# Is Corporate Social Responsibility a Risky Business?

# Evidence from seasoned equity offerings

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## Abstract

We employ CSR incidents as proxies of CSR wrongdoings and examine their impact on seasoned equity offerings (SEOs). Unlike CSR scores, CSR incidents are not confounded by management's greenwashing their CSR activities. We show that CSR risk is negatively related to the likelihood of SEOs, highlighting the difficulty to access equity capital. While firms with past CSR incidents raise smaller offers (have larger SEO underpricing), the relations are moderated (exacerbated) by information asymmetry. Adverse implications from negative social incidents are lessened if issuers are located in countries with stronger social performance. Finally, both social and environmental incidents have transient effects on offer size but long-lasting on underpricing.

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## 1. Introduction

The emphasis on corporate social responsibility (CSR) is rapidly increasing over recent years.[1] By 2018, 12,757 enterprises and organizations from more than 60 countries have adopted the Global Reporting Initiative (GRI) and made commitments to disclose their social and sustainability issues on a continuous basis. According to the 2016 Ernst & Young (EY) industry report, more than 90% of buy-side institutional investors around the world strongly-agree or agree that CSR issues have real and quantifiable impacts over the long term. The OECD believes about $US100 trillion in climate compatible infrastructure investment will be needed between 2016 and 2030 to meet Paris climate change targets. While some studies have attempted to identify the link between CSR and firm valuation and show a modest positive relation, (see meta-analysis studies Margolis and Walsh (2003) and Orlitzky, Schmidt, and Rynes (2003)), many researchers argues that more robust evidence is needed to confirm this relation (see Griffin and Mahon, 1997; Margolis and Walsh, 2003).

We focus on seasoned equity offerings (SEOs) for two main reasons. SEOs are important corporate events that allow researchers to observe the pricing of CSR risk from the sales of new shares. To the extent that market participants price CSR risk, the offer size and offer price of new shares would be associated with the firm's CSR risk. Second, SEOs are exogenous events that reduce reverse causality biases that are typical in many prior studies examining the relation between firm performance and CSR. Prior studies have difficulties distinguishing between firms that perform well financially would invest more in their CSR initiatives or firms with stronger CSR initiatives have higher firm value.

While Dutordoir et al. (2018) find that investors react more favourably to the announcements of SEOs by high-CSR firms, they find that these firms actually do not invest their SEO proceeds but retain them despite no urgent cash needs. The authors argue that investors appear to mistakenly associate high CSR scores with more value-creating SEOs. It is also possible that the problem lies with the accuracy of CSR scores. While the external CSR scores are formed by experts, they are based on information disclosed by firms. Despite some improvement in transparency and standardization of CSR reporting, this domain is almost entirely voluntary and unregulated, leaving ample potential for firms to use CSR activities solely as a branding exercise – coined 'greenwashing' (Boiral, 2009; Castello and Lozano, 2011). Recent evidence of greenwashing is mounting, such as in the increased likelihood of Climate Challenge program participants engaging in symbolic rather than substantive actions (Delmas and Montes-Sancho, 2010); companies reporting reductions in greenhouse gas emissions despite increases over time (Kim and Lyon, 2011); and strategic CSR disclosures to mask environmental damages (Kotchen and Moon, 2012; Marquis et al., 2016). Examples of greenwashing such as these indicate

[1] We use CSR and ESG interchangeably throughout the paper.

many CSR scoring methodology do not accurately represent firms' CSR commitment and may be misleading to the public and investors.

We measure a firm's CSR performance by employing a novel environmental, social, and governance incidents data from Sustainalytics. The database covers over 7,000 companies across countries and is one of the widely-used sustainability database in the investment community. Sustainalytics collected through at least 35,000 different sources to capture news that may pose CSR risks. The CSR incidents are negative events that reflect the company's programs and policies have not been completely effective thereby increasing CSR risk ratings. An incident is then assessed by Sustainalytics experts on two criteria, stakeholder impact and reputation risk, which are scored on a scale of 1 to 10. CSR incidents are unexpected events, and thus unlike CSR scores used in past studies, are not confounded by the management's greenwashing incentives in their CSR activities. Using the CSR incident measures can reduce the potential biases of reverse causality and the confounding effects of 'greenwashing' that typically arise in studies of the relation between CSR performance and firm value.

Based on the premise that interest of stakeholders are better aligned in the high-CSR firms and CSR negative incidents reflects the ethics of the firm, market participants distrust SEOs of firms that have encountered CSR controversial events. Our main hypothesis is that CSR incidents raise firm risk and reputation costs leading to adverse effects on SEO terms. Using SEOs over the 2008-2017 period by companies span across 21 countries, we show a negative and significant relation between the likelihood of SEO issuance and CSR risks after controlling for the fixed effects of country and year characteristics. This result highlights the difficulty in accessing equity capital due to increased CSR risks. The second analysis shows that higher risk and impact in the CSR incidents that occur in the prior year lower demand for a firm's new equity, resulting in a smaller offer size. This relation is mainly driven by social and governance incidents. We test whether the negative implications of CSR incidents for offer size are due to increasing the uncertainty about a firm's financial condition for outside investors. In contrast to expectations, this relation is moderated by the level of information asymmetry, consistent with the finding in Lee and Masulis (2009) that overvalued issuers successfully pool with undervalued issuers, resulting in a larger capital raised. Our results show that CSR risks increase SEO underpricing, and the effects are exacerbated when information asymmetry level is higher, consistent with prior literature. We use a Heckman self-selection model to control for sample selection bias due to the availability of Sustainalytics ratings for only certain issuers. Our results are robust to adjustments for sample selection bias.

Our main contributions are as follows. First we add to the growing literature on the impact of CSR on firms' new debt and equity capital raising. There are several papers that examine CSR and cost of equity, such as Sharfman and Fernando (2008), Dhaliwal et al. (2011), and El Ghoul et al. (2011). As

these studies are not an event study but a panel study, potential reverse causality may bias the relation between CSR and firm value. The two closest studies to ours are Dutordoir et al. (2018) and Feng et al. (2018) that study the impact of CSR on cost of equity using a sample of U.S. seasoned equity offerings. While both studies use the CSR scores from the Kinder, Lydenberg, and Domini (KLD) database, Dutordoir et al. focus on the impact of CSR performance on SEO announcement market reactions and the use of offer proceeds while Feng et al. (2018) focus on the SEO announcement market reactions and underpricing. Neither of these studies investigate how negative CSR incidents could affect market participants' perception of firm's actual CSR performance, and hence the likelihood of SEO and the size of SEO offers. We find that firms that encounter CSR events attract more negative media and investor attention, discouraging market participation in SEOs and reducing potential capital raised.

Our second contribution is in using an international sample that provides us an ideal opportunity to test whether the main results are affected by country-level CSR performance. Single-country samples are employed in most extant work, making it hard to disentangle whether the differences in CSR performance and outcome are due to voluntary CSR incentives or merely country-specific regulatory scrutiny. We find that issuers with higher social risks bear less adverse implications in SEO flotation if they are located in countries with stronger social performance. Finally, we find that the adverse effects of CSR incidents on offer size are transitory but they are long-lasting on SEO underpricing.

The rest of this paper proceeds as follows. Section 2 describes our data and presents the SEO sample statistics. Section 3 presents the method and discusses the main empirical findings. Section 4 reports the results from additional tests examining whether information asymmetry and country-level CSR ratings moderate the baseline results. Section 5 concludes the paper.

## 2. Data and sample

### 2.1. CSR ratings and controversies data from Sustainalytics

We obtain CSR proxies from Sustainalytics. Founded in 1992, Sustainalytics is an independent firm that has been providing CSR research and consulting services to investors. The database covers over 7,000 companies across countries and is one of the widely-used sustainability database in the investment community. Sustainalytics provides an CSR risk rating for individual companies, scaled from 0-100 (100 being the most severe), reflecting companies' exposure to and management of material and manageable CSR risks. CSR risk ratings can be broken down into environmental, social, and governance risk ratings. Exposure assessment is driven by sub-industry and company-specific factors. In terms of measuring the performance of how well-managed are the CSR risks, some companies are exposed to unmanageable risk which is thus taken out of the estimation. For example, the risks related

to carbon emissions are difficult to fully eliminate. Sustainalytics also update their CSR risk ratings within 48 hours of receiving news that pose CSR risks. This is done through the controversy analysis by screening daily news using intelligent learning algorithms search through at least 35,000 different sources to capture news that may pose CSR risks, termed 'Incidents'. The incidents are negative events that reflect the company's programs and policies have not been completely effective thereby increasing CSR risk ratings. An incident is assessed by Sustainalytics experts on two criteria – stakeholder impact and reputation risk – scored on a scale of 1 to 10. Prior studies use CSR ratings provided by major data vendors such as Thomson Reuters' Asset4 or the Kinder, Lydenberg, and Domini (KLD) database (now MSCI ESG KLD STATS), which have potential endogeneity biases. Companies may artificially strengthen their corporate social responsibility (CSR) if they intend to raise external capital, resulting in reverse causality bias (see Cahan et al. (2015), Dutordoir et al. (2018)). CSR incidents are unexpected events, and thus unlike CSR ratings are not confounded by management's CSR activities or investment that may be deemed 'greenwashing'. Thus, the Sustainalytics incident dataset provides a novel CSR proxy that can potentially mitigate endogeneity concerns.

### 2.2. Seasoned equity offerings

We obtain seasoned equity offerings (SEOs) data from the Securities Data Company (SDC). Our sample includes all public SEOs from 2008 through 2017 across 21 countries. We start our sample in 2008 because of the availability of Sustainalytics coverage. We exclude SEOs in which the underlying securities are not common stock nor primary stock. SEOs where the offer price is less than $5 are excluded to eliminate extreme outliers, as Kim et al. (2013) and Feng et al. (2018). We also exclude SEOs issued by utilities and financial firms which are generally influenced by regulations (Asquith and Mullins (1986); Masulis and Korwar (1986)). We exclude foreign issues by comparing the country of domicile of the firm to the location of the exchange on which the shares are issued. Following the procedure in Hanselaar et al. (2018), we filter out SEOs that were not issued on a main market as these are subject to different set of listing rules that are enforced by exchanges rather than national regulators. We exclude non-main tranches, rights issues, private placements, unit offers, and unit investment trust offers. Our initial SEO sample yields 5397 observations. For our main analysis, we match all SEOs with the Sustainalytics database to obtain a final sample of 811 observations. We address the potential selection bias in Section 3.2. We obtain daily stock return data from Datastream and annual financial data from Worldscope.

Panel A of Table 1 shows the number of offers in our SEO sample increases over the recent years before declining in 2017. While the number of offers declined in 2017, some exceptionally large SEOs were issued in that year. Panel B of Table 1 shows the country composition of the sample which is

most heavily represented by United States (U.S.), Canada, France, and Germany. Among these four countries, the average SEO proceed is the largest in the U.S. followed by France and Germany. Canadian issuers raised relatively smaller proceed. Table 1 Panel C and Panel D report the number of CSR incidents and the descriptive statistics of CSR proxies in our SEO sample. In total, there were 160 SEO firms that experience at least one CSR incidents, in which 126 are social-related, 39 are environment-related, and 70 are governance-related.

The average and median environmental, social and governance incident risk and impact range between 2 to 4 (out of 10), which is deemed moderate by Sustainalytics. To put these scores into perspective, Sustainalytics analysts consider the average and median incidents to be recurring and pose outstanding risks to the company. Furthermore, the management system put in place to address these CSR risks and impacts are adequate. Nonetheless, some SEO firms in our sample face exceptionally high social, environmental, and governance incident risk and impact (ranging from 6.5 to 10), which are deemed irreversible while the management has failed or refused to address the issue.

<Insert Table 1 here>

## 3. Method and empirical results

### 3.1. CSR risks and SEO flotation costs

We investigate the impact of CSR risks on three aspects of raising equity capital. Section 3.1.1 begins with the likelihood of SEO issuance, follows by the offer size, the level of SEO underpricing and announcement abnormal returns in Sections 3.1.2., 3.1.3., and 3.1.4. respectively.

#### 3.1.1. Likelihood of SEO issuances

First, we test whether firms with higher CSR risks are more constrained in accessing external equity capital. Using a sample of 18,796 firm-year observations between 2008 through 2017 across 21 countries, we run the Logit regressions for the likelihood of SEO issuances using the following empirical model specification:

$$Dummy\ (SEO)_i = \alpha_1 + \alpha_2 ESG_i + \alpha_3 Social_i + \alpha_4 Environment_i + \alpha_5 Governance_i + \alpha_6 Dummy\_high\_ESG_i + \alpha_7 Dummy\_high\_social_i + \alpha_8 Dummy\_high\_environment_i + \alpha_9 Dummy\_high\_governance_i + \alpha_{10} ROA$$

$_i + \alpha_{11} Ln\ (TA)_i + \alpha_{12} CASH_i + \alpha_{13} Leverage_i + \alpha_{14} MB_i + \alpha_{15} Runup_i + \alpha_{16} Volatility_i + \alpha_{17} AssetGrowth_i + \varphi\ Country\ fixed\ effects + \gamma\ Industry\ fixed\ effects + \varepsilon_i,$

where the dependent variable is one if the firm has a SEO in year *t*, and zero otherwise. Our CSR proxies are the main independent variables of interest in this analysis. *ESG* for firm *i* is scaled from 0-100 (100 being the most severe), which reflects companies' exposure to and management of material and manageable social, environmental, and governance risks. Sustainalytics also provide ratings for three separate components of *ESG* such as social risk (*Social*), environmental risk (*Environment*), and governance risk rating (*Governance*). *Social*, *Environment*, and *Governance* are also scaled from 0-100 (100 being the most severe). We also capture CSR proxies with dummy variables - *Dummy_high_ESG*, *Dummy_high_social*, *Dummy_high_environment*, and *Dummy_high_governance* - that take the value of 1 if the firm's overall ESG and its components exceed the median, and zero otherwise. Using dummy variables as ESG proxies can potentially mitigate correlations with firm characteristics. The other independent variables are determinants of equity issuance decision following prior literature. All variable definitions are presented in the Appendix. The regressions include year and country fixed effects.

