the United Nations Principles for Responsible Investment (UN PRI) with assets under management totaling over \$80 trillion (see: <https://www.unpri.org/pri/about-the-pri>). In another investor initiative to ensure the world's largest corporate greenhouse gas emitters take action on climate change, Climate Action 100+ was established in 2017 and already has over 450 investor signatories with over \$39 trillion in assets under management (see: <http://www.climateaction100.org/>).

providing products that solve pressing problems, such as climate change, and providing opportunities and decent work to employees. This sentiment is resonating with young business leaders. Over the past eight years, one of the most popular courses at Harvard Business School has been “Reimagining Capitalism,” taught by the distinguished innovation and strategy scholar Rebecca Henderson and one of the authors of this paper. It is clear that a concept of performance that excludes corporations’ environmental, employment or product impact results in poor outcomes for employees, customers and the environment.

The consequences of this erroneous definition of performance are severe. We are destroying the natural environment at a pace that threatens our continued existence on this planet; employees are treated as costs to be managed instead of resources to be invested in; and countless food, beverage and financial products have left customers worse off. Alarming rates of obesity and diabetes and declining life expectancy in the US are testimony to the negative impact of our current system.

To reverse these alarming trends, we need to redefine corporate performance to include societal considerations such as providing good jobs, paying responsible taxes, finding innovative ways to solve climate change, and providing products that truly benefit customers. Doing so requires measuring the impact companies have on society, converting this impact to monetary terms and reflecting this impact in financial statements, or “impact-weighted accounting”. By monetizing impact, we will translate social and environmental costs and benefits into comparable units that business managers and investors can intuitively understand, meaningfully aggregate, and compare without obscuring important details needed for decision-making. Impact-weighted accounting permits the use of existing financial and business analysis tools, such as net present value and internal rates of return, to assess impact-weighted corporate performance.

At least 56 large companies had produced some version of impact-weighted accounts, as of 2019 (Serafeim, Zochowski and Downing 2019). Recent work has measured the environmental impact of corporate operations for more than 3,000 large companies around the world, in terms of the damages to human health, abiotic resources, and other subjects from carbon emissions, nitrous oxide, sulphuric oxide, water scarcity and other outputs. Moreover, this work shows that such impact exhibits little correlation with existing environmental ratings (Park et al. 2020). Emerging research has also provided a framework for measuring product impact with applications to companies in the automobile, pharmaceutical, utilities and consumer packaged goods industries (Serafeim, Trinh, and Zochowski 2020). This reflects the societal costs or benefits from fuel emissions, product affordability, and health effects from product consumption (i.e. whole grains or trans-fat in the context of a consumer packaged goods firm).

Impact-weighted accounts could have a catalytic potential. Consider the development of modern risk measurement in the second half of the twentieth century, which included the concepts of aggregate portfolio risk, risk-adjusted returns, risk-return optimization, and value-at-risk to provide investors with a systematic way of optimizing return for a given level of risk. This had dramatic implications for asset allocation, generating inflows to the nascent venture capital and private equity industries. Monetization of social and environmental impacts similarly permits the development of effective risk-return-impact optimization tools and the identification of a new efficient frontier for our economy. This has the potential to dramatically change capital flows compared with the current market practice of disregarding impact completely or conducting separate qualitative and quantitative assessments. Just as financial accounting infrastructure has been a necessary condition for the development of large-scale capital markets, impact-weighted financial accounts are a necessary condition for capital markets driven by impact considerations.

We believe that impact-weighted accounting is the way of the future and the way for accounting information to remain relevant in the 21st century.

6 Conclusion

In this paper, we review the literature on corporate sustainability reporting and performance. We focus our review on the *measurement* of sustainability outcomes, the *management control systems*, *investor actions*, and *disclosure regulations* that enable firms to improve sustainability performance and its related financial impacts, and the *communication* of sustainability information to capital markets.

We conclude with final thoughts that could help accounting researchers improve their impact on scholarly work and practice in corporate sustainability. First, as our long list of references suggests, this field is incredibly interdisciplinary in nature. Scholars from management, organizational behavior, finance, marketing, economics, law, psychology and sociology are all making important contributions. Not only can accounting researchers inform their own work on corporate sustainability by learning from the work of scholars in other disciplines, but they can also contribute to and impact other disciplines through their research. We believe that, especially in the area of measurement of corporate sustainability performance, accounting researchers have a competitive advantage and could contribute to a variety of disciplines that study corporate sustainability.

