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ESG Reputational Risk, Corporate Payouts and Firm Value

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This study explores the relationship between ESG reputational risk, corporate payouts and firm value. Using a sample of 2021 US-listed firms between 2007 and 2019, we provide robust evidence that ESG reputational risk relates to higher payouts, and that free cash flows amplify this relationship. Turning to payout composition, we document that ESG reputational risk associates with a payout mix comprising a higher analogy of share repurchases versus dividends; and that this relationship is more pronounced under financial constraints. Furthermore, we show that the market places a premium on payouts from high ESG reputational risk firms. Our findings are in line with the notion that ESG reputational risk represents agency problems and raises financial risk, inducing firms to disgorge cash via a more flexible payout regime. Results are robust to several estimation techniques that address endogeneity, self-selection and censored observations.

Introduction

Traditionally, corporations and the investor community focus on financial performance. However, in recent years, environmental, social and corporate governance (ESG) has gained prominence as a substantial number of corporate stakeholders aim for a positive impact on the world by supporting responsible and sustainable business practices (Asante-Appiah and Lambert, 2022; Dyck *et al.*, 2019; Ferrell, Liang and Renneboog, 2016; Hartzmark and Sussman, 2019; Starks, Venkat and Zhu, 2017). Consequently, a firm's ESG reputation relates to financial and operational performance as it influences key stakeholders, such as investors, financial analysts, personnel, customers and suppliers (Bergh *et al.*, 2010; Brammer et al., 2006; Capelle-Blancard and Petit, 2019; Dutordoir et al., 2018; Economidou *et al.*, 2023; Krueger, Sautner and Starks, 2020).

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ESG-relevant deeds and misdeeds form expectations regarding current and future firm behaviour. Accordingly, ESG reputational risk manifests through changes in stakeholders' perceptions about a firm in relation to their expectations and is likely to have adverse consequences across several firm dimensions. ESG reputational risk stems from the exposure of firms to environmental, social and governance issues. Indicatively, environmental issues (E) include high carbon emissions and overuse of resources; social issues (S) may arise from forced labour and poor employment conditions; while money laundering, tax evasion and corporate corruption characterize governance issues (G), (Economidou *et al.*, 2023).

Extant research relates ESG reputational risk to higher agency costs, the likelihood of stakeholder sanctions, and the cost of external financing (Agoraki *et al.*, 2022; Economidou *et al.*, 2023; Kolbel, Busch and Jancso, 2017), which may in turn influence payout policy (Arena and Julio, 2023; Bonaimé, Hankins and Harford, 2014; Easterbrook, 1984). However, the association between ESG reputational risk and payout policy remains unexplored, thus warranting relevant empirical research. Therefore, in this study, we examine whether ESG reputational risk matters in corporate payout policy. Our motive is the emphasis that is being placed on ESG reputational risk, the importance of the payout decision and the evolution of corporate payouts of US-listed firms in terms of magnitude and composition.

During the last two decades, corporate payouts in the United States have showcased a remarkable shift. Specifically, the composition of payouts changed favourably towards share repurchases, which now constitute the dominant distribution mechanism, surpassing dividends over the last decade (Floyd, Li and Skinner, 2015; Skinner, 2008). Moreover, total payouts increased significantly after the 2007–2009 crisis, totaling \$5.2 trillion, while reaching a maximum in 2018.[1] Regarding the motives behind this phenomenon, related research reveals that share repurchases are used to signal stock undervaluation, to help firms exploit stock undervaluation, to offset the dilutionary effect of stock options on key performance metrics (i.e. EPS) and to distribute free cash flows in a more tax-efficient and flexible way (Arena and Julio, 2023; Bliss, Cheng and Denis, 2015; Brav *et al.*, 2005; Iyer *et al.*, 2017; Jagannathan, Stephens and Weisbach, 2000; Kahle, 2002; Skinner, 2008). In this study, based on agency and financial risk considerations, we relate ESG reputational risk to the levels of payouts as well as the composition of the payout mix.

Agency theory suggests that managers, if left to their own devices, have the tendency to waste corporate resources to gain non-pecuniary benefits, thus damaging shareholder value (Dittmar and Mahrt-Smith, 2007; Economidou *et al.*, 2023; Jensen, 1986; Jensen and Meckling, 1976; Masulis and Reza, 2015). Low ESG reputational risk[2] mitigates shareholders' agency-related concerns as it signifies 'good governance' and relates to higher firm value, productivity and profitability (Apaydin *et al.*, 2021; Dyck *et al.*, 2019; Edmans, 2012; Ferrell, Liang and Renneboog, 2016; Liang, Sun and Teo, 2022). In contrast, high ESG reputational risk signifies ESG-related misconduct and is likely to be associated with managerial self-serving behaviour, harmful to various stakeholder groups. Corporate payouts via dividends and/or share repurchases restrain such behaviour by reducing assets under managerial control while increasing the likelihood of external financing and the subsequent strict market scrutiny and monitoring (Easterbrook, 1984; Jensen, 1986). Therefore, we hypothesize that increased ESG reputational risk is related to higher payouts. Moreover, we argue that ESG reputational risk can be linked to corporate payouts through its impact on financial risk.

Increased ESG reputational risk undermines trust between investors and managers, thereby increasing adverse selection costs, and consequently impedes access to external financing (Kim, Park and Wier, 2012; Lopatta, Buchholz and Kaspereit, 2016). In this direction, Kolbel, Busch and Jancso (2017) suggest that reputational risk is likely to lead to stakeholder sanctions, thus increasing financial risk. At this point, it is important to note that the composition of the payout mix has direct implications for firms' financial flexibility

[1]See the report by Deloitte at https://www2.deloitte.com/us/en/insights/economy/spotlight/economics-insights-analysis-03-2019.html.

[2]Gomes (2000) argues that a good managerial reputation in terms of not extracting private benefits can alleviate agency-related inefficiencies and have a positive impact on share price performance.

and can serve as a risk management device (Arena and Julio, 2023; Bonaimé, Hankins and Harford, 2014).

Flexibility is a key characteristic that differentiates dividends from share repurchases (Allen and Michaely, 2003; Arena and Julio, 2023; Bonaimé, Hankins and Harford, 2014; Brav *et al.*, 2005). In the corporate finance literature, dividends are often coined as ‘sticky’ due to the well-documented managerial hesitation to reduce dividends. On the other end of the flexibility spectrum, share repurchases are sporadic. Contrary to dividends, if a firm distributes capital via share repurchases in one year, but decides not to do so in the subsequent year, the discontinuity will not trigger an adverse market reaction. Moreover, share repurchase announcements are not legally binding. These diametrically opposed features carry both advantages and disadvantages. Dividends represent an ongoing commitment to pay out cash. To the extent that ESG reputational risk represents agency costs, the quasi-fixed cost nature of dividends renders this payout method more effective vis-à-vis repurchases. In contrast, the flexibility of share repurchases gives self-interested managers the opportunity to omit payouts and dissipate the reserved cash. Nevertheless, the flexibility of share repurchases can be a valuable tool in cases where external financing is problematic, as firms can curtail share repurchases to secure sufficient investment funds (Arena and Julio, 2023; Bliss, Cheng and Denis, 2015; Brav *et al.*, 2005). Therefore, to the extent that ESG reputational risk increases financing risk, we would expect that firms employ a payout mix that favours share repurchases over dividends. It appears that ESG reputational risk may influence both payout levels and the payout mix, thus warranting an empirical investigation.

Considering our research objective, the first part of our empirical analysis explores the effect of ESG reputational risk on payout levels and payout composition. We proxy ESG reputational risk with RepRisk’s RRI index and regress firm total payouts (dividends plus share repurchases) and payout mix (repurchases over total payouts) on tRRI and a vector of controls. After correcting for endogeneity and self-selection, we document that ESG reputational risk relates to higher payouts and a payout mix that favours share repurchases. To understand these relationships further, we re-estimate our baseline regressions including an interaction term between ESG reputational risk and indicator variables for positive free cash flows and high financing constraints. We document that the effect of ESG reputational risk on total payouts (the payout mix) is more pronounced in the presence of free cash flows (financial constraints). The second part of our analysis explores the association between ESG reputational risk and firm value through its impact on payouts. Accordingly, we employ the valuation regression (Fama and French, 1998; Pinkowitz, Stulz and Williamson, 2006) and find that shareholders value distributions from high ESG reputational risk firms comparatively more.

In summary, our findings show that ESG reputational risk influences both the levels and the mix of corporate payouts. Consistent with our hypotheses, results suggest that (i) ESG reputational risk reflects agency costs and, in line with agency theory, stimulates higher total payouts (dividends and share repurchases) and (ii) ESG reputational risk raises financial risk, and this elicits a more flexible payout mix. As a final point, we document that the market places a premium on payouts from higher ESG reputational risk firms, supporting agency considerations.

This study makes several contributions to the literature. First, our results establish a link between ESG reputational risk and financial decision-making. Specifically, our findings uncover the role of ESG reputational risk in shaping corporate payouts, advancing our understanding of payout policy. Second, our study showcases the multi-faceted role of payout policy in addressing market frictions. Namely, our findings exemplify the adoption of a more flexible payout regime as a risk management device (Arena and Julio, 2023; Bonaimé, Hankins and Harford, 2014). Moreover, this study supports that increased corporate distributions are used as an agency cost-mitigating tool (Easterbrook, 1984; Jensen, 1986). Third, our findings document the effect of ESG reputational risk on firm value through its impact on payouts. From a managerial perspective, this demonstrates that investors acknowledge ESG reputational risk in valuations of financial policies. Thus, managers should take heed of ESG reputational risk in their strategic decision-making.

