

The role of the external auditor in managing environmental, social, and governance reputation risk

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ABSTRACT: Companies are under increasing pressure to manage their reputation on environmental, social, and governance (ESG) issues. Auditors are a potential source of ESG risk management expertise and assurance due to a deep understanding of their client's ESG-related reputation risk ("ESG risk") and their assurance reporting expertise. However, provision of nonaudit services (NAS) by the external auditor is controversial and public accountants are still defining their role in ESG risk control and reporting. We explore whether auditors effectively help companies manage heightened ESG risk in times of reputation crisis, using abnormal negative ESG-related media coverage as a measure of "tainted reputation". Findings show a positive association between tainted reputation and NAS, and a positive association between the interaction of tainted reputation and NAS with future firm value. The positive interaction persists when we consider a proxy for other ESG risk management activities in our analyses, and for other measures of ESG risk management effectiveness (future stock returns and future tainted reputation). Subsample analyses indicate results are driven by companies audited by ESG industry specialist auditors, and that the association between NAS and tainted reputation is driven by companies owned by institutional shareholders. Using restatements as a proxy, we find no evidence to suggest that the interaction of NAS and tainted reputation is associated with impaired audit quality. Findings demonstrate an empirical linkage between tainted reputation and NAS, support the importance of managing ESG risk, and suggest auditors effectively help their clients respond to heightened ESG risk.

Keywords: ESG reputation; firm value; nonaudit services; auditor expertise.

JEL Classification: G14, G32, G38, M14, M41, M42

Data Availability: All data used in the study are publicly available from sources cited in the text.

1. Introduction

A company's standing with respect to environmental, social, and corporate governance (ESG) factors is increasingly a major consideration in its continuing success (Kell 2014; Beard 2019; Whyte 2019).¹ ESG factors reflect business issues that can measurably impact a company's balance sheet, income statement, risk profile, and cost of capital, despite not being inherently financial in nature (Hales 2018). Laurence Fink, Chairman and CEO of BlackRock, has repeatedly cautioned that integrating ESG-related reputation risks into core strategies is key to demonstrating long-term financial performance and value creation,² and recent survey evidence suggests investors believe ESG risks have financial implications for their portfolios (Krueger et al. 2020). Public accounting firms cultivate client-specific information and expertise as they develop an understanding of their client's performance risk, have laid the groundwork for enterprise risk management (ERM) theory through their involvement with the Committee of Sponsoring Organizations (COSO), and have decades of expertise in designing, evaluating, and reporting on systems of internal control (COSO 2004; Baxter et al. 2013; Berglund and Kang 2013). Auditors have experience/expertise assessing ESG-related risk factors, as they are required to consider any risk factor that might lead to a material misstatement as part of the financial statement audit. In this study we explore whether external auditors also effectively help companies navigate their ESG reputation risk. We examine whether non-audit services (hereafter "NAS") purchased from the external auditor in times of negative ESG-related media coverage (i.e., "tainted reputation") are associated with positive future firm value (specifically, future three-year average operating performance and market value).

We define ESG-related reputation risk (hereafter, "ESG Risk") as the risk of loss of firm value due to negative reputation arising from the company's handling of ESG factors. The growing investor emphasis on ESG risk and ESG-related opportunities has motivated demand for ESG performance data,

¹ Note that ESG-related reputation differs from corporate social responsibility (CSR) in that CSR describes a company's commitment to stakeholders for socially responsible practices while ESG refers to a concept used by market participants for evaluating a company's practices (regardless of what the company sees as its commitment to stakeholders). See, for example, <https://medium.com/@utmccombssii/differences-between-esg-sri-csr-impact-investing-and-philanthropy-4316033e7198> (accessed 11/14/19).

² See, for example, letters dated February 2016 and January 2018 at <https://www.blackrock.com/corporate/investor-relations/larry-fink-ceo-letter>.

development of the Sustainability Accounting Standards Board (SASB), and the marketing of ESG risk services by public accounting and other professional firms (Morimoto et al. 2005; Manetti and Becatti 2009; Huber et al. 2017; Hales 2018; AICPA 2021a). In recent years, ESG-related reputation crises have negatively affected the revenues, brand value, customer confidence, and share price of many corporations. Recent findings indicate ESG-related disclosures and media attention are associated with market value decreases and credit risk increases (Matsumura et al. 2014; Kölbel et al. 2017; Capelle-Blancard and Petit 2019; Choi et al. 2020).

Given its potential ramifications, the reputation management literature suggests companies will increasingly seek avenues for support in dealing with ESG risk (Coombs 1998 2007; McDonnell and King 2013; Renn 2017). We expect public accounting firms to be a particularly effective source of help for companies managing ESG risk, regardless of whether accounting firms are the only source or are used in combination with other risk management consulting activities, due to auditors' risk management and assurance reporting expertise. Public accounting firms are tasked with understanding clients' business strategies, internal controls over operations, and business risks to assess the risk of misstatement/fraud and the company's ability to continue as a going concern (PCAOB 2010; Ballou et al. 2012; Berglund and Kang 2013; Sharma et al. 2018; Messier et al. 2019). In order to assess these risks effectively in the current environment, auditors must consider all ESG-related risk factors, and so external auditors have a great deal of client-specific ESG risk knowledge. Public accountants' experience with ERM, which imbeds internal control framework principles beyond the financial reporting system to firm performance and value, provides them with a theoretical foundation for understanding ESG risk (COSO 2004; Baxter et al. 2013). Importantly, public accounting firms provide third party assurance and pre-assurance services to enhance the reliability of ESG-related information provided to investors and other stakeholders (AICPA 2021b; CAQ 2020; Tysiac 2020; 2019), leaving a role for the auditor even when advisory services may be provided by other (non-audit) firms. In sum, the external auditor may have a role in helping companies manage ESG risk, which should be reflected in NAS fees, and which we expect to result in better-managed risk.

Anecdotal and market evidence suggests NAS can promote effective risk management, in general (e.g. Rice 2000; Goldwasser 2002), and that companies purchase these services from their external auditor to help in times of reputational crisis. For example, British Petroleum (BP), Alphabet (Google), Facebook, and Wells Fargo experienced spikes in NAS following ESG-related scandal with high media exposure.³ Audit firms extensively market services for managing ESG risk and opportunities, as driven by investor demand (Morimoto et al. 2005; Manetti and Becatti 2009; Cohen et al. 2011).⁴ While advisory services are prohibited from being performed on a public accounting firm’s audit clients, there is no prohibition on a firm providing other (non-audit) services for audit clients such as reviews and other engagements that result in assurance reports, as well as the pre-assurance work necessary for the audit firm to determine whether to accept the assurance engagement (AICPA 2021a). The American Institute of Certified Public Accountants (AICPA) and their affiliated Center for Audit Quality (CAQ) promote and provide examples of auditor-provided assurance-related service reports that cover ESG-related management disclosures (AICPA 2021a; 2021b; CAQ 2021). By 2019, 90% of S&P 500 companies voluntarily published sustainability reports and 65% of surveyed large U.S. and European companies reported obtaining assurance on sustainability disclosures, with 70% of surveyed respondents foreseeing an increase in the need to do so within the next five years (AICPA 2021a; Tysiac 2019).

Survey and anecdotal evidence report investors value ESG disclosures because they believe that ESG risks and opportunities affect organizations’ long-term performance and valuation (Cohen et al. 2011; Ernst & Young 2017; Krueger et al. 2020), and analytical theory suggests that investors value environmental initiatives and socially responsible activities (Klassen and McLaughlin 1996; Friedman and Heinle 2016). Similarly, archival evidence suggests ESG risk affects firm value (Matsumura et al. 2014; Choi et al. 2020). For example: investors appear to value firms lower based on carbon emissions

³ We note that although BP attributes the increase in NAS fees to work provided by Ernst & Young to “additional work required consequent upon the Gulf of Mexico incident” on page 98 of their 2010 annual report, the increase in fees did not occur until 2011. We discuss these spikes further in Section 2.2.2.

⁴ Appendix A provides examples of ESG-related services offered by public accounting firms, which (respectively) fit under categories “Low Carbon Strategy and Carbon Management,” “Social Impact,” and “Sustainable Supply Chain,” such as: assurance and auditing of low carbon labeling; identify, measure, value, monitor, and report the social impacts of projects, programs, and policies; upholding international human and labor rights.

disclosures (Matsumura et al. 2014); in abnormally warm weather (when the notion of climate change is more salient), stocks of carbon-intensive firms underperform firms with low carbon emissions (Choi et al. 2020); and, investors appear to value firms more highly when environmental initiatives are priced into audit fees, also suggesting they believe auditors have ESG risk expertise (Sharma et al. 2018). Thus, we expect that companies facing threats to their ESG-related reputation will seek additional NAS from their external auditors, and that NAS should be an effective source of help for managing heightened ESG risk in terms of future firm value. However, there is some tension to these hypotheses because the joint auditor provision of audit services and NAS can threaten auditor independence and the quality of the auditor's work (e.g., Public Oversight Board [POB] 2000; Frankel, Johnson, and Nelson 2002), and the public accounting profession is still in the process of determining its role in ESG risk management and reporting (AICPA 2021a).

To test the role of NAS in times of heightened ESG risk empirically, we use a unique dataset to construct a measure of “tainted reputation” based on the extent of unexplained/abnormal negative ESG-related media coverage a company receives. We use this measure as a proxy to examine the relation between heightened ESG risk and NAS fees.⁵ We expect that firms with more heightened ESG risk will procure more NAS in an attempt to take action to reduce business risk and to assure investors of the company's sustainability. After accounting for audit fees (i.e., after controlling for increased financial reporting risk and audit effort that might be associated with heightened ESG risk), we find a positive association between a firm's unexplained tainted reputation and its ‘audit-related’ and ‘other’ NAS fees, consistent with our prediction.⁶ These results persist despite controlling for firm fixed effects, and when we estimate a full changes analysis, which helps to validate the inference that the positive coefficient on

⁵ We develop our abnormal/unexplained tainted ESG reputation measure based on data provided by the Zurich-based company, RepRisk AG (www.reprisk.com). RepRisk aggregates overall negative media sentiment related to a firm's ESG issues based on over 80,000 media sources into a composite metric. We discuss RepRisk data in more detail in section 3.2.

⁶ The SEC requires firms to disaggregate NAS fees into three categories: audit-related, tax-related, and other (2003a; 2003b). As we discuss in footnote 18, we expect the majority of ESG-related services offered by audit firms are classified as audit-related or other. However, to be complete we also show results for tax-related NAS fees.

tainted reputation represents a differential increase in NAS fees associated with changes in tainted reputation.

If auditors are effective at helping companies manage ESG risk, then there should be a positive impact on future firm value when companies increase their NAS purchases in times of heightened ESG risk. We employ two measures of future firm value: operating performance and market value (three-year ROA and Tobins' q , respectively). We expect NAS fees and tainted reputation to have a positive interactive association with the measures of future firm value. Consistent with the prediction, audit-related NAS fees positively moderates the association between tainted reputation and both measures of future firm value. Other NAS fees positively moderates the association between tainted reputation and one (three-year ROA), but not both, measures of future firm value. These findings provide mixed evidence regarding the role of other NAS in times of heightened ESG risk, but more robust evidence supporting the notion that audit-related NAS provided by the external auditor are an effective source of assistance for companies managing heightened ESG risk.

Our models include year and firm (i.e., reporting company) fixed effects to control for time trends and time-invariant firm characteristics, and we perform several robustness tests and additional analyses to shed further light on what drives the results. First, we consider whether our results might be driven by the time-correlated purchase or internal development of other ESG risk management services, which are not required to be separately disclosed and so are not directly observable. We use abnormal selling, general, and administrative (SGA) spending to create a proxy for other ESG risk management activities (than those offered by the external auditor), that management may engage in during periods of heightened ESG risk. We find the same positive interactions of audit-related NAS fees and tainted reputation on both measures of future firm value when we include this proxy and its interaction with tainted reputation in the models. Including the proxy and its interaction with tainted reputation reduces the significance of the interaction of other NAS fees and tainted reputation on three-year-ahead ROA, but it remains marginally significant. Neither the proxy nor its interaction with tainted reputation are significantly correlated with either measure of firm value in any of the models. Second, we test the robustness of the interactive impact

of NAS and tainted reputation by replacing the firm value dependent measures with future stock returns and future tainted reputation. The interaction of NAS and tainted reputation in the current period is positively associated with future stock returns (defined as the average of monthly stock returns for years $t+1$, $t+2$, and $t+3$), and with reductions in future tainted reputation (defined as the average of years $t+1$, $t+2$, and $t+3$ being less than year t). Third, we find the positive association between tainted reputation and NAS fees, and the positive interaction of NAS fees and tainted reputation on future firm value, are driven primarily by NAS procured from ESG industry-specialist auditors (measured at the office level), providing some evidence that the associations we observe are due to auditor ESG expertise. Fourth, we find that firms are more likely to experience increases in NAS in conjunction with a tainted ESG reputation when institutions own the majority of the firm's stock, bolstering existing survey evidence that suggests ESG risk management is particularly important to institutional investors (Krueger et al. 2020), and providing some evidence that investors approve of auditor-provided ESG-related services in times of heightened reputation risk. Fifth, we find no evidence that the use of NAS in times of heightened ESG risk impairs audit quality, using likelihood of future restatements as a proxy.

We make several contributions to the corporate reputation, accounting, and finance literatures and to practice. First, we provide empirical evidence to further support the importance of managing ESG risk for future firm value. Cao et al. (2015), for example, finds that highly reputable companies enjoy lower cost of equity capital. We provide evidence that seeking help from the external auditor in periods of heightened ESG risk is associated with positive future firm outcomes, suggesting it is important for companies to actively respond to heightened ESG risk. Second, we show that auditors are involved in ESG-related concerns beyond their consideration of ESG-related financial reporting risk that they consider as part of the financial statement audit. Public accounting firms are still defining their role in ESG advisory and assurance services (AICPA 2021a; CAQ 2021), and to our knowledge we are the first to demonstrate empirical linkage between heightened ESG risk and NAS fees. Third, and most importantly, our findings suggest that auditors' involvement during times of heightened ESG risk is associated with positive firm outcomes in the form of future firm value and future ESG-related reputation.

Prior studies show that negative ESG reputation is associated with decreases in firm value (Matsumura et al. 2014; Kölbel et al. 2017; Capelle-Blancard and Petit 2019; Choi et al. 2020); our study extends these findings by providing evidence the firm value effect can be mitigated with auditor-provided NAS. We provide evidence, for example, in response to the Security and Exchange Committee’s (SEC’s) recent Public Statement requesting input on Climate Change Disclosures which asks, “what are the advantages and disadvantages of making disclosures subject to audit or another form of assurance?” (SEC 2021). On a broader level we provide further evidence in support of the auditor’s role in an effective ERM strategy and linking effective risk management to firm value (Baxter et al. 2013). Finally, our findings complement or extend findings in Lim and Tan (2008) by showing that companies and investors distinguish between NAS provided by ESG industry-specialist versus non-specialist auditors, and Krueger et al. (2020) by providing empirical evidence suggesting firms owned by institutional investors are more likely to procure NAS to help mitigate the effects of a tainted ESG-related reputation. Our findings should be of practical use to investors interested in the long-term (i.e., three-year-out) value impact of managing ESG risk, managers as they determine effective strategies for managing ESG risk, audit firms interested in the effectiveness of their ESG-related services, and standard setters and researchers interested in evidence of auditor ESG expertise.

In the next section, we provide a background discussion of ESG risk and other prior related literature and develop empirically testable hypotheses. In the third section, we describe the sample and research design. We present results in the fourth section, additional analyses in the fifth section, and conclude in the sixth section.

2. Background and hypotheses development

2.1 ESG risk

In the past decade, investors are increasingly broadening their demands for corporate responsibility such that the risk that a firm may experience damage to their ESG-related reputation has surpassed the more traditional technological, geopolitical, and economic (TGE) risks (Deloitte & Touche

2014; NACD 2017; COSO 2018; WEF 2018).⁷ For example, in 2008 only one of the top five business risks identified by the WEF were ESG-related (whereas the remaining four were TGE-related), by 2018 this ratio had flipped (i.e., four of the top five business risks were ESG-related) (WEF 2018). Some corporations have suffered severe ESG-related reputational damage resulting in customer boycotts, loss of revenue, and even bankruptcy (Hales 2018).⁸ Organizational research and practitioners have suggested that companies facing a tainted ESG reputation are expected to take actions to reassure stakeholders about the firm's future and to manage ESG risk (Elsbach and Kramer 1996; Coombs 1998, 2007; Kirsch et al. 2009; McDonnell and King 2013; Ernst & Young 2017; COSO 2018).