Second, although it may be tempting to use existing accounting theories to try to explain the observed empirical patterns in corporate sustainability, we caution researchers against doing so. It is likely that we need new theories to understand and contextualize the new institutions that are evolving in the corporate sustainability space. For example, financial accounting researchers

confer legitimacy and authority to organizations such as FASB and IASB that create financial reporting standards, but no such authority exists in the case of sustainability reporting where market participants have created new organizations, initiatives and guidelines to fill the void left by existing accounting regulation.

Finally, it is plausibly erroneous and misleading to extrapolate findings from extant research in financial accounting to predict the “optimal” level of difficulty for sustainability targets; how executives should be incentivised to achieve sustainability outcomes; and the consequences of mandated sustainability reporting. The motivations, norms, beliefs and organizations that govern managerial, regulator and investor behavior could exhibit patterns that are distinct from those previously observed. This nuance will be lost if we do not re-examine some of our core assumptions about what needs to be measured, how managerial agency improves performance on those metrics, and what the implications are of corporate disclosure.

References

- Aupperle, K., Carroll, A. and Hatfield, J. 1985. An empirical examination of the relationship between corporate social responsibility and profitability. *Academy of Management Journal*, 28(2): 446-463.
- Baloria, V.P, Klassen, K. and C.I. Wiedman. 2018. Shareholder Activism and Voluntary Disclosure Initiation: The Case of Political Spending. *Contemporary Accounting Research*, 26(2): 904-933.
- Barber, B. 2007. Monitoring the monitor: evaluating CalPERS activism. *Journal of Investing*, 16 (4): 66-80.
- Barth, M., Beaver, W., and W., Landsman. 2001. The Relevance of the Value Relevance Literature for Financial Accounting Standard Setting: Another View. *Journal of Accounting and Economics*, 31, Issue 1–3, Pages 77–104.
- Benbear, L.S., and S.M. Olmstead. 2008. The impacts of the “right to know”: Information disclosure and the violation of drinking water standards. *Journal of Environmental Economics and Management*, 56 (2): 117-130.
- Berg, F., Kölbel, J. and Rigobon, R. 2019. Aggregate Confusion: The Divergence of ESG Ratings. *MIT Sloan Research Paper No. 5822-19*.
- Berman, S., Wicks, A., Kotha, S. and Jones, T. 1999. Does Stakeholder Orientation Matter? The Relationship Between Stakeholder Management Models and Firm Financial Performance. *Academy of Management Journal*, 42: 488-506
- Brammer, S., and Millington, A. 2008. Does it pay to be different? An analysis of the relationship between corporate social and financial performance. *Strategic Management Journal*, 29(12): 1325-1343.
- Campbell, C. J., Gillian, S. L., and Niden, C. M. 1999. Current perspectives on shareholder proposals: Lessons from the 1997 proxy season. *Financial Management*, 28(1): 89–98.
- Cao, J., Liang, H. and Zhan, X. 2019. Peer Effects of Corporate Social Responsibility. *Management Science*, 65(12): 5487-5503.
- Chartered Financial Analyst Institute. 2020. ESG Investing and Analysis. Accessed on February 2, 2020 from: <https://www.cfainstitute.org/en/research/esg-investing>
- Cheema-Fox, A. LaPerla, B.R., Serafeim, G., Turkington, D. and Wang, H. 2020. Climate Data, Industry Returns and Portfolio Decarbonization. *Working paper*.