Our study relates to the body of work that links ESG reputational risk to several firm characteristics and financial decisions such as corporate governance, firm value, profitability, agency issues and financial risk (Agoraki *et al.*, 2022;

Benabou and Tirole, 2010; Eccles, Ioannou and Serafeim, 2014; Economidou *et al.*, 2023; Edmans, 2012; Ferrell, Liang and Renneboog, 2016; Gounopoulos, Gustafson and Nguyen, 2023; Lins, Servaes and Tamayo, 2017). We extend this work by associating ESG reputational risk with payout policy, considering that payout policy may serve both as an agency cost mitigating tool and a risk management device (Arena and Julio, 2023; Bonaimé, Hankins and Harford, 2014; Easterbrook, 1984; Jensen, 1986; Oswald and Young, 2008).

Hypothesis development

We posit that ESG reputational risk relates to corporate payout levels. From the stakeholder's value maximization point of view, low ESG reputational risk is associated with reduced agency costs. This association is supported by the better alignment of interests between managers, shareholders and other stakeholders when governance is more efficient (Hart and Zingales, 2017). Firms with low ESG reputational risk are well governed, have increased value, enjoy social acceptance and generate profits (Agoraki *et al.*, 2022; Dyck *et al.*, 2019; Economidou *et al.*, 2023; Edmans, 2012; Ferrell, Liang and Renneboog, 2016), thereby alleviating investor agency-related concerns. Conversely, high ESG reputational risk is expected to have a diametrically opposed effect, as it may signify agency issues. Specifically, ESG reputational risk stems from a firm's exposure to ESG-related issues. The resulting damage to perceived reputation suggests agency problems, as such misconduct is likely to originate from managerial self-serving behaviour, harmful to stakeholders.

Jensen (1986) suggests that the existence of free cash flows elevates such concerns. In cases like this, dividends and share repurchases can be valuable tools for protecting shareholder wealth. Corporate distributions directly limit resources that can be wasted under managerial control, while making it likely that the firm will need to tap into the capital markets and thus be subject to strict market scrutiny (Easterbrook, 1984; Jensen, 1986). Thus, we expect that firms with higher ESG reputational risk will exhibit higher payouts vis-à-vis their low-risk counterparts, and this relationship will be more profound in the presence of free cash flows. Considering the discussion in this paragraph, we form the following set of hypotheses:

H1a: There is a positive relationship between ESG reputational risk and corporate payouts.

H1b: The positive relationship between ESG reputational risk and corporate payouts is amplified in the presence of free cash flows.

We also posit that ESG reputational risk relates to the composition of the payout mix. Low ESG reputational risk can facilitate external financing as it may nurture trust between investors and managers, consequently reducing adverse selection costs (Kim, Park and Wier, 2012; Lopatta, Buchholz and Kaspereit, 2016). On the contrary, high ESG reputational risk increases financial risk (Agoraki *et al.*, 2022; Fafaliou *et al.*, 2022). Specifically, ESG misdeeds are likely to induce stakeholder sanctions, thus increasing the risk of future cash shortfalls (Kolbel, Busch and Jancso, 2017). Firms often adjust their financial decisions to defend against such risk. For example, enterprises may also preserve high cash balances as a precautionary move against such risk (Almeida, Campello and Weisbach, 2004). Moreover, extant literature provides evidence that the composition of the payout mix can amplify or lessen financial risk.

In the United States, corporate distributions mainly take the form of cash dividends and open market share repurchases. A fundamental risk-related characteristic in which these two forms of payout differ is their financial flexibility (Allen and Michaely, 2003; Arena and Julio, 2023; Bonaimé, Hankins and Harford, 2014; Brav *et al.*, 2005). Managerial perceptions regarding the stability of dividends are well documented (Dhanani, 2005; Lintner, 1956). Dividends are rigid due to the great value that managers place on dividend stability and their reluctance for dividend omissions and reductions. Alternatively, the market does not react unfavourably to a reduction of share repurchases, nor are their announcements legally binding. The intermittent use of share repurchases underlines their inherent flexibility, which constitutes a valuable tool in the presence of financial risk. Specifically, managers can consider the financing needs and adjust share repurchase activity accordingly (Bliss, Cheng and Denis, 2015; Brav *et al.*, 2005). In this respect, Bonaimé, Hankins and Harford (2014) exemplify the use of share repurchases as a risk management device. Their findings show that a more flexible payout mix, one that favours share repurchases over dividends, substitutes for a firm's level of financial hedging and vice versa. Therefore, to the extent that ESG reputational risk raises the financial risk, we would expect that firms choose a payout mix that favours share repurchases over dividends. Thus, we form the following set of hypotheses:

H2a: There is a positive relationship between ESG reputational risk and the flexibility of the payout mix.

H2b: The positive relationship between ESG reputational risk and the flexibility of the payout mix is amplified in the presence of financial constraints.

Finally, we argue that ESG reputational risk influences firm value through its impact on payouts. Several studies show that the value of one dollar in liquid assets (i.e. cash) depends upon the likely use of that dollar (Dittmar and Mahrt-Smith, 2007; Fama and French, 1998; Faulkender and Wang, 2006; Guo, Yin and Zeng, 2022; Pinkowitz, Stulz and Williamson, 2006). For example, one dollar in cash may be valued less than a dollar if it is expected to be squandered in private benefits in poorly governed firms. Accordingly, Dittmar and Mahrt-Smith (2007) document that the value of \$1 ranges between \$0.42 and \$0.88 in poor governance firms and that the relevant value in the presence of good governance increases twofold. In a similar vein, Pinkowitz, Stulz and Williamson (2006) argue that dividends should be valued at a premium in cases where cash is expected to be wasted due to managerial self-serving behaviour. In this study, we posit that ESG reputational risk denotes agency issues and thus the market expects cash in high ESG reputational risk firms to be wasted in private benefits. Therefore, we hypothesize that total payouts, which reduce resources under managerial control, should be valued at a premium in high ESG reputational risk firms in comparison to low ESG reputational risk firms. Specifically:

H3: The market valuation of corporate payouts is higher (lower) in high (low) ESG reputational risk firms.

Data and empirical methodology

Sample construction and sources

We construct our sample of US listed firms using a range of sources. We retrieve firm-level financial data from the Compustat Fundamental Annual, Institutional Brokers' Estimate System (IBES) and Thomson/Refinitiv databases. ESG reputational risk data are obtained from the RepRisk Global Business Intelligence database for the period between January 2007 and December 2019. From the merged sample, we exclude financial firms and utility sectors (SIC codes 6000–6999 and 4900–4999, respectively). Also, we discard observations with missing values for our baseline models. Our final sample with available ESG reputational risk information is an unbalanced panel of 13,113 firm-year observations from 2021 US firms. To avoid selection and survivorship bias, we do not convert our final sample into a balanced panel. All variables are winsorized at the conventional 1st and 99th percentiles to reduce the potential impact of outliers.

ESG reputational risk measurement

We retrieve firm-level data on ESG reputational risk from the RepRisk Global Business Intelligence database, which is considered the biggest database monitoring firm-specific ESG issues that may impact on a firm's reputation. RepRisk follows an issue- and event-driven methodology by screening sources and stakeholders for ESG risk incidents, while excluding company self-disclosures. Specifically, the database follows an outside/inside approach[3] by using machine learning algorithms and daily screening of over 100,000 public sources, media outlets and stakeholders. RepRisk quantifies a company's actual ESG reputational risk by focusing on 28 ESG-related issues according to international standards. In addition, RepRisk covers 67 ESG-related 'Topic Tags', which are an extension of RepRisk's core research. The database quantifies firms' exposure to ESG issues and provides an index (*CurrentRRI*) that reflects the current level of a company's reputational exposure. Thus, RepRisk captures any company exposed to ESG risks, regardless of the

[3]Information is available on the RepRisk documentation and practices at https://www.reprisk.com/news-research/resources/methodology#a-what-is-the-reprisk-index-rri.

company's size, sector, country of headquarters or operations, or whether the company is listed or not listed. In addition, RepRisk provides a second index (*PeakRRI*)[4] that captures the highest level of a firm's ESG reputational risk over the last 2 years. Both indices range from 0 (lowest ESG reputational risk) to 100 (highest ESG reputational risk), considering exposure to ESG aspects.

It is important to note that the event-driven approach of RepRisk discussed in the previous paragraph renders our measurement of ESG reputational risk not susceptible to greenwashing practices. Consequently, this database has gained popularity in empirical research (e.g. see Asante-Appiah and Lambert, 2022; Economidou *et al.*, 2023; Fafaliou *et al.*, 2022; Li and Wu, 2020).