Table 2 shows the results of Logit regressions for the seasoned equity offering (SEO) choice. Eight regression specifications are reported. The first four specifications examine the effects of the continuous overall ESG risk proxy, and the individual ESG component (social, environmental, governance) risk proxies respectively while the last four specifications test the effects of the dummy variables of ESG risk proxy and individual ESG component risk proxies on the likelihood of SEO issuance. The main result of this analysis is that both *ESG* and *Dummy_high_ESG* are significantly negative at the 5 percent and 1 percent level respectively. This suggests that, *ceteris paribus*, higher *ESG* risk is associated with lower likelihood of SEO issuance. In terms of economic significance, the probability of an SEO is 21.5% lower for firms with higher than median *ESG* risk.

*Social* and *Dummy_high_social* have negative coefficient signs. While the variable *Social* is not statistically significant, *Dummy_high_social* is statistically significant at the 1 percent level. This indicates that the probability of an SEO is 30.1% lower for firms with higher than median social risk. *Environment* and *Governance* are also negative and statistically significant at the 1 percent level. *Dummy_high_environment* and *Dummy_high_governance* are negative and have statistical significance of 5 percent and 10 percent respectively. The probability of an SEO is 19.9% and 14.1% lower for firms with higher than median environmental and governance risks. This indicates that the negative effects of overall CSR risk on the likelihood of SEOs are driven by all the three components.

Table 2 also shows that the probability of an SEO increases significantly in the one-year return (Runup) in all specifications consistent with the firms timing the market to issue new equity when overvalued (Loughran and Ritter, 1995). While a positive relation between market-to-book (MB) and

the likelihood of SEO issuance is predicted under the market timing (overvaluation) hypothesis (Jenter, 2005; DeAngelo, DeAngelo, and Stulz, 2010), our results show that MB is not significant in all specifications. Leverage is significantly positive at the 1 percent level in all specifications, consistent with firms using equity financing when they become financially constrained at high leverage levels (e.g. Baker, Stein, and Wurgler, 2003). Asset growth loads significantly positively in all specifications, consistent with capital requirement to fund growth opportunities (Khan, Kogan, and Serafeim, 2012). Volatility is negatively related to the likelihood of SEO issuance with significant at 10 percent level. This indicates that firms are less likely to raise equity when the basis risk is high (Khan, Kogan, and Serafeim, 2012). The loadings of other variables are not significant. Overall, Table 2 supports our hypothesis that firms with higher CSR risk are less likely to raise external equity capital.

<Insert Table 2 here>

3.1.2. Offer proceeds

While most SEO studies treat offer proceeds as a control variable, Habib and Ljungvist (2001) and Lee and Masulis (2009) find that offer proceeds are actually affected by asymmetric information. If CSR incidents pose significant risks to investors, investment banks foresee less demand for these issues and thus are reticent to underwrite large offers, resulting in smaller offers. As such, we expect to find a negative relation between ESG risk proxies and SEO offer proceeds. We use the following OLS regression model to test this hypothesis.

$$Log\ (offer\ size)_i = \alpha_1 + \alpha_2\ Log(ESG)_i + \alpha_3\ Log(Social)_i + \alpha_4\ Log(Environment)_i + \alpha_5\ Log(Governance)_i + \alpha_6\ Log(ESG\ impact)_i + \alpha_7\ Log(ESG\ risk)_i + \alpha_8\ Log(Social\ impact)_i + \alpha_9\ Log(Social\ risk)_i + \alpha_{10}\ Log(Env\ impact)_i + \alpha_{11}\ Log(Env\ risk)_i + \alpha_{12} ROA_i + \alpha_{13}\ Ln\ (TA)_i + \alpha_{14}\ Leverage_i + \alpha_{15}\ CAPEX_i + \alpha_{16} Volatility_i + \alpha_{17}\ Turnover_i + \alpha_{18}\ Tobin's\ Q_i + \varphi\ country\ fixed\ effects + \gamma\ industry\ fixed\ effects + \varepsilon_i,$$

where the dependent variable, Log (offer size) is measured as the natural logarithm of offer size scaled by market capitalization for firm *i* in the fiscal year prior to the SEO announcement. The main ESG proxies, such as Log (ESG), Log (Social), Log (Environment), and Log (Governance), are as defined in the previous subsection. They are transformed into natural logarithms. We add additional ESG proxies that directly measure ESG incidents' impact and risk. For example, Log (ESG impact) and Log (ESG risk) measure the respective average impact and risk scores of ESG-related incidences that occurred in the year prior to the SEO announcement. Similarly, Log (Social impact), Log (Social risk), Log (Env impact), Log (Env risk), Log (Gov impact), and Log (Gov risk) are the average impact and risk scores of social, environmental, and governance-related incidences respectively. Table 3 reports

empirical results for twelve specifications that vary according to the different ESG proxies. The other independent variables are determinants of offer size following prior literature (see Lee and Masulis, 2009). All variable definitions are presented in the Appendix. The regressions include year and country fixed effects.

Our main results in Table 3 show that Log (ESG) is not related to offer size in specifications (1), and (5) to (12). Specification (2) shows that Log (Social) is positively related to offer size, in contrast to our expectation that social risk reduces the attractiveness of these issues. However, the coefficient of Log (Social) is marginally significant only at the 10 percent level. Log (Environment) and Log (Governance) in specifications (3) and (4) are not statistically significant. Due to reverse causality concerns in these ESG ratings (Cahan et al. (2015), Dutordoir et al. (2018)), the lack of significance in their relation with offer size is not surprising. In specifications (5) and (6) of Table 3 we find that Log (ESG impact) and Log (ESG risk) of unexpected and unfavourable ESG incidents are negatively and significantly related to offer size. This indicates that SEO firms that experience negative ESG incidents with higher impact and risk in the year prior to the SEO will find themselves less attractive to investors, and thus raise smaller offers. Breaking down ESG incidents into separate social, environmental, and governance incidents, we find that social and governance incidents' risk and impact are negatively related offer size, suggesting they are the main drivers of the negative relations in specifications (5) and (6). On the other hand, environmental-related incidents cannot explain the offer size.

In terms of control variables, we find that offer size is negatively related to firm size (Ln (TA)), growth proxy (Tobin's q), and capital expenditure scaled by total assets (CAPEX), consistent with Lee and Masulis (2009). Offer size is positively related to leverage consistent with financial constraints of highly levered companies. In contrast to Lee and Masulis (2009), we find a positive relation between offer size and volatility. The coefficients on *Turnover* and *ROA* are not significant. Overall, the results in Table 3 support the hypothesis that ESG risks result in a significant loss of capital to firms.

Lee and Masulis (2009) document that information asymmetry is an important channel of how accruals quality affects SEO offer size. While Lee and Masulis (2009) note the possibility that poor accruals quality exacerbate information asymmetry and increase higher underwriting fees, resulting in smaller offers, they find evidence consistent with the alternative hypothesis where poor accruals quality representing high information asymmetry allows overvalued issuers to issue larger SEO offers. We investigate the possibility that information asymmetry as a channel by which ESG risks affect offer size in Section 3.3.

<Insert Table 3 here>

### 3.1.3. Underpricing

Many SEO studies find that information asymmetry is positively related to underpricing. The value uncertainty hypothesis predicts that investors are compensated with a larger discount (i.e. lower offer price) as valuation of the firm becomes more difficult (Rock, 1985). Similarly, a larger discount is needed to attract capital if the firm is riskier (Altinkilic and Hansen, 2003). Investment banks may also influence the setting of a lower offer price to attract investments into these riskier offers. In this section, we investigate whether SEO underpricing is affected by ESG risks. Firms with higher ESG risks are less honest, less trustworthy, and less ethical (Feng et al., 2018). To the extent that ESG risks exacerbate information asymmetry, we expect to find a positive relation between SEO underpricing and ESG risks.

Following Feng et al. (2018), we measure underpricing as the closing market price on the offer day minus the offer price, divided by the offer price. The offer dates provided by SDC database may be inappropriate, because around 20% of the offers take place after the close of trading (Eckbo and Masulis, 1992). Following prior studies (see Safieddine and Wilhelm, 1996; Corwin, 2003; Kim and Park, 2005; Bowen et al., 2008; Feng et al., 2018), we compute the volume-corrected offer date for our SEO sample. If the trading volume on the day following the SDC offer date is more than twice the trading volume on the SDC offer date and more than twice the average daily volume of the prior 250 trading days, then the date following the SDC offer date is set as the offer date.

To explore the association between ESG risks and SEO underpricing, we employ the following OLS regression model:

$$Underpricing_i = \alpha_1 + \alpha_2 ESG_i + \alpha_3 Social_i + \alpha_4 Environment_i + \alpha_5 Governance_i + \alpha_6 ESG\ impact_i + \alpha_7 ESG\ risk_i + \alpha_8 Social\ impact_i + \alpha_9 Social\ risk_i + \alpha_{10} Env\ impact_i + \alpha_{11} Env\ risk_i + \alpha_{12} Gov\ impact_i + \alpha_{13} Gov\ risk_i + \alpha_{14} Ln\ (TA)_i + \alpha_{15} Rel\ offer_i + \alpha_{16} Volatility_i + \alpha_{17} Ln\ (Price)_i + \varphi\ country\ fixed\ effects + \gamma\ industry\ fixed\ effects + \varepsilon_i,$$

where the dependent variable is underpricing. The main ESG proxies are as defined in the previous section. The control variables are the determinants of SEO underpricing following prior literature. To control for price uncertainty and asymmetric information, we include *Volatility* which is calculated from daily stock returns over the over the 30 trading days ending 11 days before the SEO announcement. We include *PreCAR* to control for the stock price movement between the filing date and the day prior to the offer date (Feng et al., 2018). Following Corwin (2003) we include the pre-offer day price (Ln (Price)). *Rel offer* controls for the impact of the supply of new shares in the market. All variable definitions are presented in the Appendix. The regressions include year and country fixed effects.

The results in Table 4 show that ESG risk rating is not significantly related to underpricing. This result is somewhat consistent with the significance of the CSR rating variable in Feng et al. (2018)

which is only marginal at 10 percent level. Turning to individual ESG components, we also find that social and environmental risk ratings do not predict underpricing. While governance risk rating is positively related to underpricing, the significance is only at the 10 percent level.

On the other hand, Table 4 shows that the novel Sustainalytics' ESG incident risk and impact measures are positive and significant at the 5 percent level. This pattern appears to be driven by social risk and impact, which are positive and significant at the 1 percent level. The magnitude of their coefficients are the largest relative to the other ESG components. On the other hand, the coefficients for governance risk and impact are insignificant. The results indicate that the adverse implications of these negative ESG incidents that occurred in the year prior to the SEO announcements flow through to SEO underpricing.

<Insert Table 4 here>

### 3.1.4. Announcement returns

SEO studies commonly document negative abnormal returns around the announcements of SEOs. Jensen's (1986) agency costs of free cash flow theory is one explanation for this result, as SEO proceeds may lead to overinvestment problems. Consistent with the stakeholder value maximization view (Jensen, 2001; Jawahar and McLaughlin, 2001; Freeman et al., 2004), issuers with high ESG risks may reflect self-serving managers, and in turn suggest value-decreasing use of SEO proceeds. In contrast to the overinvestment argument, DeAngelo, DeAngelo, and Stulz (2010) find evidence that SEO proceeds are required to fulfil short-term cash need. It is possible that issuers with high ESG risks may have less overinvestment concerns as they have incentives to invest SEO proceeds in CSR activities.

Upon the occurrences of negative ESG incidents, the risks to the firm may be "unforeseen", "outstanding", and "questionable whether the management systems are able to mitigate the issue in a satisfactory manner" (as per Sustainalytics' description). Therefore, uncertainty arising from CSR incidents should also exacerbate asymmetric information about firm valuation. This is consistent with the adverse selection hypothesis in Myers and Majluf (1984) whereby the negative abnormal return is a result of SEO signaling firm overvaluation. We examine whether ESG risks can predict negative market reaction around SEO announcements using the following OLS regression model:

$$CAR[-1, +1]_i = \alpha_1 + \alpha_2 ESG_i + \alpha_3 Social_i + \alpha_4 Environment_i + \alpha_5 Governance_i + \alpha_6 Log\ (ESG\ impact)_i + \alpha_7 Log\ (ESG\ risk)_i + \alpha_8 Log(Social\ impact)_i + \alpha_9 Log(Social\ risk)_i + \alpha_{10} Log(Env\ impact)_i + \alpha_{11} Log(Env\ risk)_i + \alpha_{12} Gov\ impact_i + \alpha_{13} Gov\ risk_i + \alpha_{14} Ln\ (TA)_i + \alpha_{15} Offersize$$

$_i + \alpha_{16} Asset\ Tang._i + \alpha_{17} ROA_i + \alpha_{18} Runup_i + \alpha_{19} MB_i + \varphi\ country\ fixed\ effects + \gamma\ industry\ fixed\ effects + \varepsilon_i$,

where the dependent variable is the cumulative abnormal returns in the 3 days surrounding the SEO announcement (filing) date, CAR [-1, +1], computed using the market-adjusted model. The control variables are the determinants of SEO announcement abnormal returns following prior literature.