- Chen, Y.C., Hung, M. and Wang, Y. 2018. The effect of mandatory CSR disclosure on firm profitability and social externalities: Evidence from China. *Journal of Accounting and Economics*, 65(1): 169-190.
- Christensen, D., Serafeim, G. and Sikochi, A. 2019. Why is Corporate Virtue in the Eye of the Beholder? The Case of ESG Ratings. *Working paper*.
- Christensen, H.S., Floyd, E., Liu, L. Y. and Maffett, M.G. 2017. The Real Effects of Mandated Information on Social Responsibility in Financial Reports: Evidence from Mine-Safety Records. *Journal of Accounting & Economics*, 64(2-3): 284-304.
- Clark, G. L., Salo, J., and Hebb, T. 2008. Social and Environmental Shareholder Activism in the Public Spotlight: US Corporate Annual Meetings, Campaign Strategies, and Environmental Performance, 2001–04. *Environment and Planning A: Economy and Space*, 40(6), 1370–1390.
- Cochran, P., and Wood, R. 1984. Corporate social responsibility and financial performance. *Academy of Management Journal*, 27(1): 42-56.
- David P., Bloom M. and Hillman A. 2007. Investor activism, managerial responsiveness and corporate social performance. *Strategic Management Journal*, 28: 91-100.
- Delmas, M., M.J. Montes-Sancho, and Shimshack, J.P. 2010. Information disclosure policies: Evidence from the electricity industry. *Economic Inquiry*, 48(2): 483-498.
- Deshpande, R., Dey, A. and G. Serafeim. 2020. Blackrock: Linking Purpose to Profit. *Harvard Business School Case* 120-042.
- Dhaliwal, D.S., Li, O.Z., Tsang, A. and Yang, Y.G. 2011. Voluntary Nonfinancial Disclosure and the Cost of Equity Capital: The Initiation of Corporate Social Responsibility Reporting. *The Accounting Review*, 86(1): 59-100.
- Dhaliwal, D.S., Radhakrishnan, S., Tsang, A. and Yang, Y.G. 2012. Nonfinancial Disclosure and Analyst Forecast Accuracy: International Evidence on Corporate Social Responsibility Disclosure. *Accounting Review*, 87(3): 723-759.
- Dimson, E., Karakaş, O. and Li, X., 2020. Coordinated engagements. *Working paper*.
- Dorfman, R., and Steiner, P.O. 1954. Optimal Advertising and Optimal Quality. *American Economic Review*, 44: 826-36.
- Doshi, A.R., Dowell, G. and Toffel, M.W. 2013. How Firms Respond to Mandatory Information Disclosure. *Strategic Management Journal*, 34(10): 1209–1231.
- Downar, B., Ernstberger, J., Reichelstein, S., Schwenen, S. and Zaklan, A. 2020. The impact of carbon disclosure mandates on emissions and financial operating performance. *Working paper*.

- Dranove, D., Kessler, D., McClellan, M. and Satterthwaite, M. 2002. Is more information better? The effects of 'report cards' on health care providers. *Journal of Political Economy*, 111(3): 555-588.
- Eccles, R. G. 1991. The Performance Measurement Manifesto. *Harvard Business Review*, 69(1): 131-137.
- Eccles, R.G., Krzus, M.P., Rogers, J. and Serafeim, G. 2012. The Need for Sector-Specific Materiality and Sustainability Reporting Standards. *Journal of Applied Corporate Finance*, 24(2): 65-71.
- Fagotto, E. and Fung, A. 2015. Too Much Information: Making Transparency Good for You. Boston Review. Accessed on February 20, 2020 from: <http://bostonreview.net/books-ideas/elena-fagotto-archon-fung-transparency>
- Flammer C., Hong B., Minor D.B. 2019. Corporate Governance and the Rise of Integrating Corporate Social Responsibility Criteria in Executive Compensation: Effectiveness and Implications for Firm Outcomes. *Strategic Management Journal*, 40(7): 1097-1122.
- Fombrun, C.J. 1996. Realizing value from the corporate image. *Harvard Business School Press*, Boston, MA.
- Fombrun, C.J., Gardberg, N.A. and Barnett, M.L. 2000. Opportunity platforms and safety nets: Corporate citizenship and reputational risk. *Business and society review*.
- Fombrun, C. and Shanley, M. 1990. What's in a Name? Reputation Building and Corporate Strategy. *Academy of Management Journal*, 33(2), 233-258.
- Fombrun, C.J. 2005. Building Corporate Reputation through CSR Initiatives: Evolving Standards. *Corporate Reputation Review*, 8: 7-11.
- Freeman R. E. 1984. Strategic management: A stakeholder approach. Boston: Pitman Publishing.
- Freeman, R. Edward and Martin, Kirsten E. M. and Parmar, B.L. Stakeholder Capitalism. *Journal of Business Ethics*, 74(4): 303-314.
- Freeman, R.E., Harrison, J.S., Wicks, A.C. Parmar, B.L., De Colle, S. 2010. Stakeholder theory: The state of the art. *Cambridge University Press*.
- Freiberg, D., Rogers, J. and Serafeim, G. 2019. Pathways to Materiality: How Sustainability Issues Become Financially Material to Corporations and Their Investors. Harvard Business School Working Paper, No. 20-056, November 2019.
- Freiberg, D., Grewal, J. and Serafeim, G. 2020. Science-based carbon emissions targets. *Working paper*.

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

Gardberg, N.A. and Fombrun, C.J. Corporate Citizenship: Creating Intangible Assets Across Institutional Environments. *Academy of Management Review*, 31: 329-346

Creary, S., Gartenberg, C. and Serafeim, G. 2019. Purpose and fairness inequality in the workplace. *Working paper*.

Gartenberg, C., Prat, A. and Serafeim, G. 2019. Corporate Purpose and Financial Performance. *Organization Science*, 30(1): 1–18.