Methodology

Research design

In this section, we present our methodology for testing hypotheses H1a and H2a. Specifically, we regress total payouts and the composition of the payout mix, respectively, on ESG reputational risk and a vector of the control variables. Thus, we estimate the following models:

$$\begin{aligned} Payouts_{i,t} = {} & a_0 + a_1 CurrentRRI_{i,t} \\ & + a_2 Z_{i,t} + firm_i + year_t + u_{i,t} \quad (1) \end{aligned}$$

$$\begin{aligned} Rep\%_{i,t} = {} & b_0 + b_1 CurrentRRI_{i,t} \\ & + b_2 Z_{i,t} + firm_i + year_t + u'_{i,t} \quad (2) \end{aligned}$$

where *Payouts* is total payouts (dividends plus share repurchases) scaled by total assets, *Rep%* is the composition of the payout mix measured as share repurchases scaled by the sum of share repurchases plus dividends (Bonaimé, Hankins and Harford, 2014), *CurrentRRI* is the firm's ESG reputational risk and Z is a vector of control variables. We include the *firm* and *year* variables to control for time-invariant firm-specific heterogeneity and time-fixed effects, respectively, while u is the disturbance term. If hypotheses H1a and H2a are valid, then a_1 and b_1 should be positive and statistically significant. To test H1b, we re-estimate Equation (1) while including an interaction term between ESG reputational risk and an indicator variable for free cash flows (*DummyFCF*) that takes the value 1 (0) if the firm has positive (negative) free cash flows. Our first measure of free cash flow is calculated according to Richardson's (2006) accounting-based framework. Free cash flow is computed by subtracting from net operating cash flow the optimal level of investment needed to maintain assets in place,[5] plus new expected investment. New expected investment is estimated using the fitted values from a dynamic investment expectation model. In a similar vein, our second measure of free cash flow is calculated by subtracting from net operating cash flow the capital expenditures, dividends and changes in working capital (see Byoun and Xu, 2016). If H1b holds, then the interaction term between ESG reputational risk and free cash flow will be positive, suggesting that the presence of free cash flows amplifies the positive relationship between ESG reputational risk and total payouts. To test H2b, we follow a similar methodology and re-estimate Equation (2) while including an interaction term between ESG reputational risk and an indicator variable for high financial constraints that takes the value 1 (0) if the firm's financial constraints measurement is above (below) the sample's median. We use two common measures of financial constraint: the Kaplan and Zingales (1997) and Whited and Wu (2006) indices. If H2b holds, then the interaction term between ESG reputational risk and the high financial constraints dummy will be positive, suggesting that high financial constraints amplify the positive relationship between ESG reputational risk and the portion of share repurchases in the payout mix. As a measure for ESG reputational risk, we use RepRisk's *CurrentRRI* index to capture a company's current exposure to ESG-related issues. In addition, following the extant literature on payout determinants (Almeida, Fos and Kronlund, 2016; Arena and Julio, 2023; Bens *et al.*, 2003; Blouin, Raedy and Shackelford, 2011; Bonaimé, Hankins and Harford, 2014; Dittmar, 2000; Gaspar *et al.*, 2013; Herdhayinta, Lau and Shen, 2021; Jensen, 1986; Oswald and Young, 2008; Rozeff, 1982),

[4]We repeat our baseline estimations using this index as a robustness test. The results are available in the online Supporting Information.

[5]Investment needed to maintain assets in place is proxied by depreciation.

we include in our regression a rich set of control variables. In line with Jensen's (1986) free cash flow theory, we control for free cash flows (*FreeCashFlows*). We control for asymmetric information by including firm size (*FirmSize*) and analyst coverage (*AnalystCoverage*). Following Rozeff (1982), we include cash flow volatility (*CashFlowVol*) and Tobin's Q (*TobinsQ*) to capture firms' risk and growth opportunities, respectively. In addition, we control for financial leverage (*Leverage*) to control for alternative mechanisms to reduce agency issues. Finally, we include firms' age (*Age*) (Blouin, Raedy and Shackelford, 2011; Denis and Osobov, 2008) and institutional holdings (*InstitutionalHoldings*) to account for lifecycle theories and dividend clienteles, respectively.

Addressing endogeneity

Regarding our baseline models (Equations (1) and (2)), we consider three potential causes of endogeneity, specifically, reverse causality, omitted variables and measurement error. First, reverse causality may occur since low payout firms, ceteris paribus, have more capital available to fund socially responsible investment, thus reducing ESG reputational risk. Second, despite controlling for well-known determinants of payout policy in Equations (1) and (2), omitted variable bias may be present due to an uncontrolled confounding variable, that is, one correlated with both ESG reputational risk and the error term. Third, while ESG reputational risk is constructed by RepRisk using a sophisticated algorithm that dynamically captures and quantifies a company's or project's reputational risk exposure to ESG issues, it may still contain some measurement error. Thus, in addition to our baseline estimation approach, we also employ three additional techniques to address potential endogeneity between ESG reputational risk and payout policy.

We first use an instrumental variable (IV) approach and perform 2SLS estimations. To this end, we address the potential endogeneity that may arise from reverse causality, omitted variables and measurement error. The instruments we choose are the firm's industry average scores of ESG reputational risk (three-digit SIC code) in a given year. The motivation and construction of the instrument closely follow prior studies (e.g. Chang *et al.*, 2018; El Ghoul *et al.*, 2011), which suggests that same-industry firms are more likely to be exposed to similar ESG risks.

Moreover, we use heteroscedasticity-based instruments as suggested by Lewbel (2012). This methodology is used in regression models with endogenous regressors to identify the structural parameters in the absence of external instruments. To achieve identification, this method requires regressors to not be correlated with the product of heteroscedastic errors, which is the case in models where error correlations stem from an unobserved common factor. Lewbel's (2012) instruments are generated from the existing model and specifically by utilizing heterogeneity in the error term of the first-stage regression. This econometric technique can be used when external instruments are unavailable, or as a supplement to external instruments to improve the efficiency of the IV estimator.

The first stage of our approach (Equation (1)) includes a regression of a firm's ESG reputational risk on the instrument, including the vector of control variables (Z) from Equation (1). In the second stage, we regress total payouts (*Payouts*) and the composition of the payout mix (*Rep%*) on the first-stage residuals, including the vector of controls (Z). Both the first and second stages of our instrumental approach (IV) are provided below:

$$ESG_{\mathrm{i,t}} = \mathrm{a}_0 + \mathrm{a}_1 Instrument_{\mathrm{i,t}} + \mathrm{a}_2 \mathrm{Z}_{\mathrm{i,t}} + \ firm_{\mathrm{i}} + year_{\mathrm{t}} \ + \mathrm{u}_{\ \mathrm{i,t}} \tag{3}$$

$$TotalPayouts_{\mathrm{i,t}} \ = \mathrm{a}_0 + \mathrm{a}_1 Predicted(ESG)_{\mathrm{i,t}} + \mathrm{a}_2 \mathrm{Z}_{\mathrm{i,t}} + firm_{\mathrm{i}} + year_{\mathrm{t}} \ + \ \mathrm{u}_{\ \mathrm{i,t}} \tag{4}$$

$$Rep\%_{\mathrm{i,t}} = \mathrm{a}_0 + \mathrm{a}_1 Predicted(ESG)_{\mathrm{i,t}} + \mathrm{a}_2 \mathrm{Z}_{\mathrm{i,t}} + firm_{\mathrm{i}} + year_{\mathrm{t}} \ + \mathrm{u}'_{\ \mathrm{i,t}} \tag{5}$$

As an alternative approach to address the endogeneity concern, we utilize entropy-balancing regressions (Ataullah *et al.*, 2014; Hainmueller, 2012). This is a preprocessing method which utilizes a reweighting scheme to calibrate unit weights in order to equalize the distribution moments between the treatment and control samples. In doing so, entropy balancing improves covariate balance and reduces loss of information as it does not 'match or discard' each unit, as is the case with propensity score-matching techniques.

Heckman selection model

We test our findings further by applying the two-stage Heckman model (Heckman, 1979). In doing so, we address possible sample selection and omitted variable bias that may lead to a non-zero co-variance between the ESG reputational risk and the random error in our baseline model. Our intention is to explore whether firms with certain characteristics are more prone to ESG reputational risk. Latent variables that may influence ESG reputational risk may also affect firms' payout activity. In this case, the coefficient on ESG reputational risk may be overestimated upwards. The first stage of the model uses a probit regression to estimate the probability of a firm having ESG reputational risk above the sample average. The second stage reforms and incorporates in the estimation the individual predicted probabilities to correct for the possibility of self-selection.

Specifically, we employ a Heckman two-stage model to correct for possible selection considering: (i) a firm's *Managerial Ability* (Demerjian, Lev and McVay, 2012), as efficient firms are more skilled at addressing ESG concerns (Erhemjamts *et al.*, 2013); (ii) *StatePoliticalOrientation*, as firms with headquarters in states that vote for the Democratic Party are typically more engaged in ESG activities (Rubin, 2001); (iii) *StateReligion*, motivated by the observation that firms' ESG activity tends to be affected by the degree of religiosity in the state of their headquarters (Angelidis and Ibrahim, 2004; Fafaliou *et al.*, 2022); (iv) state industry average ESG reputational risk (*StateSectorMeanRRI*), to capture ESG strategies that are associated with firm location; and (v) firms' ESG strategies (*ESGStrategies*) using text mining on annual reports (Economidou *et al.*, 2023), to account for the possibility that firms form strategies to mitigate the impact of their ESG exposure.