2.2. ESG risk and the external auditor

2.2.1 ESG-related financial reporting risk

External auditors evaluate the implications of their client's nonfinancial as well as their financial activities for the risk of fraud and material misstatement in the financial statements, and for the client's short-term viability (i.e., whether the entity will continue as a going concern for the period of one year or more) (PCAOB 2010; Baxter et al. 2013; Messier et al. 2019). Companies' activities related to ESG risk and ESG-related opportunities have implications for financial reporting choices, estimates, and quality. For example, environmental and socially responsible initiatives can incur significant research and development and contingent liability costs, be costly and difficult to implement, and have other unpredictable outcomes (Bonini and Oppenheim 2008; Friedman and Heinle 2016; Sharma et al. 2018;

⁷ TGE risks include, for example, cyberattacks, Middle East instability, and asset price collapse (WEF 2018).

⁸ Examples include: Volkswagen paid \$14.7 billion in settlement when the company admitted falsifying emissions tests, leading to a worldwide recall of millions of cars; following the revelation that Wells Fargo created as many as two million fake consumer accounts, negative perceptions of Wells Fargo tanked from 15% before the scandal to 52% over a two month period, and high profile customers withdrew transactions or boycotted the company; Snapchat's market value dropped \$800 million after public outrage in response to an ad which appeared to make light of domestic violence; Facebook's market value dropped \$37 billion after public outrage in response to the news that Cambridge Analytica accessed information from approximately 50 million Facebook users; the Weinstein Company filed for Chapter 11 Bankruptcy protection following months of media criticisms of sexual misconduct against one of the company's co-founders. See, for example, <http://money.cnn.com/2016/06/28/news/companies/volkswagen-fine/index.html>, <http://money.cnn.com/2016/10/24/investing/wells-fargo-fake-accounts-angry-customers/>, <https://www.vanityfair.com/style/2018/03/rihanna-chris-brown-snapchat-ad>, <http://money.cnn.com/2018/03/19/news/companies/zuckerberg-net-worth/index.html> and <https://www.nytimes.com/2018/03/19/business/weinstein-company-bankruptcy.html>.

Burke et al. 2019). Social indicators such as community, employee relations, human rights, occupational health and safety, and diversity significantly affect the perception of management quality and the trust between management and corporate stakeholders (Turban and Greening 1997; Lacey and Kennet-Hensel 2010; McMillan-Capehart et al. 2010, Dhaliwal et al. 2011; Kim et al. 2012). Violation of norms related to social issues (e.g., use of child labor or racial/ gender/sexual-orientation discrimination) can threaten a firm's profitability and viability via depressed consumer demand and/or litigation risk (Burke et al. 2019; Capelle-Blancard and Petit 2019). Finally, a company's governance structure and quality is a key aspect of the auditors' assessment of a company's "tone at the top" and management's integrity in their evaluation of internal controls (Cohen et al. 2002; PCAOB 2009).

Empirical findings suggest auditors understand the risk associated with their client's ESG-related activities well enough to respond to increased ESG-related financial reporting risk with increased audit effort and to price the risk into their audit fees and client retention decisions (e.g., Berglund and Kang 2013; Sharma et al. 2018; Burke et al. 2019; Asante-Appiah 2020). For example, Burke et al. (2019) find negative ESG-related media coverage is associated with a higher likelihood of auditor resignation and increased audit fees. Such findings suggest auditors cultivate client-specific information and expertise as they develop an understanding of their client's ESG risk in order to assess its potential to translate into financial reporting risk (i.e., the risk of issuing materially misstated financial statements). We predict this experience/expertise puts them in a unique position to help their clients in managing ESG-related performance risk (i.e., the risk of loss to future firm value), even when the performance risk is not likely to translate to a material misstatement.

2.2.2 The external auditor and ESG-related performance risk

The growing investor emphasis on ESG risk has motivated the demand for ESG performance data, the development of the Sustainability Accounting Standards Board (SASB), and the marketing of ESG-related services by public accounting and other professional firms (Morimoto et al. 2005; Manetti and Becatti 2009; Huber et al. 2017; Hales 2018). Public accounting firms are uniquely positioned to help their clients manage ESG risk, as they have laid the groundwork for risk management (ERM) theory

through their involvement with COSO (COSO 2004; Nocco and Stulz 2006; Baxter et al. 2013). ERM programs are designed to integrate risk management across a variety of risk sources and they embed the COSO-derived internal control framework and principles broadly and systematically throughout organizations. In fact, COSO has issued ERM guidelines specifically for managing ESG risk (COSO 2018). Appendix A provides examples of the types of services marketed by public accounting firms as ESG-related. As suggested by the above discussion, many of the services they offer relate to the formulation of ERM strategies, processes, and controls.⁹ While an audit firm cannot offer all of these services to their audit clients, their offering of them to non-audit clients is evidence of their comfort level with ESG risk management.

When a company needs to manage ESG risk, the auditor is an obvious source of expertise in assessing internal controls and risks over ESG operations, performance, and reporting. Companies' external auditors already understand their clients' ESG risks and have the expertise to assist them formulate a plan to respond to heightened ESG risk. These arguments are supported by anecdotal evidence of spikes in NAS fees following negative ESG-related reputation events.¹⁰ The provision of NAS services by the external auditor, however, is not without controversy. Regulators argue that the joint provision of audit services and NAS threatens auditor independence, and therefore audit quality, because auditors may be unduly driven by a desire to maintain particular clients in order to preserve their

⁹ For example, Ernst & Young's "Sustainability Strategy and Integration" category of services features: sustainability strategy formulation and integration, ESG management system development, materiality assessment, sustainability review and tailored improvement plans, and a roadmap for corporate sustainability; their "Market Readiness of Emissions Trading Scheme" advertises "establishment of ETS internal controls, accounting treatment of carbon trading, and analytical prediction of ETS; KPMG's "Stakeholder Communication" category describes ESG service as helping clients "shape the company's key ESG messages to investors and other stakeholders in the context of strategy and long-term value creation."

¹⁰ For example, British Petroleum experienced four years of reductions in fees for NAS up to fiscal year 2010. According to Audit Analytics data, following the Deepwater Horizon drilling rig explosion in the Gulf of Mexico in 2010, fees for NAS increased from approximately \$8 million per year in 2009 and 2010 to approximately \$11 million in 2011 (a 37.5% increase) and \$21 million in 2012 (over 200% increase). The increase in fees for NAS (pre- versus post-scandal periods) is largely driven by increases in audit-related and other NAS fees, while average audit fees remained stable or decreased after the Gulf of Mexico oil spill incident. We note similar spikes in NAS fees for the following examples: Alphabet Inc. following the antitrust violation scandals in 2017 and 2018 (a 48% increase for 2017 and 2018, on average, compared to 2016); Facebook, Inc. following consumer data breaches in 2018 (an 8% increase in 2018 compared to 2017); and, Wells Fargo & Co. following the consumer accounts scandal in 2016 and 2017 (a 14% increase for 2016 to 2018, on average, compared to 2015).

supplemental NAS fee income (Simunic 1984; Beck, Frecka, and Solomon 1988a; POB 2000; Sharma and Sidhu 2001; Frankel et al. 2002; Kinney, Palmrose, and Scholz 2004). Section 201 of the Sarbanes-Oxley Act of 2002 (SOX) limits the type, and requires disclosure of the amount, of NAS that can be provided by the external auditor, and a number of studies suggest investors share regulators' concerns, as they penalize firms for their higher NAS purchases (e.g. Frankel et al. 2002; Raghunandan 2003; Brandon, Crabtree, and Maher 2004; Krishnan, Sami, and Zhang 2005; Francis 2006; Francis and Ke 2006).¹¹

Empirical studies examining the association between NAS and audit quality outcomes, however, generally conclude that NAS do not impair audit quality (e.g. Defond, Raghunandan, and Subramanyam 2002; Frankel et al. 2002; Ferguson, Seow, and Young 2004; Ruddock, Taylor, and Taylor 2006; Srinidhi and Gul 2007; Ye, Carson, and Simnett 2011), and the profession appears to be moving forward under the assumption that providing ESG-related services does not impair auditor independence. The CAQ, an advocacy group for the AICPA, issued a report, "The Role of Auditors in Company-Prepared ESG Information: Present and Future," addressing how public company auditors can enhance the reliability of management-provided ESG information (CAQ 2020).¹² The AICPA convened a Sustainability Assurance and Advisory Task Force in 2012, published a practitioner guide titled "Attestation Engagements on Sustainability Information (Including Greenhouse Gas Emissions Information)" in 2017, and jointly with the CAQ issued an ESG reporting and attestation roadmap "to help audit practitioners understand the risk and legal considerations associated with performing attestation engagements on ESG information that is disclosed in SEC filings" (AICPA 2021a; AICPA 2021b).

In sum, we assert auditors' ERM expertise, deep understanding of their clients' risks, and experience, and reputation with providing assurance on management disclosures, put them in a unique

¹¹ We note that Frankel et al. (2002) find that the association between NAS disclosure and market reaction is small in economic terms, and Ashbaugh, LaFond, and Mayhew (2003) find no evidence of significant market reaction to disclosures of higher NAS fees.

¹² In this report, the CAQ provides three examples that demonstrate flexibility and variability in the type of reports and pre-assurance services an auditor can offer to their audit clients: a 2019 stand-alone ESG examination and review report for Vornado Realty Trust; a 2019 stand-alone sustainability review report for Guess?, Inc.; and, a separate review report that relates to information provided as part of the 2019 annual 10-K report for Etsy, Inc.

position to help their clients during times of heightened ESG risk (i.e., periods of scandal or reputation taint). We predict that firms facing heightened ESG risk will be motivated to purchase more NAS from their external auditor to help manage that risk. To shed light on whether companies use the external auditor to help manage heightened ESG risk, we look for a positive association between a company's tainted reputation and the company's NAS.

H1 There is a positive association between a company's tainted reputation and NAS fees.

2.3 ESG risk management and future firm value

Evidence suggests investors place increasingly greater emphasis on nonfinancial information and value ESG disclosures because they believe that ESG risks and opportunities affect organizations' long-term performance and valuation (Cohen et al. 2011; Park 2015; Friedman and Heinle 2016; Ernst & Young 2017; Nelson 2017; Krueger et al. 2020). Prior studies find a positive association between environmental performance/disclosures and firm valuation (Belkaoui 1976; Klassen and McLaughlin 1996; Konar and Cohen 2001; Matsumura et al. 2014; Sharma et al. 2018; Choi et al. 2020). Mackey et al. (2007) and Friedman and Heinle (2016) analytically demonstrate that firms may pursue socially responsible activities to maximize the market value of the firm; Jo and Harjoto (2011) and Servaes and Tamayo (2013) provide evidence of a positive association between CSR and market value (Tobin's q); and, McMillan-Capehart et al. (2010) finds a positive association between a firm's diversity management reputation and the firm's share price in the short term. Similarly, Gompers et al. (2003) and Brown and Caylor (2006) demonstrate a positive association between good corporate governance and market value (Tobin's q). These studies suggest that effectively managing ESG risk should enhance firm value.

If auditors are an effective source of help for managing heightened ESG risk, then increases in NAS in response to a tainted ESG-related reputation should reflect effective ESG risk responsiveness and have a positive impact on future firm value. Consistent with the literature on firm value (e.g., Hermalin and Weisbach 1991; Yermack, 1996; Coles et al. 2008; Bebcuk et al. 2011; Baxter et al. 2013; Correa and Lel 2016; Vafeas and Vlittis 2019), we focus on operating performance and market valuation. Specifically, we expect NAS fees to positively moderate the association between tainted ESG reputation

and future (i.e., for the subsequent three-year period) operating performance and market valuation.¹³ We present these predictions formally as hypotheses 2a and 2b below.

H2a NAS fees will positively moderate the association between tainted reputation and future operating performance.

H2b NAS fees will positively moderate the association between tainted reputation and future market valuation.

3 Sample selection and research design

3.1 Sample

The sample consists of all U.S. publicly-traded companies covered in the RepRisk database from fiscal year 2007 to 2014 with available data in the Compustat, Audit Analytics, GMI Ratings, and BoardEx databases. We begin the sample in fiscal year 2007 because RepRisk data coverage begins in 2007 and end in fiscal year 2014 because we require three-year forward-looking data (i.e., 2015 to 2018) for some of our variables. We exclude financial firms because their financial reporting is different from non-financial firms, and they have different corporate governance structures. After excluding financial firms and firms with missing data in the Compustat, Audit Analytics, and BoardEx databases, the sample consists of 7,267 firm-year observations for NAS fee models. We exclude 702 additional observations with missing data to calculate future firm value, leaving 6,565 firm-year observations for future firm value models. Table 1 presents the sample selection. Panel A describes the sample and Panel B shows industry representation in the sample and in comparison to the total population of non-financial firms in the Compustat database.

<<< Insert Table 1 here >>>

3.2 Measuring tainted ESG reputation

We derive a composite measure of tainted ESG reputation, as a proxy for heightened ESG risk, based on corporate reputation data from the RepRisk database.¹⁴ RepRisk AG, is a database provider and

¹³ Our future firm value measures are constructed as an average of the firm's value on the measure for the three years subsequent to our measurement of their ESG risk, as this time frame allows the impact of meaningful initiatives to be compounded into the firm's value.

consultant on ESG issues. The company's team of analysts track over 55,000 publicly-traded companies globally for negative news on their ESG platform. RepRisk employs artificial intelligence technology to independently screen over 80,000 media, stakeholders, and other public sources in 15 different languages. Once a relevant, negative ESG incident is identified and curated, RepRisk determines the specific nature of the incident and classifies it into one of 28 categories (see Appendix B) that incorporate the ten principles of the United Nations (UN) Global Compact.¹⁵ Each negative news incident is given two proprietary scores: (1) *severity*, the harshness of the perceived impact of the incident, and (2) *reach*, the influence or readership expanse of the news outlet. The latter score, in particular, results in (for example) an article appearing in the Wall Street Journal to have a higher reputation risk index score (RRI) than a blog entry from a local NGO. RepRisk provides an RRI score for each firm each month (current RRI), and a peak RRI score for the trailing 24 months (peak RRI). The current RRI and peak indexes typically range from zero (lowest exposure) to 100 (highest exposure).

First, we compute average annual current RRI for a firm in year t ($AvRRI_{it}$) as the log of average monthly current RRI for a given fiscal year.¹⁶ Descriptive statistics on Table 2, Panel A demonstrate wide variations in $AvRRI$ across firms in our sample. The mean and median unadjusted average current RRI are 8.54 and 1.75, respectively; the minimum and maximum are 0 and 68.83 (untabulated). The mean and median of $AvRRI$ are 1.39 and 1.01, respectively; the minimum and maximum $AvRRI$ are 0.00 and 4.25 (untabulated). Next we use Equation (1) below to estimate the determinants of $AvRRI$ as a function of firm characteristics and complexity variables that are likely to impact the level of media coverage of negative ESG for a firm in year t : firm size ($SIZE_{it}$), foreign operations ($FOROPS_{it}$), sales growth ($GROWTH_{it}$), market to book ratio (MB_{it}), the number of business segments ($BUSEG_{it}$), profitability

¹⁴ See www.RepRisk.com. RepRisk corporate reputation data is publicly accessible via a subscription on the Wharton Research platform.

¹⁵ The UN Global Compact is a voluntary initiative based on CEO commitments to implement universal sustainability principles and to undertake partnerships in support of UN goals. See <https://www.unglobalcompact.org/>.

¹⁶ Using the annual average of monthly data is consistent with the approach used for similar measures, such as credit risk (e.g., Ham and Koharki 2016). In section 5.5, we consider an alternative measure of RRI. This alternative measure helps to reduce heterogeneity of variance due to firm size and capture year-to-year variations in RRI.

(ROA_{it}), leverage (LEV_{it}), company age (AGE_{it}), low marginal tax rate ($lowMTR_{it}$), industry litigiousness (LIT_{it}), and industry ESG-sensitivity (ESG_IND_{it}). We include year fixed effects (*Year fixed-effects*), but do not include firm fixed effects in Equation 1 because the variables, LIT and ESG_IND are collinear with firm fixed-effects.¹⁷ We cluster standard errors by industry and year to account for cross-correlations within an industry and within a year. All continuous dependent, test, and control variables are winsorized at the top and bottom 1% of their distribution. Panels A and E of Appendix C defines the dependent and the control variables, respectively.

$$AvRRI_{it} = a_0 + a_1SIZE_{it} + a_2FOROPS_{it} + a_3GROWTH_{it} + a_4MB_{it} + a_5BUSEG_{it} + a_6ROA_{it} + a_7LEV_{it} + a_8AGE_{it} + a_9lowMTR_{it} + a_{10}LIT_{it} + a_{11}ESG_IND_{it} + Year\ fixed-effects + error \quad (1)$$

Equation (1) provides a benchmark for the expected level of $AvRRI$. The regression results for Equation (1) are reported in Panel B of Table 2. $AvRRI$ increases with $SIZE$, MB , AGE , $lowMTR$, LIT , and ESG_IND , and decreases with $GROWTH$, $BUSEG$, ROA , and LEV . We use the residual from Equation (1) to represent unexplained or abnormal negative ESG-related media coverage for a firm in year t , which is our measure of tainted ESG reputation, $TAINTREP_{it}$. This two-stage approach helps to reduce concern that results from our Equation (2) analyses (described below) might be driven by correlation between the independent variable and error term (Hribar et al. 2014). From Panel A of Table 2, the mean and median $TAINTREP$ are 0.00 and 0.01, respectively; the minimum and maximum $TAINTREP$ are -3.07 and 3.39 (untabulated).