The main results in Table 5 show that *ESG* is negatively related to CAR [-1, +1] consistent with the stakeholder value maximization and asymmetric information arguments. In terms of economic significance, a one standard deviation increase in ESG decreases announcement abnormal returns by 4.04%. This relation is mainly driven by social risk and governance risk, and the economic impact of both risks on announcement abnormal returns are similar. On the other hand, environmental risk does not influence the market reaction for SEO announcements. However, ESG (and their subcomponents) incident risks and impacts do not affect the pricing around SEO announcements, suggesting that investors have compounded the negative information into the prices. Consistent with the overvaluation hypothesis, *MB* and *Runup* are negatively related to CAR [-1, +1]. The results find that the coefficients on blockholding ownership level, *BH_own*, are negative and significant at the 1 percent level in all specifications. This is consistent with the agency cost argument as past studies find that controlling blockholders are prone to overinvest and the firms are at risk of cash-flow tunnelling (Johnson et al., 2000; Marisetty, Marsden, and Veeraraghavan, 2008; Atanasov et al., 2010). The remaining control variables are not significant.

<Insert Table 5 here>

### 3.2. Addressing sample selection bias

A common concern in the corporate social responsibility (CSR) literature is the potential endogeneity and omitted variable bias that may confound the causal relation between CSR and the SEO characteristics. For example, the importance of CSR as a driver of SEO characteristics may be driven by omitted variables that are correlated with both CSR and SEO characteristics. Consequently, omission of these variables may bias the CSR coefficient. Additionally, a firm's SEO offer characteristics (offer size and offer price) may not be independent of its decision to engage in CSR activities, leading to reverse causality concerns. For instance, managers may increase CSR activities before issuing SEO to increase reputational value and attract investment.

Our main ESG measures are novel because ESG risk and impact scores are assessing environmental, social, and governance incidents directly, which reflect a firm's real ESG performance. Unlike KLD CSR scores that potentially be biased by firms that use CSR activities as branding exercise

– coined 'greenwashing' (Boiral 2009, Castello and Lozano 2011), ESG incidents are exogenous shocks to the firm. Therefore, we argue that reverse causality is not a concern when using ESG incidents as our main variable instead of ESG ratings.[2]

However Sustainalytics does not assess all the SEO firms in our initial sample, resulting in a non-random group of SEOs in our final sample that may pose self-selection concerns. Table 6 presents the descriptive statistics for the subsample of SEO that has Sustainalytics coverage (final SEO sample) and the subsample of SEOs that do not. The two subgroups have distinct firm and offer characteristics. SEOs that have Sustainalytics coverage tend to be raised by larger firms and of larger deals. To deal with potential omitted factors simultaneously affecting the availability of an ESG rating and SEO offer characteristics, we implement a two-step Heckman procedure (Heckman, 1979), as in Deng et al. (2013), Hoi et al. (2013), Dutordoir et al. (2017), and Grundy and Verwijmeren (2017). In the first stage, we estimate a probit model of the probability that a firm is covered by Sustainalytics, and in the second stage we estimate a model for the dependent variables used in Tables 3, 4, and 5. The estimation of the first stage of the model results in an inverse Mill's ratio (Lambda), which serves as control for sample selection bias in the second stage.

<Insert Table 6 here>

Our first-stage specification includes as explanatory variables the same set of firm characteristics that are used in the second-stage specification with the addition of an instrument for the probability of having ESG coverage. We use the industry-year-country norm of having ESG rating in Sustainalytics as an instrument, similar to Anderson, Duru, and Reeb (2012) and Grundy and Verwijmeren (2017). We calculate the industry-year norm of having an ESG rating in Sustainalytics as the log of one plus the percentage of firms in the industry-year-country that have ESG rating. This instrument satisfies the exclusion criteria as it is not directly linked to the SEO characteristics.

Table 7 presents the first-stage results of the Heckman procedure and second-stage results for offer size, underpricing, and CAR [-1, +1] as the dependent variables in Panel A, B, and C respectively. The second-stage regression models of Heckman procedure in Panel A of Table 7 provide the same sign and levels of significance for the main ESG proxies as the regression specifications for offer size in Table 3. We note that the *lambda* bears significant coefficient estimates suggesting a self-selection bias in having an ESG rating. Panel B of Table 7 also finds the same sign and levels of significance for the main ESG proxies as the regression specifications for SEO underpricing in Table 4. The *lambda*,

[2] The CSR literature often discuss two hypotheses that predict a reverse causality between CSR activity and firm performance, namely the good management hypothesis and the slack resource hypothesis (see Waddock and Graves, 1997).

however, are not significant, suggesting that self-selection bias is insignificant. The results in Panel C of Table 7 are consistent with the regression specifications for CAR [-1, +1] in Table 5. Overall, our results continue to hold in a two-step Heckman procedure that controls for self-selection bias.

<Insert Table 7 here>

## 4. Additional tests

### 4.1. Are the effects of ESG incidents on SEO issuances moderated or exacerbated by asymmetric information?

We aim to examine whether the effects of ESG incident impact and risk proxies on offer size and underpricing can be attributed to information asymmetry. In Table 8, we add interaction terms for ESG proxies and information asymmetry level to the same baseline regression models employed in Table 3 and Table 4. Following the definition of information asymmetry in previous studies (Bhagat et al., 1985; Jiang et al., 2009; Feng et al., 2018), we employ three proxies of information asymmetry, such as *Volatility, Idyrisk*, and *Turnover*. *Volatility* is calculated from the standard deviation of daily stock returns over the 30 trading days ending 11 days before the SEO announcement. *Idyrisk* as measured by the standard deviation of the residuals of the market model regression using daily returns over the 200 trading days ending 11 days before the SEO announcement. *Turnover* is computed as the ratio of the average daily share trading volume over the 90 trading days ending 11 days prior to the issue date divided by the total shares outstanding in the financial year prior to the SEO announcement (Lee and Masulis, 2009). To the extent that the relation between ESG proxies and offer size can be attributed to information asymmetry, we should find that the adverse effects of ESG incident risk and impact proxies on offer size are exacerbated in issuers with greater information asymmetry.

Panel A (i) of Table 8 shows that the coefficients on the interaction terms between Log (social impact) and *Idyrisk* in Column (2) to be positive and significant. Similarly, the interaction terms between Log (social risk) and *Idyrisk* is positive and statistically significant as shown in Column (5). Interactions of Log (social impact) and Log (social risk) with *Volatility* and *Turnover* shown in Column (1), (3), (4), and (6) do not yield significant relations. In contrast to expectations, the results indicate that the effects of social incidents on offer size are less adverse when asymmetric information is higher. This finding is however consistent with the findings in Lee and Masulis (2009) whereby high information asymmetry allows overvalued issuers to issue larger SEO offers. Panel A (ii) of Table 8 finds that the coefficients for interactions between Log (Env impact) and information asymmetry proxies are insignificant. Similar pattern is documented for Log (Env risk). Overall, the results show

that the negative impact of ESG incidents on offer size due to reputation cost, but this relation is moderated by information asymmetry.

In Panel B (i) while the interaction term between *Social impact* and *Volatility* in the regression model for underpricing is not significant, the interactions with *Idyrisk* and *Turnover* are positive and significant. The significance in the interaction terms between *Social risk* and information asymmetry proxies has a similar trend. For environmental risk and impact, their interactions with *Turnover* are positive and statistically significant, but not significant in their interactions with *Volatility* and *Idyrisk*. Overall, the results show that the positive relation between social and environmental incidents and underpricing can be attributed to information asymmetry.

<Insert Table 8 here>

4.2. Are the effects of ESG incidents on SEO issuances depending on country ESG ratings?

In Table 3, we show that ESG incidents that occur in the year prior to SEO issuances reduce offer size. In this section, we examine whether these relations are moderated by country ESG performance. Column (1) of Table 9 Panel A (i) shows that the interaction between social ESG incident impact and country social performance (Country_social) is negative and statistically significant at the 5 percent level. We also include the interaction terms between social ESG incident impact with dummy variable for firms in the top quartile (strongest) country-social rating (Dummy_high_csocial) and dummy variable for firms in the bottom quartile (weakest) country-social rating (Dummy_low_csocial) in column (2) and column (3) respectively. The coefficient on interaction term between social ESG incident impact and *Dummy_high_csocial* is positive and statistically significant at the 1 percent level. However the interaction term between social ESG incident impact and *Dummy_low_csocial* is not significant. Similar trend is observed for the effects of social ESG incident risk in columns (4) to (6). Overall our results indicate that the adverse effects of social ESG incident impact and risk on offer size are mitigated by higher country social performance. Table 9 Panel A (ii) shows that the interaction between environmental ESG incident impact and country environment performance (Country_env) is not statistically significant. Similar pattern is documented for environmental ESG incident risk.

Table 9 Panel B examine whether the relation between ESG incidents and underpricing is moderated by the country ESG performance. While Table 4 shows a positive relation between social ESG incident impact and underpricing, we find that the coefficient for the interaction between social ESG incident impact and *Dummy_high_csocial* in Table 9 Panel B (i) is negative and statistically significant at the 1 percent level. Similar result is documented for the coefficient on social ESG incident risk and *Dummy_high_csocial*. Table 10 Panel B (ii) also shows similar results for environmental

incident impact and risk. Overall, our results indicate that the adverse effects of social and environmental incident impact and risk on underpricing are mitigated by higher country social performance.

<Insert Table 9 here>

4.3. Are the effects of ESG incidents on SEO issuances transitory or permanent?

Table 10 presents the OLS regression estimates of ESG incidents from the past one, two, and three years prior to the SEO announcements on the log of SEO offer size and SEO underpricing in Panel A and Panel B respectively.[3] In Column (1), we test the effects of firm ESG incident's impact from two years prior to the SEO on offer size while Column (2) examines the effects of ESG incident's impact from three years prior to the SEO. In Column (3), we include all of ESG incidents' impact from the past one, two, and three years prior to the SEO announcements in the same specification to identify the dominant factor. Columns (4) – (6) examine the effects from ESG incident's risk in a similar manner. The same procedure but separated into social, environmental, and governance incidences are shown in subsection (i), (ii), and (iii) respectively. All variables are defined in Appendix. All regressions include the control variables in Table 3 and Table 4, as well as country and year fixed effects.

Panel A (i) of Table 10 shows that Log (social impact) and Log (social risk) in the two years and three years prior to the SEO are not significantly related to offer size. The coefficients for Log (social impact) and Log (social risk) in the year prior to the SEO when combined in the same specifications remain negative and significant at the 1 percent level. Our results indicate that the implications of negative ESG incidents on offer size are transitory, rather than permanent. While the environmental incidents do not affect offer size as shown in the baseline regressions in Table 3, Table 10 Panel A (ii) shows that only Log (env impact) in the two years prior to the SEO is positively related to offer size. Consistent with Table 3, Log (env impact) in the year prior to the SEO is not significant.

Panel B (i) documents significant positive coefficients for social impact and risk in the two years and three years prior to the SEO (i.e., *Social impact* $_{-2}$, *Social impact* $_{-3}$, *Social risk* $_{-2}$, *Social risk* $_{-3}$) in the regression of underpricing. When social impact and risk in the year prior to the SEO are combined with those in two years and three years prior to the SEO, all variables remain significant at least at the 5 percent level. In terms of the environmental incidents, Panel B (ii) finds that the variables *Env impact* $_{-2}$ and *Env risk* $_{-2}$ are positively related to underpricing while *Env impact* $_{-3}$ and *Env risk* $_{-3}$ are negatively related to underpricing. However our evidence is in contrast to Table 4 as *Env impact* and *Env risk* in

[3] We do not focus on the effects of ESG incidents' risk and impact measures on announcement abnormal returns because there are no significant relations in the baseline regressions as shown in Table 5.

the year prior to the SEO are not significant anymore after including *Env impact* and *Env risk* from the two and three years prior to the SEO in the same specification (i.e., *Env impact* $_{-2}$, *Env impact* $_{-3}$, *Env risk* $_{-2}$, *Env risk* $_{-3}$).

<Insert Table 10 here>

## 5. Conclusion

This study examines whether firms' CSR wrongdoings are costly to equity issuers, providing another lens for the link between CSR and firm value. SEOs afford the opportunity to study market perceptions of firms' real CSR performance through their impact on SEO likelihood, offer size, underpricing, and announcement reactions. Unlike prior studies that use a comprehensive CSR ratings that are subject to potential greenwashing biases, we use a novel proxy of real CSR performance from the CSR incident dataset provided by Sustainalytics.

First we show a negative relation between CSR risk and the likelihood of SEOs, which reflects significant association between CSR risk and the difficulty in accessing equity capital. Next, we find that issuers that encounter past CSR incidents raise smaller SEO offer size. We further investigate the relative contribution of each CSR category (social, environmental, governance) to offer size, underpricing, and announcement reactions and whether the relationships are exacerbated or moderated by information asymmetry level. The negative relations between offer size with CSR risk and impact are driven by the social incidents. Upon adding the interactions between CSR risk and impact with information asymmetry, we find that the adverse effects on offer size are moderated by information asymmetry. This result is not surprising as Lee and Masulis (2009) document that overvalued issuers successfully pool with undervalued issuers when information asymmetry level is high, enabling overvalued issuers to raise large offer size.

Our results show that CSR incidents' risk and impact increase SEO underpricing, and the effects are exacerbated when information asymmetry level is higher, consistent with prior literature. The adverse effects are driven by social and environmental incidents. We use a Heckman self-selection model to confirm that our results are robust to adjustments for sample selection bias. In terms of the effects from the country-level CSR performance, we document that issuers in countries with stronger social performance have less adverse implications on offer size and underpricing despite higher social risk at the firm level. There is evidence that CSR incidents have long-lasting adverse impact on underpricing, but only transient effects on offer size. Taken together, our study contribute to the CSR and SEO literature by showing that CSR wrongdoings are costly in the context of corporate equity financing.