Gartenberg, C., and Serafeim, G. 2019. Corporate Purpose and Firm Ownership. *Harvard Business School Working Paper*, No. 20-024.

Ghoshal, S. and Bartlett, C.A. 1994. Linking organizational context and managerial action: The dimensions of quality of management. *Strategic Management Journal*, 15(S2), pp.91-112.

Global Reporting Initiative (GRI). 2018. Member State Implementation of Directive 2014/95/EU. Accessed on June 12 2020 from:
https://www.globalreporting.org/resourcelibrary/NFRpublication%20online_version.pdf

Greening, D. W., and Turban, D. B. 2000. Corporate Social Performance As a Competitive Advantage in Attracting a Quality Workforce. *Business & Society*, 39(3): 254–280.

Grewal, J. 2019a. Real effects of disclosure regulation on voluntary disclosers: evidence from mandatory carbon reporting. *Working paper*.

Grewal, J. 2019b. Disclosure of emerging trends: evidence from climate change business opportunities. *Working paper*.

Grewal, J, Hauptmann, C. and Serafeim, G. 2020. Material Sustainability Information and Stock Price Informativeness. *Journal of Business Ethics*, Forthcoming.

Grewal, Jody, Riedl, E.J. and Serafeim, G. 2019. Market Reaction to Mandatory Nonfinancial Disclosure. *Management Science*, 65(7): 3061–3084.

Guiso, L., Sapienza, P. and Zingales, L., 2015. The value of corporate culture. *Journal of Financial Economics*, 117(1): 60-76.

Hawn, O., Chatterji, A. and Mitchell, W. 2014. How Firm Performance Moderates the Effect of Changes in Status on Investor Perceptions: Additions and Deletions by the Dow Jones Sustainability Index. *Working paper*.

Healy, P. and Serafeim, G. 2020. Voluntary, Self-Regulatory and Mandatory Disclosure of Oil and Gas Company Payments to Foreign Governments. *Accounting Horizons*, 34 (1): 111–129.

Hillman A.J., Keim G.D. 2001. Shareholder Value, Stakeholder Management, and Social Issues: What's the Bottom Line? *Strategic Management Journal*, 22(2): 125-139.

Holthausen, R.W., Watts, R.L. 2001. The relevance of the value-relevance literature for financial accounting standard setting. *Journal of Accounting and Economics*, 31(1-3): 3-75.

Hull, C.E. and Rothenberg, S. 2008. Firm performance: the interactions of corporate social performance with innovation and industry differentiation. *Strategic Management Journal*, 29(7): 781-789.

Ioannou, I. and Serafeim, G. 2015. The Impact of Corporate Social Responsibility on Investment Recommendations: Analysts' Perceptions and Shifting Institutional Logics. *Strategic Management Journal*, 36(7): 1053-1081.

Ioannou, I., Li, S.X. and Serafeim, G. 2016. The Effect of Target Difficulty on Target Completion: The Case of Reducing Carbon Emissions. *Accounting Review*, 91(5): 1467-1492.

Ioannou, I., and Serafeim, G. 2019a. The Consequences of Mandatory Corporate Sustainability Reporting. *The Oxford Handbook of Corporate Social Responsibility: Psychological and Organizational Perspectives*, 452–489. Oxford University Press, 2019.

Ioannou, I. and Serafeim, G. 2019b. Corporate Sustainability: A Strategy? *Harvard Business School Working Paper*, No. 19-065.

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

Jin, G.Z., and Leslie, P. 2003. The effect of information on product quality: Evidence from restaurant hygiene grade cards. *Quarterly Journal of Economics*, 118(2): 409-451.

Khan, M., Serafeim, G. and Yoon, A. 2016. Corporate Sustainability: First Evidence on Materiality. *Accounting Review*, 91(6): 1697-1724.

Knauer, A. and Serafeim, G. Attracting Long-Term Investors Through Integrated Thinking and Reporting: A Clinical Study of a Biopharmaceutical Company. *Journal of Applied Corporate Finance*, 26(2): 57–64.

Kotsantonis, S. and Serafeim, G. Four Things No One Will Tell You About ESG Data. *Journal of Applied Corporate Finance*, 31(2): 50–58.

Kotsantonis, S. and Serafeim, G. 2020. Human Capital and the Future of Work: Implications for Investors and ESG integration. *Journal of Financial Transformation*, 51: 115-130.

KPMG. 2017. The KPMG [Survey](#) of Corporate Responsibility Reporting 2017.

Matsumura, E.M., Prakash, R. and Vera-Munoz, S. C. 2018. Capital Market Expectations of Risk Materiality and the Credibility of Managers' Risk Disclosure Decisions. *Working paper*.