ESG reputational risk, payout and firm value: Value regression specification

Following Fama and French (1998) and Pinkowitz, Stulz and Williamson (2006), we examine the market valuation of payouts in low versus high ESG reputational risk firms by estimating the following equation:

$$\begin{aligned} MarketValue_{i,t} = \; & \alpha + \beta_1 Earnings_{i,t} + \beta_2 Earnings_{i,t} \\ & + \beta_3 Earnings_{i,t+1} + \beta_4 NetAssets_{i,t} \\ & + \beta_5 NetAssets_{i,t+1} \beta_6 \boldsymbol{R\&D}_{i,t} \\ & + \beta_7 \Delta \boldsymbol{R\&D}_{i,t} + \beta_8 \boldsymbol{R\&D}_{i,t+1} \\ & + \beta_9 \boldsymbol{Interest}_{i,t} + \beta_{10} \boldsymbol{Interest}_{i,t} \\ & + \beta_{11} \Delta \boldsymbol{Interest}_{i,t+1} + \beta_{12} \boldsymbol{Payouts}_{i,t} \\ & + \beta_{13} \Delta \boldsymbol{Payouts}_{i,t} + \beta_{14} \Delta \boldsymbol{Payouts}_{i,t+1} \\ & + \beta_{15} \Delta MarketValue_{i,t+1} \\ & + \beta_{16} \Delta Cash_{i,t} + \beta_{17} \Delta Cash_{i,t+1} \\ & + year + firm + \varepsilon_{i,t} \end{aligned} \tag{6}$$

The variable X_t represents the level of variable X in year t over the level of assets in year t and dX_t is the change in the level of X from year t−1 to year t, divided by the total assets in year t. The variable dXt+1 captures the change in the level of X from year t to year t+1 divided by the total assets in year t. The variable *MarketValue* expresses a firm's market value at the end of the fiscal year, calculated as the market value of equity plus the book values of short and long-term debt. *Earnings* represents earnings before extraordinary items plus interest, deferred tax credits and investment tax credits, *R&D*[6] is the firm's research and development expenses, *Interest* is the interest expense and *Payouts* is share repurchases plus common dividends paid. *NetAssets* is net assets, calculated as total assets minus cash. *Interest* represents interest expense, *Cash* is liquid assets, measured as cash and cash equivalents.

Fama and French (1998) argue that a firm's market value equals the sum of the market value of a solely equity-financed firm that pays zero dividends and with equal pre-tax expected net cash flows (cash earnings before interest, dividends and taxes, less investment outlays), plus the value effects of taxation on the firm's expected dividend and interest payments. Consequently, if other variables in Equation (6) capture all the information

[6]We set *R&D* equal to zero when it is missing (Pinkowitz, Stulz and Williamson, 2006). The percentage of missing *R&D* observations in our sample is equal to 42.24%. To ensure that our results are not affected by assigning a zero value to these observations, we re-estimate our model by excluding firms with missing *R&D* and the results remain in the same direction. See Table A12 in the online Supporting Information.

regarding expected net cash flows in financing decisions, then the coefficients on dividend and the debt-related interest variables capture the tax effects. So, Fama and French (1998) proxy for expected net cash flows by past, current and future earnings, investment and R&D. Specifically, current, change and lead change *Earnings* variables capture the profits component of expected net cash flows. Change and lead change *Earnings* variables proxy for the expected growth in profits. Fama and French (1998) include the change and lead change in the firm's total assets to proxy for the net investment component of expected net cash flows. In this respect we follow Pinkowitz, Stulz and Williamson (2006) and split the change in total assets into its cash (*Cash*) and non-cash component (*NetAssets*). The *R&D* variable is included due to the mandatory expensing of R&D, which leads to the understatement of assets and also affects firm value if R&D expenditures have multiperiod payoffs. Finally, the lead change in market value is included to cleanse other future changes of their unexpected components.

To investigate the market valuation of payouts in low versus high ESG reputational risk firms, we stratify firm-years into *High* (*Low*) *CurrentRRI* groups depending on whether they lie above (below) the respective annual median[7] value of *CurrentRRI*.

Descriptive statistics

In Table 1 we present the descriptive statistics of the variables used in the baseline regressions. In Panel A, we document that the average of *Payouts*[8] for our sample is 4.3%, while the mean firm-year in our sample has a repurchases to total payouts ratio (*Rep%*) of 46.7%. In terms of ESG reputational risk, *CurrentRRI* ranges from 0 to 0.664 and has an average value of 0.079. The mean for the *FreeCashFlows* variable in our sample is −0.047, suggesting that the average firm does not generate enough cash flows from operations to maintain assets in place and fund expected investment. Moreover, the *TobinsQ* variable for the average firm is 1.989, indicating growth opportunities. In terms of *Leverage*, the average value is 21.2%. Firm age (*Age*) ranges from 3 to 58 years, with a mean value of 26.70 years. The cash flow volatility variable (*CashFlowVol*) and firm size (*Size*) have an average value of \$0.047 billion and \$8.78 billion, respectively. Finally, institutions hold 72.8% of the average firm and the mean firm is followed by two analysts (*AnalystCoverage*).

Panel B presents the univariate test of difference in the means of the variables between high and low ESG reputational risk, as proxied by (*CurrentRRI*). We find that firms with increased ESG reputational risk exhibit higher total payouts and their payout mix favours share repurchases. This is consistent with H1a and H2a, that ESG reputational risk stimulates higher payouts under a more flexible payout mix.

In Panel C we present the correlations between all the variables used in our baseline regressions (Equations (1) and (2)). In line with our expectations, the results show that ESG reputational risk (*CurrentRRI*) exhibits a positive and statistically significant correlation with both *Payouts* and *Rep%*. To secure that the correlations are not spurious, we include a rich set of control variables in our regression analysis.

Empirical analysis

ESG reputational risk and total payouts

In Table 2 we present the estimation of Equation (1). In column (1) we initially employ a between estimator (BE) to capture the cross-sectional variation. The coefficient of ESG reputational risk (*CurrentRRI*) is 0.043, statistically significant at the 1% level. However, to account for possible bias resulting from unobserved firm-specific heterogeneity, in column (3) we also employ a high-dimensional firm and year fixed-effects estimator (HDFE). The respective coefficient is 0.012, statistically significant at conventional levels. Moreover, following Dittmar (2000) and Fenn and Liang (2001), in column (2) we present the results from the Tobit regressions. By using this estimator, we

[7]We have also used an alternative stratification to classify firms into low and high ESG reputational risk subsamples. Specifically, we classify firms with *RRI* values between 0 and 24 as low reputational risk and firms with *RRI* values between 50 and 100 as high reputational risk firms. Results are presented in Table A13 in the online Supporting Information.

[8]The percentage of firm-years with zero payouts (*Payouts*) is approximately 19%, while the respective percentage for zero repurchases is 32%. To account for these specific distributions, we follow conventional practice and employ left-censored Tobit estimations (Dittmar, 2000; Fenn and Liang, 2001).

Table 1. Descriptive statistics

Panel A	N	Mean	SD	Min	p25	Median	p75	Max
Payouts	13,113	0.043	0.058	0	0.001	0.019	0.063	0.378
Rep%	13,113	0.468	0.425	0	0	0.475	1	1
CurrentRRI	13,113	0.080	0.110	0	0	0	0.157	0.664
FreeCashFlows	13,113	–0.048	0.120	–0.992	–0.075	–0.029	0.010	0.117
TobinsQ	13,113	1.989	1.281	0.561	1.226	1.610	2.276	11.643
Leverage	13,113	0.212	0.177	0	0.052	0.196	0.320	0.807
Age	13,113	26.707	16.612	3	13	21	40	58
CashFlowVol	13,113	0.047	0.044	0.004	0.021	0.034	0.057	0.285
Size (US$ bn)	13,113	8.780	3.237	3.204	0.528	1.753	5.343	431.769
InstHoldings	13,113	0.728	0.245	0.011	0.615	0.800	0.914	1.001
AnalystCoverage	13,113	2.228	1.93	1	1	1.417	2.583	17.5
Market Value	13,113	1.973	1.245	0.624	1.215	1.599	2.267	9.356
Payouts	13,113	0.045	0.064	–0.006	0	0.019	0.063	0.328
ΔPayouts	11,246	0.003	0.054	–0.226	–0.003	0	0.012	0.219
Earnings	13,113	0.08	0.123	–0.645	0.048	0.094	0.141	0.323
ΔEarnings	11,246	0.004	0.086	–0.394	–0.016	0.009	0.031	0.361
ΔNetAssets	11,246	0.052	0.156	–0.541	–0.018	0.039	0.111	0.608
R&D	13,113	0.028	0.061	0	0	0	0.026	0.389
ΔR&D	11,246	0.002	0.014	–0.057	0	0	0.001	0.095
Interest	13,113	0.014	0.013	0	0.004	0.011	0.019	0.080
ΔInterest	11,246	0.001	0.005	–0.025	–0.001	0	0.002	0.028
Cash	13,113	0.156	0.173	0.011	0.034	0.095	0.212	0.934

Panel B	*Low CurrentRRI*	*High CurrentRRI*	t-Value
Payouts	0.037	0.049	–12.22***
Rep%	0.464	0.514	–6.87***
FreeCashFlows	–0.064	–0.037	–12.09***
TobinsQ	1.995	1.938	2.51**
Leverage	0.207	0.248	–13.15***
Age	23.401	31.311	–27.80***
CashFlowVol	0.052	0.039	17.14***
Size	6.798	8.348	–57.86***
InstHoldings	0.712	0.742	–6.96***
AnalystCoverage	1.634	2.589	10.38***

Panel C: Correlation matrix

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
(1) *TotalPayouts*	1.00											
(2) *Rep%*	0.27*	1.000										
(3) *CurrentRRI*	0.16*	0.07*	1.000									
(4) *PeakRRI*	0.15*	0.07*	0.87*	1.000								
(5) *FreeCashFlows*	0.31*	0.17*	0.14*	0.12*	1.000							
(6) *TobinsQ*	0.23*	–0.02*	–0.02*	–0.03*	–0.06*	1.000						
(7) *Leverage*	–0.06*	–0.03*	0.19*	0.11*	0.06*	–0.28*	1.000					
(8) *Age*	0.19*	0.08*	0.31*	0.30*	0.17*	–0.15*	0.06*	1.000				
(9) *CashFlowVol*	–0.12*	–0.09*	–0.17*	–0.17*	–0.45*	0.21*	–0.20*	–0.25*	1.000			
(10) *Size*	0.20*	0.17*	0.54*	0.50*	0.38*	–0.17*	0.32*	0.48*	–0.44*	1.000		
(11) *InstHoldings*	0.14*	0.29*	0.06*	0.07*	0.21*	–0.01	0.10*	0.21*	–0.21*	0.48*	1.000	
(12) *AnalystCoverage*	0.27**	0.17**	0.29**	0.27**	0.49***	–0.14*	0.10**	0.34***	–0.30***	0.53***	0.27***	1

Panel A presents descriptive statistics for the variables used in the baseline regressions ((Equations (1) and (2)). Panel B shows the mean values for firm-years with high/low ESG reputational risk as proxied by *CurrentRRI*. A firm-year is classified as *High* (*Low*) *CurrentRRI* if it falls above (below) the sample's median. The last columns present the univariate test of difference in means of the variables between *High* and *Low CurrentRRI* firm-years. In Panel C we present the correlation matrix of all variables used in the baseline analysis. All variable definitions are provided in Appendix Table A1.