## Appendix

| Variable | Description | Source |
|---|---|---|
| **Dependent variables**: | | |
| Dummy_SEO | Dummy variable equals 1 if firm *i* issues a SEO in year *t*, 0 otherwise. | SDC |
| Log (Offer Size) | Natural logarithm of offer size scaled by market capitalization for firm *i* in the fiscal year prior to the SEO announcement. | SDC and Worldscope |
| Underpricing | The closing market price on the offer day minus the offer price, divided by the offer price for firm *i*. | SDC and Datastream |
| CAR [-1, +1] | Market-adjusted model cumulative abnormal returns from day -1 to +1 surrounding the SEO announcement date for firm *i*. | SDC and Datastream |
| **ESG proxies:** | | |
| ESG | Overall ESG risk ratings for firm *i* scaled from 0-100 (100 being the most severe), which reflect companies' exposure to and management of material and manageable social, environmental, and governance risks. | Sustainalytics |
| Social | Social risk ratings for firm *i* scaled from 0-100 (100 being the most severe), which reflect companies' exposure to and management of material and manageable social risks. | Sustainalytics |
| Environmental | Environmental risk ratings for firm *i* scaled from 0-100 (100 being the most severe), which reflect companies' exposure to and management of material and manageable environmental risks. | Sustainalytics |
| Governance | Governance risk ratings for firm *i* scaled from 0-100 (100 being the most severe), which reflect companies' exposure to and management of material and manageable governance risks. | Sustainalytics |
| ESG impact | The average impact of ESG-related incidences for firm *i* that occurred in the year prior to the SEO announcement. Sustainalytics analysts assess the stakeholder impact of each incident based on the severity of the impact, accountability of the company, and its exceptionality. | Sustainalytics |
| ESG risk | The average risk of ESG-related incidences for firm *i* that occurred in the year prior to the SEO announcement. Sustainalytics analysts assess the reputation risk of each incident based on its notoriety and exposure. | Sustainalytics |
| Social impact | The average impact of social-related incidences for firm *i* that occurred in the year prior to the SEO announcement. | Sustainalytics |
| Social risk | The average risk of social-related incidences for firm *i* that occurred in the year prior to the SEO announcement. | Sustainalytics |
| Env impact | The average impact of environment-related incidences for firm *i* that occurred in the year prior to the SEO announcement. | Sustainalytics |
| Env risk | The average risk of environment-related incidences for firm *i* that occurred in the year prior to the SEO announcement. | Sustainalytics |
| Gov impact | The average impact of governance-related incidences for firm *i* that occurred in the year prior to the SEO announcement. | Sustainalytics |
| Gov risk | The average risk of governance-related incidences for firm *i* that occurred in the year prior to the SEO announcement. | Sustainalytics |
| Dummy_high_ESG | One if the firm has greater than median ESG risk rating and zero otherwise. | Sustainalytics |
| Dummy_high_social | One if the firm has greater than median social risk rating and zero otherwise. | Sustainalytics |
| Dummy_high_env | One if the firm has greater than median environmental risk rating and zero otherwise. | Sustainalytics |
| Dummy_high_gov | One if the firm has greater than median governance risk rating and zero otherwise. | Sustainalytics |
| IV - ESG rated | The norm of having an ESG rating within the same industry, year, and country. | Sustainalytics |
| Country social | The commitment and performance in social protection and solidarity of the country where firm *i* is located on a scale of 0 (weakest) to 100 (strongest). | Vigeo |
| Country env | The commitment and performance in environment protection of the country where firm *i* is located on a scale of 0 (weakest) to 100 (strongest). | Vigeo |
| Country gov | The commitment and performance in rule of law and governance of the country where firm *i* is located on a scale of 0 (weakest) to 100 (strongest). | Vigeo |

| | | |
|---|---|---|
| Dummy_high_csocial | One if the firm is in the top quartile (strongest) country-social rating and zero otherwise. | Vigeo |
| Dummy_low_csocial | One if the firm is in the bottom quartile (weakest) country-social rating and zero otherwise. | Vigeo |
| Dummy_high_cenv | One if the firm is in the top quartile (strongest) country-environment rating and zero otherwise. | Vigeo |
| Dummy_low_cenv | One if the firm is in the bottom quartile (weakest) country-environment rating and zero otherwise. | Vigeo |
| Dummy_high_cgov | One if the firm is in the top quartile (strongest) country-governance rating and zero otherwise. | Vigeo |
| **Control variables:** | | |
| ROA | EBITDA/Total Assets for firm *i*. | Worldscope |
| Ln (TA) | Natural logarithm of total assets for firm *i*. | Worldscope |
| Leverage | Total liabilities divided by total assets for firm *i*. | Worldscope |
| CAPEX | Capital expenditures for firm *i*. | Worldscope |
| CASH | Cash divided by total assets for firm *i* | Worldscope |
| Asset Tang. | Property, plant and equipment divided by total assets for firm *i*. | Worldscope |
| Runup | Buy-hold abnormal return for firm *i* in the year leading up to the SEO announcement. | Datastream |
| PreCAR | The cumulative market-adjusted return between the filing date and the day prior to the offer date following Feng et al. (2018) | Datastream |
| BH_own | Blockholder ownership for firm *i* computed as 100% - NOSHFF where NOSHFF represents non-strategic ordinary investors. | Worldscope |
| Turnover | The ratio of the average daily share trading volume during the trading period (-90, -11) prior to the filing date divided by the pre-SEO total shares outstanding following Lee and Masulis (2009). | Datastream, Worldscope |
| Volatility | Stock return volatility for firm *i* calculated from daily stock returns over the over the 30 trading days ending 11 days before the SEO announcement. | Datastream |
| Tobin's Q | (Total asset minus book equity plus shares outstanding multiplied with the year-end closing stock price)/total asset for firm *i* following Lee and Masulis (2009). | Worldscope |
| Ln(Price) | Natural logarithm of the closing price on the day prior to the offer for firm *i*. | Datastream |
| MB | Market to book ratio for firm *i*. | Worldscope |
| Idyrisk | Standard deviation of the residuals of the market model regression using daily returns for firm *i* over the 200 trading days ending 11 days before the SEO announcement. | Datastream |
| Rel offer | Ratio of offering proceeds to total asset. | SDC |

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## Tables

**Table 1**

SEO frequency, SEO proceeds, ESG incident frequency and characteristics

This table reports the breakdown across the sample period between 2008 through to 2017 for the SEO frequency, and their mean, 25th percentile, 50th percentile, 75th percentile, and total proceeds in Panel A. Similar statistics are reported across 21 countries in Panel B. Panel C shows the frequency of ESG incidents in the year prior to the SEO. Panel D presents the mean, median, minimum, and maximum of the ESG proxies. The variable definitions of the ESG proxies are presented in the Appendix. SEO proceeds are in million dollars.

Panel A: SEO frequency and proceeds across years

| Year | No. of SEO | Mean SEO proceeds | 25th | 50th | 75th | Total SEO proceeds |
|---|---|---|---|---|---|---|
| 2008 | 13 | 566.00 | 167.95 | 338.88 | 467.63 | 7358.02 |
| 2009 | 48 | 489.32 | 147.31 | 254.13 | 504.10 | 23487.55 |
| 2010 | 60 | 584.05 | 117.66 | 270.95 | 715.04 | 35043.14 |
| 2011 | 108 | 465.39 | 115.47 | 327.86 | 656.14 | 50262.62 |
| 2012 | 113 | 430.95 | 100.01 | 208.00 | 493.05 | 48697.58 |
| 2013 | 137 | 359.27 | 112.44 | 218.09 | 489.59 | 49219.91 |
| 2014 | 121 | 539.18 | 110.36 | 307.97 | 712.25 | 65241.01 |
| 2015 | 117 | 474.32 | 76.79 | 231.74 | 630.64 | 55495.34 |
| 2016 | 101 | 474.62 | 152.50 | 286.68 | 541.75 | 47937.00 |
| 2017 | 13 | 691.69 | 164.39 | 188.67 | 302.19 | 8991.98 |
| Total | 811 | 471.40 | 114.26 | 249.77 | 581.45 | 391734.10 |

Panel B: SEO frequency and proceeds across countries

| Country | No. of SEO | Mean SEO proceeds ($ mil) | 25th ($ mil) | 50th ($ mil) | 75th ($ mil) | Total SEO proceeds ($ mil) |
|---|---|---|---|---|---|---|
| Australia | 70 | 344.94 | 36.01 | 94.33 | 278.51 | 24145.69 |
| Brazil | 12 | 142.56 | 28.94 | 71.47 | 211.18 | 1710.76 |
| Canada | 116 | 322.08 | 105.66 | 186.50 | 370.63 | 37361.25 |
| China | 27 | 233.74 | 59.55 | 143.23 | 332.21 | 6311.10 |
| Denmark | 12 | 572.92 | 384.95 | 552.99 | 862.89 | 6875.08 |
| France | 85 | 549.34 | 214.85 | 431.03 | 695.66 | 46694.07 |
| Germany | 81 | 627.99 | 139.68 | 429.06 | 1005.94 | 50866.91 |
| Hong Kong | 46 | 451.52 | 84.31 | 158.64 | 529.96 | 20770.01 |
| India | 27 | 368.79 | 67.28 | 151.11 | 308.00 | 9957.40 |
| Italy | 16 | 319.48 | 215.41 | 243.02 | 403.51 | 5111.60 |
| Japan | 29 | 824.37 | 200.89 | 368.91 | 918.63 | 23906.78 |

| | | | | | | |
|---|---|---|---|---|---|---|
| Netherlands | 19 | 464.26 | 94.09 | 218.09 | 693.03 | 8821.03 |
| Norway | 20 | 220.44 | 43.39 | 93.23 | 258.40 | 4408.84 |
| Philippines | 12 | 145.04 | 81.25 | 150.39 | 190.17 | 1740.42 |
| South Africa | 18 | 313.63 | 158.19 | 217.41 | 420.96 | 5645.40 |
| Spain | 42 | 488.43 | 162.17 | 366.12 | 630.64 | 20514.23 |
| Sweden | 14 | 530.97 | 40.34 | 118.82 | 231.74 | 7433.63 |
| Switzerland | 16 | 337.79 | 75.93 | 227.17 | 351.64 | 5404.61 |
| Taiwan | 11 | 178.33 | 72.25 | 152.97 | 195.02 | 1961.60 |
| United Kingdom | 33 | 368.11 | 125.26 | 177.13 | 266.08 | 12147.48 |
| United States | 125 | 719.57 | 249.98 | 543.50 | 927.85 | 89946.26 |
| Total | 811 | 471.40 | 114.26 | 249.77 | 581.45 | 391,734.10 |

Panel C: Frequency of ESG incidents

| Category | No. |
|---|---|
| SEO firms with at least one ESG incident | 160 |
| SEO firms with at least one social incident | 126 |
| SEO firms with at least one environmental incident | 39 |
| SEO firms with at least one governance incident | 70 |

Panel D: ESG characteristics

| | Mean | Median | Std Dev | Min | Max |
|---|---|---|---|---|---|
| ESG | 56.81 | 55.00 | 10.10 | 36.00 | 90.00 |
| Social | 56.37 | 55.00 | 11.77 | 29.00 | 94.00 |
| Environment | 53.28 | 51.00 | 13.42 | 26.00 | 94.07 |
| Governance score | 62.66 | 62.00 | 9.96 | 35.00 | 92.66 |
| ESG incident risk | 3.26 | 3.00 | 1.13 | 1.00 | 7.00 |
| ESG incident impact | 2.43 | 2.25 | 1.23 | 0.33 | 7.00 |
| Social incident risk | 3.15 | 3.00 | 1.08 | 1.00 | 6.50 |
| Social incident impact | 2.34 | 2.00 | 1.12 | 0.33 | 6.00 |
| Environmental incident risk | 3.99 | 3.66 | 2.03 | 1.00 | 9.00 |
| Environmental incident impact | 3.47 | 3.00 | 2.37 | 1.00 | 10.00 |
| Governance incident risk | 3.54 | 3.38 | 1.21 | 1.00 | 7.00 |
| Governance incident impact | 2.36 | 2.22 | 1.18 | 1.00 | 6.60 |

**Table 2**

Access to SEO capital raising

This table reports coefficients from Logit regressions of the equity issuance choice on the independent variables shown. The dependent variable is one if the firm has a seasoned equity offering (SEO) in year *t*, and zero otherwise. *ESG* is the overall risk rating encompassing three elements – social, environmental, and governance performance. *Social* represents the social risk rating, *Environment* represents the environment risk rating, and *Governance* represents the governance risk rating. All of these ESG proxies are scaled from 0 – 100 (where 100 is the most severe). All variable definitions are presented in the Appendix. The sample consists of 18,976 firm-year observations that span across 21 countries between 2008 through 2017. ***, **, and * represent two-tailed statistical significance at less than the 1%, 5%, and 10% level, respectively.

| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
|---|---|---|---|---|---|---|---|---|
| ROA | -0.00873 | -0.00930 | -0.0146 | 0.00894 | -0.0137 | -0.0160 | -0.0163 | -0.00247 |
| | (0.167) | (0.163) | (0.165) | (0.173) | (0.162) | (0.152) | (0.160) | (0.168) |
| Ln (TA) | 0.0600* | 0.0445 | 0.0597* | 0.0416 | 0.0432 | 0.0450 | 0.0440 | 0.0316 |
| | (0.0326) | (0.0332) | (0.0320) | (0.0301) | (0.0315) | (0.0314) | (0.0317) | (0.0303) |
| CASH | -0.327 | -0.339 | -0.333 | -0.376 | -0.388 | -0.378 | -0.374 | -0.389 |
| | (0.480) | (0.483) | (0.479) | (0.486) | (0.485) | (0.483) | (0.482) | (0.486) |
| Leverage | 0.485*** | 0.489*** | 0.478*** | 0.502*** | 0.486*** | 0.486*** | 0.490*** | 0.497*** |
| | (0.0968) | (0.0962) | (0.0970) | (0.0965) | (0.0968) | (0.0959) | (0.0960) | (0.0962) |
| MB | -0.000378 | -0.000435 | -0.000356 | -0.000386 | -0.000381 | -0.000387 | -0.000463 | -0.000402 |
| | (0.000586) | (0.000587) | (0.000595) | (0.000583) | (0.000588) | (0.000565) | (0.000597) | (0.000589) |
| Runup | 2.089*** | 2.090*** | 2.092*** | 2.087*** | 2.089*** | 2.084*** | 2.089*** | 2.088*** |
| | (0.300) | (0.298) | (0.300) | (0.302) | (0.301) | (0.301) | (0.300) | (0.301) |
| Volatility | -9.080* | -8.978* | -8.841* | -9.423* | -9.067* | -9.265* | -9.007* | -9.017* |
| | (5.035) | (5.026) | (5.005) | (5.117) | (5.072) | (5.073) | (5.007) | (5.072) |
| Asset Growth | 0.793*** | 0.802*** | 0.771*** | 0.778*** | 0.773*** | 0.770*** | 0.774*** | 0.773*** |
| | (0.279) | (0.283) | (0.276) | (0.280) | (0.280) | (0.278) | (0.281) | (0.281) |
| ESG | -0.0131** | | | | | | | |
| | (0.00540) | | | | | | | |
| Social | | -0.00695 | | | | | | |
| | | (0.00478) | | | | | | |
| Environment | | | -0.0102*** | | | | | |
| | | | (0.00383) | | | | | |
| Governance | | | | -0.0104*** | | | | |
| | | | | (0.00395) | | | | |
| Dummy_high_ESG | | | | | -0.242*** | | | |
| | | | | | (0.0938) | | | |
| Dummy_high_social | | | | | | -0.358*** | | |
| | | | | | | (0.0912) | | |
| Dummy_high_environment | | | | | | | -0.222** | |
| | | | | | | | (0.0908) | |
| Dummy_high_governance | | | | | | | | -0.152* |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | | | | | (0.0818) |
| Constant | -5.396*** | -5.533*** | -5.599*** | -5.193*** | -5.771*** | -5.727*** | -5.784*** | -5.656*** |
| | (0.612) | (0.606) | (0.602) | (0.638) | (0.611) | (0.608) | (0.611) | (0.603) |
| Observations | 18,976 | 18,976 | 18,976 | 18,976 | 18,976 | 18,976 | 18,976 | 18,976 |
| Pseudo R-squared | 0.106 | 0.105 | 0.106 | 0.105 | 0.106 | 0.108 | 0.106 | 0.105 |

**Table 3**

OLS regression on log (offer size)

This table presents OLS regression estimates of ESG proxies on the log of SEO offer size. The sample consists of 811 SEOs over the 2008-2017 period by companies span across 21 countries. The dependent variable is the natural logarithm of proceeds divided by market capitalization for firm *i* on the fiscal year prior to the SEO filing date. All variables are defined in Appendix. All regressions include a constant, country, and year fixed effects. ∗∗∗, ∗∗, and ∗ represent two-tailed statistical significance at less than the 1%, 5%, and 10% level, respectively.

| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) | (11) | (12) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ROA | -0.177 | -0.238 | -0.156 | -0.171 | -0.118 | -0.105 | -0.0947 | -0.0853 | -0.176 | -0.176 | -0.171 | -0.176 |
| | (0.359) | (0.360) | (0.358) | (0.358) | (0.359) | (0.358) | (0.358) | (0.357) | (0.359) | (0.359) | (0.359) | (0.358) |
| Ln(TA) | -0.236*** | -0.254*** | -0.211*** | -0.241*** | -0.210*** | -0.205*** | -0.212*** | -0.209*** | -0.244*** | -0.244*** | -0.219*** | -0.215*** |
| | (0.0323) | (0.0316) | (0.0315) | (0.0299) | (0.0337) | (0.0337) | (0.0329) | (0.0329) | (0.0333) | (0.0333) | (0.0334) | (0.0334) |
| Leverage | 0.939*** | 0.951*** | 0.918*** | 0.942*** | 0.941*** | 0.937*** | 0.962*** | 0.960*** | 0.953*** | 0.955*** | 0.948*** | 0.950*** |
| | (0.189) | (0.189) | (0.189) | (0.189) | (0.189) | (0.188) | (0.188) | (0.188) | (0.190) | (0.190) | (0.189) | (0.189) |
| CAPEX | -1.404*** | -1.467*** | -1.464*** | -1.348*** | -1.421*** | -1.417*** | -1.447*** | -1.425*** | -1.410*** | -1.409*** | -1.452*** | -1.474*** |
| | (0.512) | (0.512) | (0.512) | (0.513) | (0.510) | (0.509) | (0.509) | (0.508) | (0.512) | (0.512) | (0.511) | (0.511) |
| Volatility | 12.39*** | 12.78*** | 12.30*** | 12.35*** | 12.77*** | 12.75*** | 12.54*** | 12.44*** | 12.13*** | 12.12*** | 13.15*** | 13.20*** |
| | (3.598) | (3.595) | (3.589) | (3.590) | (3.588) | (3.580) | (3.576) | (3.569) | (3.608) | (3.608) | (3.611) | (3.604) |
| Turnover | 3.318 | 3.124 | 3.737 | 3.210 | 3.180 | 3.117 | 3.264 | 3.243 | 3.293 | 3.317 | 3.241 | 3.231 |
| | (2.300) | (2.291) | (2.299) | (2.293) | (2.293) | (2.289) | (2.286) | (2.282) | (2.301) | (2.300) | (2.296) | (2.294) |
| Tobin's Q | -0.002*** | -0.002*** | -0.002*** | -0.002** | -0.002** | -0.002** | -0.002** | -0.002** | -0.002*** | -0.002*** | -0.002*** | -0.002*** |
| | (0.0008) | (0.0008) | (0.0008) | (0.0008) | (0.0008) | (0.0008) | (0.0008) | (0.0008) | (0.0008) | (0.0008) | (0.0008) | (0.0008) |
| Log (ESG) | 0.099 | | | | 0.128 | 0.144 | 0.135 | 0.136 | 0.108 | 0.104 | 0.106 | 0.113 |
| | (0.264) | | | | (0.263) | (0.263) | (0.263) | (0.262) | (0.264) | (0.264) | (0.264) | (0.263) |
| Log (Social) | | 0.006* | | | | | | | | | | |
| | | (0.003) | | | | | | | | | | |
| Log (Environment) | | | -0.005 | | | | | | | | | |
| | | | (0.003) | | | | | | | | | |
| Log (Governance) | | | | 0.005 | | | | | | | | |
| | | | | (0.004) | | | | | | | | |
| Log (ESG impact) | | | | | -0.196** | | | | | | | |
| | | | | | (0.077) | | | | | | | |
| Log (ESG risk) | | | | | | -0.202*** | | | | | | |
| | | | | | | (0.065) | | | | | | |
| Log (social impact) | | | | | | | -0.277*** | | | | | |
| | | | | | | | (0.084) | | | | | |

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Log (social risk) | | | | | | | | -0.260*** | | | | |
| | | | | | | | | (0.0710) | | | | |
| Log (env impact) | | | | | | | | | 0.112 | | | |
| | | | | | | | | | (0.114) | | | |
| Log (env risk) | | | | | | | | | | 0.106 | | |
| | | | | | | | | | | (0.105) | | |
| Log (gov impact) | | | | | | | | | | | -0.214** | |
| | | | | | | | | | | | (0.108) | |
| Log (gov risk) | | | | | | | | | | | | -0.204** |
| | | | | | | | | | | | | (0.0872) |
| Country FE | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Year FE | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Constant | 6.540*** | 6.894*** | 6.813*** | 6.679*** | 6.024*** | 5.884*** | 6.018*** | 5.964*** | 6.627*** | 6.649*** | 6.232*** | 6.152*** |
| | (0.978) | (0.531) | (0.531) | (0.546) | (0.996) | (0.996) | (0.985) | (0.983) | (0.982) | (0.984) | (0.989) | (0.989) |
| Observations | 811 | 811 | 811 | 811 | 811 | 811 | 811 | 811 | 811 | 811 | 811 | 811 |
| Adj R square | 0.227 | 0.230 | 0.229 | 0.228 | 0.232 | 0.235 | 0.236 | 0.239 | 0.227 | 0.227 | 0.230 | 0.231 |

**Table 4**

OLS regression on underpricing

This table reports the results from OLS regressions of the dependent variable SEO underpricing on ESG ratings, ESG incidents' risk and impact scores from 2008 through 2017. The dependent variable is SEO underpricing, which is calculated as the closing market price on the offer day minus the offer price, divided by the offer price for firm i. All other variables are defined in Appendix. ***, **, and * represent two-tailed statistical significance at less than the 1%, 5%, and 10% level, respectively.

| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) | (11) | (12) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ln(TA) | 0.00995 | 0.0179* | 0.00887 | 0.00571 | 0.00176 | 0.00266 | -0.000932 | 0.000608 | 0.00431 | 0.00344 | 0.00877 | 0.00735 |
| | (0.0112) | (0.0108) | (0.0108) | (0.0102) | (0.0116) | (0.0116) | (0.0112) | (0.0113) | (0.0114) | (0.0114) | (0.0116) | (0.0116) |
| Rel offer | -0.00756 | 8.64e-05 | 8.16e-05 | 7.41e-05 | -0.00542 | -0.00508 | -0.00234 | -0.00229 | -0.00832 | -0.00849 | -0.00736 | -0.00705 |
| | (0.0122) | (6.54e-05) | (6.55e-05) | (6.54e-05) | (0.0122) | (0.0122) | (0.0120) | (0.0121) | (0.0121) | (0.0121) | (0.0122) | (0.0122) |
| Volatility | 1.731 | 1.485 | 1.580 | 1.632 | 1.552 | 1.599 | 1.601 | 1.670 | 1.492 | 1.442 | 1.659 | 1.598 |
| | (1.258) | (1.258) | (1.258) | (1.256) | (1.256) | (1.256) | (1.240) | (1.246) | (1.259) | (1.258) | (1.272) | (1.268) |
| Ln(Price) | 0.0149 | 0.0214 | 0.0209 | 0.0228 | 0.0151 | 0.0149 | 0.0149 | 0.0150 | 0.0160 | 0.0156 | 0.0146 | 0.0143 |
| | (0.0169) | (0.0167) | (0.0167) | (0.0167) | (0.0168) | (0.0168) | (0.0166) | (0.0167) | (0.0169) | (0.0168) | (0.0169) | (0.0169) |
| PreCAR | 0.151 | 0.128 | 0.186 | 0.228 | 0.162 | 0.149 | 0.272 | 0.220 | 0.128 | 0.104 | 0.136 | 0.127 |
| | (0.558) | (0.557) | (0.557) | (0.556) | (0.556) | (0.556) | (0.550) | (0.553) | (0.556) | (0.556) | (0.559) | (0.559) |
| ESG | 0.000107 | | | | 6.97e-06 | -6.47e-05 | -0.000280 | -0.000189 | 0.000261 | 0.000184 | 0.000120 | 0.000119 |
| | (0.00161) | | | | (0.00160) | (0.00161) | (0.00159) | (0.00160) | (0.00161) | (0.00160) | (0.00161) | (0.00161) |
| Social | | -0.00196 | | | | | | | | | | |
| | | (0.00126) | | | | | | | | | | |
| Env | | | 0.000592 | | | | | | | | | |
| | | | (0.00119) | | | | | | | | | |
| Gov | | | | 0.00269* | | | | | | | | |
| | | | | (0.00145) | | | | | | | | |
| ESG impact | | | | | 0.0305** | | | | | | | |
| | | | | | (0.0120) | | | | | | | |
| ESG risk | | | | | | 0.0219** | | | | | | |
| | | | | | | (0.00973) | | | | | | |
| Social impact | | | | | | | 0.0670*** | | | | | |
| | | | | | | | (0.0136) | | | | | |
| Social risk | | | | | | | | 0.0434*** | | | | |
| | | | | | | | | (0.0107) | | | | |
| Env impact | | | | | | | | | 0.0311** | | | |
| | | | | | | | | | (0.0139) | | | |
| Env risk | | | | | | | | | | 0.0346*** | | |
| | | | | | | | | | | (0.0133) | | |
| Gov impact | | | | | | | | | | | 0.00717 | |
| | | | | | | | | | | | (0.0183) | |
| Gov risk | | | | | | | | | | | | 0.0108 |

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | (0.0129) |
| Country FE | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Year FE | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Constant | -0.201 | -0.290 | -0.278 | -0.361* | -0.0766 | -0.0888 | -0.0324 | -0.0614 | -0.117 | -0.0950 | -0.182 | -0.159 |
| | (0.200) | (0.187) | (0.187) | (0.191) | (0.206) | (0.206) | (0.200) | (0.201) | (0.203) | (0.204) | (0.206) | (0.207) |
| Observations | 797 | 797 | 797 | 797 | 797 | 797 | 797 | 797 | 797 | 797 | 797 | 797 |
| Adj R square | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |

**Table 5**

OLS regression on announcement CAR [-1, +1]

This table reports the results from OLS regressions of the dependent variable CAR [-1, +1] on ESG ratings, ESG incidents' risk and impact scores from 2008 through 2017. The dependent variable CAR [-1, +1] is the cumulative abnormal returns for the 3 days surrounding the SEO filing date estimated based on the market-adjusted model. All other variables are defined in Appendix. ∗∗∗, ∗∗, and ∗ represent two-tailed statistical significance at less than the 1%, 5%, and 10% level, respectively.

| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) | (11) | (12) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ROA | 0.0347** | 0.0368** | 0.0327* | 0.0328* | 0.0354** | 0.0353** | 0.0354** | 0.0352** | 0.0347** | 0.0347** | 0.0348** | 0.0349** |
| | (0.0150) | (0.0174) | (0.0173) | (0.0173) | (0.0150) | (0.0150) | (0.0150) | (0.0150) | (0.0150) | (0.0150) | (0.0149) | (0.0149) |
| Ln(TA) | 0.0031* | 0.0030* | 0.002 | 0.002 | 0.003** | 0.003** | 0.003** | 0.003* | 0.003** | 0.003* | 0.002* | 0.002 |
| | (0.00166) | (0.00162) | (0.00161) | (0.00152) | (0.00169) | (0.00170) | (0.00168) | (0.00168) | (0.00165) | (0.00165) | (0.00169) | (0.00170) |
| Asset Tang. | -0.0117 | -0.0107 | -0.0120 | -0.0119 | -0.0118 | -0.0118 | -0.0119* | -0.0119 | -0.0115 | -0.0116 | -0.0114 | -0.0113 |
| | (0.00722) | (0.00740) | (0.00741) | (0.00738) | (0.00720) | (0.00720) | (0.00722) | (0.00723) | (0.00725) | (0.00725) | (0.00723) | (0.00723) |
| Offer size | 3.15e-05 | 3.21e-05* | 3.10e-05 | 3.19e-05 | 3.09e-05 | 3.09e-05 | 3.05e-05 | 3.08e-05 | 3.17e-05 | 3.16e-05 | 3.18e-05 | 3.20e-05 |
| | (2.57e-05) | (1.94e-05) | (1.95e-05) | (1.94e-05) | (2.58e-05) | (2.58e-05) | (2.59e-05) | (2.59e-05) | (2.57e-05) | (2.57e-05) | (2.58e-05) | (2.58e-05) |
| Leverage | -0.00791 | -0.00754 | -0.00711 | -0.00730 | -0.00796 | -0.00799 | -0.00768 | -0.00779 | -0.00818 | -0.00804 | -0.00791 | -0.00794 |
| | (0.00960) | (0.00933) | (0.00936) | (0.00932) | (0.00961) | (0.00960) | (0.00967) | (0.00965) | (0.00952) | (0.00949) | (0.00959) | (0.00961) |
| Runup | -0.063*** | -0.063*** | -0.063*** | -0.063*** | -0.063*** | -0.063*** | -0.063*** | -0.063*** | -0.063*** | -0.063*** | -0.063*** | -0.063*** |
| | (0.0172) | (0.0135) | (0.0135) | (0.0134) | (0.0172) | (0.0172) | (0.0172) | (0.0172) | (0.0172) | (0.0172) | (0.0172) | (0.0173) |
| MB | -0.0007* | -0.0007* | -0.0007* | -0.0008* | -0.0007* | -0.0007* | -0.0007* | -0.0007* | -0.0007* | -0.0007* | -0.0007* | -0.0007* |
| | (0.0004) | (0.0004) | (0.0004) | (0.0004) | (0.0004) | (0.0004) | (0.0004) | (0.0004) | (0.0003) | (0.0003) | (0.0003) | (0.0003) |
| BH_own | -0.0002*** | -0.0002*** | -0.0002*** | -0.0002*** | -0.0002*** | -0.0002*** | -0.0002*** | -0.0002*** | -0.0002*** | -0.0002*** | -0.0002*** | -0.0002*** |
| | (7.36e-05) | (7.83e-05) | (7.87e-05) | (7.87e-05) | (7.36e-05) | (7.37e-05) | (7.37e-05) | (7.37e-05) | (7.38e-05) | (7.38e-05) | (7.48e-05) | (7.49e-05) |
| ESG | -0.0004* | | | | -0.0004* | -0.0004* | -0.0004* | -0.0004* | -0.0004* | -0.0004* | -0.0004* | -0.0004* |
| | (0.0002) | | | | (0.0002) | (0.0002) | (0.0002) | (0.0002) | (0.0002) | (0.0002) | (0.0002) | (0.0002) |
| Social | | -0.0003** | | | | | | | | | | |
| | | (0.0001) | | | | | | | | | | |
| Env | | | -0.000116 | | | | | | | | | |
| | | | (0.0001) | | | | | | | | | |
| Gov | | | | -0.0004** | | | | | | | | |
| | | | | (0.0001) | | | | | | | | |
| Log (ESG impact) | | | | | -0.002 | | | | | | | |
| | | | | | (0.003) | | | | | | | |
| Log (ESG risk) | | | | | | -0.002 | | | | | | |
| | | | | | | (0.003) | | | | | | |
| Log (social impact) | | | | | | | -0.002 | | | | | |
| | | | | | | | (0.004) | | | | | |
| Log (social risk) | | | | | | | | -0.001 | | | | |

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | (0.003) | | | | |
| Log (env impact) | | | | | | | | | -0.002 | | | |
| | | | | | | | | | (0.006) | | | |
| Log (env risk) | | | | | | | | | | -0.0008 | | |
| | | | | | | | | | | (0.006) | | |
| Log (gov impact) | | | | | | | | | | | 0.003 | |
| | | | | | | | | | | | (0.007) | |
| Log (gov risk) | | | | | | | | | | | | 0.003 |
| | | | | | | | | | | | | (0.005) |
| Country FE | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Year FE | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Constant | -0.0339 | -0.0384 | -0.0350 | -0.0208 | -0.0398 | -0.0387 | -0.0382 | -0.0368 | -0.0359 | -0.0349 | -0.0297 | -0.0294 |
| | (0.0287) | (0.0260) | (0.0260) | (0.0266) | (0.0294) | (0.0295) | (0.0291) | (0.0291) | (0.0290) | (0.0292) | (0.0294) | (0.0294) |
| Observations | 811 | 811 | 811 | 811 | 811 | 811 | 811 | 811 | 811 | 811 | 811 | 811 |
| Adjusted R2 | 0.0844 | 0.0847 | 0.0805 | 0.0855 | 0.0839 | 0.0837 | 0.0838 | 0.0835 | 0.0834 | 0.0833 | 0.0838 | 0.0839 |

**Table 6**

Seasoned equity offerings (SEO) issue and offer characteristics for SEO samples with and without ESG ratings

This table shows the differences in firm and offer characteristics between SEO samples with ESG ratings and without ESG ratings provided by Sustainalytics. The initial SEO sample consists of 5397 observations, whereby 831 observations have ESG ratings while 4566 observations do not have ESG ratings. All variables are defined in the Appendix. *p*-values for *t*-tests are reported in the last column.

| | Total (5397) | | SEO with ESG (811) | | SEO without ESG (4566) | | Difference | p-value |
|---|---|---|---|---|---|---|---|---|
| | Mean | Median | Mean | Median | Mean | Median | | |
| Marketcap ($USD) | 2.11 | 0.34 | 8.24 | 4.61 | 0.99 | 0.20 | 7.24 | *** |
| Marketcap | 11.30 | 1.42 | 32.50 | 7.94 | 7.45 | 1.01 | 25.05 | *** |
| ROA | 0.67 | 7.14 | 11.04 | 10.50 | -1.22 | 6.14 | 12.25 | *** |
| TA | 28.20 | 1.83 | 97.00 | 8.42 | 15.60 | 1.26 | 81.40 | *** |
| Net sales | 24.80 | 1.17 | 86.00 | 4.73 | 13.70 | 0.87 | 72.30 | *** |
| Operating income | 1.07 | 0.05 | 4.41 | 0.46 | 0.46 | 0.02 | 3.95 | *** |
| Leverage | 53.79 | 54.75 | 56.72 | 57.46 | 53.26 | 53.95 | 3.46 | *** |
| CAPEX | 6.02 | 3.11 | 6.94 | 4.10 | 5.85 | 2.85 | 1.09 | *** |
| Volatility | 2.79 | 2.36 | 1.94 | 1.68 | 2.96 | 2.53 | -1.03 | *** |
| Turnover | 0.95 | 0.29 | 0.70 | 0.28 | 1.00 | 0.29 | -0.30 | *** |
| Tobin's Q | 7.52 | 1.48 | 10.98 | 1.58 | 6.88 | 1.46 | 4.10 | * |
| Asset Tang. | 27.93 | 19.67 | 35.00 | 25.01 | 26.65 | 18.84 | 8.35 | *** |
| Runup | 7.92 | 3.36 | 3.38 | 2.22 | 9.11 | 3.84 | -5.73 | *** |
| MB | 3.59 | 2.05 | 3.16 | 2.28 | 3.67 | 2.00 | -0.51 | *** |
| BH_own | 35.83 | 34.00 | 34.55 | 32.00 | 36.10 | 35.00 | -1.55 | |
| Price | 104.24 | 25.89 | 115.19 | 33.00 | 102.07 | 24.43 | 13.12 | |
| Offer size | 217.57 | 116.69 | 84.94 | 59.27 | 241.63 | 130.11 | -156.69 | *** |
| Rel offer | 211.76 | 100.48 | 100.33 | 51.16 | 231.97 | 111.53 | -131.64 | *** |
| Underpricing | 115.66 | 1.88 | 381.43 | 1.24 | 62.54 | 2.10 | 318.89 | *** |

**Table 7**

Heckman Analysis

This table reports the regression results based on a Heckman (1979) selection model. Column (1) in Panel A shows the first stage of the Heckman model, using the Probit model of the probability that a firm is rated by Sustainalytics. Columns (2) – (9) in Panel A are the second stage where the dependent variable is the natural logarithm of proceeds divided by market capitalization for firm *i* on the fiscal year prior to the SEO announcement date, Log (Offer size). Similarly, Column (1) in Panel B shows the first stage of the Heckman model. Columns (2) – (9) in Panel B are the second stage where the dependent variable is SEO underpricing, which is calculated as the closing market price on the offer day minus the offer price, divided by the offer price for firm *i*. Similarly, Panel C shows the first and second stages of the Heckman model whereby the dependent variable in the second stage is the announcement CAR [-1, +1], which is the cumulative abnormal returns for the 3 days surrounding the SEO filing date estimated based on the market-adjusted model. All other variables are defined in Appendix. ***, **, and * represent two-tailed statistical significance at less than the 1%, 5%, and 10% level, respectively.

Panel A: Log (Offer size)

| | First-stage | Second-stage (1) | Second-stage (2) | Second-stage (3) | Second-stage (4) | Second-stage (5) | Second-stage (6) | Second-stage (7) | Second-stage (8) | Second-stage (9) |
|---|---|---|---|---|---|---|---|---|---|---|
| IV - ESG rated | 3.675*** | | | | | | | | | |
| | (0.210) | | | | | | | | | |
| ROA | 0.470 | -0.517 | -0.450 | -0.435 | -0.500 | -0.488 | -0.494 | -0.495 | -0.494 | -0.495 |
| | (0.294) | (0.364) | (0.363) | (0.363) | (0.363) | (0.362) | (0.362) | (0.362) | (0.362) | (0.361) |
| Ln(TA) | 0.523*** | -0.345*** | -0.317*** | -0.311*** | -0.340*** | -0.336*** | -0.328*** | -0.329*** | -0.331*** | -0.326*** |
| | (0.0262) | (0.0452) | (0.0464) | (0.0462) | (0.0454) | (0.0453) | (0.0457) | (0.0457) | (0.0447) | (0.0447) |
| Leverage | -0.927*** | 1.094*** | 1.091*** | 1.086*** | 1.128*** | 1.125*** | 1.087*** | 1.089*** | 1.100*** | 1.101*** |
| | (0.166) | (0.191) | (0.190) | (0.190) | (0.189) | (0.189) | (0.191) | (0.192) | (0.190) | (0.190) |
| CAPEX | 0.657* | -1.455*** | -1.470*** | -1.466*** | -1.567*** | -1.545*** | -1.516*** | -1.516*** | -1.440*** | -1.460*** |
| | (0.374) | (0.499) | (0.497) | (0.496) | (0.496) | (0.495) | (0.499) | (0.499) | (0.500) | (0.500) |
| Volatility | -4.623 | 13.22*** | 13.55*** | 13.54*** | 13.76*** | 13.65*** | 12.87*** | 12.86*** | 13.82*** | 13.87*** |
| | (2.862) | (3.521) | (3.509) | (3.502) | (3.496) | (3.489) | (3.521) | (3.521) | (3.523) | (3.516) |
| Turnover | 4.830*** | 2.164 | 2.074 | 2.019 | 1.932 | 1.920 | 2.541 | 2.563 | 2.033 | 2.031 |
| | (1.540) | (2.266) | (2.257) | (2.253) | (2.242) | (2.238) | (2.264) | (2.264) | (2.253) | (2.251) |
| Tobin's Q | 0.00216*** | -0.00249*** | -0.00234*** | -0.00233*** | -0.00236*** | -0.00236*** | -0.00260*** | -0.00260*** | -0.00241*** | -0.00240*** |
| | (0.000564) | (0.000856) | (0.000854) | (0.000852) | (0.000850) | (0.000848) | (0.000856) | (0.000856) | (0.000853) | (0.000852) |
| Log (ESG) | | 0.109 | 0.136 | 0.151 | 0.00683** | 0.00678** | -0.00459 | -0.00463 | 0.00560 | 0.00564 |
| | | (0.256) | (0.255) | (0.255) | (0.00341) | (0.00341) | (0.00328) | (0.00327) | (0.00397) | (0.00397) |
| Lambda | | -0.374*** | -0.361*** | -0.359*** | -0.375*** | -0.374*** | -0.373*** | -0.374*** | -0.362*** | -0.360*** |
| | | (0.110) | (0.109) | (0.109) | (0.108) | (0.108) | (0.109) | (0.109) | (0.109) | (0.109) |
| Log (ESG impact) | | | -0.184** | | | | | | | |
| | | | (0.0755) | | | | | | | |
| Log (ESG risk) | | | | -0.192*** | | | | | | |
| | | | | (0.0642) | | | | | | |
| Log (social impact) | | | | | -0.269*** | | | | | |
| | | | | | (0.0825) | | | | | |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Log (social risk) | | | | | | -0.252*** | | | | |
| | | | | | | (0.0690) | | | | |
| Log (env impact) | | | | | | | 0.106 | | | |
| | | | | | | | (0.112) | | | |
| Log (env risk) | | | | | | | | 0.103 | | |
| | | | | | | | | (0.103) | | |
| Log (gov impact) | | | | | | | | | -0.189* | |
| | | | | | | | | | (0.106) | |
| Log (gov risk) | | | | | | | | | | -0.185** |
| | | | | | | | | | | (0.0855) |
| Country FE | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Year FE | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Constant | -8.299*** | 8.523*** | 7.971*** | 7.820*** | 8.520*** | 8.460*** | 8.935*** | 8.948*** | 8.369*** | 8.369*** |
| | (0.450) | (1.118) | (1.136) | (1.136) | (0.795) | (0.794) | (0.801) | (0.801) | (0.816) | (0.816) |
| Observations | 4,756 | 4,756 | 4,756 | 4,756 | 4,756 | 4,756 | 4,756 | 4,756 | 4,756 | 4,756 |