- McWilliams, A. and Siegel, D. 1997. The Role of Money Managers in Assessing Corporate Social Responsibility Research. *Journal of Investing*, 6(4): 98-107.
- Messier, W. 1983. The Effect of Experience and Firm Type on Materiality/Disclosure Judgments. *Journal of Accounting Research*, 21(2), 611-618.
- Milgrom, P., and Roberts, J. 1986. Price and Advertising Signals of Product Quality. *Journal of Political Economy*, 94(4), 796-821.
- Monks, R., Miller, A. and Cook, J. 2004. Shareholder activism on environmental issues: A study of proposals at large US corporations. *Natural Resources Forum*, 28(2-4): 317-330.
- Moroney, R. and Trotman, K.T. 2016. Differences in auditors' materiality assessments when auditing financial statements and sustainability reports. *Contemporary Accounting Research*, 33(2), pp.551-575.
- Moskowitz, M. 1972. Choosing socially responsible stocks. *Business and Society Review*, 1(1): 71-75.
- Navarro P. 1988. Why do corporations give to charity? *Journal of Business*, 61(1): 65–93.
- Orlitzky, M., Schmidt, F.L. and Rynes, S.L. 2001. Corporate Social and Financial Performance: A Meta-analysis. *Organization Studies*, 24(3): 403-441.
- Park, DG, Serafeim, G., Zochowski, R., and D., Freiberg. 2020. Environmental impact measurement and analysis. *Harvard Business School: The Impact Weighted Accounts Project*.
- Perego, P. and Kolk, A. 2012. Multinationals' accountability on sustainability: The evolution of third-party assurance of sustainability reports. *Journal of Business Ethics*, 110(2), pp.173-190.
- Proffitt, W. T., and Spicer, A. 2006. Shaping the shareholder activism agenda: institutional investors and global social issues. *Strategic Organization*, 4(2), 165–190.
- Rauter, T. 2019. The Effect of Mandatory Extraction Payment Disclosures on Corporate Payment and Investment Policies Abroad. *Working paper*.
- Securities and Exchange Commission. 2010. Commission Guidance Regarding Disclosure Related to Climate Change. Securities Act Release 33-9106, U.S. Securities and Exchange Commission.
- Sen, S. and Bhattacharya, C. B. 2001. Does Doing Good Always Lead to Doing Better? Consumer Reactions to Corporate Social Responsibility. *Journal of Marketing Research*, 38(2), 225–243.
- Serafeim, G. and Grewal, J. 2019. ESG Metrics: Reshaping Capitalism? *Harvard Business School Technical Note* 116-037, March 2016 (Revised April 2019).

Serafeim, G., Trinh, K., and R.T. Zochowski. A Preliminary Framework for Product Impact-Weighted Accounts. *Harvard Business School: The Impact Weighted Accounts Project*.

Serafeim, G., Zochowski, T. R. and Downing, J. 2019. Impact-weighted financial accounts: the missing piece for an impact economy. *Harvard Business School: The Impact Weighted Accounts Project*.

Serafeim, G. 2015. Integrated Reporting and Investor Clientele. *Journal of Applied Corporate Finance*, 27(2): 34–51.

Serafeim, G. 2018. Investors as Stewards of the Commons? *Journal of Applied Corporate Finance*, 30(2): 8–17.

Simnett, R., Vanstraelen, A. and Chua, W.F. 2009. Assurance on sustainability reports: An international comparison. *Accounting Review*, 84(3): 937-967.

Tkac, P. 2006. One proxy at a time: Pursuing social change through shareholder proposals. *Economic Review*, 91: 1-20.

Tomar, S. 2019. CSR Disclosure and Benchmarking-Learning: Emissions Responses to Mandatory Greenhouse Gas Disclosure. *SMU Cox School of Business Research Paper No. 19-17*.

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

Vogel, D. 1983. Trends in shareholder activism: 1970-1982. *California Management Review*, 25(3): 68-87.

Waldman D.A., Siegel D.S. and Javidan M. 2006. Components of CEO Transformational Leadership and Corporate Social Responsibility. *Journal of Management Studies*, 43(8): 1703-1725.

Waddock S.A. and Graves S.B. 1997. The Corporate Social Performance-Financial Performance Link. *Strategic Management Journal*, 18(4): 303-319.

Wolfe, R. and Aupperle, K. 1991. Introduction to Corporate Social Performance: Methods for Evaluating an Elusive Construct. *Research in Corporate Social Performance and Policy*, 12: 265–268.

Wood, D. 1991. Corporate Social Performance Revisited. *Academy of Management Review*, 16(4), 691-718.