3.3 Empirical model and variables for testing hypothesis 1

We estimate the regression in Equation (2) below to test the association between $TAINTREP$ and NAS for a firm in year t .

$$AUNAS_{it} \text{ or } TAXNAS_{it} \text{ or } OTHNAS_{it} = a_0 + a_1TAINTREP_{it} + a_2Control\ variables_{it} + Year\ fixed-effects + Firm\ fixed-effects + error \quad (2)$$

¹⁷In Section 5.5.1, we consider the robustness of our results to excluding LIT and ESG_IND and including both year and firm fixed-effects in Equation (1).

3.3.1 Dependent variables

The SEC requires firms to disaggregate NAS fees into audit-related, tax-related, and all other NAS because combining all types of NAS in a single category would confuse investors and other financial statement users (SEC 2003a; 2003b), and prior studies suggest investor perception can vary with types of NAS (e.g. Mishra, Raghunandan, and Rama 2005; Koh et al. 2013). According to Audit Analytics: audit-related NAS include fees the external auditor derives from accounting consultations in connection with such activities as mergers and acquisitions, and internal control reviews; tax-related NAS include fees for tax compliance and planning; and, other NAS consist of all other NAS fees paid to the external auditor. We would expect most ESG-related services to be included as audit-related or other NAS, and so we disaggregate NAS for a firm in year t into one of the following three measures: audit-related NAS fees ($AUNAS_{it}$), tax-related NAS fees ($TAXNAS_{it}$), and all other types of NAS fees ($OTHNAS_{it}$).¹⁸

3.3.2 Test variable

The test variable, $TAINTREP_{it}$ is the residual from the regression in Equation (1). We expect a positive coefficient on $TAINTREP$ when using $AUNAS$ or $OTHNAS$ as the dependent measures, but form no expectation for the coefficient on $TAINTREP$ in the $TAXNAS$ model.

3.3.3 Control variables

Equation (2) includes a number of control variables established as being positively associated with NAS fees (Parkash and Venable 1993; Naiker et al. 2012; Markelevich and Rosner 2013): firm size ($SIZE_{it}$), foreign operations ($FOROPS_{it}$), sales growth ($GROWTH_{it}$), market to book ratio (MB_{it}), the number of business segments ($BUSEG_{it}$), return on assets (ROA_{it}), restructuring activities ($RESTR_{it}$), acquisition ($MERGER_{it}$), employee pension or post-retirement plan ($EMPLAN_{it}$), new debt issue ($DEISSUE_{it}$), Big 4 auditor ($BIG4_{it}$), auditor tenure ($AUDTEN_{it}$), audit fees ($AUFEE_{it}$), CEO duality ($DUALITY_{it}$), institutional majority ($INSTMAJ_{it}$), insider ownership ($INSIDE_{it}$), special items ($SPITEMS_{it}$),

¹⁸ Public accounting firms do not disclose specific information regarding how they classify NAS. Per informal discussion with audit partners, fees related to providing assurance for ESG-related reports, and pre-assurance fees, might be categorized as “audit-related” or “other,” depending on the nature of the client and services.

and inventory and receivables ($INVREC_{it}$). We also include leverage (LEV_{it}), block ownership ($BLOCK_{it}$), board independence ($BIND_{it}$), audit committee accounting expertise ($ACEXPRT_{it}$), and loss ($LOSS_{it}$) because the prior literature indicates they are negatively related to NAS fees (Parkash and Venable 1993; Naiker et al. 2012; Markelevich and Rosner 2013). Finally, we include institutional majority ($INSTMAJ_{it}$), board size ($BSIZE_{it}$), and new CEO (NEW_CEO_{it}); the literature provides mixed findings regarding how these variables relate to NAS fees. All the control variables are measured for each firm-year observation in year t. Our regressions for Equation (2) also include year and firm fixed effects to control for time trends and time-invariant firm characteristics. We cluster standard errors at the industry and year levels. All continuous dependent, test, and control variables are winsorized at the top and bottom 1% of their distribution. Panels A, C, and E of Appendix C defines the dependent, test, and control variables, respectively.

3.4 Empirical model and variables for testing hypothesis 2

Hypothesis 2 examines whether auditors' NAS is an effective source of help to mitigate heightened ESG risk. Since investors are largely concerned about the effect of tainted ESG reputation on firm value, we examine whether and how NAS and tainted ESG interact to affect future operating performance and market value. Based on prior literature, we expect a negative association between tainted ESG-related reputation and future firm value (e.g. Roberts and Dowling 2002; Gompers et al. 2003; Brown and Caylor 2006; Mishra and Suar 2010; Jo and Karjoto 2011; Lins et al. 2017). H2 proposes that the negative relationship between tainted ESG reputation and future firm value will be positively moderated by NAS fees. We follow previous literature to estimate three-year out future firm value in Equation (3) below for each category of NAS fees for a firm in year t (Lang, Stulz, and Walkling 1989; Aboody, Barth, and Kasznik 1999; Piotroski 2000; Bhojraj and Lee 2002).

$$3YRROA_{it+1tot+3} \text{ or } 3YRTOBIN_{it+1tot+3} = a_0 + a_1 TAINTPREP_{it} \times AUNAS_{it} \text{ [or } a_1 TAINTPREP_{it} \times TAXNAS_{it}$$

$$\begin{aligned}
& [\text{or } a_1 TAINREP_{it} \times OTHNAS_{it}] + a_2 TAINREP_{it} + a_3 AUNAS_{it} \\
& [\text{or } a_3 TAXNAS_{it} \text{ or } a_3 OTHNAS_{it}] + a_4 \text{Control variables}_{it} + \\
& \text{Year fixed-effects} + \text{Firm fixed-effects} + \text{error} \quad (3)
\end{aligned}$$

3.4.1 Dependent variable

The primary measures of firm value are based on operating performance and market valuation. We employ future return on assets (ROA) as a measure of firm operating performance and future Tobin's q as a measure of market valuation (e.g., Hermalin and Weisbach 1991; Yermack, 1996; Coles et al. 2008; Bebchuk et al. 2011; Baxter et al. 2013; Correa and Lel 2016; Vafeas and Vlittis 2019).¹⁹ We use Tobins' q as the proxy for future market value because the literature suggests it captures the market's expectations of growth opportunities (e.g. Richardson 2006; Shroff 2017; Ham, Seybert, and Wang 2018). The dependent variable for the long-term operating performance model (H2a) is the firm's three-year average ROA, beginning with year $t+1$ ($3YRROA_{it+1tot+3}$). We calculate ROA as net income divided by total assets. The dependent variable for the long-term market valuation model (H2b) is the natural logarithm of three-year average Tobins' q, beginning year $t+1$ ($3YRTOBIN_{it+1tot+3}$). We calculate a firm's Tobin's q as follows: (book value of assets + market value of common stock - book value of common stock - balance sheet deferred tax) / book value of assets.

3.4.2 Test variables

To test whether NAS fees positively moderates an association between tainted ESG-related reputation and future firm value, we interact *TAINREP* with *AUNAS* or *TAXNAS* or *OTHNAS* in the *3YRROA* and *3YRTOBIN* models. We expect a positive interaction for *AUNAS* and *OTHNAS*, and form no expectation for the interaction of *TAXNAS*. Therefore, the independent test variables of interest for Equation (3) are the interaction terms *TAINREP* \times *AUNAS*, *TAINREP* \times *TAXNAS*, and *TAINREP* \times *OTHNAS*.

3.4.3 Control variables

¹⁹ In Section 4.2.5, we employ three-year out stock returns as a measure of firm value as an additional analysis.

Consistent with the firm value literature (e.g., Yermack 1996; Bebchuk et al. 2011; Baxter et al. 2013; Vafeas and Vlittis 2019), Equation (3) includes the following control variables as previously defined for Equations (1) and (2): *SIZE*, *GROWTH*, *BUSEG*, *LEV*, *AGE*, *DUALITY*, *INSIDE*, *BIND*, and *BSIZE*. Additional control variables related to firm value for a firm in year *t* are number of board meetings (*BMEET_{it}*), ratio of capital expenditure to total assets (*CAPX_AT_{it}*), ratio of research and development expenditure to total sales (*R&D_SALES_{it}*), and ratio of advertising expenditure to total sales (*XAD_SALES_{it}*). Consistent with prior firm value research, we employ the same control variables for future firm performance (*3YRROA*) and future firm valuation (*3YRTOBIN*) models, except for adding *ROA* to the *3YRTOBIN* model (e.g., Baxter et al. 2013; Correa and Lel 2016). Similar to the regressions for Equation (2), our regressions for Equation (3) include year and firm fixed effects to control for time trends and time-invariant firm characteristics. We cluster standard errors at the industry and year levels. All continuous dependent, test, and control variables are winsorized at the top and bottom 1% of their distribution. Panels A, C, and E of Appendix C defines the dependent, test, and control variables, respectively.

4 Empirical results

4.1 Descriptive statistics

Panel A of Table 2 shows (rounded) mean and median total NAS fees are \$1,000,083 and \$307,254, respectively. Mean/median *AUNAS*, *TAXNAS*, and *OTHNAS* are 8.98/11.26, 9.63/11.74, and 3.77/0.00, respectively. Mean (median) *3YRROA* and *3YRTOBIN* are 0.04 (0.05) and 1.87(1.52), respectively. Descriptive statistics for control variables are generally consistent with the literature. Table 3 presents correlations of variables in the main regressions.²⁰

>>> Insert Tables 2 and 3 here >>>

4.2 Multivariate analyses

²⁰ Except firm size (*SIZE*) and audit fees (*AUFEE*), all correlations (for variables included in the same regression) are below the 0.80 multicollinearity threat threshold (Kennedy 1992) and the highest untabulated variance-inflation factor from all of our analyses is 4.66, well below the recommended threshold of 10 (Kennedy 1992). The high correlation between *SIZE* and *AUFEE* is consistent with theory and prior auditor fee research.

4.2.1 Hypothesis 1

Table 4 presents regression results for Equation (2).²¹ As predicted in H1, we observe a statistically significant, positive coefficient on *TAINTREP* for the *AUNAS* ($p < 0.05$) and *OTHNAS* ($p < 0.01$) models. The results are consistent with the notion that firms procure higher audit-related and other NAS from the auditor in response to heightened ESG risk. In untabulated analyses, the marginal effect of *TAINTREP* is economically meaningful as we find that moving from the first to the third quartile of tainted reputation results in a 10.16% (13.55%) increase in audit-related (other) NAS fees.²² Control variable direction and significance are generally as expected based on prior literature. We note the coefficient on *TAINTREP* in the *TAXNAS* model is not significant ($p > 0.10$), and the adjusted R^2 for *AUNAS*, *TAXNAS*, and *OTHNAS* models are comparable to prior NAS studies. Differences in results among the three types of NAS fees on some of the control variables (e.g., *RESTR*, *BIG4*, *INSIDE*) supports the disaggregation of NAS fee by type for our analyses. Our results are robust to the following alternative design choices: (1) including only firm fixed-effects, (2) including industry and year fixed-effects, (3) clustering by firm and year, and (4) clustering by industry only.²³

>>> Insert Tables 4 here >>>

4.2.2 Changes in tainted reputation and changes in NAS

Our NAS fee models (*AUNAS*, *TAXNAS*, *OTHNAS*) control for a large number of variables that can influence the association between *TAINTREP* and NAS fees. However, there remains the possibility that our results are driven by *TAINTREP* correlating with some observed or unobserved firm size and

²¹ We exclude 47 singleton observations (i.e., firms with only one firm-year observation in the sample) from the NAS fee models, as including them in regressions that control for firm fixed effects can overstate statistical significance and lead to incorrect inferences (Correia 2015).

²² We use the “margins” function in STATA to estimate the adjusted predicted *AUNAS*, *TAXNAS*, and *OTHNAS*, at the first and third quartiles of the independent variable, *TAINTREP*, while holding all other variables at their mean values (Williams 2012). The STATA margins estimate of adjusted predicted values at the first and third quartiles of *TAINTREP* are 8.210356 and 9.0443204 for *AUNAS*. The change in predicted values equates to an increase of 10.16%. We use the margins function in STATA to compute economic significance throughout this paper. We do not compute the marginal effect of *TAINTREP* with respect to *TAXNAS* because *TAINTREP* is not significantly associated with *TAXNAS*.

²³ See Online Appendix A. Panels A, B, and C present results for *AUNAS*, *TAXNAS*, and *OTHNAS*, respectively. In each panel, Columns 1, 2, 3, and 4 document results for the design choices as described above. Results are consistent with those we present throughout this section for all four models

complexity variables because larger and more complex firms (either due to their size or nature of operations) attract more media coverage and/or are more likely to have higher NAS. First, as noted in Section 3.2, we partially address this concern by using a two-stage model in our primary NAS fee models (Equations 1 and 2), which helps mitigate concern over potential observable correlated omitted variables. Second, as noted earlier, all the NAS fee regressions include year and firm fixed effects which help control for time trends and time-invariant firm characteristics. We next use a changes regression model, wherein firms serve as their own controls (allowing time-invariant unobservable variables to cancel out) (Brown et al. 2011), to address concerns regarding potential endogeneity arising from unobservable correlated omitted variables. We re-specify each continuous variable in Equation (2) as the difference between the value in year t and the value in year $t-1$ (prefixed by Δ). We include year and industry fixed effects and cluster standard errors at the industry and year levels. Table 5 presents the results of the changes regression in Columns 1, 2 and 3 for $\Delta AUNAS$, $\Delta TAXNAS$, $\Delta OTHNAS$, respectively.²⁴ As shown in Columns 1 and 3, $\Delta TAINREP$ has a positive and significant association with $\Delta AUNAS$ ($p < 0.05$), and with $\Delta OTHNAS$ ($p < 0.01$), but as shown in column 2, the coefficient on $\Delta TAINREP$ is not significant in the $\Delta TAXNAS$ model ($p > 0.10$), consistent with our prior testing of H1.²⁵

>>> Insert Table 5 here>>>

4.2.3 Hypothesis 2

We turn our attention to how NAS fees in periods of heightened ESG risk impact future firm value (H2). We expect *TAINREP* to negatively impact operating performance (*3YRROA*) based on prior work, and H2a predicts the association between *TAINREP* and *3YRROA* will be positively moderated by NAS fees. We present the results of this analysis in Table 6.²⁶ Columns 1, 2, and 3 present results for $TAINREP \times AUNAS$, $TAINREP \times TAXNAS$, and $TAINREP \times OTHNAS$, respectively for H2a

²⁴ We lose 1,137 observations for this analysis because we drop the base year from the changes regressions.

²⁵ As a robustness check, we exclude industry fixed effects, but include year fixed effects and cluster standard errors at the industry and year levels. The results persist and are tabulated in Online Appendix B.

²⁶ We exclude 66 singleton observations (i.e., firms with only one firm-year observation in the sample) from the firm value models, as including them in regressions that control for firm fixed effects can overstate statistical significance and lead to incorrect inferences (Correia 2015).

(*3YRROA*). As predicted, the coefficients on *TAINTREP* \times *AUNAS* and *TAINTREP* \times *OTHNAS* are positive and significantly associated with *3YRROA* ($p < 0.01$ and $p < 0.05$, respectively), but the coefficient on *TAINTREP* \times *TAXNAS* is not significant. Thus, whereas *AUNAS* and *OTHNAS* purchased in conjunction with *TAINTREP* are positively associated with *3YRROA*, *TAXNAS* purchased in conjunction with *TAINTREP* is not. The marginal effect of *TAINTREP* \times *AUNAS* (*TAINTREP* \times *OTHNAS*) is (is not) economically meaningful, as we find that moving from the first to third quartile of *AUNAS* (*OTHNAS*) purchased in conjunction with *TAINTREP* results in a 22.16 (0.13) percent increase in *3YRROA*.²⁷ The marginal effect of *TAINTREP* \times *OTHNAS* in the *3YRROA* regression is not surprising given the low dollar amounts involved. As shown in Panel A of Table 2, average other NAS fees in our sample is only \$52,504, which may be too low to meaningfully impact future firm performance. Overall, our evidence is consistent with audit-related external audit services being an effective source of help for companies mitigating the long-term firm performance effects of a tainted ESG-related reputation.

Columns 4, 5, and 6 of Table 6 present results for *TAINTREP* \times *AUNAS*, *TAINTREP* \times *TAXNAS*, and *TAINTREP* \times *OTHNAS*, respectively for H2b (*3YRTOBIN*). Similar to the *3YRROA* model, the coefficient on the interaction term, *TAINTREP* \times *AUNAS*, is significantly associated with *3YRTOBIN* ($p < 0.05$), but the coefficient on *TAINTREP* \times *TAXNAS* is not. We find that moving from the first to third quartile of *AUNAS* purchased in conjunction with *TAINTREP* results in 3.93 percent increase in *3YRTOBIN*. These results are consistent with investors viewing audit-related NAS purchases favorably when they are made in periods of heightened ESG risk. Contrary to the *3YRROA* model, we find no significant association between *TAINTREP* \times *OTHNAS*, and *3YRTOBIN*. Collectively, the *3YRROA* and

²⁷ We compute economic significance for H2a and H2b (discussed shortly) using the methodology described in footnote 22. The STATA margins estimate of adjusted predicted values at the first and third quartiles of *TAINTREP* \times *AUNAS* are 0.032361 and 0.039531 for *3YRROA*. The change in predicted values equates to an increase of 22.16%. We do not compute the marginal effect of *TAINTREP* \times *TAXNAS* with respect to *3YRROA* because *TAINTREP* \times *TAXNAS* is not significantly associated with *3YRROA*.

3YRTOBIN results provide robust evidence that audit related NAS purchases in periods of heightened ESG risk positively affects future firm value, but the evidence is weaker for other NAS purchases.²⁸

>>> Insert Table 6 here>>>

4.2.4 Proxy for other ESG risk management activities

Results of testing H2 provide evidence that auditor-provided NAS in times of heightened ESG risk is positively associated with future firm value. Firms may purchase ESG risk management advisory services from sources other than the external auditor and/or may pursue other internally generated ESG initiatives in periods of heightened ESG reputation risk. Whereas NAS fees paid to the auditor is a required disclosure, fees paid to other consultants and additional internal costs are not separately disclosed, and therefore not directly observable. We include firm and year fixed effects in our regressions to partially address endogeneity concerns arising from time trends and time-invariant firm characteristics. We further address the concern that the results of regressing *3YRROA* and *3YRTOBIN* on *TAINTREP* \times *AUNAS*, *TAINTREP* \times *TAXNAS*, and *TAINTREP* \times *OTHNAS* (i.e., H2) could be driven by these correlated omitted variables by creating a proxy for other ESG risk management activities purchased in periods of heightened ESG risk. We create this proxy based on abnormal selling, general, and administration (SGA) expenses.

We define $XSGA_{it}$ as SGA expenses, excluding audit fees and NAS fees, for a firm in year t and create a variable to represent abnormal SGA ($AbnSGA_{it}$) as the residual of regressing $XSGA$ on a set of determinants as in Equation (1).²⁹ We report these regression results in Online Appendix D. Next, we interact *TAINTREP* with $AbnSGA$ (*TAINTREP* \times $AbnSGA$) to proxy for fees/costs paid to other consultants in periods of heightened ESG reputation risk. We include *TAINTREP* \times $AbnSGA$ in Equation 3. If the

²⁸ From Online Appendix C, the significance levels of the *3YRROA* and *3YRTOBIN* results are robust (i.e., significant results remain significant at $p = 0.10$ or below) to the following alternative designs: (1) including only firm fixed effects, (2) including industry and year fixed effects, (3) clustering by firm and year, and (4) clustering by industry only. Panels A, B, and C present results for *AUNAS*, *TAXNAS*, and *OTHNAS*, respectively. In each panel, Columns 1, 2, 3, and 4 present results of designs (1), (2), (3), and (4), respectively, for *3YRROA*. Columns 5, 6, 7, and 8 present results of designs (1), (2), (3), and (4) for *3YRTOBIN*.

²⁹ We exclude all fees (audit and NAS) paid to the external auditor in order to develop a proxy for fees paid to other consultants or additional internal cost incurred in periods of tainted ESG reputation.

results obtained for Equation (3) are driven by other ESG risk management activities, then the interaction of *TAINTREP* and NAS fees should not be significantly related to *3YRROA* and *3YRTOBIN* in the presence of *TAINTREP x AbnSGA*. As shown in Table 7, the coefficients on *TAINTREP x AbnSGA* are not significant for any column. The coefficients on *TAINTREP x AUNAS* continue to be significant and positively related to *3YRROA* ($p < 0.01$) and *3YRTOBIN* ($p < 0.05$) (Columns 1 and 4, respectively), and the coefficient on *TAINTREP x OTNNAS* continues to be marginally significant for *3YRROA* ($p < 0.10$, Column 3). The coefficients on *TAINTREP x TAXNAS* (Columns 2 and 5) continue to be insignificant. Collectively, these results provide some comfort that our H2 results are not driven by other ESG risk management activities.

>>> Insert Table 7 here>>>

4.2.5 Tainted ESG reputation, NAS, and future stock returns

The evidence from the *3YRTOBIN* regressions suggests that NAS purchased in times of heightened ESG reputation might positively affect future stock returns. We examine the robustness of the future firm valuation results to replacing *3YRTOBIN* in Equation (3) with $3YRRET_{it+1tot+3}$, which is the average of monthly stock returns for a firm in years $t+1$, $t+2$, and $t+3$. From Column 1 of Online Appendix E, the coefficient on *TAINTREP x AUNAS* is positive and significantly ($p < 0.05$) associated with *3YRRET*, but the coefficients on *TAINTREP x TAXNAS* and *TAINTREP x OTHNAS* are not significant. These results add to the robustness of the evidence that audit-related NAS purchases in periods of heightened ESG risk positively impact future firm value.

5 Additional analyses

5.1 Impact to future ESG-related reputation

The results of testing H1 provide empirical evidence consistent with the notion that auditors provide NAS to help their clients manage heightened ESG risk. The results of testing H2 provide evidence that auditor-provided NAS in times of heightened ESG risk is positively associated with future firm value, i.e., evidence of auditors' effectiveness at providing these services. Next, we search for

additional evidence of auditors' effectiveness by examining whether NAS purchases in times of heightened ESG risk help to reduce future ESG risk.

We create a new variable, $AvRRI_{it+1tot+3}Dcrs$, as a proxy for an improved, or “less tainted” future ESG-related reputation. We define $AvRRI$ as the average of annual current RRI for a firm in year t . $AvRRI_{it+1tot+3}Dcrs$ is equal to one if the log of one plus the average of annual current RRI for a firm in years $t+1$, $t+2$, and $t+3$ is less than $AvRRI$, and zero otherwise. We use the explanatory variables from Equation (1) to examine the factors associated with $AvRRIDcrs$. We include the interaction of $TAINTREP$ and each of the three NAS fees in the model. If NAS purchases in times of tainted ESG reputation help to reduce future ESG risk, the coefficient on the interaction of $TAINTREP$ and NAS fees ($TAINTREP \times AUNAS$, $TAINTREP \times TAXNAS$, $TAINTREP \times OTHNAS$) should be positive. There are 4,023 firm-year observations for this analysis because we lose 2,542 observations with insufficient data for all relevant years to compute $AvRRIDcrs$. We report the results in Table 8. Columns 1, 2, and 3 show results for $AvRRIDcrs$ regressed separately on $TAINTREP \times AUNAS$, $TAINTREP \times TAXNAS$, and $TAINTREP \times OTHNAS$, respectively. Per Columns 1 and 3, the coefficients on $TAINTREP \times AUNAS$ and $TAINTREP \times OTHNAS$ are positive and significantly associated with $AvRRIDcrs$ (p 's < 0.01), but the coefficients on $TAINTREP \times TAXNAS$ (Column 2) is not significant. These results suggest higher audit-related or other NAS purchased in conjunction with heightened ESG risk is associated with lower future ESG risk.

>>> Insert Table 8 here>>>

5.2 Auditor ESG industry specialization

There is evidence that firms procure more NAS from industry specialist auditors, to which investors react positively (e.g., Lim and Tan 2008). Investors expect industry specialist auditors to provide higher quality service because they have greater knowledge of the industry (Defond and Zang, 2014). ESG industry clients are more likely to need help managing ESG risk, and their auditors are more likely to have experience managing ESG risk. To examine whether firms procure more NAS from ESG industry specialist auditors, and whether the positive moderating effect of NAS on the association between $TAINTREP$ and firm valuation is conditional on auditor ESG industry specialization (at the office

level), we create and partition our sample based on a new variable, *ESG_SPE_AUD*. We define *ESG_SPE_AUD* as equal to one if the firm is audited by an ESG industry specialist auditor, and zero otherwise. We identify office-level ESG industry specialist auditors as those who have at least 30% of the market share of ESG industry audits (i.e., *ESG_IND* = 1), based on office-level ESG audit fees after subtracting out the audit fees of the observation client.³⁰ Office-level ESG audit market share ranges from zero to 98.57%, and the mean and median are 26% and 21%, respectively. Of the observation firms in our sample, 10.60% are audited by an auditor classified as an ESG industry specialist for a given firm-year. We re-estimate the Equation (2) and (3) regressions for both subsamples and report our findings in Table 9. Panel A presents results for Equation (2). Panels B and C present results for Equation (3) using *3YRROA* and *3YRTOBIN* as the dependent measures, respectively. To conserve space, we only show results on the main variables of interest. In Panel A, Columns 1 and 4 report results for *AUNAS* when *ESG_SPE_AUD* is set equal to 1 and when *ESG_SPE_AUD* is set equal to 0, respectively; Columns 2 and 5 report results for *TAXNAS* when *ESG_SPE_AUD* = 1 and *ESG_SPE_AUD* = 0; and, Columns 3 and 6 report results for *OTHNAS* when *ESG_SPE_AUD* = 1 and *ESG_SPE_AUD* = 0. Columns 1 and 3 of Panel A show the coefficient on *TAINTREP* is positive and significantly associated with *AUNAS* ($p < 0.05$) and *OTHNAS* ($p < 0.10$) when *ESG_SPE_AUD* = 1; but, *TAINTREP* is not significant in Columns 2, 4, 5, and 6, when *ESG_SPE_AUD* = 0. These analyses suggest our results are primarily driven by NAS purchases made from ESG industry specialist auditors.

Panels B and C, Columns 1 and 4 report results for the interaction variable, *TAINTREP* \times *AUNAS* when *ESG_SPE_AUD* = 1 and when *ESG_SPE_AUD* = 0, respectively; Columns 2 and 5 report results for the interaction variable, *TAINTREP* \times *OTHNAS* when *ESG_SPE_AUD* = 1 and *ESG_SPE_AUD* = 0; and Columns 3 and 6 report results for the interaction variable, *TAINTREP* \times *OTHNAS* when *ESG_SPE_AUD* = 1 and *ESG_SPE_AUD* = 0. Per Panel B, the coefficient on *TAINTREP* \times *AUNAS* is positive and significantly associated with *3YRROA* (p 's < 0.05) for ESG industry-specialist auditors

³⁰ The audit literature defines an auditor as an industry specialist if the auditor commands 10-30% of audit market share (based on audit revenues) (Neal and Riley, 2004; Defond and Zang, 2014). We follow previous literature to derive the measure of office-level expertise (Ferguson, Francis, and Stokes 2003; Whitworth and Lambert 2014).

(Column 1), but not for non-specialists (Columns 4). Similarly, per Panel C only the coefficient on the interaction term for audit-related NAS ($TAINTREP \times AUNAS$) is positive and significantly associated with $3YRTOBIN$ ($p < 0.05$) for industry-specialist auditors (Column 1). The coefficients on $TAINTREP \times TAXNAS$ and $TAINTREP \times OTHNAS$ are not significantly associated with $3YRROA$ and $3YRTOBIN$ in both panels B and C (p 's > 0.1). These findings suggest that results of our main H2 analyses are driven primarily by audit-related NAS provided by ESG industry specialist auditors, extending the findings of Lim and Tan (2008) by documenting the importance of considering industry specialty in testing research questions related to NAS, and providing some evidence that the associations we observe are due to ESG-related expertise.

>>> Insert Table 9 here>>>

5.3 Institutional shareholders

We consider whether our results vary based on ownership composition, as survey evidence in Krueger et al. (2020) suggests institutional investors are particularly concerned about financial implications of ESG risks. We create and partition our sample based on the variable, $INSTMAJ_{it}$, equal to one if the majority of outstanding shares of a firm in year t are held by institutions, and zero otherwise. Per Table 10, the coefficient on $TAINTREP$ is positive and significantly associated with $AUNAS$ and $OTHNAS$ (p 's < 0.05) when $INSTMAJ = 1$, but not when $INSTMAJ = 0$. $TAINTREP$ is not significantly associated with $TAXNAS$ when $INSTMAJ = 1$ or 0. Results suggest firms whose stock is owned primarily by institutional investors drive the association between NAS fees and a tainted ESG-related reputation, suggesting investors approve of auditor-provided ESG-related services in times of heightened reputation risk.

>>> Insert Table 10 here>>>

5.4 Audit quality implications

NAS has the potential to impair auditor independence and audit quality (Brandon et al. 2004; Krishnan, Sami, and Zhang 2005; Francis and Ke 2006). We look for evidence of impaired audit quality when audit firms provide additional NAS in periods of heightened reputation risk by examining the effect

of interacting *TAINTREP* and NAS fees on the likelihood of the reporting firm releasing a nonreliance restatement (*REST*), a proxy for audit quality.³¹ If there is audit quality impairment, then the interaction variables, *TAINTREP* \times *AUNAS*, *TAINTREP* \times *TAXNAS*, and *TAINTREP* \times *OTHNAS* should be positive and significantly related to *REST*. From Online Appendix F, the interaction variables *TAINTREP* \times *AUNAS*, *TAINTREP* \times *TAXNAS*, and *TAINTREP* \times *OTHNAS* are not significantly related to *REST* (coeff. (z) = 0.003 (0.018); -0.004 (-0.28); and 0.012 (1.19), respectively). Thus, we find no evidence to suggest that increased NAS purchases in times of heightened ESG risk impairs audit quality, using restatements as a proxy.

5.5 Alternative variable specifications

5.5.1 Using Peak IRR

We consider (tabulated in Online Appendix G) an alternative specification of *TAINTREP*, the RepRisk peak RRI score (*PeakRRI*), which is one plus the log of a firm's highest negative ESG-related reputation score for the trailing two years; this alternative proxy represents a cumulative negative reputation score and captures year-to-year firm variation in RRI. We rerun Equation (1), replacing *AvRRI* with *PeakRRI*, and including a new variable, *TAINTPEAK*, which is equal to the residual from the new regression. We repeat the regressions for Equations (2) and (3) using *TAINTPEAK* and results continue to support H1 and H2.

5.5.1 Controlling for firm-fixed effects in Equation (1)

As we discuss in Section 3.2, we do not include firm fixed effects in Equation (1) in our measure of *TAINTREP* because the variables *LIT* and *ESG_IND* are collinear with firm fixed effects. In this Section, we remeasure *TAINTREP* by including firm-fixed effects and excluding *LIT* and *ESG_IND* in Equation (1). Next, we repeat the regressions for Equations (2) and (3). As shown in Panels A and B of Online Appendix H, the results continue to support H1 and H2.

³¹ Nonreliance restatements, also known as Item 4.02 restatements, are material or egregious restatements of previously published financial statements because they can no longer be relied upon due to significant accounting errors. We include the following control variables in the *REST* model: *SIZE*, *FOROPS*, *GROWTH*, *BUSEG*, *LEV*, *ROA*, *RESTR*, *MERGER*, *BIG4*, *AUDTEN*, *AUFEE*, *INSIDE*, *INSTMAJ*, *BIND*, *ACEXPRT*, restatement announcement in year *t* (*MISST*), and internal control weakness (*ICW*).

6 Conclusion

We explore whether auditors effectively help companies manage ESG (reputation) risk. We theorize that auditors' leadership in developing ERM process and theory (through their involvement with COSO), as well as the understanding of ESG risk they gain as they perform client acceptance/retention and planning decisions, provides them with a unique opportunity to develop client-specific ESG-related expertise. Auditors are able to draw on this expertise in providing their audit clients with pre-assurance services aimed at generating new or improved ESG-related disclosures. For example, the external auditor may be effective in helping the company identify the positive steps necessary to review/update internal controls over ESG-related governance, risk assessment, and reporting (e.g., related to privacy violations, anti-competitive practices, etc.). In addition to pre-assurance services, reflected in NAS fees are costs related to providing assurance on ESG-related disclosures issued by management. We look for empirical evidence that auditors are significant providers of such services by testing the association between a company's (audit-related, tax, and other) NAS fees and its tainted (ESG-related) reputation. Our results show a positive association between tainted reputation and audit-related and other NAS fees, consistent with the notion that companies caught up in ESG-related scandal seek additional services from their external auditor. We look for evidence of the effectiveness of auditor-provided services by testing the interactive impact of audit-related, tax, and other NAS fees and tainted reputation on future (three-year-out) firm value. We find that audit-related NAS fees positively moderates the association between tainted reputation and future firm value, as we would expect if auditor-provided NAS is effective at helping firms manage ramifications of heightened ESG risk; our findings related to the impact of other NAS fees is mixed.

We are limited in our ability to establish causality due to the nature of the data we use in this study. We include year and firm fixed effects in our models to control for time trends and time-invariant firm characteristics, and note that our results are robust to using a changes model. However, we cannot rule out the possibility that our results are driven by a correlation between the explanatory variables and the error terms in our equations. We particularly note that fees paid for ESG-related risk advisory services

to consultants other than the external auditor are not observable and may be associated with both NAS fees and future firm value; however, we also point out that our results are robust to including a proxy for the use of other ESG risk management activities in response to heightened ESG risk. In other words, evidence suggests that the positive association of the interaction of audit-related NAS fees and tainted reputation is incremental to and more significant than the impact of other risk management activities engaged in by the company.

Several additional analyses support our interpretation of the results presented. First, companies that increase (audit-related and other) NAS in conjunction with heightened ESG risk are more likely to have reduced future ESG risk, providing further evidence supporting the effectiveness of auditor-provided ESG-related services. Second, companies are more likely to purchase NAS from ESG industry specialist auditors, and such services appear to be more effective than services from non-specialists, suggesting that the associations we observe are expertise-related. Third, companies with high institutional ownership are more likely to purchase NAS in conjunction with heightened ESG risk, consistent with the notion that institutional investors are particularly concerned with managing ESG risk and believe NAS to be an effective way to do so. The fact that the results of these additional analyses are generally as would be expected based on prior literature and theory provides some comfort regarding our hypotheses testing. Our conclusions are also supported by anecdotal evidence (e.g., audit firm and industry marketing materials, company footnote disclosures) that audit firms are offering, and companies are using, auditor-provided ESG-related services.

We contribute to literature and practice by providing further evidence regarding the importance of managing ESG risk for future firm value, and showing evidence that companies and investors differentiate between different types/qualities of NAS. Our evidence also is consistent with the notion that auditors have developed expertise in helping clients respond to heightened ESG risk in a way that positively affects future firm value. Our findings should be of interest to managers as they determine NAS purchases, regulators as they decide the most effective way to regulate NAS, and audit firms interested in the effectiveness of their ESG-related NAS. Our study, and the implications of our results should be of

primary interest to the SEC and the European Commission as they deliberate the pros and cons of requiring assurance on ESG-related reports. We provide initial and timely evidence suggesting positive firm value and ESG risk management effects of auditor involvement in ESG-related reporting. Future studies can further explore the persistence of and boundary conditions surrounding our results, the impact of different forms of ESG disclosure and assurance reports on firm value and other important outcome measures, and other settings for evidence of auditors' non-financial expertise.

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Appendix A: Examples of ESG-related services offered by public accounting firms

Firm	ESG-related Services Framework
Deloitte ^a	<ul style="list-style-type: none"> Resource Excellence We assist our clients in managing the business and environmental impacts of natural resources consumption (such as water), energy, waste, and emissions by translating analytical insights into actionable cost savings, risk mitigation opportunities, and economic value. Social Impact We help organizations to identify, measure, value, monitor, and report the social impacts of projects, programs, and policies. We combine competence, experience, and methodological rigor to help clients maximize social impact and shared value opportunities. Environment Health & Safety We help clients navigate their EH&S risk and compliance landscape through a pragmatic approach to integrating their critical EH&S processes into broader operational risk management and sustainability programs. Sustainable Supply Chain We help our clients refine supply chains, product lifecycles and internal operations by addressing diverse issues such as supplier engagement and extended producer strategy, sourcing and procurement, packaging, closed loop recycling, supply chain transparency, and upholding international human and labor rights. Sustainable Finance We help our clients incorporate environmental, social and governance (ESG) criteria into their investment decisions to enable more effective management and valuation of natural capital and ecosystem services and to drive tangible economic value and more positive environmental and societal impact in the financial sector. Stakeholder Engagement & Partnerships We assist our clients in advancing their sustainability agenda by advising on stakeholder engagement strategies and assessments, including engagement measurement and design services, in order to achieve performance objectives and demonstrate accountability to external stakeholders. Sustainability & Integrated Reporting We assist organizations in applying the concept of integrated thinking to achieve strategic objectives and communicate corporate performance through integrated reporting. Integrated reporting requires the consideration of dependence and impact on a broader set of capitals beyond financial and manufactured capitals, to include natural, human, social and relationship, and intellectual capitals. Sustainability Assurance We assist our clients in increasing the credibility and

^a <https://www2.deloitte.com/global/en/pages/risk/solutions/deloitte-sustainability-services.html> (accessed 11/22/19)

	<p>reliability of sustainability disclosures by providing both internal and external assurance on sustainability reports, greenhouse gas (GHG) statements, and other forms of non-financial information.</p> <ul style="list-style-type: none"> Public Sector Sustainable Energy Services We advise federal government clients on energy management and energy policy issues, and we assist international donor and development clients on expanding access to energy in developing countries. We provide cutting-edge, specialized technical assistance and a demonstrated ability to develop and implement energy services and solutions for developing countries and emerging markets.
Ernst & Young ^b	<ul style="list-style-type: none"> Market Readiness Assessment When entering a new market, companies need to understand the landscape of their target market and how ESG issues will affect their business. EY CCaSS will assist our clients in getting ready to excel in the new market sector through managing ESG performance, and introducing ESG perspective on growing a sustainable business in the new business environment. Sustainability Strategy and Integration EY CCaSS provides a wide range of advisory services to assist clients to develop strategic sustainability plans, manage corporate sustainability goals and to achieve sustainability targets on the operational level. Featured services include sustainability strategy formulation and integration, ESG management system development, materiality assessment, sustainability status review and tailored improvement plans and roadmap for corporate sustainability, etc. Sustainability / ESG Reporting and Assurance EY CCaSS has the capability to relate clients' ESG performance to the corporate brand and business development strategies through sustainability and ESG reporting and assurance services. This is aimed to ensure that regulatory disclosure requirements are met and that the expectations of stakeholders are addressed. Market Readiness of Emissions Trading Scheme (ETS) We have a professional team dedicated in ETS for years, to prepare businesses to enter ETS at home and abroad by helping clients with carbon emission inventory, carbon asset valuation, deployment and trusteeship, database management of low carbon projects, establishment of ETS internal control, accounting treatment of carbon trading, and analytical prediction of ETS. This can build capacity in and businesses more adaptable to changing climate change policies, and thus reduce their risks in addressing climate change. Financial Derivatives of Climate Change A combination of experiences in financial assurance, risk

^b <https://www.ey.com/cn/en/services/specialty-services/climate-change-and-sustainability-services/esg-assurance-reporting-and-climate-change-carbon>. See also [https://www.ey.com/Publication/vwLUAssets/EY-ESG-and-impact-investing-an-emerging-business-driver/\\$File/EY-ESG-and-impact-investing-an-emerging-business-driver.pdf](https://www.ey.com/Publication/vwLUAssets/EY-ESG-and-impact-investing-an-emerging-business-driver/$File/EY-ESG-and-impact-investing-an-emerging-business-driver.pdf) for a framework that is categorized along the dimensions of: Vision; Design; Implementation; Reporting.

	<p>assessment, carbon asset management and sustainability assurance enables us to provide businesses with one-stop comprehensive services, including risk assessment, revenue accounting and issuance auditing of climate change financial derivatives. This can help businesses better cope with climate change (e.g. carbon allowance and CCER), amplify returns, enhance green credits, and strengthen green financing capability.</p> <ul style="list-style-type: none"> • Low Carbon Strategy and Carbon Management Our professional team equipped with abundant experiences in corporate management, low carbon advisory and auditing. Through capacity building, database management, and industry analysis, businesses tend to be more proactive in dealing with carbon emission reduction. A win-win situation, achieving environmental benefits and financial gains at the same time, is very often expected of businesses. Typical services include non-financial information disclosure, risk assessment and low carbon strategy planning, investment appraisal of low carbon projects, advisory and auditing of low carbon labeling.
KPMG ^c	<ul style="list-style-type: none"> • Level Setting Agree on definition of ESG and its importance to the company • Assessment Determine which ESG risks and opportunities are of strategic significance to the company • Integration Encourage integration of strategically significant ESG issues into the business strategy • Stakeholder Communications Shape the company's key ESG messages to investors and other stakeholders in the context of strategy and long-term value creation • Board Oversight Ensure that the board has the right composition, structure, and processes to oversee ESG in the context of strategy and long-term value creation
PwC ^d	<ul style="list-style-type: none"> • Strategy development • Goal setting • Performance alignment • Measurement • Reporting

^c <https://assets.kpmg/content/dam/kpmg/lu/pdf/lu-en-esg-strategy-framework-for-board-oversight.pdf> (accessed 11/22/19). Note that KPMG also specifically markets a responsible corporate tax strategy as a critical part of ESG: <https://assets.kpmg/content/dam/kpmg/xx/pdf/2019/03/corporate-tax-a-critical-part-of-esg.pdf>.

^d <https://www.pwc.com/us/en/services/sustainability.html>. PwC marketing materials that are available on-line do not elaborate on these activities. However, there are additional materials aimed specifically at board directors, investors, and managers at <https://www.pwc.com/us/en/services/assets/pwc-esg-directors-boardroom.pdf> and <https://www.pwc.com/us/en/services/assets/pwc-esg-divide-investors-corporates.pdf>.

Appendix B: RepRisk's 28 ESG issues coverage

ENVIRONMENT		SOCIAL		GOVERNANCE
Environmental Footprint	Community Relations	Employee Relations	Corporate Governance	
Global pollution (incl. climate change and GHG emissions)	Human rights abuses, corporate complicity	Forced labor	Corruption, bribery, extortion, money laundering	
Local pollution	Impacts on communities	Child labor	Executive compensation issues	
Impacts on ecosystems and landscapes	Local participation issues	Freedom of association and collective bargaining	Misleading communication, e.g. "greenwashing"	
Overuse and wasting of resources	Social discrimination	Discrimination in employment	Fraud	
Waste issues		Occupational health and safety issues	Tax evasion	
Animal mistreatment		Poor employment conditions	Tax optimization	
			Anti-competitive practices	

Cross-cutting Issues

Controversial products and services

Products (health and environmental issues)

Violation of international standards

Violation of national legislation

Supply chain issues

Appendix C: Variable definitions

Panel A: Dependent variables used in main analyses

Variable	Measurement (Data Source)
Panel A: Dependent variables used in main analyses	
<i>AvRRI</i>	= Log of [one plus average of a firm's monthly current reputation risk index in a given fiscal year] (RepRisk);
<i>AUNAS</i>	= Log of [one plus total audit related NAS fees] (Audit Analytics);
<i>TAXNAS</i>	= Log of [one plus total tax related NAS fees] (Audit Analytics);
<i>OTHNAS</i>	= Log of [one plus all other NAS fees] (Audit Analytics);
<i>3YRROA</i>	= Average return on assets for a firm in years t+1, t+2, and t+3. Return on assets is calculated as net income/total assets (Compustat NI, AT);
<i>3YRTOBIN</i>	= Average Tobins Q for a firm in years t+1, t+2, and t+3. Tobins Q is calculated as book value of assets plus market value of common stock less book value of common stock less balance sheet deferred tax /book value of assets (Compustat AT, PRCC_F, CSHO, CSTKCV, TXDB).

Panel B: Additional dependent variables used in supplementary analyses and online appendix

<i>ΔAUNAS</i>	= Changes in <i>AUNAS</i> [<i>AUNAS</i> previously defined] from the prior year;
<i>ΔTAXNAS</i>	= Changes in <i>TAXNAS</i> [<i>TAXNAS</i> previously defined] from the prior year;
<i>ΔOTHNAS</i>	= Changes in <i>OTHNAS</i> [<i>OTHNAS</i> previously defined] from the prior year;
<i>3YRRET</i>	= Average of monthly stock returns for years t+1, t+2, and t+3 (CRSP RET);
<i>AvRRI_Dcrs</i>	= One if average of annual current RRI for a firm in years t+1, t+2, and t+3 is less than <i>AvRRI</i> , and zero otherwise (RepRisk);
<i>XSGA</i>	= Log of [one plus selling, general and administrative expenses minus total audit and nonaudit fees] (Compustat XSGA, Audit Analytics);
<i>PeakRRI</i>	= Log [one plus a firm's assigned peak reputation risk index for the fiscal year] (RepRisk);
<i>REST</i>	= One if the current fiscal year financial statements are subsequently restated and if the restatement has negative consequences on reported earnings, and 0 otherwise (Audit Analytics).

Panel C: Test variables used in main analyses

<i>TAINTREP</i>	= Residual value of regressing <i>AvRRI</i> on a set of firm size, complexity and industry determinants (see the text);
<i>AUNAS</i>	= As previously defined;
<i>TAXNAS</i>	= As previously defined;
<i>OTHNAS</i>	= As previously defined;
<i>TAINTREP x AUNAS</i>	= <i>TAINTREP</i> [<i>TAINTREP</i> defined previously] multiplied by <i>AUNAS</i> ;
<i>TAINTREP x TAXNAS</i>	= <i>TAINTREP</i> multiplied by <i>TAXNAS</i> ;
<i>TAINTREP x OTHNAS</i>	= <i>TAINTREP</i> multiplied by <i>OTHNAS</i> .

Panel D: Additional test variables used in supplementary analyses and online appendix

<i>ΔTAINTREP</i>	= Changes in <i>TAINTREP</i> from the prior year;
<i>TAINTREP x AbnXSGA</i>	= <i>TAINTREP</i> multiplied by <i>AbnXSGA</i> . <i>AbnXSGA</i> is the residual value of regressing <i>XSGA</i> [<i>XSGA</i> defined previously] on a set firm size, complexity, and industry determinants. See Online Appendix D;
<i>AUNAS</i>	= As previously defined

<i>TAXNAS</i>	=	As previously defined
<i>OTHNAS</i>	=	As previously defined
<i>TAINTPEAK</i>	=	Residual value of regressing <i>PeakRRI</i> on a set of firm size, complexity, and industry determinants. <i>PeakRRI</i> is the log of [one plus a firm's highest negative reputation risk index score for the trailing two years] (<i>RepRisk</i>);
<i>TAINTPEAK</i> \times <i>AUNAS</i>	=	<i>TAINTPEAK</i> [<i>TAINTPEAK</i> previously defined] multiplied by <i>AUNAS</i> ;
<i>TAINTPEAK</i> \times <i>TAXNAS</i>	=	<i>TAINTPEAK</i> [<i>TAINTPEAK</i> previously defined] multiplied by <i>TAXNAS</i> ;
<i>TAINTPEAK</i> \times <i>OTHNAS</i>	=	<i>TAINTPEAK</i> [<i>TAINTPEAK</i> previously defined] multiplied by <i>OTHNAS</i> ;
<i>ESG_SPE_AUD</i>	=	One if the company is audited by an ESG industry specialist auditor, where an ESG industry specialist is an auditor with 30% or more ESG audit market share, based on ESG audit fees less fees paid by the observation firm, measured at the office level, and zero otherwise.

Panel E: Control variables used in main analyses

<i>SIZE</i>	=	Log of [one plus total assets] (Compustat AT);
<i>FOROPS</i>	=	One if the firm has foreign operations, and zero otherwise (Compustat FCA, PIFO, TXFO);
<i>GROWTH</i>	=	Growth in sales over the previous year (Compustat SALE);
<i>MB</i>	=	Market-to-book ratio (Compustat (PRCC_F * CSHO) / SEQ);
<i>BUSEG</i>	=	Log of [one plus the number of business segments] (Compustat Segments BUSSEG);
<i>ROA</i>	=	Net income divided by total assets (Compustat NI/AT);
<i>LEV</i>	=	Total debt divided by market value of assets (Compustat (DLTT + DLC) / (PRCC_F * CSHO + DLTT));
<i>AGE</i>	=	Log of [one plus company age in years] (GMI Ratings);
<i>lowMTR</i>	=	One if the firm's marginal tax rate is lower than the sample year median, and zero otherwise. Simulated marginal tax rate provided by Professor John Graham, available at https://faculty.fuqua.duke.edu/~jgraham/taxform.html ;
<i>LIT</i>	=	One if the firm operates in litigious industry (four-digit SICs 2833-2836; 3570-3577; 3600-3674; 5200-6951; 7370), and zero otherwise (Compustat SIC);
<i>ESG_IND</i>	=	One if the firm operates in ESG-sensitive industry (Compustat two-digit SICs 10; 13; 21; 26; 28; 29; 33; 34; 49; and 51), and zero otherwise. See Brammer and Millington (2005) and Cho and Patten (2007);
<i>RESTR</i>	=	One if the firm has undergone restructuring activities, and zero otherwise (Compustat RCP, RCA);
<i>MERGER</i>	=	One if the firm reports merger or acquisition, and zero otherwise (Compustat AQP, AQA);
<i>EMPLAN</i>	=	One if the firm has a pension or post-retirement plan, and zero otherwise (Compustat XPR, PVPL);
<i>DEISSUE</i>	=	One if the firm issued a new debt, and zero otherwise (Compustat (DLTT, DLC);
<i>BIG4</i>	=	One if the client's external auditor is a Big 4 auditor, and zero otherwise (Audit Analytics);
<i>AUDTEN</i>	=	Log of [one plus number of years the external auditor has audited the client] (Audit Analytics);

<i>AUFEE</i>	=	Log of [one plus total audit fees] (Audit Analytics);
<i>DUALITY</i>	=	One if the CEO is also the chair of the board, and zero otherwise (BoardEx);
<i>INSIDE</i>	=	Percentage of outstanding shares held by insiders (GMI Ratings);
<i>SPITEMS</i>	=	Special items scaled by total assets (Compustat SPI/AT);
<i>INVREC</i>	=	Inventory plus accounts receivable, divided by total assets (Compustat (INVT+RECT)/AT))
<i>BLOCK</i>	=	Cumulative percentage shares held by block holders owning at least 5 percent of outstanding shares (GMI Ratings);
<i>BIND</i>	=	The percentage of directors on the firm's board who are external, non-affiliate directors (BoardEx);
<i>ACEXPRT</i>	=	Audit committee directors who are accounting financial experts divided by total audit committee directors on a firm's board. Accounting financial expert audit committee directors are those with functional experience as a certified public accountant, auditor, chief financial officer, chief accounting officer, and controller (BoadEx);
<i>LOSS</i>	=	One if the firm reports net income below zero in the fiscal year, and zero otherwise (Compustat NI);
<i>INSTMAJ</i>	=	One if majority of the company's outstanding shares are held by institutions, and zero otherwise (GMI Ratings);
<i>BSIZE</i>	=	Log of [one plus number of members serving on the firm's board] (BoardEx);
<i>NEW_CEO</i>	=	One if the tenure of the CEO is one year or less (BoardEx);
<i>BMEET</i>	=	Log of [one plus number of board meetings during the year] (Risk Metrics, GMI Ratings);
<i>CAPX_AT</i>	=	The ratio of capital expenditure to total assets (Compustat CAPX/AT). CAPX set to zero if missing;
<i>R&D_SALES</i>	=	The ratio of research and development expense to sales (Compust XRD/SALE). XRD set to zero if missing;
<i>XAD_SALES</i>	=	The ratio of advertising expense to sales (Compust XAD/SALE). XAD set to zero if missing;

Panel G: Additional control variables used in supplementary analyses or online appendix

<i>MISST</i>	=	One if the firm restates previously issued financial statements in the current fiscal year, and zero otherwise (Audit Analytics);
<i>ICW</i>	=	One if the firm reported material weakness in internal controls, and zero otherwise (Audit Analytics).

Table 1: Sample selection and industry membership**Panel A:** Sample selection

	Number of Observation
Universe of U. S non-financial firms covered in RepRisk from fiscal year 2007 to 2014	11,895
Less observations with missing financial data in Compustat files	(2,225)
Less observations with missing NAS fees data from Audit Analytics	(247)
Less firms with missing governance data from BoardEx and GMI Ratings	(1,549)
Less observations without other control variables	(607)
Final sample for NAS models	7,267
Less observations with missing data to calculate three-year out ROA or TOBINSQ	702
Final sample for firm value models	6,565

Panel B: Industry membership

Industry Name	Frequency	Percentage	Compustat Population
Consumer non-durables	568	7.82%	5.01%
Consumer durables	225	3.10%	2.63%
Manufacturing	935	12.87%	9.24%
Oil, gas, and coal extraction and products	631	8.68%	7.31%
Chemicals and Allied Products	348	4.79%	2.67%
Business equipment	995	13.69%	19.96%
Telephone and television transmission	141	1.94%	3.51%
Utilities	514	7.07%	4.78%
Wholesale, retail, and some services	1,121	15.43%	8.43%
Healthcare, medical equipment, and drugs	673	9.26%	14.69%
	6,151	84.64%	78.24%
All others	1,116	15.36%	21.76%
Total Sample	7,267	100.00%	100%

TABLE 2: Descriptive statistics**Panel A:** Descriptive statistics - All variables in the primary models

Variable	N	Mean	Std	1st Quartile	Median	3rd Quartile
Average current RRI	7,267	8.54	10.78	0.00	1.75	16.50
<i>AvRRI</i>	7,267	1.39	1.42	0.00	1.01	2.86
<i>SIZE</i>	7,267	7.98	1.61	6.87	7.95	9.02
<i>FOROPS</i>	7,267	0.37	0.48	0.00	0.00	1.00
<i>GROWTH</i>	7,267	0.08	0.23	-0.02	0.06	0.14
<i>MB</i>	7,267	2.91	4.08	1.35	2.13	3.50
<i>BUSEG</i>	7,267	1.83	0.62	1.39	1.84	2.30
<i>ROA</i>	7,267	0.04	0.12	0.02	0.05	0.09
<i>LEV</i>	7,267	0.25	0.22	0.07	0.19	0.38
<i>AGE</i>	7,267	3.25	1.30	2.77	3.37	4.17
<i>lowMTR</i>	7,267	0.49	0.50	0.00	0.00	1.00
<i>LIT</i>	7,267	0.25	0.43	0.00	0.00	1.00
<i>ESG_IND</i>	7,267	0.34	0.47	0.00	0.00	1.00
<i>TAINTREP</i>	7,267	-0.00	1.13	-0.92	0.01	0.89
Total NAS fee (\$000)	7,267	1,000	2,565	85	307	929
Audit-related NAS (\$000)	7,267	416	1,647	2	77	300
Tax-related NAS (\$000)	7,267	531	1,204	10	126	503
Other NAS (\$000)	7,267	53	382	0	0	4
<i>AUNAS</i>	7,267	8.98	5.29	7.60	11.26	12.61
<i>TAXNAS</i>	7,267	9.63	5.24	9.21	11.74	13.13
<i>OTHNAS</i>	7,267	3.77	4.91	0.00	0.00	8.29
<i>3YRROA</i>	6,565	0.04	0.12	0.02	0.05	0.08
<i>3YRTOBIN</i>	6,565	1.87	1.24	1.17	1.52	2.14
<i>RESTR</i>	7,267	0.40	0.49	0.00	0.00	1.00
<i>MERGER</i>	7,267	0.25	0.43	0.00	0.00	0.00
<i>EMPLAN</i>	7,267	0.94	0.24	1.00	1.00	1.00
<i>DEISSUE</i>	7,267	0.67	0.47	0.00	1.00	1.00
<i>BIG4</i>	7,267	0.93	0.26	1.00	1.00	1.00
<i>AUDTEN</i>	7,267	2.49	0.77	2.08	2.49	3.04
<i>AUFEE</i>	7,267	14.63	1.02	13.91	14.55	15.34
<i>DUALITY</i>	7,267	0.53	0.50	0.00	1.00	1.00
<i>INSIDE</i>	7,267	0.12	0.20	0.01	0.04	0.12
<i>SPITEMS</i>	7,267	-0.01	0.04	-0.01	0.00	0.00
<i>INVREC</i>	7,267	0.23	0.16	0.09	0.21	0.33
<i>BLOCK</i>	7,267	0.24	0.17	0.12	0.22	0.34
<i>BIND</i>	7,267	0.73	0.16	0.64	0.75	0.86
<i>ACEXPRT</i>	7,267	0.20	0.17	0.00	0.20	0.25
<i>LOSS</i>	7,267	0.18	0.38	0.00	0.00	0.00
<i>INSTMAJ</i>	7,267	0.84	0.36	1.00	1.00	1.00
<i>BSIZE</i>	7,267	2.31	0.22	2.20	2.30	2.48
<i>NEW_CEO</i>	7,267	0.19	0.39	0.00	0.00	0.00
<i>BMEET</i>	7,267	2.13	0.34	1.95	2.08	2.30
<i>CAPX_AT</i>	7,267	0.06	0.06	0.02	0.04	0.07
<i>R&D_SALES</i>	7,267	0.04	0.10	0.00	0.00	0.02
<i>XAD_SALES</i>	7,267	0.01	0.03	0.00	0.00	0.01

Table 2 cont'd

Panel B: Determinants of tainted ESG reputation

	<i>Dependent variable:</i>	<i>AvRRI</i>
Variable	Coeff.	t-stat
Intercept	-2.238***	-19.70
<i>SIZE</i>	0.445***	41.01
<i>FOROPS</i>	0.031	1.05
<i>GROWTH</i>	-0.432***	-5.55
<i>MB</i>	0.009**	2.45
<i>BUSEG</i>	-0.056**	-2.06
<i>ROA</i>	-0.384**	-2.59
<i>LEV</i>	-0.501***	-6.48
<i>AGE</i>	0.056***	4.61
<i>lowMTR</i>	0.100***	3.17
<i>LIT</i>	0.094*	1.73
<i>ESG-IND</i>	0.172***	4.54
Year fixed effects	Yes	
Firm fixed effects [±]	No	
Std errors clustered at	Industry, Year	
No. of Obs.	7,267	
Adjusted R2; F-value	0.353; 311.37***	
This table reports the regression results that explains the determinants of negative ESG reputation. *, **, *** denote significance at the 0.10, 0.05, and 0.01 levels, respectively. Significance is based on p-values that are two-tailed. Standard errors are double clustered at the industry and year levels. ± Firm fixed effects excluded because the variables <i>LIT</i> and <i>ESG-IND</i> are industry-specific and collinear with firm fixed effects. See Appendix C for variable definitions.		

Table 3: Correlations of variables used in the main Equations 2 and 3 regressions

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)	(23)	(24)	(25)	(26)	(27)	(28)	(29)	(30)	(31)	(32)	(33)	(34)	(35)	
(1) <i>AUNAS</i>	1 00																																			
(2) <i>TAXNAS</i>	0.25	1 00																																		
(3) <i>OTHNAS</i>	0.26	0.98	1 00																																	
(4) <i>3YRROA</i>	0.14	0.09	0.10	1 00																																
(5) <i>3YRTOBIN</i>	-0.07	0 01	0 00	0.21	1 00																															
(6) <i>TAINTREP</i>	0.04	-0 01	-0.04	-0 01	0.04	1 00																														
(7) <i>SIZE</i>	0.49	0.29	0.31	0.15	-0.20	0 01	1 00																													
(8) <i>FOROPS</i>	0.08	0.19	0.19	0.07	0.04	0 00	0.05	1 00																												
(9) <i>GROWTH</i>	-0.04	-0.04	-0.03	0.03	0.12	0 00	-0.05	-0 01	1 00																											
(10) <i>MB</i>	0 01	0.04	0.04	0.16	0.40	0 00	0 00	-0 01	0.10	1 00																										
(11) <i>BUSEG</i>	0.20	0.13	0.13	0.09	-0.16	0 00	0.28	0.08	-0.11	-0.08	1 00																									
(12) <i>ROA</i>	0.13	0.08	0.08	0.51	0.16	0 00	0.21	0.05	0.14	0.14	0.08	1 00																								
(13) <i>LEV</i>	0.09	-0.04	-0.03	-0.19	-0.41	0 00	0.22	-0.11	-0.11	-0.24	0.09	-0.29	1 00																							
(14) <i>RESTR</i>	0.15	0.20	0.20	0.03	-0.05	0 00	0.14	0.23	-0.15	-0 02	0.12	-0.06	0.03	1 00																						
(15) <i>MERGER</i>	0.12	0.09	0.10	0 00	-0.04	-0.06	0.11	0.08	0.11	0 00	0.08	0 02	0 02	0.18	1 00																					
(16) <i>EMPLAN</i>	0.13	0.04	0.04	0.07	-0.05	-0 01	0.10	0 01	-0.06	-0 01	0.11	0.05	0 00	0.06	0.03	1 00																				
(17) <i>DEISSUE</i>	0.14	0.07	0.07	-0.04	-0.23	-0.03	0.29	-0 02	-0 01	-0.04	0.12	-0 02	0.36	0.05	0.08	0 01	1 00																			
(18) <i>BIG4</i>	0.18	0.26	0.27	0.06	-0 02	-0 02	0.31	0.04	-0.07	0 02	0.10	0.06	0.07	0.08	0 01	0.08	0.06	1 00																		
(19) <i>AUDTEN</i>	0.23	0.16	0.16	0.10	-0 01	0 01	0.29	0 01	-0.11	0 02	0.15	0.11	-0.03	0.12	0.06	0.08	0.04	0.25	1 00																	
(20) <i>AUFEE</i>	0.49	0.38	0.40	0.14	-0.13	0.04	0.81	0.25	-0.09	0 02	0.33	0.15	0.12	0.32	0.16	0.12	0.24	0.32	0.26	1 00																
(21) <i>DUALITY</i>	0.08	0.05	0.06	0 02	-0.03	0 02	0.13	-0.05	-0 01	0 01	0.08	0.05	0.04	-0.03	-0.03	0 01	0.08	0.03	0.08	0.11	1 00															
(22) <i>INSIDE</i>	-0.19	-0.09	-0.10	-0.06	-0 02	-0 01	-0.26	0.00	0 01	-0.03	-0.06	-0.06	0 01	-0.11	-0.08	-0.05	-0.08	-0.14	-0.15	-0.24	-0.08	1 00														
(23) <i>SPITEMS</i>	0 00	-0.03	-0.03	0.05	0.05	-0.03	0.06	-0.06	0.10	0.03	0 01	0.45	-0.15	-0.21	-0.04	0 00	-0 01	0 02	0.04	-0.04	0 01	-0 02	1 00													
(24) <i>INVREC</i>	0 00	0.03	0 02	0.13	-0 02	0.03	-0.17	0.12	-0.05	-0.03	0.06	0.07	-0.09	0.09	-0 02	0.05	-0.03	-0.08	0 02	0 02	-0.03	0.10	-0.06	1 00												
(25) <i>BLOCK</i>	-0.07	-0.08	-0.08	-0.07	0 00	-0.03	-0.23	0 00	0 00	-0.03	-0.15	-0.12	0.10	0.06	0 01	0 00	-0.05	0 01	-0.09	-0.17	-0.10	-0.30	-0.05	0 01	1 00											
(26) <i>BIND</i>	0.14	0.07	0.07	0.08	-0 02	0.03	0.18	0.03	-0.05	0.04	0.07	0.06	-0.03	0.12	0 01	0.07	0.04	0.12	0.13	0.22	0.15	-0.39	0 01	0 00	-0.03	1 00										
(27) <i>ACEXPRT</i>	-0.09	-0.05	-0.05	0.03	0.05	-0 01	-0.07	0 02	0 00	0 00	0 00	0.03	-0.08	0.03	0 02	-0 01	-0.06	0.03	-0.02	-0.04	-0.05	-0.05	0 01	0 02	0.04	0.07	1 00									
(28) <i>LOSS</i>	-0.13	-0.08	-0.09	-0.35	-0.05	0 02	-0.23	0 00	-0.14	-0.07	-0.11	-0.65	0.25	0.07	-0.03	-0.09	-0 02	-0.07	-0.13	-0.15	-0.07	0.09	-0.44	-0.02	0.13	-0.09	0 00	1 00								
(29) <i>INSTMAJ</i>	0.15	0.12	0.13	0.16	0.03	-0.03	0.17	0 02	-0.03	0.04	0.06	0.13	-0.07	0.12	0.06	0.10	0 02	0.14	0.11	0.17	0.05	-0.30	-0 02	0.07	0.09	0.21	0 02	-0.14	1 00							
(30) <i>BSIZE</i>	0.36	0.22	0.23	0.14	-0.09	0.04	0.59	0 01	-0.09	0 02	0.23	0.12	0.13	0.17	0.05	0.12	0.19	0.25	0.29	0.54	0 01	-0.18	0 01	-0.04	-0.12	0.15	-0 01	-0.15	0.15	1 00						
(31) <i>NEWCEO</i>	-0 02	0 00	0 00	-0 02	-0 02	-0 01	0 00	-0 01	-0.03	-0 01	-0 02	-0.04	0 01	0.04	-0 02	-0 01	-0 01	0 00	0 00	0 01	-0.09	-0 02	-0.05	-0 01	0.02	-0.03	0 01	0.05	0 00	0 02	1 00					
(32) <i>BMEET</i>	0.09	0.05	0.05	-0.07	-0.11	0 01	0.11	0 01	0 01	-0.04	0 02	-0.08	0.11	0.11	0.10	0.04	0 02	0.04	-0.03	0.17	-0.08	-0.11	-0.07	-0.12	0.07	0.07	-0 01	0.09	0.03	0.04	0.06	1 00				
(33) <i>CAPX_AT</i>	-0.13	-0.14	-0.14	-0.14	-0.07	-0 02	-0 02	-0.15	0.13	-0 01	-0.15	-0 01	0.07	-0.24	-0.17	-0.16	0.13	-0.08	-0.11	-0.22	0.04	0 01	0.07	-0.31	-0.03	-0.08	-0.02	0 01	-0.10	-0.11	0 00	-0.03	1 00			
(34) <i>R&D_SALES</i>	-0.10	0 02	0 01	-0.29	0.34	-0.03	-0.17	0.05	0.10	0.10	-0.15	-0.36	-0.23	0.07	0.06	-0 02	-0.22	0 01	-0.04	-0.08	-0.07	-0.04	-0.03	-0.15	0.05	0.03	0.06	0.24	0 01	-0.11	0 00	0.07	-0.17	1 00		
(35) <i>XAD_SALES</i>	0 01	0.05	0.05	0.10	0.19	0.07	-0.04	0 01	-0 02	0.12	-0.07	0.06	-0.07	0.05	-0.03	-0.03	-0.10	0 02	0 02	0 00	-0.05	0.18	-0.04	0 01	0 00	-0.04	0.04	-0 01	-0 01	0.06	-0 01	-0 02	-0.09	-0 01	1 00	