Panel B: Underpricing

| | First-stage | Second-stage (1) | Second-stage (2) | Second-stage (3) | Second-stage (4) | Second-stage (5) | Second-stage (6) | Second-stage (7) | Second-stage (8) | Second-stage (9) |
|---|---|---|---|---|---|---|---|---|---|---|
| IV - ESG rated | 3.686*** | | | | | | | | | |
| | (0.210) | | | | | | | | | |
| Ln(TA) | 0.468*** | 0.0151 | 0.00568 | 0.00663 | 0.00908 | 0.0108 | 0.00601 | 0.00471 | 0.00853 | 0.00695 |
| | (0.0248) | (0.0149) | (0.0152) | (0.0152) | (0.0147) | (0.0148) | (0.0149) | (0.0149) | (0.0146) | (0.0146) |
| Rel offer | -7.53e-06 | 8.22e-05 | 8.57e-05 | 8.58e-05 | 9.17e-05 | 9.11e-05 | 8.48e-05 | 8.52e-05 | 7.69e-05 | 7.84e-05 |
| | (0.000136) | (6.42e-05) | (6.39e-05) | (6.40e-05) | (6.31e-05) | (6.34e-05) | (6.39e-05) | (6.39e-05) | (6.42e-05) | (6.42e-05) |
| Volatility | 0.678 | 1.610 | 1.435 | 1.482 | 1.402 | 1.465 | 1.333 | 1.281 | 1.559 | 1.500 |
| | (2.701) | (1.229) | (1.225) | (1.226) | (1.209) | (1.215) | (1.229) | (1.228) | (1.240) | (1.236) |
| Ln (Price) | 0.233*** | 0.0231 | 0.0224 | 0.0221 | 0.0221 | 0.0221 | 0.0244 | 0.0239 | 0.0248 | 0.0244 |
| | (0.0436) | (0.0172) | (0.0171) | (0.0171) | (0.0169) | (0.0170) | (0.0171) | (0.0171) | (0.0172) | (0.0172) |
| ESG | | 1.35e-05 | -9.12e-05 | -0.000163 | -0.00204* | -0.00202* | 0.000906 | 0.000901 | 0.00268* | 0.00268* |
| | | (0.00157) | (0.00156) | (0.00157) | (0.00121) | (0.00121) | (0.00117) | (0.00117) | (0.00142) | (0.00142) |
| Lambda | | 0.0155 | 0.0123 | 0.0128 | 0.0135 | 0.0135 | 0.0134 | 0.0125 | 0.0162 | 0.0157 |
| | | (0.0387) | (0.0386) | (0.0386) | (0.0381) | (0.0383) | (0.0386) | (0.0386) | (0.0387) | (0.0387) |
| ESG impact | | | 0.0311*** | | | | | | | |
| | | | (0.0117) | | | | | | | |
| ESG risk | | | | 0.0225** | | | | | | |
| | | | | (0.00947) | | | | | | |
| Social impact | | | | | 0.0671*** | | | | | |
| | | | | | (0.0132) | | | | | |
| Social risk | | | | | | 0.0437*** | | | | |
| | | | | | | (0.0103) | | | | |
| Env impact | | | | | | | 0.0322** | | | |
| | | | | | | | (0.0137) | | | |
| Env risk | | | | | | | | 0.0355*** | | |
| | | | | | | | | (0.0130) | | |
| Gov impact | | | | | | | | | 0.00915 | |
| | | | | | | | | | (0.0178) | |
| Gov risk | | | | | | | | | | 0.0121 |
| | | | | | | | | | | (0.0125) |
| Country FE | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Year FE | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Constant | -8.398*** | -0.346 | -0.189 | -0.201 | -0.144 | -0.171 | -0.244 | -0.219 | -0.402 | -0.375 |
| | (0.449) | (0.278) | (0.283) | (0.284) | (0.276) | (0.278) | (0.280) | (0.280) | (0.287) | (0.287) |
| Observations | 4,821 | 4,821 | 4,821 | 4,821 | 4,821 | 4,821 | 4,821 | 4,821 | 4,821 | 4,821 |

Panel C: Announcement CAR [-1, +1]

| | First-stage | Second-stage (1) | Second-stage (2) | Second-stage (3) | Second-stage (4) | Second-stage (5) | Second-stage (6) | Second-stage (7) | Second-stage (8) |
|---|---|---|---|---|---|---|---|---|---|
| IV - ESG rated | 3.529*** | | | | | | | | |
| | (0.236) | | | | | | | | |
| ROA | 0.445 | 0.0255 | 0.0255 | 0.0285 | 0.028 | 0.0230 | 0.0231 | 0.0230 | 0.0233 |
| | (0.286) | (0.0178) | (0.0178) | (0.0179) | (0.0179) | (0.0178) | (0.0178) | (0.0177) | (0.0178) |
| Ln(TA) | 0.518*** | -0.000167 | -0.000145 | -0.000106 | -0.000261 | -0.000994 | -0.00117 | -0.00156 | -0.00147 |
| | (0.0293) | (0.00236) | (0.00236) | (0.00230) | (0.00231) | (0.00229) | (0.00229) | (0.00225) | (0.00225) |
| Asset Tang. | 0.253* | -0.0137* | -0.0136* | -0.0126* | -0.0126* | -0.0135* | -0.0137* | -0.0136* | -0.0134* |
| | (0.140) | (0.00738) | (0.00738) | (0.00739) | (0.00739) | (0.00742) | (0.00742) | (0.00738) | (0.00739) |
| Offer size | -0.00104*** | 2.98e-05 | 3.00e-05 | 2.97e-05 | 3.01e-05 | 2.99e-05 | 2.98e-05 | 3.10e-05 | 3.12e-05 |
| | (0.000351) | (1.97e-05) | (1.97e-05) | (1.98e-05) | (1.98e-05) | (1.98e-05) | (1.98e-05) | (1.97e-05) | (1.97e-05) |
| Leverage | -0.787*** | -0.00475 | -0.00480 | -0.00427 | -0.00436 | -0.00468 | -0.00443 | -0.00393 | -0.00405 |
| | (0.179) | (0.00962) | (0.00963) | (0.00960) | (0.00961) | (0.00966) | (0.00968) | (0.00960) | (0.00960) |
| Runup | 0.0320 | -0.0613*** | -0.0612*** | -0.0608*** | -0.0608*** | -0.0618*** | -0.0617*** | -0.0613*** | -0.0615*** |
| | (0.231) | (0.0134) | (0.0134) | (0.0134) | (0.0134) | (0.0134) | (0.0134) | (0.0134) | (0.0134) |
| MB | 0.0255*** | -0.000954** | -0.000958** | -0.000906** | -0.000920** | -0.000970** | -0.000974** | -0.00104** | -0.00104** |
| | (0.00704) | (0.000439) | (0.000438) | (0.000439) | (0.000440) | (0.000438) | (0.000438) | (0.000437) | (0.000437) |
| BH_own | -0.00241 | -0.000246*** | -0.000245*** | -0.000231*** | -0.000232*** | -0.000244*** | -0.000241*** | -0.000247*** | -0.000248*** |
| | (0.00163) | (7.95e-05) | (7.95e-05) | (7.94e-05) | (7.94e-05) | (7.98e-05) | (7.98e-05) | (7.99e-05) | (8.00e-05) |
| Lambda | | -0.0119** | -0.0120** | -0.0118** | -0.0119** | -0.0120** | -0.0121** | -0.0135** | -0.0133** |
| | | (0.00589) | (0.00589) | (0.00587) | (0.00588) | (0.00589) | (0.00589) | (0.00587) | (0.00587) |
| ESG | | -0.000475** | -0.000476** | | | | | | |
| | | (0.000219) | (0.000219) | | | | | | |
| Social | | | | -0.000377** | -0.000377** | | | | |
| | | | | (0.000172) | (0.000172) | | | | |
| Env | | | | | | -0.000161 | -0.000151 | | |
| | | | | | | (0.000165) | (0.000164) | | |
| Gov | | | | | | | | -0.000449** | -0.000450** |
| | | | | | | | | (0.000198) | (0.000198) |
| ESG impact | | -0.00104 | | | | | | | |
| | | (0.00165) | | | | | | | |
| ESG risk | | | -0.000415 | | | | | | |
| | | | (0.00133) | | | | | | |
| Social impact | | | | -0.00147 | | | | | |
| | | | | (0.00188) | | | | | |
| Social risk | | | | | -0.000591 | | | | |
| | | | | | (0.00147) | | | | |
| Env impact | | | | | | -0.00186 | | | |
| | | | | | | (0.00191) | | | |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Env risk | | | | | | | -0.000993 | | |
| | | | | | | | (0.00182) | | |
| Gov impact | | | | | | | | 0.00258 | |
| | | | | | | | | (0.00246) | |
| Gov risk | | | | | | | | | 0.00151 |
| | | | | | | | | | (0.00174) |
| Country FE | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Year FE | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Constant | -8.384*** | 0.0303 | 0.0333 | 0.0249 | 0.0275 | 0.0297 | 0.0318 | 0.0571 | 0.0555 |
| | (0.474) | (0.0414) | (0.0415) | (0.0409) | (0.0409) | (0.0407) | (0.0408) | (0.0413) | (0.0413) |
| Observations | 3,296 | 3,296 | 3,296 | 3,296 | 3,296 | 3,296 | 3,296 | 3,296 | 3,296 |

**Table 8**

Information asymmetry

This table presents OLS regression estimates of ESG proxies and SEO firms' information asymmetry level on the log of SEO offer size and SEO underpricing. The sample consists of 811 SEOs over the 2008-2017 period by companies span across 21 countries. In Panel A, the dependent variable is the natural logarithm of proceeds divided by market capitalization for firm *i* on the fiscal year prior to the SEO filing date. In Panel B, the dependent variable is the SEO underpricing, which is calculated as the closing market price on the offer day minus the offer price, divided by the offer price for firm *i*. The main variables in both Panel A and Panel B are the interaction terms of ESG impact and ESG risk with three information asymmetry proxies, such as *Volatility*, *Idyrisk*, and *Turnover*. All variables are defined in Appendix. All regressions include control variables in Table 3 and Table 4, as well as country and year fixed effects. ***, **, and * represent two-tailed statistical significance at less than the 1%, 5%, and 10% level, respectively.

Panel A Regression results of offer size on ESG proxies and SEO firms' information asymmetry level

(i) Social incidents

| | (1) | (2) | (3) | (4) | (5) | (6) |
|---|---|---|---|---|---|---|
| Log (Social impact) x Volatility | 7.217 | | | | | |
| | (6.885) | | | | | |
| Log (Social impact) x Idyrisk | | 19.17** | | | | |
| | | (8.812) | | | | |
| Log (Social impact) x Turnover | | | -0.0438 | | | |
| | | | (0.0323) | | | |
| Log (Social risk) x Volatility | | | | 5.097 | | |
| | | | | (5.989) | | |
| Log (Social risk) x Idyrisk | | | | | 16.03** | |
| | | | | | (7.599) | |
| Log (Social risk) x Turnover | | | | | | -0.0299 |
| | | | | | | (0.0265) |
| Control variables | Included | Included | Included | Included | Included | Included |
| Constant | 6.105*** | 5.552*** | 6.865*** | 6.039*** | 5.538*** | 6.801*** |
| | (0.989) | (1.012) | (0.962) | (0.987) | (1.012) | (0.961) |
| Observations | 811 | 811 | 811 | 811 | 811 | 811 |
| Adjusted R squared | 0.236 | 0.250 | 0.238 | 0.239 | 0.252 | 0.239 |

(ii) Environmental incidents

| | (1) | (2) | (3) | (4) | (5) | (6) |
|---|---|---|---|---|---|---|
| Log (Env impact) x Volatility | 6.256 | | | | | |
| | (7.605) | | | | | |
| Log (Env impact)t x Idyrisk | | 13.77 | | | | |
| | | (10.29) | | | | |
| Log (Env impact) x Turnover | | | -0.0590 | | | |
| | | | (0.0715) | | | |
| Log (Env risk) x Volatility | | | | 5.245 | | |
| | | | | (6.558) | | |
| Log (Env risk) x Idyrisk | | | | | 11.84 | |
| | | | | | (9.553) | |
| Log (Env risk) x Turnover | | | | | | -0.0436 |
| | | | | | | (0.0621) |
| Control variables | Included | Included | Included | Included | Included | Included |
| Constant | 6.613*** | 5.890*** | 7.374*** | 6.631*** | 5.914*** | 7.406*** |
| | (0.983) | (1.003) | (0.955) | (0.985) | (1.005) | (0.956) |
| Observations | 811 | 811 | 811 | 811 | 811 | 811 |
| Adjusted R squared | 0.226 | 0.237 | 0.231 | 0.226 | 0.237 | 0.231 |

Panel B Regression results of underpricing on ESG proxies and SEO firms' information asymmetry level