***$p < 0.01$.

**$p < 0.05$.

*$p < 0.1$.

Table 2. ESG reputational risk and payouts

	(1) *Payouts* Between estimator	(2) *Payouts* Left-censored Tobit	(3) *Payouts* High-dimensional FE	(4) *Payouts* High-dimensional FE–entropy balanced
CurrentRRI	0.043***	0.041***	0.012*	0.018**
	(0.008)	(0.009)	(0.007)	(0.008)
FreeCashFlows	0.169***	0.287***	0.094***	0.096***
	(0.013)	(0.018)	(0.010)	(0.010)
TobinsQ	0.015***	0.014***	0.005***	0.004***
	(0.001)	(0.001)	(0.001)	(0.001)
Leverage	0.002	0.001	0.017**	0.014*
	(0.005)	(0.006)	(0.007)	(0.008)
Age	0.000***	0.001***	0.002***	0.002***
	(0.000)	(0.000)	(0.000)	(0.000)
CashFlowVol	0.007	–0.041	–0.045	–0.030
	(0.023)	(0.030)	(0.029)	(0.030)
Size	–0.001	–0.000	–0.026***	–0.025***
	(0.001)	(0.001)	(0.003)	(0.003)
InstHoldings	–0.012***	–0.009*	0.003	–0.007
	(0.004)	(0.005)	(0.007)	(0.008)
AnalystCoverage	0.008***	0.009***	0.014***	0.013***
	(0.001)	(0.002)	(0.001)	(0.001)
Constant	0.027**	0.015	0.174***	0.183***
	(0.012)	(0.015)	(0.022)	(0.022)
Observations	13,113	13,113	13,113	13,113
R-squared	0.338		0.624	0.638
Year FE	YES	YES	YES	YES
Firm FE	NO	NO	YES	YES
State FE	YES	YES	YES	YES
Robust	YES	YES	YES	YES

This table presents the estimations of Equation (1). The dependent variable is *Payouts* (common dividends plus share repurchases, scaled by the book value of total assets). Robust standard errors clustered at the firm level are reported in parentheses. Variable definitions are provided in Appendix Table A1.
***$p < 0.01$.
**$p < 0.05$.
*$p < 0.1$.

correct for censored observations, which in our case result from the number of zero-payout observations in our sample. Our findings reveal a positive impact of ESG reputational risk on total payouts equal to 0.04, statistically significant at the 1% level. Finally, we balance our sample and re-estimate the model using entropy balancing regressions (Hainmueller, 2012). Specifically, we split firm-year observations into treatment (high ESG reputational risk) and control (low ESG reputational risk) groups based on the median *CurrentRRI* in each year.[9] The results reported in column (4) show a statistically significant effect of ESG reputational risk on total payouts at the 1% level.

Our findings document a consistent positive relationship between ESG reputational risk and total payouts. This relationship holds across all estimation techniques. The BE results suggest this relationship to be driven by cross-sectional variation, that is, high ESG reputational risk firms exhibit higher payouts than low ESG reputational risk. The firm fixed-effects estimations indicate that the positive relationship between ESG reputational risk and total payouts holds over time for any given firm. Our results show strong support for H1a, suggesting that ESG reputational risk reflects agency issues and that firms mitigate these issues by conducting higher distributions to shareholders (Chen and Ngo, 2022; Easterbrook, 1984). Finally, our estimates from the strongly balanced matched sample suggest that the positive

[9]In Appendix Table A2 we report the entropy-balanced sample weights.

relationship between ESG reputational risk is not driven by systematic and random inequalities in the representation of firms in our sample. In terms of the control variables, the positive relationship between *FreeCashFlows*, *Age* and total payouts is in line with the agency theory of free cash flows. Agency costs are likely to be high in mature firms and companies that generate high free cash flows. *TobinsQ* appears to be positively related to total payouts. It may be the case that higher growth opportunities reflect future profitability and thus the ability of the firm to sustain future payouts, a crucial factor for dividend payments.

ESG reputational risk and total payouts in the presence of free cash flows

Table 3 presents the results from estimating Equation (1) while including an interaction term between ESG reputational risk and a dummy variable that takes the value of 1 if free cash flows are positive and 0 otherwise. The results in columns (1)–(6) show that the interaction term between ESG reputational risk (*CurrentRRI*) and both dummy variables for positive free cash flows ($DummyFCF_1$, $DummyFCF_2$) are positive and statistically significant at conventional levels, across all estimation methods. Indicatively, in column (2) the coefficient for *CurrentRRI* is 0.012, which is the slope of the regression line for the zero or negative free cash flows group (i.e. $DummyFCF_1 = 0$). The value of the interaction term $CurrentRRI \times DummyFCF_1$ is 0.035, which represents the difference in slope between the positive and negative (or zero) free cash flows groups, that is, the slope for the positive free cash flows group would be $0.012 + 0.035 = 0.047$. This supports H1b, that the presence of positive free cash flow capabilities amplifies the positive relationship between ESG reputational risk and payouts.

ESG reputational risk and the composition of the payout mix

Table 4 presents the results from estimating Equation (2). We use *CurrentRRI* as a proxy for ESG reputational risk and present the relevant results in columns (1)–(4). We document a robust positive and statistically significant relationship at conventional levels, between ESG reputational risk and the proportion of share repurchases in the payout mix across alternative proxies and estimation methods. Indicatively, in column (3), where we report results from a HDFE, the coefficient of *CurrentRRI* is 0.129, statistically significant at the 5% level. The findings lend strong support to H2a and are consistent with the notion that ESG reputational risk increases financial risk, consequently steering firms towards a more flexible payout mix, one that favours repurchases over dividends.

ESG reputational risk and the composition of the payout mix under different levels of financial constraints

Table 5 presents the results from estimating Equation (2) while including an interaction term between ESG reputational risk and a dummy variable that, in any given year, takes the value of 1 if a firm's financial constraint measurement is above the respective sample's annual median.[10] In columns (1)–(6) we document that the interaction term between ESG reputational risk (*CurrentRRI*) and both dummy variables for financial constraints (*DummyWW*, *DummyKZ*) is positive and statistically significant at conventional levels, across all estimation methods. Indicatively, in column (2) the coefficient for *CurrentRRI* is 0.042, which is the slope of the regression line for the low financial constraints group (i.e. $DummyWW = 1$). The value of the interaction term $CurrentRRI \times DummyWW$ is 0.211, which is the difference in slope between the high and low financial constraint groups, that is, the slope for the high financial constraints group would be $0.042 + 0.211 = 0.253$. This supports H2b, that the presence of financial constraints amplifies the positive relationship between ESG reputational risk and the portion of share repurchases in the payout mix.

Robustness checks with the instrumental variables

To further secure our baseline estimations and eliminate possible endogeneity concerns, we follow an IV approach. The instruments we employ are the firm's industry (three-digit SIC code) average, *CurrentRRI* scores in a given year and

[10]The results remain unchanged irrespective of whether the dummy is constructed using the median on a year-by-year basis or the sample's median.

Table 3. The ESG reputational risk–payouts nexus: the role of free cash flows

Variables	(1) *Payouts* Left-censored Tobit	(2) *Payouts* High-dimensional FE	(3) *Payouts* High-dimensional FE–entropy balanced	(4) *Payouts* Left-censored Tobit	(5) *Payouts* High-dimensional FE	(6) *Payouts* High-dimensional FE–entropy balanced
CurrentRRI	0.026*	0.012*	0.022**	0.025**	0.019**	0.024***
	(0.014)	(0.007)	(0.010)	(0.010)	(0.008)	(0.006)
$DummyFCF_1$	–0.006**	–0.001	–0.001			
	(0.002)	(0.002)	(0.002)			
$CurrentRRI \times DummyFCF_1$	0.018*	0.035***	0.028***			
	(0.010)	(0.011)	(0.010)			
$DummyFCF_2$				0.029***	0.023***	0.028***
				(0.002)	(0.002)	(0.002)
$CurrentRRI \times DummyFCF_2$				0.012*	0.027**	0.035***
				(0.007)	(0.011)	(0.010)
TobinsQ	0.013***	0.014***	0.013***	0.014***	0.012***	0.012***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Leverage	0.000	0.006	0.006	–0.004	0.003	0.005
	(0.006)	(0.005)	(0.004)	(0.006)	(0.005)	(0.004)
Age	0.001***	0.000***	0.000***	0.000***	0.000***	0.000***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
CashFlowVol	–0.043	–0.005	–0.018	–0.140***	–0.096***	–0.094***
	(0.030)	(0.023)	(0.021)	(0.032)	(0.023)	(0.019)
Size	–0.000	–0.001	–0.001	0.001	–0.000	0.000
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
InstHoldings	–0.008*	–0.010**	–0.011***	–0.004	–0.005	–0.008***
	(0.005)	(0.004)	(0.003)	(0.005)	(0.004)	(0.003)
AnalystCoverage	0.009***	0.009***	0.007***	0.018***	0.015***	0.011***
	(0.002)	(0.001)	(0.001)	(0.002)	(0.001)	(0.001)
Constant	0.023	0.017**	0.021***	–0.022**	–0.003	–0.001
	(0.018)	(0.007)	(0.006)	(0.010)	(0.007)	(0.005)
Observations	13,113	13,113	13,113	13,113	13,113	13,113
R-squared		0.368	0.371		0.354	0.374
Year FE	YES	YES	YES	YES	YES	YES
Firm FE	NO	YES	YES	NO	YES	YES
State FE	YES	YES	YES	YES	YES	YES
Robust	YES	YES	YES	YES	YES	YES

This table presents results from estimating an expanded version of Equation (1), which includes an interaction term between ESG reputational risk (*CurrentRRI*) and a dummy variable that takes the value 1 if free cash flows are positive, and 0 otherwise (*DummyFCF*). Free cash flows are calculated using Richardson's (2006) accounting-based framework ($DummyFCF_1$) and as cash flows from operations minus capital expenditures ($DummyFCF_1$). The dependent variable is *Payouts* (common dividends plus share repurchases) scaled by the book value of total assets. Robust standard errors clustered at the firm level are reported in parentheses. Variable definitions are provided in Appendix Table A1.

$^{***}p < 0.01$.

$^{**}p < 0.05$.

$^{*}p < 0.1$.

Lewbel's (2012) heteroscedasticity-based instruments.[11] Table 6 reports the relevant results.

To assess instrument validity, we perform the Kleibergen and Paap under-identification (LM statistic) test. If the p value is less than 0.05 and 0.1, the null hypothesis of under-identification is rejected at the 5% and 10% levels, respectively. Moreover, to evaluate correlation between our instruments and the error term, we follow the Hansen over-identification test. Under the null hypothesis that over-identifying restrictions are valid, to reject the null hypothesis at the 5% and 10% levels, we need a higher value than 0.05 and 0.1, respectively. Finally, to assess our instruments'

[11]We have also used Lewbel's (2012) heteroscedasticity-based instruments as a supplement to industry averages.

Table 4. ESG reputational risk and the payout mix

Variables	(1) *Rep%* Between estimator	(2) *Rep%* Left-censored Tobit	(3) *Rep%* High-dimensional FE	(4) *Rep%* High-dimensional FE–entropy balanced
CurrentRRI	0.129**	0.175**	0.129**	0.226***
	(0.065)	(0.086)	(0.065)	(0.075)
FreeCashFlows	0.315***	0.732***	0.315***	0.321***
	(0.066)	(0.116)	(0.066)	(0.075)
TobinsQ	–0.012**	–0.024***	–0.012**	–0.018***
	(0.006)	(0.009)	(0.006)	(0.007)
Leverage	–0.156***	–0.230***	–0.156***	–0.152***
	(0.046)	(0.062)	(0.046)	(0.053)
Age	–0.002***	–0.001**	–0.002***	–0.002***
	(0.000)	(0.001)	(0.000)	(0.001)
CashFlowVol	–0.178	–0.369	–0.178	–0.113
	(0.209)	(0.308)	(0.209)	(0.240)
Size	0.007	0.015	0.007	0.003
	(0.007)	(0.010)	(0.007)	(0.008)
InstHoldings	0.288***	0.367***	0.288***	0.378***
	(0.037)	(0.053)	(0.037)	(0.040)
AnalystCoverage	0.036***	0.047***	0.036***	0.027**
	(0.012)	(0.016)	(0.012)	(0.013)
Constant	0.301***	0.124	0.335***	0.309***
	(0.080)	(0.110)	(0.059)	(0.066)
Observations	13,113	13,113	13,113	13,113
R-squared	0.150		0.450	0.477
Year FE	YES	YES	YES	YES
Firm FE	NO	NO	YES	YES
State FE	YES	YES	YES	YES
Robust	YES	YES	YES	YES

This table presents results from estimating Equation (2). The dependent variable is *Rep%* (share repurchases to total payouts). Robust standard errors clustered at the firm level are reported in parentheses. Variable definitions are provided in Appendix Table A1.
***$p < 0.01$.
**$p < 0.05$.
*$p < 0.1$.

explanatory power, we utilize a weak identification test. The instruments are weak and have no explanatory power if any of the Stock and Yogo critical values are greater than the Cragg–Donald Wald F-statistic.

In Table 6 we present our estimates of the two-stage least-squares method. Our findings, after controlling for endogeneity, are in line with those of the baseline model reported in Tables 3 and 5, and thus provide further support for H1a and H2a.

Robustness checks for self-selection

Table 7 presents the estimations of Equations (1) and (2) using the Heckman two-stage model (Heckman, 1979). In columns (1) and (3) we provide the estimates of the first stage of the Heckman model for *Payouts* and *Rep%*, and in columns (2) and (4) those of the second stage. Our estimates indicate that after addressing self-selection, the coefficient of *CurrentRRI* is 0.05 (0.188), statistically significant at conventional levels, suggesting a positive relationship between ESG reputational risk and *Payouts* (*Rep%*). Overall, while accounting for potential sample selection that may arise from (i) managerial ability, (ii) state political orientation and religion, (iii) firm location and (iv) corporate ESG management strategies, our findings remain in the same direction with the baseline findings.

ESG reputational risk, payout and firm value: Value regression specification

Table 8 presents the results from estimating Equation (6). Column (1) documents the findings from

Table 5. The ESG reputational risk–payout mix nexus: the role of financial constraints

Variables	(1) *Rep%* Left-censored Tobit	(2) *Rep%* HDFE	(3) *Rep%* HDFE (entropy balancing)	(4) *Rep%* Left-censored Tobit	(5) *Rep%* HDFE	(6) *Rep%* HDFE (entropy balancing)
CurrentRRI	0.014*	0.042*	0.146***	0.066*	0.129*	0.213***
	(0.008)	(0.024)	(0.053)	(0.038)	(0.067)	(0.050)
DummyWW	0.108***	0.096***	0.077***			
	(0.018)	(0.017)	(0.014)			
CurrentRRI×DummyWW	0.160*	0.211*	0.219**			
	(0.092)	(0.111)	(0.087)			
DummyKZ				0.094***	0.129***	0.125***
				(0.022)	(0.021)	(0.016)
CurrentRRI×DummyKZ				0.027	0.023	0.056
				(0.146)	(0.134)	(0.098)
FreeCashFlows	0.425***	0.369***	0.341***	0.398***	0.365***	0.348***
	(0.069)	(0.066)	(0.055)	(0.068)	(0.065)	(0.054)
TobinsQ	–0.000	–0.006	–0.013***	–0.003	–0.010	–0.016***
	(0.006)	(0.006)	(0.004)	(0.006)	(0.006)	(0.004)
Leverage	–0.322***	–0.241***	–0.223***	–0.330***	–0.272***	–0.269***
	(0.046)	(0.047)	(0.031)	(0.048)	(0.047)	(0.031)
Age	–0.002***	–0.002***	–0.002***	–0.002***	–0.002***	–0.002***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
CashFlowVol	–0.395*	–0.132	–0.122	–0.347	–0.104	–0.068
	(0.213)	(0.206)	(0.158)	(0.213)	(0.206)	(0.159)
Size	0.016**	0.022***	0.018***	0.002	0.009	0.008*
	(0.008)	(0.007)	(0.005)	(0.007)	(0.007)	(0.005)
AnalystCoverage	0.361***	0.274***	0.372***	0.368***	0.273***	0.362***
	(0.037)	(0.037)	(0.024)	(0.036)	(0.036)	(0.024)
Constant	0.150**	0.172***	0.147***	0.300***	0.308***	0.253***
	(0.063)	(0.061)	(0.042)	(0.060)	(0.058)	(0.038)
Observations	13,113	13,113	13,113	13,113	13,113	13,113
R-squared		0.560	0.586		0.561	0.590
Year FE	YES	YES	YES	YES	YES	YES
Firm FE	NO	YES	YES	NO	YES	YES
State FE	YES	YES	YES	YES	YES	YES
Robust	YES	YES	YES	YES	YES	YES

This table presents results from estimating an expanded version of Equation (2), which includes an interaction between ESG reputational risk (*CurrentRRI*) and a dummy variable that takes the value 1 if a firm's measurement of financial constraints is above the sample's median, and 0 otherwise. The dependent variable is *Rep%* (share repurchases to total payouts) while the financial constraints dummies (*DummyWW*, *DummyKZ*) are constructed according to Whited and Wu (2006) (columns 1–3) and Kaplan and Zingales (1997) (columns 4–6) indices, respectively. Robust standard errors clustered at the firm level are reported in parentheses. Variable definitions are provided in Appendix Table A1.

***$p < 0.01$.

**$p < 0.05$.

*$p < 0.1$.

the estimation of Equation (6) for the full sample, including *CurrentRRI* as a control, while columns (2) and (3) provide our findings considering subsamples with high and low ESG reputational risk, which are split according to the firm-year median values of *CurrentRRI*. For the full sample, we document that ESG reputational risk has a negative impact on firms' value. This suggests that market valuation incorporates the risk exposure of firms to ESG issues. Moreover, the estimates in columns (2) and (3) confirm H3 regarding the market valuation differential of total payouts between high and low ESG reputational risk firms. Economically speaking, a total payout rate of 1% of a firm's total payouts boosts firm value by 4.53% in firms with high ESG reputational risk, a more than twofold effect compared to the increase of 1.98% in the low ESG reputational risk sample.

Table 6. Mitigating endogeneity concerns: 2SLS

Dependent variable	(1) First stage	(2) *Payouts* Second stage	(3) *Rep%* Second stage
CurrentRRI		0.030***	0.205***
		(0.009)	(0.058)
FreeCashFlows	–0.033***	0.094***	0.318***
	(0.010)	(0.008)	(0.046)
TobinsQ	0.004***	0.005***	–0.012***
	(0.001)	(0.001)	(0.003)
Leverage	–0.063***	0.017***	–0.152***
	(0.005)	(0.006)	(0.025)
Age	0.001***	0.002***	–0.002***
	(0.000)	(0.000)	(0.000)
CashFlowVol	0.149***	–0.045**	–0.189
	(0.023)	(0.023)	(0.124)
Size	0.043***	–0.026***	0.004
	(0.001)	(0.002)	(0.004)
InstHoldings	–0.061***	0.003	0.292***
	(0.004)	(0.005)	(0.020)
AnalystCoverage	–0.003**	0.013***	0.059***
	(0.001)	(0.001)	(0.011)
IndustryAverageCurrentRRI	0.903***		
	(0.041)		
z_InstHoldings	–0.061***		
	(0.004)		
z_TobinsQ	0.004***		
	(0.001)		
z_CashFlowVol	0.155***		
	(0.024)		
z_Age	0.001***		
	(0.000)		
z_Size	0.043***		
	(0.001)		
z_FreeCashFlows	–0.039***		
	(0.010)		
z_Leverage	–0.062***		
	(0.005)		
Z_AnalystCoverage	–0.002		
	(0.001)		
Observations	13,113	13,113	13,113
Year FE	YES	YES	YES
Firm FE	YES	YES	YES
State FE	YES	YES	YES
Cragg–Donald Wald F statistic	0.000		
Week identification test	29.51		
Hansen J statistic (p value)	0.153		

This table reports results from the two-stage least-squares estimations of Equations (1) and (2). In column (1) we instrument ESG reputational risk using industry averages (three-digit SIC) and Lewbel's (2012) heteroscedasticity-based instruments. Standard errors are reported in parentheses. Variable definitions are provided in Appendix Table A1.
***p < 0.01.
**p < 0.05.
*p < 0.1.

Additional robustness checks

To further check the robustness of our findings, we perform a series of sensitivity tests. First, we re-estimate the baseline Equations (1) and (2) using a second proxy for ESG reputational risk, namely RepRisk's *PeakRRI*, which measures a firm's overall reputational risk exposure over the

Table 7. Mitigating sample selection using the Heckman two-stage procedure

	(1)	(2)	(3)	(4)
	Payouts		*Rep%*	
Variables	Heckman selection equation	Heckman main equation	Heckman selection equation	Heckman main equation
CurrentRRI		0.050***		0.188***
		(0.006)		(0.049)
FreeCashFlows	–0.330*	0.172***	–0.408**	0.331***
	(0.170)	(0.007)	(0.168)	(0.057)
TobinsQ	0.010	0.016***	0.013	–0.001
	(0.011)	(0.000)	(0.010)	(0.004)
Leverage	0.074	–0.004	0.082	–0.158***
	(0.078)	(0.003)	(0.078)	(0.027)
Age	–0.001	0.000***	–0.001	–0.002***
	(0.001)	(0.000)	(0.001)	(0.000)
CashFlowVol	1.787***	–0.023	1.852***	–0.504***
	(0.397)	(0.018)	(0.391)	(0.144)
Size	0.073***	–0.000	0.076***	0.001
	(0.012)	(0.001)	(0.012)	(0.005)
InstHoldings	–0.132**	–0.008***	–0.128**	0.354***
	(0.062)	(0.003)	(0.062)	(0.022)
AnalystCoverage	0.072***	0.007***	0.062***	0.052***
	(0.024)	(0.001)	(0.024)	(0.008)
ManagerialAbility	–0.345		–0.329	
	(0.261)		(0.257)	
StatePoliticalOrientation	0.126***		0.121***	
	(0.017)		(0.017)	
StateReligion	0.526***		0.519***	
	(0.085)		(0.084)	
StateSectorMeanRRI	1.628***		1.611***	
	(0.276)		(0.274)	
ESGStrategies	0.071**		0.067**	
	(0.032)		(0.032)	
λ		0.009		0.128**
		(0.008)		(0.065)
Observations	13,113	13,113	13,113	13,113
Year FE	YES	YES	YES	YES
Industry FE	YES	YES	YES	YES
State FE	YES	YES	YES	YES

The dependent variable is *Payouts* (share repurchases plus dividends to total assets) in columns (1) and (2) and *Rep%* (share repurchases to share repurchases plus dividends) in columns (3) and (4). The key independent variable is the predicted value of the probability of having an ESG reputational risk above the sector's median. Standard errors are reported in parentheses. Variable definitions are provided in Appendix Table A1.

***$p < 0.01$.

**$p < 0.05$.

*$p < 0.1$.

last 2 years. Second, to address possible ESG management strategies in specific industries with distinct ESG exposures (i.e. the energy sector), we weigh firms' RepRisk scores with the respective average industry score and re-estimate the baseline models (Equations (1) and (2)). Third, we use another approach to measure share purchases, namely the change in treasury stock approach as in Fama and French (1998), and re-estimate Equations (1), (2) and (6). Fourth, we additionally scale total payouts with net income, net sales and market value of equity (see Attig *et al.*, 2021; Brockman and Unlu, 2009). Fifth, to check that our results are not driven by a specific dimension of ESG, we re-estimate Equations (1) and (2) using the main components of ESG reputational risk. Finally, we

Table 8. ESG reputational risk and firm value

Variables	(1) *Market value* *Full sample*	(2) *Market value* *Low CurrentRRI*	(3) *Market value* *High CurrentRRI*
DummyCurrentRRI	–0.337**		
	(0.140)		
$Payouts_t$	3.548***	1.984***	4.537***
	(0.412)	(0.630)	(0.465)
$\Delta Payouts_t$	–0.656***	–0.018	–1.366***
	(0.230)	(0.309)	(0.299)
$\Delta Payouts_{t+1}$	1.557***	1.097***	1.490***
	(0.286)	(0.414)	(0.276)
$Earnings_t$	2.066***	1.316***	3.700***
	(0.314)	(0.443)	(0.393)
$\Delta Earnings_t$	–0.154	–0.100	0.260
	(0.183)	(0.260)	(0.207)
$\Delta Earnings_{t+1}$	1.339***	1.029***	2.438***
	(0.203)	(0.270)	(0.282)
$\Delta NetAssets_t$	0.644***	0.729***	0.407***
	(0.087)	(0.132)	(0.097)
$\Delta NetAssets_{t+1}$	0.624***	0.794***	0.252***
	(0.071)	(0.099)	(0.090)
$R\&D_t$	5.076***	3.140**	7.103***
	(0.910)	(1.248)	(1.101)
$\Delta R\&D_t$	2.840**	0.131	4.292***
	(1.168)	(1.459)	(1.498)
$\Delta R\&D_{t+1}$	7.071***	4.583***	10.396***
	(1.187)	(1.531)	(1.373)
$Interest_t$	6.636***	7.827**	4.990*
	(2.267)	(3.398)	(2.835)
$\Delta Interest_t$	–10.149***	–9.532***	–5.914*
	(2.521)	(3.353)	(3.223)
$\Delta Interest_{t+1}$	–4.228*	–4.312	2.232
	(2.532)	(3.237)	(3.475)
$\Delta MarketValue_{t+1}$	–0.190***	–0.234***	–0.103***
	(0.024)	(0.029)	(0.035)
$Cash_t$	1.447	1.140	1.366
	(0.978)	(0.835)	(0.942)
Constant	1.160***	1.357***	0.901***
	(0.071)	(0.106)	(0.080)
Observations	11,246	5423	5823
R-squared	0.803	0.823	0.825
Year FE	YES	YES	YES
Firms FE	YES	YES	YES
State FE	YES	YES	YES
Robust	YES	YES	YES

This table estimates Equation (6) for the full sample and for subsamples of high and low ESG reputational risk. Firm-years are stratified in the *High* (*Low*) *CurrentRRI* group if they lie below the respective annual median value of *CurrentRRI*. The dependent variable $MarketValue_t$ is the market value of equity plus the book value of debt scaled by the book value of total assets. X_t is the level of variable X in year t divided by the book value of assets in year t. ΔX_t is the change in the level of X from year t−1 to year t divided by the book value of assets in year t, $((X_t - X_{t-1})/A_t)$, where A is the book value of assets. ΔX_{t+1} is the change in the level of X from year t+1 to year t divided by the book value of assets in year t, $((X_{t+1} - X_t)/A_t)$. *Earnings* is earnings defined as earnings before extraordinary items plus interest plus deferred tax credits plus investment tax credits. *NetAssets* is net assets, which is defined as total assets minus cash. *R&D* is research and development expense. When *R&D* is missing, it is set to zero. *Interest* is interest expense. *Payouts* is common dividends plus share repurchases. *Cash* is cash and short-term investments. All estimations include firm and year fixed effects. Robust standard errors are reported in parentheses.

***$p < 0.01$.

**$p < 0.05$.

*$p < 0.1$.

utilize an alternative approach to the valuation regression (Fama and French, 1998; Pinkowitz, Stulz and Williamson, 2006) following Faulkender and Wang (2006) and use excess stock returns to assess the association between ESG reputational risk and firm value through its impact on payouts. In all the aforementioned re-estimations, our findings remain in the same direction with our baseline results and in the interest of brevity are included in the online Supporting Information.

Managerial and policy implications

From a managerial perspective, our results document that investors consider ESG reputational risk as an important factor in firm valuation. Specifically, our findings are in line with the notion that ESG reputational risk reflects agency issues, and thus investors value the relevant payouts at a premium. Our study also has important policy implications. From a regulator's perspective, our findings emphasize the role of a share repurchases-oriented, corporate payout mix as a risk management device (Arena and Julio, 2023; Bonaimé, Hankins and Harford, 2014). Share repurchases are often associated with distorted incentives (see Almeida, Fos and Kronlund, 2016), leading up to their recent ban under the CARES Act (2020). In this respect, our study supports the proponents of this payout mechanism as it highlights their beneficial use in terms of augmenting firms' financial flexibility.

Conclusion

In this study, we investigate the ESG reputational risk–payout policy nexus motivated by the increased attention that is being placed on ESG by corporations and the academic community. Specifically, we argue that ESG reputational risk is positively associated with agency costs and financial constraints and thus, payout levels and composition are potential mechanisms against these issues.

We provide robust evidence that higher ESG reputational risk affects both the level of payouts as well as the composition of the payout mix. Initially, we regress total payouts and the composition of the payout mix (repurchases to total payouts) on ESG reputational risk, including a rich set of control variables. We establish a positive relationship between ESG reputational risk and both aspects of payout policy that endures after employing an array of estimation methods to address potential endogeneity, self-selection and censored observations. Consequently, we re-estimate our baseline regressions including an interaction term between ESG reputational risk and indicator variables for free cash flows and financing constraints. We document that the effect of ESG reputational risk on corporate payouts (the portion of share repurchases in the payout mix) is more pronounced in the presence of free cash flows (financial constraints).

In addition, to gain further insight into the ESG reputational risk–payout nexus, we assess the impact of reputational risk on firm value through its impact on payouts. We utilize a value regression approach (see Fama and French, 1998; Pinkowitz, Stulz and Williamson, 2006) and document that the market places a premium on payouts made by firms with higher ESG reputational risk. This lends further support to the notion that ESG reputational risk suggests agency issues.

Overall, this study reveals the role of ESG reputational risk in shaping the payout decision. It advances our knowledge of financial decision-making by exemplifying the use of payout policy as an agency cost mitigating tool and risk management device (Bonaimé, Hankins and Harford, 2014; Easterbrook, 1984; Jensen, 1986). Lastly, this study emphasizes the significance of ESG reputational risk on firms' corporate mechanisms and reveals the channels of its impact on fundamental financial decisions. From a managerial perspective, our results document that investors consider ESG reputational risk as an important factor in firm valuation.

Appendix A

Table A1. Variable definitions

Variable	Definition	Source
Payouts	Purchases of common and preferred stock[a] plus common dividends to book value of total assets.	Compustat
Rep%	Purchases of common and preferred stock scaled by the sum of purchases of common and preferred stock and cash dividends.	Compustat
CurrentRRI	A company's current level of ESG reputational exposure to media and stakeholder attention, ranging from 0 (lowest) to 100 (highest) and converted to range from 0 to 1.	RepRisk Global Business Intelligence database
PeakRRI	A company's accumulated ESG reputational exposure for the last 2 years to media and stakeholder attention, ranging from 0 (lowest) to 100 (highest) and converted to range from 0 to 1.	RepRisk Global Business Intelligence database
FreeCashFlows	Free cash flows as calculated by Richardson's (2006) accounting-based framework.	Author's calculations
TobinsQ	Market-to-book ratio, calculated as the market value of assets ((PRCC_F*CSHO) + AT – CEQ) divided by the book value of assets (AT).	Compustat
Leverage	Total debt scaled by the book value of total assets.	Compustat
Age	Number of years elapsing from a firm's foundation day.	Orbis database, J. R. Ritter (https://site.warrington.ufl.edu/ritter/ipo-data/)
CashFlowVol	Standard deviation of operating cash flows – rolling 3-year window.	Compustat
InstHoldings	Institutional holdings and shares held by institutions.	Thomson/Refinitiv
Firm Efficiency	Measure of a firm's efficiency within its industry, based on data envelopment analysis, with values ranging from 0 (inefficient firm) to 1 (fully efficient firm).	Constructed by the authors following the methodology of Demerjian, Lev and McVay (2012) and using Compustat data
Whited and Wu (2006)	Whited and Wu (2006) index: $-0.091CF - 0.062DD = 0.021LEV - 0.44LNTA + 0.102\text{ISG} - 0.035\text{SG}$ where CF is operating cash flows scaled by the book value of total assets DD is a dummy variable, which takes the value 1 if a firm pays dividends and 0 otherwise LEV is the leverage variable $LNTA$ is the firm size variable ISG is the firm's industry sales growth (industry is defined as the three-digit industry SIC code) SG is sales growth between t and t−1.	Compustat
Kaplan and Zingales (1997)	Kaplan and Zingales (1997) index: $0.238Q - 1.002CF + 3.139LEVER - 39.368DIV - 1.315CASH$ where Q is Tobin's Q variable CF is operating cash flows scaled by the book value of total assets $LEVR$ is the leverage variable DIV is cash dividends scaled by the book value of total assets $CASH$ is the firm's cash and cash equivalents divided by the book value of total assets.	Compustat

Table A1. (Continued)

Variable	Definition	Source
Size	Natural logarithm of the book value of total assets.	Compustat
State Religion	Religion ranking of the state in which the issuer's headquarters are located. The ranking is based on the ratio of the number of religious adherents in the issuer's state to the total population in that state in 2010.	Data on religiosity are obtained from the Association of Religion Data Archive (http://www.thearda.com/Archive/Files/Descriptions/RCMSST10.asp)
State Political Orientation	A dummy variable equal to 1 if a firm's headquarters are located in a Democratic state, and 0 otherwise. A state is Democratic if the Democratic Party won the last presidential election prior to the IPO announcement date in that state.	The list of Democratic states is available at https://en.wikipedia.org/wiki/Red_states_and_blue_states
StateSectorAverageRRI	Average ESG of the sector (two-digit SIC code) that a firm belongs to.	RepRisk Global Business Intelligence database
MarketValue	Market value of the firm calculated at fiscal year-end as the sum of the market value of equity, the book value of short-term debt and the book value of long-term debt.	Compustat
Earnings	Earnings before extraordinary items plus interest plus deferred tax credits plus investment tax credits to total assets.	Compustat
NetAssets	Total assets minus cash and scaled by total assets.	Compustat
Interest	Interest expense scaled by total assets.	Compustat
Payouts	Purchases of common and preferred stock plus common dividends to book value of total assets.	Compustat
R&D	Research and development expenditures scaled by total assets.	Compustat
Cash	Cash and short-term investment to total assets.	Compustat
DummyCurrentRRI, DummyPeakRRI	Indicator variables that take the value 1 if *CurrentRRI* (*PeakRRI*) is above the sample's median, and 0 otherwise.	
Earnings	Earnings before extraordinary items plus interest plus deferred tax credits plus investment tax credits to lagged market of equity.	Compustat
NetAssets	Total assets minus cash to lagged market value of equity.	Compustat
NetFinancing	Total equity issuance plus debt issuance minus repurchases minus debt redemption to lagged market value of equity.	Compustat
Interest	Interest expense to lagged market value of equity.	Compustat
Payouts	Purchases of common and preferred stock plus common dividends to lagged market value of equity.	Compustat
R&D	Research and development expenditures to lagged market value of equity	Compustat
Cash	Cash and short-term investment to the lagged market value of equity.	Compustat
Leverage	Market leverage calculated as total debt scaled by the book value of total debt plus the market value of equity.	Compustat
AnalystCoverage	The natural logarithm of the number of analysts following the firm.	IBES

[a] 'Purchases of common and preferred stock' is considered as the most accurate measurement of actual share repurchases (Banyi et al., 2008).

Table A2. Entropy balancing

Panel A: Entropy balancing weighting						
Before: Without weighting	Treat			Control		
	Mean	Variance	Skewness	Mean	Variance	Skewness
FreeCashFlows	–0.044	0.013	–3.566	–0.064	0.021	–3.260
TobinsQ	2.034	1.898	2.966	2.000	1.992	2.979
Leverage	0.225	0.030	0.632	0.206	0.036	0.785
Age	27.620	301.300	0.499	23.340	211.400	0.899
CashFlowVol	0.046	0.002	2.639	0.052	0.002	2.583
Size	7.640	3.364	–0.234	6.785	2.073	–0.323
InstHoldings	0.676	0.064	–0.861	0.712	0.071	–0.991
AnalystCoverage	2.241	4.190	2.657	2.165	3.131	2.107
After: Weighting variables	Treat			Control		
	Mean	Variance	Skewness	Mean	Variance	Skewness
FreeCashFlows	–0.044	0.013	–3.566	–0.044	0.013	–3.699
TobinsQ	2.034	1.898	2.966	2.034	2.316	3.210
Leverage	0.225	0.030	0.632	0.225	0.033	0.705
Age	27.620	301.300	0.499	27.620	259.000	0.506
CashFlowVol	0.046	0.002	2.639	0.046	0.002	2.897
Size	7.640	3.364	–0.234	7.640	2.100	–0.377
InstHoldings	0.676	0.064	–0.861	0.676	0.076	–0.875
AnalystCoverage	2.241	4.190	2.657	2.241	3.687	1.895

This table documents the results from the entropy balancing approach. Panel A presents the mean, variance and skewness between the treated and control groups before and after weighting. Panel B reports the entropy balancing regression estimates. Standard errors in Panel B are reported in parentheses. Variable definitions are reported in Appendix Table A1.

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