Bold correlations are significant at $p < 0.05$. See Appendix C for variable definitions

Table 4: Tainted ESG reputation and NAS

		Column 1		Column 2		Column 3	
<i>Dependent variable:</i>		<i>AUNAS</i>		<i>TAXNAS</i>		<i>OTHNAS</i>	
Variable	Expected Sign	Coeff.	t-stat	Coeff.	t-stat	Coeff.	t-stat
Intercept	?	-11.244***	-2.79	-5.090	-1.34	-3.505	-1.04
<i>TAINTREP</i>	+/?/+	0.091**	2.18	-0.027	-0.80	0.118***	2.44
<i>SIZE</i>	+	1.154***	5.00	0.586***	2.67	0.144	0.78
<i>FOROPS</i>	+	-0.269	-1.24	-0.052	-0.29	-0.040	-0.18
<i>GROWTH</i>	+	-0.026	-0.12	-0.026	-0.12	0.172	0.77
<i>MB</i>	+	0.000	0.01	0.011	0.91	0.011	0.81
<i>BUSEG</i>	+	-0.056	-0.33	-0.259	-1.65	0.252*	1.62
<i>ROA</i>	+	-0.492	-0.77	-0.269	-0.44	-0.479	-0.74
<i>RESTR</i>	+	-0.022	-0.18	0.303***	2.44	-0.024	-0.19
<i>MERGER</i>	+	0.725***	6.94	0.180**	1.76	0.139	1.18
<i>EMPLAN</i>	+	0.489*	1.41	-0.187	-0.51	0.135	0.40
<i>DEISSUE</i>	+	0.419***	3.70	0.029	0.27	0.025	0.23
<i>BIG4</i>	+	-1.184	-1.54	3.335***	4.66	-0.084	-0.10
<i>AUDTEN</i>	+	0.513***	4.30	0.124	0.90	-0.142	-1.31
<i>AUFEE</i>	+	0.784***	3.16	0.509**	1.95	0.551***	2.53
<i>DUALITY</i>	+	-0.147	-0.99	-0.200	-1.54	0.059	0.37
<i>INSIDE</i>	+	1.759***	2.63	0.394	0.77	-2.269***	-3.12
<i>SPITEMS</i>	+	-0.425	-0.27	0.360	0.25	-1.975	-1.15
<i>INVREC</i>	+	-1.717*	-1.71	0.923	0.85	-1.078	-1.09
<i>LEV</i>	-	-1.212***	-3.17	-0.433	-1.06	0.200	0.38
<i>BLOCK</i>	-	0.740**	1.91	-0.684*	-1.44	-0.435	-0.90
<i>BIND</i>	-	-0.475	-0.90	0.180	0.51	-0.086	-0.21
<i>ACEXPRT</i>	-	-2.322***	-4.75	-2.527***	-5.58	-4.013***	-7.02
<i>LOSS</i>	-	0.216	1.21	-0.109	-0.74	-0.311**	-1.72
<i>INSTMAJ</i>	?	-0.432**	-2.13	0.293	1.33	-0.025	-0.11
<i>BSIZE</i>	?	0.092	0.20	-0.047	-0.12	-0.295	-0.59
<i>NEW CEO</i>	?	-0.087	-0.90	-0.043	-0.46	-0.045	-0.40
Year fixed effects		Yes		Yes		Yes	
Firm fixed effects		Yes		Yes		Yes	
Std errors clustered at		Industry, Year		Industry, Year		Industry, Year	
No. of Obs.		7,220 [®]		7,220 [®]		7,220 [®]	
Adjusted R2; F-value		0.630; 8.09***		0.706; 6.11***		0.559; 6.00***	

This table presents effect of tainted ESG reputation on firm procurement of audit-related (column 1), tax-related (column 2) and all other types of (column 3) NAS. The symbols *, **, *** denote significance at the 0.10, 0.05, and 0.01 levels, respectively. Significance is based on p-values that are one-tailed for variables with a predicted sign, and two-tailed otherwise. Standard errors are double clustered at the industry and year levels. [®] 47 singleton observations are dropped from the regression. See Appendix C for variable definitions.

Table 5: Changes in tainted ESG reputation and changes in NAS

		Column 1		Column 2		Column 3	
<i>Dependent variable:</i>		$\Delta AUNAS$		$\Delta TAXNAS$		$\Delta OTHNAS$	
Variable	Expected Sign	Coeff.	t-stat	Coeff.	t-stat	Coeff.	t-stat
Intercept	?	-0.451	-1.42	-0.075	-0.27	0.202	0.74
$\Delta TAINREP$	+/?/+	0.080**	1.78	-0.032	-1.10	0.124***	3.10
$\Delta SIZE$	+	6.786***	2.95	-0.494	-0.29	-0.995	-0.58
$\Delta FOROPS$	+	0.010	0.08	0.017	0.18	-0.028	-0.26
$\Delta GROWTH$	+	0.002*	1.49	0.000	0.64	-0.004*	-1.75
ΔMB	+	0.030	0.60	-0.012	-0.63	0.022	0.89
$\Delta BUSEG$	+	0.042	0.14	0.097	0.37	0.184	0.79
ΔROA	+	0.000	-0.27	0.000	-1.42	0.000	-0.18
ΔLEV	-	0.000	-0.21	0.000	-0.05	0.000*	-1.51
$\Delta RESTR$	+	0.047	0.39	0.139*	1.54	-0.018	-0.16
$\Delta MERGER$	+	0.379***	3.50	0.100	0.93	0.135	1.15
$\Delta EMPLAN$	+	0.342*	1.40	0.047	0.28	-0.067	-0.34
$\Delta DEISSUE$	+	0.041	0.42	-0.074	-0.74	0.041	0.42
$\Delta BIG4$	+	-0.059	-0.31	0.144	0.75	0.240	1.21
$\Delta AUDTEN$	+	0.297**	1.87	0.125	0.80	0.141	1.07
$\Delta AU FEE$	+	0.937***	3.58	0.524**	1.93	0.303	1.13
$\Delta DUALITY$	+	-0.119	-1.08	-0.087	-0.96	-0.020	-0.21
$\Delta INSIDE$	+	0.000	0.87	0.000	-0.32	0.003***	5.76
$\Delta SPITEMS$	+	0.001*	1.31	0.000	-0.47	0.001	1.20
$\Delta INVREC$	+	-0.065**	-2.27	-0.068	-1.61	-0.005	-0.87
$\Delta BLOCK$	-	0.016	1.23	0.005	0.62	0.027	0.54
$\Delta BIND$	-	-0.011	-0.07	0.164	1.05	-0.156	-1.27
$\Delta ACEXPRT$	-	-3.540***	-5.12	-3.566***	-6.12	-4.620***	-6.43
$\Delta LOSS$	-	-0.167	-1.05	-0.151	-1.10	-0.339**	-2.23
$\Delta INSTMAJ$?	-0.027	-0.17	0.017	0.12	-0.151	-1.19
$\Delta ABSIZE$?	0.708	0.55	0.077	0.07	1.398	1.35
ΔNEW_CEO	?	-0.223*	-1.94	-0.160*	-1.75	0.006	0.04
Year fixed effects		Yes		Yes		Yes	
Industry fixed effects		Yes		Yes		Yes	
Std errors clustered at		Industry, Year		Industry, Year		Industry, Year	
No. of Obs.		6,083		6,083		6,083	
Adjusted R2; F-value		0.018; 6.38***		0.011; 3.84***		0.011; 6.10***	

This table presents effect of changes in tainted ESG reputation on changes in firm procurement of audit-related (column 1), tax-related (column 2), and all other types of (column 3) NAS. All continuous dependent, test, and control variables are measured as changes from the prior year, and all indicator variables are as defined in Appendix C. The symbols *, **, *** denote significance at the 0.10, 0.05, and 0.01 levels, respectively. Significance is based on p-values that are one-tailed for variables with a predicted sign, and two-tailed otherwise. Standard errors are double clustered at the industry and year levels. See Appendix C for variable definitions.

Table 6: Tainted ESG reputation, NAS and long-term firm value

		Column 1		Column 2		Column 3		Column 4		Column 5		Column 6	
<i>Dependent variable:</i>		<i>3YRROA</i>		<i>3YRROA</i>		<i>3YRROA</i>		<i>3YRTOBIN</i>		<i>3YRTOBIN</i>		<i>3YRTOBIN</i>	
Variable	Pred. Sign	Coeff.	t-stat	Coeff.	t-stat	Coeff.	t-stat	Coeff.	t-stat	Coeff.	t-stat	Coeff.	t-stat
Intercept		0.525***	10.08	0.524***	9.94	0.523***	9.81	5.444***	17.88	5.455***	18.14	5.455***	18.06
<i>TAINTREP</i> \times <i>AUNAS</i>	+	0.001***	2.44					0.002**	1.85				
<i>TAINTREP</i> \times <i>TAXNAS</i>	?			0.000	1.22					-0.000	-0.09		
<i>TAINTREP</i> \times <i>OTHNAS</i>	+					0.001**	1.83					-0.000	-0.14
<i>TAINTREP</i>	-	-0.007***	-2.91	-0.006**	-2.23	-0.004***	-2.56	-0.026**	-2.26	-0.011	-0.93	-0.012**	-1.88
<i>AUNAS</i>	?/(-)	0.000	0.36					-0.003**	-2.07				
<i>TAXNAS</i>	?/(-)			-0.000	-0.31					0.001	0.71		
<i>OTHNAS</i>	?/(-)					-0.000	-0.44					0.002	1.62
<i>SIZE</i>	?/(+)	-0.062***	-9.02	-0.061***	-8.85	-0.062***	-8.82	-0.401***	-11.18	-0.408***	-11.30	-0.408***	-11.42
<i>GROWTH</i>	+	0.030***	2.75	0.030***	2.78	0.030***	2.76	0.122***	3.36	0.123***	3.39	0.122***	3.38
<i>BUSEG</i>	+/(-)	0.007*	1.63	0.007*	1.65	0.007**	1.69	-0.002	-0.07	-0.001	-0.04	-0.002	-0.08
<i>ROA</i>	/(+)							0.134	1.02	0.135	1.03	0.137	1.04
<i>LEV</i>	-/(?)	-0.073***	-2.92	-0.073***	-2.92	-0.073***	-2.90	-0.147**	-2.11	-0.145**	-2.09	-0.144**	-2.06
<i>AGE</i>	+/(?)	-0.002	-0.97	-0.002	-0.97	-0.001	-0.89	-0.005	-0.55	-0.005	-0.56	-0.005	-0.55
<i>DUALITY</i>	?/(-)	0.004	1.39	0.004	1.34	0.004	1.43	0.027	1.14	0.028	1.17	0.027	1.14
<i>INSIDE</i>	-	-0.024***	-2.88	-0.023***	-2.76	-0.023***	-2.75	-0.006	-0.10	-0.011	-0.17	-0.004	-0.06
<i>BIND</i>	?/(-)	-0.004	-0.32	-0.004	-0.30	-0.004	-0.33	-0.122**	-2.18	-0.118**	-2.11	-0.117**	-2.09
<i>BSIZE</i>	?/(-)	0.012	1.22	0.013	1.29	0.013	1.30	-0.049	-1.02	-0.047	-0.97	-0.046	-0.96
<i>BMEET</i>	?/(-)	-0.003	-0.96	-0.003	-0.92	-0.003	-0.89	-0.040*	-1.63	-0.042**	-1.71	-0.041**	-1.68
<i>CAPX_AT</i>	?/(+)	0.023	0.42	0.026	0.47	0.024	0.43	-0.693***	-2.81	-0.706***	-2.83	-0.708***	-2.86
<i>R&D_SALES</i>	?/(+)	-0.128**	-2.20	-0.130**	-2.21	-0.128**	-2.21	0.204	0.60	0.208	0.60	0.207	0.60
<i>XAD_SALES</i>	?/(+)	-0.037	-0.20	-0.033	-0.18	-0.028	-0.15	1.290	0.82	1.328	0.84	1.334	0.85
Year fixed effects		Yes		Yes		Yes		Yes		Yes		Yes	
Firm fixed effects		Yes		Yes		Yes		Yes		Yes		Yes	
Std errors clustered at		Industry, Year		Industry, Year		Industry, Year		Industry, Year		Industry, Year		Industry, Year	
No. of Obs. [®]		6,499		6,499		6,499		6,499		6,499		6,499	
Adjusted R ² ; F-value		0.690; 15.42***		0.689; 14.27***		0.689; 19.38***		0.874; 12.62***		0.873; 14.75***		0.873; 13.88***	

This table presents regression results of moderation by audit-related, tax-related, and all other NAS of the association between tainted ESG reputation and long-term operating performance (Columns 1, 2, 3 respectively) and market valuation (Columns 4, 5, 6, respectively). The symbols *, **, *** denote significance at the 0.10, 0.05, and 0.01 levels, respectively. Significance is based on p-values that are one-tailed for variables with a predicted sign, and two-tailed otherwise. Standard errors are double clustered at the industry and year levels. [®] 66 singleton observations are dropped from the regression. See Appendix C for variable definitions.

Table 7: Tainted ESG reputation, NAS and long-term firm value – Other consultants hired and internal costs

		Column 1		Column 2		Column 3		Column 4		Column 5		Column 6	
<i>Dependent variable:</i>		<i>3YRROA</i>		<i>3YRROA</i>		<i>3YRROA</i>		<i>3YRTOBIN</i>		<i>3YRTOBIN</i>		<i>3YRTOBIN</i>	
Variable	Pred. Sign	Coeff.	t-stat	Coeff.	t-stat	Coeff.	t-stat	Coeff.	t-stat	Coeff.	t-stat	Coeff.	t-stat
Intercept		0.486***	8.42	0.487***	8.44	0.485***	8.27	5.405***	16.66	5.406***	16.89	5.410***	16.78
<i>TAINTREP</i> \times <i>AUNAS</i>	+	0.001***	2.39					0.002**	1.93				
<i>TAINTREP</i> \times <i>TAXNAS</i>	?			0.001	1.19					0.000	0.03		
<i>TAINTREP</i> \times <i>OTHNAS</i>	+					0.001*	1.66					-0.000	-0.02
<i>TAINTREP</i> \times <i>AbnSGA</i>	+	0.008	1.03	0.007	0.98	0.007	0.99	0.046	1.07	0.044	1.03	0.046	1.06
<i>TAINTREP</i>	-	-0.005***	-3.03	-0.006**	-2.29	-0.003**	-2.24	-0.032***	-2.64	-0.014	-1.02	-0.014**	-2.06
<i>AUNAS</i>	?/(-)	0.000	0.34					-0.004**	-2.03				
<i>TAXNAS</i>	?/(-)			-0.000	-0.10					0.001	0.79		
<i>OTHNAS</i>	?/(-)					-0.000	-0.53					0.002	1.43
<i>AbnSGA</i>	?	-0.008	-0.97	-0.008	-0.94	-0.008	-0.99	-0.034	-0.76	-0.031	-0.70	-0.031	-0.70
Control variables		Yes		Yes		Yes		Yes		Yes		Yes	
Year fixed effects		Yes		Yes		Yes		Yes		Yes		Yes	
Firm fixed effects		Yes		Yes		Yes		Yes		Yes		Yes	
Std errors clustered at		Industry, Year		Industry, Year		Industry, Year		Industry, Year		Industry, Year		Industry, Year	
No. of Obs. [®]		6,499		6,499		6,499		6,499		6,499		6,499	
Adjusted R ² ; F-value		0.650; 12.30***		0.650; 12.18***		0.650; 16.38***		0.864; 12.73***		0.864; 13.79***		0.864; 13.09***	

This table presents regression results of moderation by audit-related, tax-related, and all other NAS of the association between tainted ESG reputation and long-term operating performance (Columns 1, 2, 3 respectively) and market valuation (Columns 4, 5, 6, respectively) when controlling for effect of other consultants hired and internal costs. The symbols *, **, *** denote significance at the 0.10, 0.05, and 0.01 levels, respectively. Significance is based on p-values that are one-tailed for variables with a predicted sign, and two-tailed otherwise. Standard errors are double clustered at the industry and year levels. [®] 66 singleton observations are dropped from the regression. See Appendix C for variable definitions.

Table 8: Tainted ESG reputation, NAS, and future tainted ESG reputation

	Column 1		Column 2		Column 3	
<i>Dependent variable:</i>	<i>AvRRI Dcrs</i>		<i>AvRRI Dcrs</i>		<i>AvRRI Dcrs</i>	
	Coeff.	t-stat	Coeff.	t-stat	Coeff.	t-stat
Intercept	0.914***	12.11	0.905***	12.68	0.906***	12.67
<i>TAINTREP</i> \times <i>AUNAS</i>	0.004***	3.81				
<i>TAINTREP</i> \times <i>TAXNAS</i>			0.001	0.69		
<i>TAINTREP</i> \times <i>OTHNAS</i>					0.003***	3.79
<i>TAINTREP</i>	-0.125***	-7.12	-0.090***	-7.69	-0.095***	-9.65
<i>AUNAS</i>	-0.001	-0.54				
<i>TAXNAS</i>			0.002**	1.83		
<i>OTHNAS</i>					-0.001	-0.64
Control variables	Yes		Yes		Yes	
Year fixed effects	Yes		Yes		Yes	
Firm fixed effects [±]	No		No		No	
Std errors clustered at	Industry, Year		Industry, Year		Industry, Year	
No. of Obs.	4,023		4,023		4,023	
Adjusted R2; F-value	0.276; 13.02***		0.274; 11.65***		0.275; 11.76***	

This table reports the regression results that shows how NAS purchased in periods of heightened ESG reputation is associated with decreases in three year-out (future) ESG reputation. *, **, *** denote significance at the 0.10, 0.05, and 0.01 levels, respectively. Significance is based on p-values that are one-tailed. Standard errors are double clustered at the industry and year levels. [±] Firm fixed effects excluded because the variables *LIT* and *ESG-IND* are industry-specific and collinear with firm fixed effects. See Appendix C for variable definitions.

Table 9: Auditor ESG-industry specialization**Panel A:** Tainted ESG reputation and NAS: Auditor ESG-industry specialization

	Column 1 (<i>ESG_SPE_AUD</i> = 1)		Column 2 (<i>ESG_SPE_AUD</i> = 1)		Column 3 (<i>ESG_SPE_AUD</i> = 1) <i>D</i> = 1)		Column 4 (<i>ESG_SPE_AUD</i> = 0)		Column 5 (<i>ESG_SPE_AUD</i> = 0)		Column 6 (<i>ESG_SPE_AUD</i> = 0)	
<i>Dependent variable:</i>	<i>AUNAS</i>		<i>TAXNAS</i>		<i>OTHNAS</i>		<i>AUNAS</i>		<i>TAXNAS</i>		<i>OTHNAS</i>	
Variable	Coeff.	t-stat	Coeff.	t-stat	Coeff.	t-stat	Coeff.	t-stat	Coeff.	t-stat	Coeff.	t-stat
Intercept	3.412	0.25	10.278	0.86	-13.287	-0.96	-11.889***	-2.79	-5.049	-1.31	-3.573	-0.99
<i>TAINTREP</i>	0.301**	1.80	0.037	0.27	0.191*	1.50	0.020	0.46	-0.022	-0.63	0.060	1.24
Control variables	Yes		Yes		Yes		Yes		Yes		Yes	
Firm and Year fixed effects	Yes		Yes		Yes		Yes		Yes		Yes	
Std errors clustered at	Industry, Year		Industry, Year		Industry, Year		Industry, Year		Industry, Year		Industry, Year	
No. of Obs.®;	721		721		721		6,441		6,441		6,441	
Adjusted R ² ; F-value	0.659; 3.39***		0.739; 4.30***		0.608; 2.99***		0.625; 9.74***		0.707; 5.08***		0.553; 5.67***	

Panel B: Tainted ESG reputation, NAS and long-term firm performance: Effect of auditor ESG-industry specialization

	Column 1 (<i>ESG_SPE_AUD</i> = 1)		Column 2 (<i>ESG_SPE_AUD</i> = 1)		Column 3 (<i>ESG_SPE_AUD</i> = 1)		Column 4 (<i>ESG_SPE_AUD</i> = 0)		Column 5 (<i>ESG_SPE_AUD</i> = 0) <i>D</i> = 0)		Column 6 (<i>ESG_SPE_AUD</i> = 0)	
<i>Dependent variable:</i>	<i>3YRROA</i>		<i>3YRROA</i>		<i>3YRROA</i>		<i>3YRROA</i>		<i>3YRROA</i>		<i>3YRROA</i>	
Variable	Coeff.	t-stat	Coeff.	t-stat	Coeff.	t-stat	Coeff.	t-stat	Coeff.	t-stat	Coeff.	t-stat
Intercept	0.318*	1.98	0.266	1.55	0.315*	1.95	0.537***	10.40	0.537***	10.38	0.537***	10.32
<i>TAINTREP</i> × <i>AUNAS</i>	0.002**	1.93					0.000	1.17				
<i>TAINTREP</i> × <i>TAXNAS</i>			0.001	1.23					0.000	1.19		
<i>TAINTREP</i> × <i>OTHNAS</i>					0.000	0.17					0.000	1.03
<i>TAINTREP</i>	-0.018*	-1.56	-0.013**	-2.14	-0.002	-0.51	-0.007***	-2.83	-0.005**	-2.32	-0.004***	-2.69
<i>AUNAS</i>	0.002	1.52					-0.000	-0.11				
<i>TAXNAS</i>			-0.002**	-2.38					-0.000	-0.21		
<i>OTHNAS</i>					-0.000	-0.39					-0.000	-0.91
Other control variables	Yes		Yes		Yes		Yes		Yes		Yes	
Firm and Year fixed effects	Yes		Yes		Yes		Yes		Yes		Yes	
Std errors clustered at	Industry, Year		Industry, Year		Industry, Year		Industry, Year		Industry, Year		Industry, Year	
No. of Obs.®;	639		639		639		5,809		5,809		5,809	
Adjusted R ² ; F-value	0.752; 5.55***		0.749; 4.95***		0.747; 5.35***		0.693; 14.86***		0.693; 14.73***		0.692; 18.37***	

Panel C: Tainted EGG reputation, NAS and long-term firm valuation: Effect of auditor ESG-industry specialization

	Column 1 (<i>ESG_SPE_AUD</i> = 1)		Column 2 (<i>ESG_SPE_AUD</i> = 1)		Column 3 (<i>ESG_SPE_AUD</i> = 1)		Column 4 (<i>ESG_SPE_AUD</i> = 0)		Column 5 (<i>ESG_SPE_AUD</i> = 0)		Column 6 (<i>ESG_SPE_AUD</i> = 0)	
<i>Dependent variable:</i>	<i>3YRTOBIN</i>		<i>3YRTOBIN</i>		<i>3YRTOBIN</i>		<i>3YRTOBIN</i>		<i>3YRTOBIN</i>		<i>3YRTOBIN</i>	
Variable	Coeff.	t-stat	Coeff.	t-stat	Coeff.	t-stat	Coeff.	t-stat	Coeff.	t-stat	Coeff.	t-stat
Intercept	4.183***	3.55	4.223***	3.60	4.315***	3.64	5.525***	17.39	5.531***	17.72	5.534***	17.67
<i>TAINTREP</i> × <i>AUNAS</i>	0.005**	1.83					0.001	1.26				
<i>TAINTREP</i> × <i>TAXNAS</i>			0.002	0.44					-0.000	-0.21		
<i>TAINTREP</i> × <i>OTHNAS</i>					-0.003	-1.08					0.000	0.53
<i>TAINTREP</i>	-0.062**	1.16	-0.035	-0.88	-0.006	-0.34	-0.024**	-1.94	-0.010	-0.77	-0.014**	-2.09
<i>AUNAS</i>	-0.004	-0.86					-0.003**	-1.74				
<i>TAXNAS</i>			0.002	0.37					0.001	0.82		
<i>OTHNAS</i>					-0.001	-0.15					0.003*	1.73
Other control variables	Yes		Yes		Yes		Yes		Yes		Yes	
Firm and Year fixed effects	Yes		Yes		Yes		Yes		Yes		Yes	
Std errors clustered at	Industry, Year		Industry, Year		Industry, Year		Industry, Year		Industry, Year		Industry, Year	
No. of Obs.®	639		639		639		5,809		5,809		5,809	
Adjusted R ² ; F-value	0.910; 21.76***		0.910; 27.84***		0.910; 20.74***		0.868; 13.94***		0.868; 14.31***		0.868; 14.40***	

This table presents subsample regression results of the role of auditor ESG industry specialization on the association between tainted ESG reputation and NAS purchases (Panel A), and the interaction of tainted ESG reputation and NAS on future firm performance (Panel B) and future firm valuation (Panel C). In each Panel, Column 1 (Column 2) presents results when the firm's auditor is an ESG industry specialist (non-specialist). The symbols *, **, *** denote significance at the 0.10, 0.05, and 0.01 levels, respectively. Significance is based on p-values that are one-tailed for variables with a predicted sign, and two-tailed otherwise. Standard errors are double clustered at the industry and year levels. ® Singleton observations are dropped from the regressions. See Appendix C for variable definitions.

Table 10: Institutional shareholders**Panel A:** Tainted ESG reputation and NAS: Institutional ownership firms

	Column 1 (INSTMAJ = 1)		Column 1 (INSTMAJ = 1)		Column 1 (INSTMAJ = 1)		Column 2 (INSTMAJ = 0)		Column 2 (INSTMAJ = 0)		Column 2 (INSTMAJ = 0)	
<i>Dependent variable:</i>	<i>AUNAS</i>		<i>TAXNAS</i>		<i>OTHNAS</i>		<i>AUNAS</i>		<i>TAXNAS</i>		<i>OTHNAS</i>	
Variable	Coeff.	t-stat	Coeff.	t-stat	Coeff.	t-stat	Coeff.	t-stat	Coeff.	t-stat	Coeff.	t-stat
Intercept	-14.939***	-3.21	-9.683**	-2.32	-3.509	-0.86	-0.860	-0.07	13.162	1.63	2.954	0.37
<i>TAINTREP</i>	0.098**	2.34	-0.011	-0.35	0.120**	2.31	0.163	1.23	-0.145	-1.52	0.049	0.46
Control variables	Yes		Yes		Yes		Yes		Yes		Yes	
Firm and Year fixed effects	Yes		Yes		Yes		Yes		Yes		Yes	
Std errors clustered at	Industry, Year		Industry, Year		Industry, Year		Industry, Year		Industry, Year		Industry, Year	
No. of Obs.®	6,079		6,079		6,079		1,034		1,034		1,034	
Adjusted R ² ; F-value	0.621; 7.43***		0.697; 4.61***		0.562; 6.57***		0.635; 1.91**		0.747; 2.57***		0.598; 2.37**	

Panel B: Tainted ESG reputation, NAS and long-term firm performance: Institutional ownership firms

	Column 1 (INSTMAJ = 1)		Column 1 (INSTMAJ = 1)		Column 1 (INSTMAJ = 1)		Column 2 (INSTMAJ = 0)		Column 2 (INSTMAJ = 0)		Column 2 (INSTMAJ = 0)	
<i>Dependent variable:</i>	<i>3YRROA</i>		<i>3YRROA</i>		<i>3YRROA</i>		<i>3YRROA</i>		<i>3YRROA</i>		<i>3YRROA</i>	
Variable	Coeff.	t-stat	Coeff.	t-stat	Coeff.	t-stat	Coeff.	t-stat	Coeff.	t-stat	Coeff.	t-stat
Intercept	0.525***	9.00	0.524***	8.90	0.523***	8.82	0.528***	3.84	0.549***	4.08	0.538***	3.88
<i>TAINTREP</i> x <i>AUNAS</i>	0.001**	2.36					0.001*	1.47				
<i>TAINTREP</i> x <i>TAXNAS</i>			0.000*	1.52					-0.000	-0.72		
<i>TAINTREP</i> x <i>OTHNAS</i>					0.001**	1.90					0.000	1.08
<i>TAINTREP</i>	-0.006***	-2.44	-0.006**	-1.74	-0.003**	-1.76	-0.011*	-1.39	-0.002	-0.44	-0.007*	-1.35
<i>AUNAS</i>	0.000	0.15					0.000	0.30				
<i>TAXNAS</i>			-0.000	-0.53					-0.000	-0.39		
<i>OTHNAS</i>					-0.000	-0.05					-0.001	-1.18
Other control variables	Yes		Yes		Yes		Yes		Yes		Yes	
Firm and Year fixed effects	Yes		Yes		Yes		Yes		Yes		Yes	
Std errors clustered at	Industry, Year		Industry, Year		Industry, Year		Industry, Year		Industry, Year		Industry, Year	
No. of Obs.®	5,472		5,472		5,472		933		933		933	
Adjusted R ² ; F-value	0.639; 16.00***		0.639; 12.57***		0.639; 13.79***		0.770; 3.08***		0.769; 3.28***		0.770; 5.34***	

Panel C: Tainted EGG reputation, NAS and long-term firm valuation: Institutional ownership firms

	Column 1 (<i>INSTMAJ</i> = 1)		Column 1 (<i>INSTMAJ</i> = 1)		Column 1 (<i>INSTMAJ</i> = 1)		Column 2 (<i>INSTMAJ</i> = 0)		Column 2 (<i>INSTMAJ</i> = 0)		Column 2 (<i>INSTMAJ</i> = 0)	
<i>Dependent variable:</i>	<i>3YRTOBIN</i>		<i>3YRTOBIN</i>		<i>3YRTOBIN</i>		<i>3YRTOBIN</i>		<i>3YRTOBIN</i>		<i>3YRTOBIN</i>	
Variable	Coeff.	t-stat	Coeff.	t-stat	Coeff.	t-stat	Coeff.	t-stat	Coeff.	t-stat	Coeff.	t-stat
Intercept	5.294***	15.62	5.296***	15.64	5.300***	15.69	4.341***	6.61	4.526***	6.82	4.417***	6.52
<i>TAINTREP</i> × <i>AUNAS</i>	0.006***	2.49					0.001*	1.38				
<i>TAINTREP</i> × <i>TAXNAS</i>			0.000	0.04					-0.001	-0.28		
<i>TAINTREP</i> × <i>OTHNAS</i>					0.000	0.06					0.001	0.53
<i>TAINTREP</i>	-0.040**	-2.05	-0.013	-0.94	-0.013**	-1.92	-0.020*	-1.37	0.004	0.18	-0.005	-0.34
<i>AUNAS</i>	-0.007**	-1.90					-0.002*	-1.30				
<i>TAXNAS</i>			0.003	1.34					-0.008**	-1.90		
<i>OTHNAS</i>					0.002	1.68*					0.001	0.17
Other control variables	Yes		Yes		Yes		Yes		Yes		Yes	
Firm and Year fixed effects	Yes		Yes		Yes		Yes		Yes		Yes	
Std errors clustered at	Industry, Year		Industry, Year		Industry, Year		Industry, Year		Industry, Year		Industry, Year	
No. of Obs.®	5,472		5,472		5,472		933		933		933	
Adjusted R ² ; F-value	0.880; 10.74***		0.880; 12.92***		0.880; 12.35***		0.875; 4.16***		0.874; 2.70***		0.873; 2.71***	

This table presents subsample regression results of the role of institutional ownership on the association between tainted ESG reputation and NAS purchases (Panel A), and the interaction of tainted ESG reputation and NAS on future firm performance (Panel B) and future firm valuation (Panel C). In each Panel, Column 1 (Column 2) presents results when majority of the firm's stock is (is not) owned by institutions. The symbols *, **, *** denote significance at the 0.10, 0.05, and 0.01 levels, respectively. Significance is based on p-values that are one-tailed for variables with a predicted sign, and two-tailed otherwise. Standard errors are double clustered at the industry and year levels. ® singleton observations are dropped from the regressions. See Appendix C for variable definitions.