(i) Social incidents

| | (1) | (2) | (3) | (4) | (5) | (6) |
|---|---|---|---|---|---|---|
| Social impact x Volatility | -1.464 | | | | | |
| | (1.108) | | | | | |
| Social impact x Idyrisk | | 2.582* | | | | |
| | | (1.492) | | | | |
| Social impact x Turnover | | | 0.0224*** | | | |
| | | | (0.00529) | | | |
| Social risk x Volatility | | | | -0.838 | | |
| | | | | (0.909) | | |
| Social risk x Idyrisk | | | | | 2.618** | |
| | | | | | (1.245) | |
| Social risk x Turnover | | | | | | 0.0126*** |
| | | | | | | (0.00392) |
| Control variables | Included | Included | Included | Included | Included | Included |
| Constant | -0.0639 | -0.0682 | -0.00596 | -0.0840 | -0.0873 | -0.0404 |
| | (0.201) | (0.214) | (0.199) | (0.202) | (0.214) | (0.201) |
| Observations | 797 | 797 | 797 | 797 | 797 | 797 |
| Adjusted R squared | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |

(ii) Environmental incidents

| | (1) | (2) | (3) | (4) | (5) | (6) |
|---|---|---|---|---|---|---|
| Environment impact x Volatility | -1.153 | | | | | |
| | (0.914) | | | | | |
| Environment impact x Idyrisk | | -0.0897 | | | | |
| | | (1.375) | | | | |
| Environment impact x Turnover | | | 0.0163* | | | |
| | | | (0.00964) | | | |
| Environment risk x Volatility | | | | -0.930 | | |
| | | | | (0.817) | | |
| Environment risk x Idyrisk | | | | | 0.330 | |
| | | | | | (1.267) | |
| Environment risk x Turnover | | | | | | 0.0168** |
| | | | | | | (0.00828) |
| Control variables | Included | Included | Included | Included | Included | Included |
| Constant | -0.125 | -0.182 | -0.128 | -0.104 | -0.159 | -0.105 |
| | (0.203) | (0.217) | (0.204) | (0.204) | (0.217) | (0.204) |
| Observations | 797 | 797 | 797 | 797 | 797 | 797 |
| Adjusted R squared | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |

**Table 9**

Country ESG index

This table presents OLS regression estimates of ESG proxies and media attention of ESG incidents on the log of SEO offer size and SEO underpricing. The sample consists of 735 SEOs over the 2008-2017 period by companies span across 21 countries. There are fewer SEO observations in this analysis due to missing country ESG data in the Vigeo dataset. In Panel A, the dependent variable is the natural logarithm of proceeds divided by market capitalization for firm *i* on the fiscal year prior to the SEO filing date. In Panel B, the dependent variable is the SEO underpricing, which is calculated as the closing market price on the offer day minus the offer price, divided by the offer price for firm *i*. The main variables in both Panel A and Panel B are the interaction terms of social, environmental, and governance impact and risk with the respective country social, environmental, and governance ratings for the year prior to the SEO announcement. All variables are defined in Appendix. All regressions include control variables in Table 3 and Table 4, as well as country and year fixed effects. ***, **, and * represent two-tailed statistical significance at less than the 1%, 5%, and 10% level, respectively.

Panel A Regression results of offer size on ESG proxies and Country ESG index

(i) Country social index

| | (1) | (2) | (3) | (4) | (5) | (6) |
|---|---|---|---|---|---|---|
| Log (social impact) x Country social | 0.0167** | | | | | |
| | (0.00715) | | | | | |
| Log (social impact) x Dummy_high_csocial | | 0.560*** | | | | |
| | | (0.164) | | | | |
| Log (social impact) x Dummy_low_csocial | | | 0.497 | | | |
| | | | (0.421) | | | |
| Log (social risk) x Country social | | | | 0.0142** | | |
| | | | | (0.00610) | | |
| Log (social risk) x Dummy_high_csocial | | | | | 0.421*** | |
| | | | | | (0.140) | |
| Log (social risk) x Dummy_low_csocial | | | | | | 0.399 |
| | | | | | | (0.365) |
| Control variables | Included | Included | Included | Included | Included | Included |
| Constant | 5.213*** | 5.834*** | 5.765*** | 5.201*** | 5.690*** | 5.710*** |
| | (1.301) | (1.020) | (1.007) | (1.298) | (1.019) | (1.005) |
| Observations | 735 | 735 | 735 | 735 | 735 | 735 |
| Adjusted R2 | 0.225 | 0.235 | 0.220 | 0.228 | 0.235 | 0.222 |

(ii) Country environment index

| | (1) | (2) | (3) | (4) | (5) | (6) |
|---|---|---|---|---|---|---|
| Log (Env impact) x Country env | 0.0115 | | | | | |
| | (0.0180) | | | | | |
| Log (Env impact) x Dummy_high_cenv | | -0.0795 | | | | |
| | | (0.261) | | | | |
| Log (Env impact) x Dummy_low_cenv | | | -0.299 | | | |
| | | | (0.770) | | | |
| Log (Env risk) x Country env | | | | 0.0106 | | |
| | | | | (0.0168) | | |
| Log (Env risk) x Dummy_high_cenv | | | | | -0.0779 | |
| | | | | | (0.238) | |
| Log (Env risk) x Dummy_low_cenv | | | | | | -0.292 |
| | | | | | | (0.769) |
| Control variables | Included | Included | Included | Included | Included | Included |
| Constant | 6.867*** | 6.597*** | 6.573*** | 6.905*** | 6.616*** | 6.598*** |
| | (1.137) | (1.000) | (0.998) | (1.140) | (1.001) | (1.000) |
| Observations | 735 | 735 | 735 | 735 | 735 | 735 |
| Adjusted R2 | 0.207 | 0.206 | 0.206 | 0.207 | 0.206 | 0.206 |

Panel B Regression results of underpricing on ESG proxies and Country ESG index

(i) Country social index

| | (1) | (2) | (3) | (4) | (5) | (6) |
|---|---|---|---|---|---|---|
| Log (social impact) x Country social | -0.00193 | | | | | |
| | (0.00268) | | | | | |
| Log (social impact) x Dummy_high_csocial | | -0.259*** | | | | |
| | | (0.0604) | | | | |
| Log (social impact) x Dummy_low_csocial | | | -0.0789 | | | |
| | | | (0.157) | | | |
| Log (social risk) x Country social | | | | -0.00144 | | |
| | | | | (0.00229) | | |
| Log (social risk) x Dummy_high_csocial | | | | | -0.199*** | |
| | | | | | (0.0518) | |
| Log (social risk) x Dummy_low_csocial | | | | | | -0.0550 |
| | | | | | | (0.137) |
| Control variables | Included | Included | Included | Included | Included | Included |
| Constant | 0.269 | 0.224 | -0.0262 | 0.248 | 0.229 | -0.0484 |
| | (0.376) | (0.209) | (0.199) | (0.377) | (0.210) | (0.199) |
| Observations | 727 | 727 | 727 | 727 | 727 | 727 |
| Adjusted R squared | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |

(ii) Country environment index

| | (1) | (2) | (3) | (4) | (5) | (6) |
|---|---|---|---|---|---|---|
| Log (env impact) x Country env | -0.0109 | | | | | |
| | (0.00667) | | | | | |
| Log (env impact) x Dummy_high_cenv | | -0.212** | | | | |
| | | (0.0966) | | | | |
| Log (env impact) x Dummy_low_cenv | | | -0.110 | | | |
| | | | (0.286) | | | |
| Log (env risk) x Country env | | | | -0.0118* | | |
| | | | | (0.00622) | | |
| Log (env risk) x Dummy_high_cenv | | | | | -0.214** | |
| | | | | | (0.0878) | |
| Log (env risk) x Dummy_low_cenv | | | | | | -0.102 |
| | | | | | | (0.285) |
| Control variables | Included | Included | Included | Included | Included | Included |
| Constant | -0.136 | -0.0333 | -0.0202 | -0.130 | -0.0228 | -0.0102 |
| | (0.315) | (0.199) | (0.200) | (0.315) | (0.199) | (0.200) |
| Observations | 727 | 727 | 727 | 727 | 727 | 727 |
| Adjusted R2 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |

**Table 10**

Are the effects of ESG incidents permanent or transitory?

This table presents OLS regression estimates of past ESG incidents on the log of SEO offer size and SEO underpricing. The sample consists of 811 SEOs over the 2008-2017 period by companies span across 21 countries. In Panel A, the dependent variable is the natural logarithm of proceeds divided by market capitalization for firm *i* on the fiscal year prior to the SEO filing date. In Panel B, the dependent variable is the SEO underpricing, which is calculated as the closing market price on the offer day minus the offer price, divided by the offer price for firm *i*. In Column (1) and Column (4), we include firm *i*'s ESG incident's impact and risk scores in the two years prior to the SEO. In Column (2) and Column (5), firm *i*'s ESG incident impact and risk scores in the three years prior to the SEO are included. In Column (3) and Column (6), firm *i*'s ESG incident impact and risk scores in the one year, two years, or three years prior to the SEOs are included. Social, environmental, and governance incidences are segregated into subsection (i), (ii), and (iii) respectively. All variables are defined in Appendix. All regressions include control variables in Table 3 and Table 4, as well as country and year fixed effects. ***, **, and * represent two-tailed statistical significance at less than the 1%, 5%, and 10% level, respectively.

Panel A Regression results of offer size on past years' ESG incidents

(i) Social incidents

| | (1) | (2) | (3) | (4) | (5) | (6) |
|---|---|---|---|---|---|---|
| Log (social impact) | | | -0.316*** | | | |
| | | | (0.0962) | | | |
| Log (social impact)$_{-2}$ | -0.108 | | -0.0280 | | | |
| | (0.0911) | | (0.107) | | | |
| Log (social impact)$_{-3}$ | | 0.0387 | 0.181 | | | |
| | | (0.103) | (0.115) | | | |
| Log (social risk) | | | | | | -0.282*** |
| | | | | | | (0.0812) |
| Log (social risk) $_{-2}$ | | | | -0.119 | | -0.0162 |
| | | | | (0.0790) | | (0.0929) |
| Log (social risk) $_{-3}$ | | | | | -0.0131 | 0.112 |
| | | | | | (0.0905) | (0.100) |
| Control variables | Included | Included | Included | Included | Included | Included |
| Constant | 6.329*** | 6.579*** | 6.074*** | 6.257*** | 6.523*** | 6.015*** |
| | (0.994) | (0.984) | (0.992) | (0.995) | (0.985) | (0.992) |
| Observations | 811 | 811 | 811 | 811 | 811 | 811 |
| Adj R square | 0.227 | 0.226 | 0.237 | 0.228 | 0.226 | 0.238 |

(ii) Environment incidents

| | (1) | (2) | (3) | (4) | (5) | (6) |
|---|---|---|---|---|---|---|
| Log (env impact) | | | -0.0576 | | | |
| | | | (0.152) | | | |
| Log (env impact) $_{-2}$ | 0.294* | | 0.312 | | | |
| | (0.152) | | (0.192) | | | |
| Log (env impact) $_{-3}$ | | 0.174 | 0.0929 | | | |
| | | (0.171) | (0.194) | | | |
| Log (env risk) | | | | | | -0.0582 |
| | | | | | | (0.130) |
| Log (env risk) $_{-2}$ | | | | 0.299** | | 0.315** |
| | | | | (0.129) | | (0.156) |
| Log (env risk) $_{-3}$ | | | | | 0.172 | 0.0849 |
| | | | | | (0.150) | (0.164) |
| Control variables | Included | Included | Included | Included | Included | Included |
| Constant | 6.595*** | 6.622*** | 6.597*** | 6.627*** | 6.637*** | 6.619*** |
| | (0.977) | (0.982) | (0.983) | (0.976) | (0.982) | (0.984) |
| Observations | 811 | 811 | 811 | 811 | 811 | 811 |
| Adj R square | 0.230 | 0.227 | 0.228 | 0.231 | 0.227 | 0.230 |

Panel B Regression results of underpricing on past years' ESG incidents

(i) Social incidents

| | (1) | (2) | (3) | (4) | (5) | (6) |
|---|---|---|---|---|---|---|
| Social impact | | | 0.0350** | | | |
| | | | (0.0151) | | | |
| Social impact $_{-2}$ | 0.0726*** | | 0.0342** | | | |
| | (0.0140) | | (0.0162) | | | |
| Social impact $_{-3}$ | | 0.0882*** | 0.0590*** | | | |
| | | (0.0153) | (0.0171) | | | |
| Social risk | | | | | | 0.0217* |
| | | | | | | (0.0121) |
| Social risk $_{-2}$ | | | | 0.0476*** | | 0.0180 |
| | | | | (0.0116) | | (0.0137) |
| Social risk $_{-3}$ | | | | | 0.0678*** | 0.0507*** |
| | | | | | (0.0129) | (0.0143) |
| Control variables | Included | Included | Included | Included | Included | Included |
| Constant | 0.0488 | -0.0200 | 0.125 | -0.0119 | -0.0302 | 0.0679 |
| | (0.203) | (0.199) | (0.201) | (0.203) | (0.199) | (0.202) |
| Observations | 797 | 797 | 797 | 797 | 797 | 797 |
| Adj R square | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |

(ii) Environment incidents

| | (1) | (2) | (3) | (4) | (5) | (6) |
|---|---|---|---|---|---|---|
| Env impact | | | 0.0121 | | | |
| | | | (0.0192) | | | |
| Env impact $_{-2}$ | 0.0829*** | | 0.0883*** | | | |
| | (0.0201) | | (0.0253) | | | |
| Env impact $_{-3}$ | | -0.0143 | -0.0530** | | | |
| | | (0.0213) | (0.0244) | | | |
| Env impact | | | | | | 0.0184 |
| | | | | | | (0.0159) |
| Env impact $_{-2}$ | | | | 0.0756*** | | 0.0786*** |
| | | | | (0.0168) | | (0.0197) |
| Env impact $_{-3}$ | | | | | -0.0134 | -0.0520** |
| | | | | | (0.0189) | (0.0206) |
| Control variables | Included | Included | Included | Included | Included | Included |
| Constant | -0.0442 | -0.221 | -0.0757 | -0.0230 | -0.222 | -0.0381 |
| | (0.202) | (0.202) | (0.203) | (0.202) | (0.202) | (0.203) |
| Observations | 797 | 797 | 797 | 797 | 797 | 797 |
| Adj R square | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |