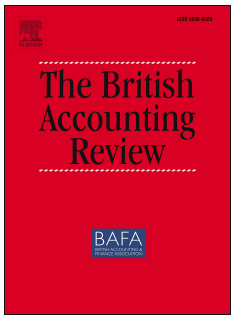

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The Effect of Corporate Sustainability Performance on Leverage Adjustments

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The Effect of Corporate Sustainability Performance on Leverage Adjustments

Abstract

We examine the impact of corporate sustainability performance (CSP) on the speed at which firms adjust their leverage ratios to the target levels for a large sample of 31 countries from 2002 to 2018. Using two proxies of CSP, we find that firms with superior CSP tend to adjust faster toward their target leverage ratios. In exploring the potential underlying economic mechanisms through which CSP affects leverage adjustments, we find that better CSP helps firms to ease information asymmetry, enhance stakeholder engagement, push up stock prices in the stock market, and improve competitive advantage in the product market. In the cross section, the positive association between CSP and leverage adjustment speed is less pronounced in countries with high-quality institutions. The results remain unchanged in robustness tests. Overall, this paper highlights the important role of CSP in shaping corporate capital structure dynamics and suggests implications for corporate strategic planning on the privately optimal levels of CSP activities.

Key Words: Corporate Sustainability Performance; Leverage SOA; Dynamic trade-off theory; Institutional environments.

JEL Classification : G31, G32

1. Introduction

In recent decades, non-financial performance in general, and corporate sustainability in particular, is becoming increasingly crucial and attracting substantial attention among companies and their stakeholders. Corporate sustainability performance (hereafter, CSP) identifies the extent to which a company simultaneously integrates economic growth, environmental protection, social efficiency, and governance elements into its operations, and ultimately, the influence these elements exert on the firm and society (Artiach, Lee, Nelson, & Walker, 2010). Prior literature suggests that CSP has the potential to create value for companies by increasing financial performance, that is lowering the idiosyncratic financial constraints (Cheng, Ioannou, & Serafeim, 2014), reducing a firm's risk (Sassen, Hinze, & Hardeck, 2016), and sinking the costs of capital (Bae, El Ghoul, Guedhami, Kwok, & Zheng, 2019; El Ghoul, Guedhami, Kim, & Park, 2018; Goss & Roberts, 2011). In this paper, we provide empirical evidence on a new mechanism through which CSP leads to corporate value creation: it increases the speed with which firms adjust their leverage toward the target capital structure and predisposes them to operate at the optimal level of leverage that balances the benefits against the costs of debt financing.

Capital structure literature documents that firms are very likely to consider target leverage ratios when they issue new capital (Graham & Harvey, 2001). Even though the dynamic trade-off theory predicts that firms have incentives to adjust to target leverage by reducing any deviation from those targets (Frank & Goyal, 2009), because of substantial financing frictions, (i.e. issuance costs or intermediation costs) firms may decide to deviate temporarily from their target levels. In other words, to the extent that leverage rebalancing is costly, moving toward the target can be slow (Fischer, Heinkel, & Zechner et al., 1989; Flannery & Rangan, 2006; Lemmon, Roberts, & Zender, 2008).

A separate but growing body of literature has highlighted the important role of CSP in shaping corporate information environments, equity valuation, competitive advantage, and stakeholder engagement. Prior literature suggests that CSP potentially motivates a firm's voluntary disclosure that enhances information transparency and reduces agency costs (Dhaliwal, Heitzman, & Li, 2006). Also, investors are more patiently to negative news and poor stock performance and are less responsive to mispricing signals of superior CSP firms (Cao, Titman, Zhan, & Zhang, 2020; Starks, Venkat, & Zhu, 2017). Such firms are therefore more likely to be overvalued[1], which reduces the firm's cost of equity issuance. In addition to the information role of sustainability reporting, CSP has a non-negligible influence on the product market. Flammer (2015a, 2015b) and Cao, Liang, and Zhan (2019) suggest that CSP enhances a firm's position in the product market as a competitive advantage that improves the firm's expected future cash flow realization, resulting in a low marginal capital transaction cost (Faulkender, Flannery, Hankins, & Smith, 2012). In addition, stakeholder theory documents that CSP helps firms to build long-term relationships with suppliers, customers, and creditors, which not only helps firms to improve revenue and profit, but also enables them to capitalise on their performance advantage (Bae et al., 2019; Choi & Wang, 2009; Lins, Servaes, & Tamayo, 2017). Such firms are awarded high ratings by credit rating agencies (Attig, El Ghoul, Guedhami, & Suh, 2013; Stellner, Klein, & Zwergel, 2015). To the extent that CSP affects the information asymmetry, pushes up the

[1] A detailed discussion of the association between mispricing and misvaluation can be found in section 2.3.

stock prices, improves competitive advantage, and enhances stakeholder engagement of firms, firms with superior CSP have lower agency costs, transaction costs (Cheng et al., 2014), costs of equity capital (Breuer, Müller, Rosenbach, & Salzmann, 2018; Dhaliwal, Li, Tsang, & Yang, 2011; El Ghoul et al., 2018; El Ghoul, Guedhami, Kwok, & Mishra, 2011), and to some extent, costs of bank loans (Goss & Roberts, 2011). These reduced costs, in turn, could effectively lower the cost of leverage adjustments. Therefore, we expect that the CSP should influence the speed at which firms adjust toward their optimal leverage levels. In addition, we expect that the positive impact of CSP on the speed of leverage adjustment is mitigated in countries with stronger institutional arrangements. We argue that stronger institutional settings are external mechanisms to prevent agency conflicts (An, Li, & Yu, 2015; Çolak, Gungoraydinoglu, & Öztekin, 2018; Öztekin, 2015; Öztekin & Flannery, 2012). Whilst they reduce information asymmetry and distress costs and enhance financial flexibility and the accessibility to capital markets, institutional environments are not controlled by firms, and are a less costly means for firms to manage asymmetric information and enhance stakeholder engagement. Thus, strong institutional environments can substitute the role of CSP in increasing the speed at which firms adjust to their target leverage, making the positive impacts of CSP on speed of leverage adjustment less pronounced.

To examine our hypotheses, we employ a cross-country panel dataset from the Thomson Reuters and Bloomberg databases for 2,869 publicly listed firms from 31 countries for the period between 2002 and 2018. Using cross-country data has two advantages. First, our sample comprises a broad sample of CSP data. Second, international data allows us to examine the impact of country-level institutional settings on the association between CSP and the speed of leverage adjustment.

The results confirm that CSP is significantly and positively associated with the speed with which firms adjust leverage toward their targets. Since previous literature suggests that CSP can lower firm risks, reduce costs of capital, improve information transparency, enhance stakeholder engagement, and generate competitive advantage (Breuer et al., 2018; Cao et al., 2019; Cho, Lee, & Pfeiffer Jr, 2013; Choi & Wang, 2009; El Ghoul et al., 2018; El Ghoul et al., 2011; Goss & Roberts, 2011; Sassen et al., 2016), firms with superior CSP have lower leverage adjustment costs, and thus, faster adjustment speeds. We confirm the robustness of the results by using alternative control variables, alternative econometric methods, substituting leverage and target leverage with alternative measures, and re-estimating the baseline model with different subsamples. To mitigate potential endogeneity and correlated omitted variables concerns, we use the instrument variable approach that employs the two-stage feasible efficient generalized method of moment's estimation with validity-tested instruments. Our results remain valid.

We further investigate four mechanisms through which CSP positively affects the speed of leverage adjustment and find that information asymmetry, equity mispricing, stakeholder engagement, and competitive advantage are significantly associated with this relationship in the predicted direction. In addition, we find that strong institutional settings moderate the positive impact of CSP on leverage adjustment speed. This result is consistent with the view that institutional settings are an external and less costly mechanism that firms could employ to reduce asymmetric information and enhance stakeholder engagement, thus, speeding up their leverage adjustment (An et al., 2015; Çolak et al., 2018; Öztekin, 2015; Öztekin & Flannery, 2012).

This paper makes further contribution to several strands of literature. Firstly, this paper contributes to the literature on the dynamic adjustment of capital structure. The earlier literature presumed that the speed of leverage adjustment across firms was constant (Fama & French, 2002; Flannery & Rangan, 2006; Leary & Roberts, 2005), but recent literature has provided evidence that adjustment speeds are heterogeneous and determined by various factors. In addition to the strand of research that employs the dynamic partial adjustment models of capital structure to identify the determinants of adjustment speeds (An et al., 2015; Çolak et al., 2018; Faulkender et al., 2012; Öztekin & Flannery, 2012), we introduce a new non-financial essential element, namely, corporate sustainability performance, which explains the cross-sectional variation of leverage adjustment speeds. We further explore the potential underlying economic channels and identify four mechanisms that explain the association between CSP and leverage adjustment speeds.

Secondly, this paper highlights the impact of institutional settings on capital structure. For instance, Fan, Titman, and Twite (2012) find that firms in countries with poor institutions are potentially highly leveraged. Öztekin and Flannery (2012) suggest that good institutional settings could reduce financial transaction costs, thus increasing leverage adjustment speeds. Öztekin (2015) also confirms that high-quality institutions enhance the adjustment speeds while stronger creditor protection and more effective bankruptcy procedures lead to high leverage ratios. In this paper, we use a broad range of institutional factors and find that strong institutional settings could be a less costly mechanism for firms to reduce leverage adjustment costs when compared to CSP. Strong institutional settings are a substitute for CSP, which significantly mitigates the positive impact of CSP on the speed of leverage adjustment.

Thirdly, this paper also contributes to the literature on CSP. Prior studies (Cheng et al., 2014; El Ghoul et al., 2018; El Ghoul et al., 2011; Lee & Faff, 2009; Sassen et al., 2016) focus on the impacts of CSP on financial performance, firm risks, costs of external financing, and financial constraints but not on the capital structure. We shed light on the significance of the impact of CSP on the adjustment of capital structure. Additionally, to the extent that investments in CSP bring both benefits and costs to corporations (Bae et al., 2019; Cheng et al., 2014; Luo, Meier, & Oberholzer-Gee, 2011), our findings have important implications for corporate strategic planning on the privately optimal levels of CSP activities.

The remainder of this paper is organized as follows. Section 2 presents a literature review and develops the hypotheses. Section 3 explains our empirical design. Section 4 describes the data, sample selection and variable construction. Section 5 reports the empirical results, robustness checks and further analyses before Section 6 offers a conclusion.

2. Literature review and hypothesis development

This section summarizes the literature on CSP and the speed of leverage adjustment. It discusses a prediction on how CSP facilitates firm leverage adjustments and outlines a discussion on the possible channels of this relationship and the roles of the country's institutional strength in reshaping the leverage adjustment sensitivity to CSP.

2.1. Corporate sustainability performance

A large number of studies have investigated the impacts of CSP on firm financial performance. These studies provide contradictory results that show positive, negative, U-shape, and even inverse U-shape associations between CSP and corporate financial performance (Margolis & Walsh, 2003; Salzmann, 2013; Ye & Zhang, 2011). Nonetheless, existing meta-analysis shows unambiguous evidence that the positive relation is more likely to occur (Eccles, Ioannou, & Serafeim, 2014; Margolis, Elfenbein, & Walsh, 2010; Margolis & Walsh, 2003; Orlitzky, Schmidt, & Rynes, 2003; Van Beurden & Gössling, 2008). For example, in their review of 34 empirical studies, Van Beurden and Gössling (2008) show that there is clear evidence for a positive link between corporate social and financial performance. They also suggest that the studies yielding contrary findings use out-dated material. Servaes and Tamayo (2013) reveal that there is a positive relationship between corporate social responsibility (CSR) and firm value when customers have high awareness of firm activities. Similarly, Eccles et al. (2014) indicate that firms with superior socially and environmentally responsible practices, which are regarded as highly sustainable, have better financial performance compared to firms bereft of any explicitly sustainable practices. Flammer (2015a) examines shareholder proposals for CSR that pass or fail by a small margin of votes and finds that approved proposals lead to positive abnormal stock returns. Deng, Kang, and Low (2013) find that acquirers with superior CSR have higher merger announcement returns and better post-merger operating performance. Most recently, Albuquerque, Koskinen, and Zhang (2019) find that CSR decreases systematic risk and increases firm value and that these effects are stronger for firms with high product differentiation.

Empirical studies also investigate the importance of CSP in the product market and suggest that investing in CSP activities can be used to differentiate product strategy (Bagnoli & Watts, 2003; Siegel & Vitaliano, 2007). Specifically, Lou and Bhattacharya (2006, 2009) demonstrate that CSR increases customer loyalty, resulting in more pricing power for firms. There is also direct evidence of the ability of firms with CSR features to increase their sale capacity or product price (Ailawadi, Neslin, Luan, & Taylor, 2014; Auger, Burke, Devinney, & Louviere, 2003; De Pelsmacker, Driesen, & Rayp, 2005; Elfenbein & McManus, 2010; Hilger, Hallstein, Stevens, & Villas-Boas, 2019). Flammer (2015b) suggests an indirect link between CSR and the product differentiation strategy by revealing that US firms respond to tariff reductions that increase competition by investing more in their CSR activities.

Recently, the literature on corporate sustainability has focused on how social responsibility impacts the cost of capital of firms. Bauer, Derwall, and Hann (2009) investigate credit risk and suggest that firms with better employee relations have higher credit ratings and lower costs of debt financing. Similarly, Attig et al. (2013) indicate that firms with superior social performance tend to be awarded relatively high credit ratings that lead to low financing costs. Lee and Faff (2009) find that sustainable firms exhibit significantly lower idiosyncratic risk whereas Goss and Roberts (2011) show that firms with superior CSP enjoy between 7 and 18 basis-points discount on bank debts compared to their counterparts. In their examination of a European dataset, Stellner et al. (2015) also confirm that firms with better environmental, social, and governance performance have lower credit risks. Cheng et al. (2014) imply that firms with superior CSP are more likely to have access to financial resources. In a similar vein, El Ghoul et al. (2011) show that firms can benefit from investments in CSR in terms of a lower cost of equity. Dhaliwal et al. (2011) document that firms with a high cost of equity are willing

to invest more in CSR activities in the following year in order to enjoy a subsequent reduction in their cost of equity. Breuer et al. (2018) find that in countries with strong investor protection, the cost of equity falls when a firm invests in CSR. El Ghoul et al. (2018) conclude that the investment in corporate environmental responsibility reduces the firm's equity costs worldwide. Bae et al. (2019) conclude that CSR can reduce the costs of high leverage by impacting firms' interactions with customers and competitors.

In this paper, we contribute to the extant literature by examining the correlation between CSP and the speed of adjustment (SOA) of the targeted leverage level of firms. This study adds to the current research on the impacts of corporate sustainability on firm financial performance, risks, and costs of capital, and provides further evidence on the effects of corporate sustainability on a firm's capital structure decisions. In a related work, Do, Huang, and Lo (2018) examine the impact of adopting CSR on leverage SOA using the US data. Our study differentiates from theirs in two ways. The first is that by establishing the relationship between CSP and the leverage SOA, we further identify four potential underlying economic channels that link firms' CSP and SOA: asymmetric information, equity mispricing, stakeholder engagement, and competitive advantage. We also show that this association is present only for over-levered firms, not for under-levered firms. The second is that, differently from a single-country study, we include public firms from 31 countries, so our sample has a larger and more comprehensive coverage of data. By employing international data, we are able to address the impact of country-level institutions on the association between CSP and the leverage SOA.

2.2. Speed of leverage adjustment

The study by Modigliani and Miller (1958) has generated a number of theories that emphasise the importance of a firm's decisions on capital structure, due to frictions and imperfections within capital markets. The trade-off theory, which is regarded as one of the major theoretical perspectives, emphasises two types of market friction: corporate income taxes, and financial distress/bankruptcy costs. The early static trade-off models claim that firms have their own target capital structure that balances the costs and benefits of debt (Bradley, Jarrell, & Kim, 1984; Brennan & Schwartz, 1978; Kraus & Litzenberger, 1973). Such theoretical models are followed by recent empirical dynamic trade-off models, and results suggest that there is a mean reversion of capital structure as firms try to reach such target levels to maximize the firm value (Hennessy & Whited, 2005; Strebulaev, 2007; Titman & Tsyplakov, 2007). Consequently, a new strand of research has attempted to examine how quickly firms adjust to their target leverage levels.

The speed that firms converge on their target leverage depends on the cost of adjusting leverage. Such adjustments commence only when the benefits of adjustment are sufficient to offset the costs of moving back to the target (Fischer et al., 1989; Leary & Roberts, 2005). With zero adjustment costs, trade-off theory suggests that no firms should be observed with leverage deviation from the target leverage level. At the other extreme, if adjustment costs are infinite, firms should never move back to their targets. The current literature has provided mixed evidence on the speed with which firms converge toward their target leverage ratios. Specifically, while Fama and French (2002) suggest a low adjustment speed (about 7% to 18% per year), other studies estimate faster firm target leverage convergence ratios. For example, Lemmon et al. (2008) estimate the SOA of 25% for book leverage;

Flannery and Rangan (2006) show an even faster SOA of about 35% per year; and Alti (2006) and Leary and Roberts (2005) suggest that firms need approximately two to four years to fill in the gap between actual and target leverage ratios.

The existing literature provides differing evidence on the definition of adjustment costs that vary the speed of leverage adjustment. Specifically, a large number of studies consider transaction costs as the main part of leverage adjustment costs (Altınkılıç & Hansen, 2000; Fischer et al., 1989; Goldstein, Ju, & Leland, 2001; Strebulaev, 2007). For instance, Strebulaev (2007) provides the estimates of underwriting and management costs whereas Altınkılıç and Hansen (2000) define adjustment costs as the security issuance costs. Faulkender et al. (2012) also argue that sunk and incremental costs affect the adjustment rates of leverage ratios. Recent empirical studies focus on the opportunity costs that vary the speed of leverage adjustment among firms. Chang, Chou, and Huang (2014) show that strong corporate governance enhances firm leverage adjustments. Elsas, Flannery, and Garfinkel (2014) investigate firms' financing of major investment activities and argue that such firms adjust to their target leverage by issuing more equity capital. Zhou, Tan, Faff, and Zhu (2016) focus on the sensitivity of the cost of equity to the leverage deviation and suggest that firms with high sensitivity adjust faster to their target leverage. Ho, Lu, and Bai (2020) find that equity liquidity has a significantly positive impact on leverage adjustments. In addition, other studies consider the mispricing of equity as an element of market timing that has significant impacts on leverage SOA. For example, Warr, Elliott, Koëter-Kant, and Öztekin (2012) conclude that equity mispricing affects the speed at which firms adjust their leverage ratio and this impact depends on the position of actual leverage relative to the target level. Corporate decisions are also shown to have significant impacts on the costs of leverage adjustments. Uysal (2011) suggests that firms move the target leverage ratio further when they plan and structure for acquisitions. Lockhart (2014) argues that the demand for liquidity and access to credit lines have significant impacts on adjustment costs conditional on the deviation of actual leverage from target levels. Dang, Dang, Moshirian, Nguyen, and Zhang (2019) suggest the impact of media coverage on leverage adjustment speed via two mechanisms: information dissemination, and monitoring. Finally, the recent literature provides evidence on the impacts of macroeconomic characters and institutional environments on leverage adjustment costs. Specifically, Cook and Tang (2010) indicate that firms that operate in good economic conditions will adjust faster than their counterparts in poor economic conditions. Elsas and Florysiak (2011) show that institutional settings with high default risks and high expected bankruptcy costs will enhance leverage SOA. Öztekin and Flannery (2012) and Öztekin (2015) find that better institutional environments are related to a high speed of leverage adjustments. Çolak et al. (2018) examine the impact of a country's political uncertainty on the leverage adjustments. Most recently, Faff, Huang, and Lu (2020) show that firms located in countries with higher levels of social trust have faster leverage SOA.

2.3. Corporate sustainability performance in determining speed of leverage adjustments

A growing literature suggests that CSP may affect the cost of adjusting leverage. This suggestion is inspired by the positive role played by CSP in shaping corporate behaviours. First, CSP potentially drives firm transparency since it motivates voluntary disclosure. Previous literature illustrates that firms with better environmental, social, and governance (ESG) performance are more likely to publish their ESG reports with their sustainability strategies (Dhaliwal et al., 2006). Such firms want to signal

their high quality by highlighting their good performance (Clarkson, Li, Richardson, & Vasvari, 2008). ESG reports are also more likely to be assured by third parties (such as the auditing profession or other assurance providers), thus enhancing the reliability of their reports (Simnett, Vanstraelen, & Chua, 2009). Prior studies also suggest that CSP can improve earnings quality. Kim, Park, and Wier (2012) suggest that firms with high-quality CSP are less likely to be involved in accruals and real earnings management, and more likely to have more managers with ethical concerns. Therefore, such firms are more likely to generate highly transparent and reliable financial reports. In general, firms with superior CSP have better information transparency or less information asymmetry between themselves and their investors, which diminishes the likelihood of agency costs. In turn, this shrinks leverage adjustment costs and increases the speed of leverage adjustment to their target level (Çolak et al., 2018; Öztekin, 2015; Öztekin & Flannery, 2012).

Also, in the stock market, it is possible that CSP could push up a firm's stock prices due to the growth of socially responsible investing. Recent studies suggest that socially responsible institutions behave more patiently to negative news and are less responsive to mispricing signals toward the high CSP firms in their portfolios when compared to their other holdings (Cao et al., 2020; Starks et al., 2017). Starks et al. (2017) show that socially responsible institutional investors are long term oriented and more patient with superior CSP firms. Such institutions do not sell the stocks even after negative news and poor stock performance. Cao et al. (2020) further document that socially responsible institutional investors pay less attention and underreact to mispricing signals after adjusting for investment horizon. Specifically, such investors are less likely to sell the stocks they hold when the quantitative signals imply that they are overpriced, and are less likely to buy stocks when there are underpriced signals. Hartzmark and Sussman (2019) also suggest that mutual funds are more likely to allocate more attention to identifying high ESG stocks and react less to quantitative signals. Consequently, high CSP firms are more likely to be overvalued. On the other hand, the recent literature has shown that equity mispricing has an impact on leverage SOA. Warr et al. (2012) document that, firms that have a leverage above the optimal level and should, therefore, issue equity (or retire debt), adjust faster toward their target when their shares are overvalued. The speed is much slower when stocks are undervalued. In sum, firms with high CSP levels that are more likely to be overvalued in the stock market have lower costs of leverage adjustments, and thus faster leverage SOA toward their target leverage.

Second, the literature shows that CSP has a significant role in the product market relating to a firm's stakeholder engagement and competitive advantages. Specifically, better CSP performance represents a high engagement of firms with their stakeholders through mutual belief and cooperation. Jones (1995) shows that firms which employ ethical contracting, and which commit to their stakeholders through mutual trust and cooperation will enjoy a competitive advantage over their counterparts that do not. This competitive advantage will reduce agency and transaction costs (such as costs of monitoring, bonding, search, and warranty). Choi and Wang (2009) suggest that by facilitating strong stakeholder relationships, corporate sustainability not only helps firms to improve revenue and profit, but also enables them to capitalise on their performance advantages. This, in turn, increases the likelihood of long-term oriented behaviours (Bénabou & Tirole, 2010; Eccles et al., 2014). Additionally, as one of the stakeholders of firms, credit rating agencies tend to award relatively high ratings to superior CSP

firms (Attig et al., 2013; Oikonomou, Brooks, & Pavelin, 2014; Stellner et al., 2015). Such firms have lower volatility in underlying asset values, which implies a lower default risk as well as lower expected losses from default. Consequently, these firms are better placed to approach external financial sources and to more quickly adjust to their targets.

Flammer (2015b) and Cao et al. (2019) document that CSR enhances a firm's position in the product market as a competitive advantage, thus increasing sales growth and improving corporate performance. Adopting CSP activities is also considered as being a firm's differentiation strategy, which is particularly attractive for investors in the evaluation of uncertain investment opportunities (Smit & Trigeorgis, 2006; Stoughton, Wong, & Yi, 2018). Branco and Rodrigues (2006) argue that engaging in a CSR strategy is a form of investment, entailing initial costs for future financial benefits. Accordingly, one can expect stronger and more stable cash flow and higher profitability for firms with higher CSP in the future. Such potential changes in cash flow features may provide a low marginal transaction cost for leverage targeting (Faulkender et al., 2012), hence accelerating the speed of leverage adjustment of firms with high CSP.

To summarize, we argue that firms with better CSP will have lower costs of leverage adjustments through four channels: lowering information asymmetry; making equity over-valued; enhancing stakeholder engagement; and increasing competitive advantage.

Based on the discussion above, we propose the following hypotheses:

H1. Firms with better CSP adjust faster to the target leverage ratios.

H2a. Information disclosure is the channel linking CSP and the speed of leverage adjustments

H2b. Equity mispricing is the channel linking CSP and the speed of leverage adjustments

H2c. Stakeholder engagement is the channel linking CSP and the speed of leverage adjustments

H2d. Competitive advantage is the channel linking CSP and the speed of leverage adjustments

Institutional settings are generally considered as being external mechanisms to mitigate agency conflicts (An et al., 2015; Çolak et al., 2018; Öztekin, 2015; Öztekin & Flannery, 2012). Supporting this view, La Porta, Lopez-de-Silanes, Shleifer, and Vishny (1998) find that financial markets are more effective and vigorous in countries with better institutions. In such countries, investor protection and legal enforcement are strong and ensure that stakeholder rights are implemented in times of need. Öztekin and Flannery (2012) show that stronger institutions reduce information asymmetry and distress costs, and enhance access to capital markets and financial flexibility, making it easier for firms to issue either debt or equity that leads to higher adjustment speeds. Öztekin (2015) also confirms that high quality institutions form legal frameworks that facilitate more effective contracting, which enables economic transactions. Çolak et al. (2018) suggest that strong institutional settings reduce the uncertainty of financial markets. Nonetheless, institutional settings are established beyond the control of firms and represent a less costly means for firms to reduce information asymmetry and enhance stakeholder engagement. Taken together, strong institutional environments can substitute the role of CSP in increasing the speed at which firms adjust to target leverage, making the positive impacts of CSP on leverage speed of adjustment attenuated.

The following hypothesis supports these arguments:

H3. A country's institutional strength attenuates the positive impacts of CSP on the speed of leverage adjustments.

3. Empirical design

This paper investigates how CSP affects the speed at which firms adjust to their target leverage ratios. We argue that it would be cheaper for firms with sustainability compliant to obtain debt and equity capital, which would enable firms to adjust more quickly to their target leverage. Based on the existing literature, we model a firm's target leverage as a function of the firm's time-varying characteristics and the industrial elements (An et al., 2015; Devos, Rahman, & Tsang, 2017; Flannery & Rangan, 2006; Hovakimian, Opler, & Titman, 2001; Huang & Ritter, 2009; Warr et al., 2012). These components include firm financial characteristics and the industry leverage ratio. Definitions of the variables are provided in Appendix A. We consider the following equation:

$$L^*_{ij,t+1} = \beta X_{i,j,t} \quad (1)$$

where β is the coefficient vector and $X_{i,j,t}$ is a set of firm-level characteristics and industry leverage ratio.

Relying on the costs and benefits of rebalancing their leverage ratio, firms assess how rapidly they converge to the target leverage ($L^*_{i,j,t+1}$) from their current positions ($L_{i,t,j+1}$). We estimate the standard partial adjustment model of capital structure:

$$L_{i,j,t+1} - L_{i,j,t} = \gamma_j\left(L^*_{i,j,t+1} - L_{i,j,t}\right) + \vartheta_{i,j,t+1} \quad (2)$$

Substituting Eq. (1) to Eq. (2) and rearranging them, yields:

$$L_{i,j,t+1} = (\gamma\beta)X_{i,j,t} + (1-\gamma)L_{i,j,t} + \vartheta_{i,j,t+1} \quad (3)$$

The speed of leverage adjustment (γ) allows firm i in a specific country j that diverges away from the target to adjust partially back to their target during the next period. We note that γ should be greater than zero as a firm's managers make efforts to reach the target leverage ratio, and the gap between the target and real leverage ratios should decrease over time (hereinafter called "the distance from target" and estimated as $Dist_{i,t} = L^*_{i,t+1} - L_{i,t}$). However, since market frictions cause costly adjustments, firms do not fully converge on their leverage, or γ being smaller than one. While the leverage adjustment speed γ in Eq. (3) is constant for all firms in a specific country, to test our hypotheses, we allow CSP to increase the firm's SOA toward its target ratio. Thus, γ varies with CSP and the control variables:

$$\gamma_{i,j,t} = \varphi_{i,j,t}CSP_{i,j,t} + \rho_{i,j,t}X_{i,j,t} \quad (4)$$

where $\varphi_{i,j,t}$ and $\rho_{i,j,t}$ are coefficient vectors and $X_{i,j,t}$ is a set of controls. As previous studies (An et al., 2015; Öztekin & Flannery, 2012) have suggested, a firm's accounting variables may affect both target and leverage SOA, thus we include the control variables that are used in target leverage estimation (X vector) in Eq. (4).

Substituting Eq. (4) back to Eq. (3) yields the equation for a partial adjustment model with heterogeneity in the leverage SOA:

$$L_{i,j,t+1} - L_{i,j,t} = \left(\varphi_{i,j,t} CSP_{i,j,t} + \rho_{i,j,t} X_{i,j,t}\right)\left(\beta X_{i,j,t} - L_{i,j,t}\right) + \vartheta_{i,j,t+1} \quad (5)$$

This can be further simplified to yield:

$$\Delta L_{i,j,t+1} = \left(\varphi_{i,j,t} CSP_{i,j,t} + \rho_{i,j,t} X_{i,j,t}\right)\left(Dist_{i,j,t}\right) + \vartheta_{i,j,t+1} \quad (6)$$

To estimate Eq. (5), following Faulkender et al. (2012) and Çolak et al. (2018), we use a two-step process. In the first step, we estimate Eq. (3) country by country using system GMM[2]. We also control for firm fixed effects and year fixed effects in Eq. (1) to capture the unobserved heterogeneity across time and across firms. From here, we obtain an estimate of target leverage using Eq. (1). Using this estimate of target leverage, we calculate each firm's distance from target ($Dist_{i,t}$) and substitute this estimated distance into Eq. (6). Following the recent literature (Çolak et al., 2018; Dang et al., 2019; Öztekin, 2015; Öztekin & Flannery, 2012), we estimate this model using pooled ordinary least squares. Since $Dist_{i,j,t}$ is generated from the first stage rather than observed, the estimation in the second stage is subject to the well-known generated regressors issue, in which the estimated standard errors may be incorrect (Pagan, 1984). We address this issue by using bootstrapped standard errors. Moreover, given that both CSP and leverage adjustments are firm-level choices, we employ firm fixed effects estimators to control for time-invariant unobserved firm-specific factors that may be correlated with the CSP variables and the leverage SOA.

Our next hypotheses (*H2a - H2d*) are based on the contention that information disclosure, equity mispricing, stakeholder engagement, and competitive advantage could be the channels ($CHANNEL_{i,j,t}$) linking CSP and firms' speed of leverage adjustments. To test these hypotheses, we include measures of the particular channels and their interactions with CSP in our empirical setting:

$$\gamma_{i,j,t} = \varphi_{i,j,t} CSP_{i,j,t} + \mu_{i,j,t} ID_{i,j,t} + \pi_{i,j,t} CSP_{i,j,t} * CHANNEL_{i,j,t} + \rho_{i,t,j} X_{i,j,t} \quad (7)$$

Finally, to test the third hypothesis (*H3*), that a country's institutional strength may attenuate the positive impact of CSP on the speed of leverage adjustments, we add a country's institution variables and the interactions between such institution variables and CSP as follows:

$$\gamma_{i,j,t} = \varphi_{i,j,t} CSP_{i,j,t} + \Delta_{i,j,t} IN_{i,j,t} + \wedge_{i,j,t} CSP_{i,j,t} * IN_{i,j,t} + \rho_{i,j,t} X_{i,j,t} \quad (8)$$

4. Variables, data, and sample selection

This section defines the variable construction used in the empirical analysis, and the data sources we use to collect various firm, industry, and country characteristics, and our sample selection procedure.

4.1. Variable construction

4.1.1. Leverage measures

We measure our dependent variable, leverage, using both the book ratio (BL) and the market ratio (ML), as it is likely that several firms have book leverage rather than market leverage and vice

[2] We note that since Eq. (3) is a dynamic panel data model, using traditional pooled OLS or fixed effects (FE) estimators would lead to biased and inconsistent estimates (Baltagi, 2013). In our robustness check, we adopt previous studies (Byoun, 2008; Devos et al., 2017; Warr et al., 2012) using the cross-sectional regressions of Fama and MacBeth (1973) to estimate target leverage.

versa (An et al., 2015; Chang et al., 2014; Cook & Tang, 2010; Flannery & Rangan, 2006; Öztekin & Flannery, 2012):

$$BL_{i,j,t} = \frac{D_{i,j,t}}{TA_{i,t,j}} \tag{9}$$

$$ML_{i,j} = \frac{D_{i,t,j}}{D_{i,t,j} + S_{i,t,j}P_{i,t,j}} \tag{10}$$

where $D_{i,t}$ is the book value of firm i's interest-bearing debt (sum of short-term and long-term book value of interest-bearing debt) at time *t*, $TA_{i,t}$ denotes the book value of firm *i*'s assets at time *t*, *j* denotes the country, and $S_{i,t}P_{i,t}$ denotes the product of the number of common shares outstanding and the stock price per share at time *t*, which equals the market value of firm *i*'s equity at time *t*.

4.1.2. Corporate Sustainability Performance

There are several ways to measure the CSP. Specifically, Elkington (1997) suggests the triple bottom line approach of including the economic, environmental, and social effects of firms on both stakeholders and society (see also Dyllick & Hockerts, 2002). Murphy and McGrath (2016) recommend the inclusion of corporate governance performance as another aspect of CSP. In this paper, we measure CSP using ESG performance scores obtained from the Thomson Reuters ESG database. This measure is used widely both in research (Chang et al., 2014; Cheng et al., 2014; Eccles et al., 2014; Ioannou & Serafeim, 2012; Mackenzie, Rees, & Rodionova, 2013; Sassen et al., 2016) and in practice (PRI, 2019).

Unlike financial reports, a firm's ESG data disclosure can be unstructured and published at any time during the year. The Thomson Reuters ESG database has standardized and simplified the ESG reported data to make it helpful for financial analysis. This database obtains more than 400 ESG metrics coming mostly from firms' public reporting such as annual reports, corporate social responsibility reports, company websites, and global media sources. From this pool of information, Thomson Reuters establishes ESG scores that measure a firm's ESG performance across three pillars (environment (E), social (S), and governance (G)) and ten topics (resource use, emissions, innovation, management, shareholders, CSR strategy, workforce, human rights, community, and product responsibility). The database also offers an overall score, which incorporates ESG controversies captured from global media sources that materially and significantly affect the companies (ESGC scores). In this paper, we use the annual ESG scores and ESGC scores for each focal company every year in our main analyses as measures of CSP. Since the values of ESG, ESGC, and the three pillars (environment (ENV), corporate governance (CGV), and social (SOC) performance) are highly skewed and show kurtosis, we use the natural logarithm to achieve more normality. Before the transformation, we add 1 to each value of ESG, ESGC, ENV, CGV, and SOC scores to retain observations with 0 (Chan, Watson, & Woodliff, 2014; Rhou, Singal, & Koh, 2016)[3].

[3] Based on the Skewness and kurtosis test for normality, we reject the hypothesis that ESG score and ESGC score are normally distributed at 1% level.

4.1.3. Institutional environment variables

The information on institutional environments is obtained from various sources, mostly the law and finance literature. We first draw the legal and regulatory variables using five proxies: efficiency of the judicial system (EFFJUD); rule of law (RULLAW); level of corruption (CORRUP); risk of expropriation (RISEXP); and the repudiation of contracts by the government (RISCON) (by following La Porta et al., 1998). Next, we consider the role of the financial environment comprising the following components: disclosure score index (DISCLO) (Jin & Myers, 2006); financial analyst (ANALYST) (Bushman, Piotroski, & Smith, 2004); auditing practice (AUDIT) (Bushman et al., 2004); disclosure to congress (DISCON) (Djankov, La Porta, Lopez-de-Silanes, & Shleifer, 2010); and disclosure to the public (DISPUB) (Djankov et al., 2010). We also investigate the impact of a country's corporate governance on the CSP-leverage SOA association by including six corporate governance indicators suggested by Kaufmann, Kraay, and Mastruzzi (2009). These indicators are accountability (VOIACC), political instability (POLSTA), government effectiveness (GOVEFF), regulation quality (REGQUA), rule of law (RULLAW2), and control of corruption (CONCOR) (by following Kaufmann, Kraay, and Mastruzzi, 2009). We also explore some other institutional factors, including English origin (ENGORI) (La Porta et al., 1998), public sector ethics (PUBETH) (Kaufmann, 2004), good government index (GOOGOV) (Morck, Yeung, & Yu, 2000), and media channels (MEDIA) (Bushman et al., 2004). These institutional variables are widely used in the literature of institutions and leverage adjustments (An et al., 2015; Çolak et al., 2018; Öztekin & Flannery, 2012).

4.1.4. Control variables

Öztekin and Flannery (2012) and An et al. (2015) suggest that a firm's characteristics may impact both target leverage and leverage SOA. Therefore, in this study, we control for a set of firm-level characteristics in both specifications. Specifically, we include firm size as a natural logarithm of total assets, tangibility as fixed assets as a proportion of total assets, profitability as earnings before interests and taxes as a proportion of total assets, research and development (R&D) expenses as R&D expenses as a proportion of total assets, R&D as a dummy variable that equals one if a firm reports R&D expenses and zero otherwise, depreciation expenses as depreciation expenses as proportion of total assets, market-to-book ratio as the market-to-book ratio of a firm's assets, and the industry median leverage ratio as the median debt ratio of a firm's Fama and French (1997) industry classification.

4.2. Data and sample

We retrieve data from several sources during our sample period of 2002 to 2018[4]. First, the firm financial data for each country is obtained from Thomson Reuters Worldscope via the Datastream database. Second, in order to estimate CSP and CSP disclosure, we retrieve information on ESG factors from the Thomson Reuters ESG and Bloomberg database. Third, we collect the macro-level institutional environments from La Porta et al. (1998), Morck et al. (2000), Djankov et al. (2010), Kaufmann et al. (2009), Bushman et al. (2004), and Öztekin and Flannery (2012). We retain only firms with common securities. We also exclude firms with special features, such as warrants, trusts, funds, and non-equity stocks. Financial and utility firms are eliminated since these firms are subject to

[4] We obtain data from 2002 as this is the first year from which data on ESG scores is available in the Thomson Reuter database.

special regulations on financing policies. To reduce short panel bias, we eliminate firms that do not have data for at least two consecutive years. We winsorize both the dependent and independent variables at the 1st and 99th percentiles to mitigate the potential impact of extreme values.

[Insert Table 1 here]

Our final sample consists of 19,434 firm-year observations from 31 countries over the period spanning 2002 to 2018. Panel A of Table 1 reports the number of observations in each country and summarizes the descriptive statistics of our key variables. In general, the sample coverage varies across countries. Developed countries are likely to have higher data coverage than developing countries. In addition, summary statistics of dependent and explanatory variables are similar to those in prior studies. For instance, the mean of book leverage ratio in our study is 0.227 compared to 0.21 in An et al. (2015) and 0.24 in Öztekin and Flannery (2012). With regard to CSP, we use ESG and ESGC scores that range from 0 to 100, with high scores indicating strong performance, as proxies. The mean scores in our sample are 52.655 for ESG and 46.419 for ESGC. In general, the scores are higher for developed countries and lower for developing countries, which implies that developed countries have higher sustainability performance. These statistics are consistent with Cheng et al. (2014), who also investigate the international market and use similar data sources. In particular, they document the same mean of the ESG score which is 52. Our average ESG score is slightly lower than that documented in Sassen et al. (2016), which is 61. Nonetheless, Sassen et al. (2016) focus on European markets that include more developed countries and we focus on international firms from 31 countries. Hence, the sample selection may contribute to these slight differences.

[Insert Table 2 here]

Panel A of Table 2 reports the Pearson correlation coefficients among the financial variables of firms. Except for the high correlation between book and market leverage, there is no evidence that explanatory variables are highly correlated. The correlation matrix suggests that leverage ratios are positively associated with firm size, tangibility, depreciation, and market-to-book ratio, but are negatively linked to profitability and R&D expenditure. Panel B of Table 2 shows the correlation coefficients among ESG performance scores and their elements, including environment, corporate governance, and social performance scores. It suggests that ESG and ESGC scores are highly correlated with each other and with their elements, although environment, corporate governance and social performance scores are not highly associated.

5. Empirical results

5.1. CSP and leverage adjustments

An essential premise of our study is that CSP affects the speed with which firms move toward their target leverage ratios. Our explanation for this association is the effects of CSP on the firm's capital transaction costs and agency costs. Table 3 reports the results from estimating the partial adjustment model (Eq. 6) using pooled OLS with bootstrapped standard errors (Models 1-4) and firm fixed effects clustering at the country level (Models 5-8) for book and market leverage. Our variables of interest are two CSP proxies: the natural logarithm of ESG (*Ln(ESG)*) and ESGC scores (*Ln(ESGC)*). The first row in the table suggests that the coefficients on all CSP variables are positive and significant at the 1%

level. It indicates that firms with better sustainability performance are likely to move faster to their target leverage ratios.

Regarding the magnitude of the impact, a standard deviation increase of one in CSP increases the speed of adjustment by 2.4% - 4.3%, compared with an average adjustment speed of 20.4%[5]. In other words, an average firm takes about 3 years to adjust half of the deviation between actual and target leverage. This duration decreases to about 2.4 years with superior CSP[6]. In general, the results support our first hypothesis that CSP encourages the speed of leverage adjustment. Firms with better CSP are charged lower transaction costs in issuing financial capital and have lower asymmetric information that leads to lower agency costs. Consequently, such firms have a higher speed of adjustment.

[Insert Table 3 here]

5.2. Channels linking CSP and leverage adjustments

In this section, we examine four possible mechanisms: information disclosure, equity mispricing, stakeholder engagement, and competitive advantage that potentially link a firm's sustainability performance and leverage SOA, as predicted by *H2a*, *H2b*, *H2c*, and *H2d*, respectively.

5.2.1. Information disclosure

As proposed by *H2a*, the presence of adverse selection and information costs can significantly escalate the costs of leverage adjustment, thus reducing the speed with which firms adjust back to their target leverage. Nonetheless, if CSP facilitates the speed of leverage adjustment by increasing a firm's information disclosure, then its impacts on leverage adjustment should be stronger for firms with less information disclosure and vice versa. We use two measures to proxy for ESG information disclosure ($ESGDIS_{i,t,j}$). The first measure is ESG disclosure score developed by Bloomberg (ESGDIS_BB) that is collected from company-sourced filings, such as corporate social responsibility reports, annual reports, the company website, and a proprietary Bloomberg survey that requests corporate data directly[7]. We also employ the ESG disclosure score provided by Thomson Reuters ESG database (ESGDIS_DS) that measures whether or not a company has disclosed an information item in any given year as another proxy for ESG information disclosure.

Table 4 presents the results for Eq. (7) for ESGDIS_BB measures in models (1)-(4) and ESGDIS_DS in models (5)-(8). The coefficients of CSP in all models are positive and statistically significant at the 1% level, implying that the positive relationship between CSP and leverage SOA remains after

[5] To compute the economic significance of corporate sustainability performance on speed of leverage adjustment, we take the product of the coefficients and sample standard deviation of the measures of corporate sustainability performance (An et al., 2015; Çolak et al., 2018; Faulkender et al., 2012)

[6] The half-life time is calculated as Ln(0.5)/Ln(1-0.204), where 0.204 is the sample mean of adjustment speeds. Because corporate sustainability performance increases the adjustment speeds by 2.4% to 4.3%, the lower bound of half-life time reduces to Ln(0.5)/Ln (1-0.247).

[7] Bloomberg rates a firm's ESG disclosure on three dimensions: social, environmental, and governance. ESG disclosure scores indicate the rating that Bloomberg's analysts give to the degree of transparency and accountability of a firm's reporting on the ESG strategies, performance, and related activities. The comprehensive score of ESG disclosure is calculated from 120 indicators, spanning from 0.1 (minimum disclosure) to 100. We collected all the data available from the Bloomberg (the earliest data available is from 2007) and match with our sample using the International Securities Identification Number (ISIN) and ticker symbol (TICKER). The mean of Bloomberg's ESG disclosure score of firms in our sample is 30.508, with the lowest score of 1.240 and highest score of 76.033.

controlling for ESG information disclosure. More importantly, the coefficients on the interaction terms *ESGDIS*CSP*Dist* are negative and highly statistically significant at the 1% level, indicating that the positive association between CSP and leverage SOA is attenuated for firms that disclose more ESG information. The results support the hypothesis *H2a*. In addition, consistent with previous studies, the coefficients of information disclosure ($ESGDIS_{i,t,j}$) are all positive and statistically significant, implying that firms with better information disclosure adjust faster to target leverage levels (Öztekin, 2015; Öztekin & Flannery, 2012).

[Insert Table 4 here]

5.2.2. Equity mispricing

We argue that high CSP firms are more likely to be overvalued, which reduces their costs of leverage adjustment, thus increasing the speed of their adjustment toward their target leverage. Hence, if the positive effect of CSP on leverage SOA is driven by the equity overvaluation, this effect should be weaker (stronger) for firms that are over- (under-)valued in the market (*H2b*). To estimate equity mispricing, we use the equity value as determined by the residual income model scaled by the market price. This approach, suggested by Rhodes–Kropf, Robinson, and Viswanathan (2005), deconstructs the book-to-market ratio into two components: the ratio of value to market price that is a measure of mispricing; and the ratio of book value to value that is a measure of growth opportunities. They find that the value to market price ratio better captures mispricing than book-to-market ratio[8]. In this paper, we follow Warr et al. (2012) who use the residual income model to estimate the firm's equity value. The residual income model is estimated by adding the discounted expected earnings in excess of the expected return on book value to the book value of equity:

$$V_0 = B_0 + \sum_{t=1}^{n} \frac{(E_t - r \text{ x } B_{t-1})}{(1+r)^t} + \frac{TV}{(1+r)^n \text{ x } r} \tag{11}$$

where V_0 is the value of the firm's equity at time 0, B_0 is the book value at time 0, r is the cost of equity, E_t is the expected future earnings for year t at time 0, TV is the terminal value that is calculated as:

$$TV = \frac{(E_t - r \text{ x } B_{t-1}) + (E_{t+1} - r \text{ x } B_t)}{2} \tag{12}$$

where r is the cost of equity that is measured using Fama and French's (1997) one-factor model with the short-term T-bill as a proxy for the risk-free rate of interest. Time 0 is the beginning of the fiscal year, and n equals two years.

[8] Market-to-book ratio is frequently used as a measure of equity valuation in early capital structure studies. However, this ratio performs rather poorly (Lee, Myers, & Swaminathan, 1999; Warr et al., 2012). For instant, Flannery and Rangan (2006) find little impact of market-to-book on adjustment rates, whereas Hovakimian (2006) argues that any association between market-to-book and capital structure is due to growth opportunities, not market timing. Lee et al. (1999) show that market-to-book ratios predict only about 0.33% of the variation in real stock returns, and they conclude that market-to-book is a weak measure of mispricing. In an unreported table, nevertheless, we also achieve consistent results when we use book-to-market ratio as the proxy for equity valuation.

The value of the firm's equity, V_0, is compared to the market value of the stock, P_0, to determine the misvaluation:

$$VP_0 = \frac{V_0}{P_0} \tag{13}$$

Following Warr et al. (2012), we use the median VP as the watershed for over- and under-valuation. Specifically, the VP of less than the median implies over-valuation, while a VP greater than the median implies under-valuation. We use the dummy variable that equals one if the firm's equity is overvalued and zero otherwise.

Panel A of Table 5 presents the results. The coefficients of *CSP*Dist* are positive and statistically significant at the 1% level, consistent with our main finding. The coefficients of the interaction term *OveVal*Dist* are also positive and highly statistically significant, indicating that firms with high CSP are more likely to be over-valuated in the market which helps them to move faster to their target leverage than their counterparties. This result is consistent with Warr et al. (2012). More importantly, the coefficients of the triple interaction term *OveVal*CSP*Dist* are negative and highly significant in all models (1-4). This implies that the positive impact of CSP on leverage SOA is weaker for overvalued firms that have lower costs of equity adjustment. This result supports our hypothesis *H2b*.

The preceding argument shows that CSP can push up a firm's stock price, make the firm's equity overvalued in the market, and thus reduce the overall cost of the firm's equity. Recent studies also document the negative association between CSP and the cost of equity. El Ghoul et al. (2011) show that firms can benefit from investment in CSR in terms of a lower cost of equity. Dhaliwal et al. (2011) document that firms with a high cost of equity are willing to invest more in CSR activities in the following year in order to enjoy a subsequent reduction in their cost of equity. Breuer et al. (2018) find that in countries with strong investor protection, the cost of equity falls when a firm invests in CSR. El Ghoul et al. (2018) conclude that investment in corporate environmental responsibility reduces the firm's equity costs worldwide. However, the impact of CSP in reducing the firm's cost of debt financing is not clear. For instance, Goss and Roberts (2011) show that the economic impact of CSP on bank loan cost is rather small, implying that banks do not recognize the value enhancing or the risk reducing effect of CSP. If this is the case, we could expect the impact of CSP on leverage SOA to be asymmetric between over-levered and under-levered firms.

We examine the impact of CSP on leverage SOA for over-levered and under-levered firms by including interaction terms between *CSP* and a dummy variable that takes value of one if firm is under-levered and zero otherwise *(Under).* The results, which are presented in Panel B of Table 5, support our argument. Specifically, the coefficients of the interaction terms *CSP*Dist* are positive and highly significant whereas the triple interaction terms *Under* CSP*Dist* are significantly negative at the 1% level across models (1)-(4). This indicates that the positive relationship between CSP and leverage SOA is significantly stronger for over-levered firms than for under-levered firms. This can be explained for over-levered firms, as high CSP helping to reduce a firm's cost of equity which helps to accelerate the speed of the firm's leverage adjustments. However, as banks do not recognize the value-enhancing or the risk-reducing impact of high CSP, under-levered firms that need to issue debt or

retire equity to adjust to the target would move more slowly to their target due to high investments in CSP.

[Insert Table 5 here]

5.2.3. Stakeholder engagement

The hypothesis *H2c* posits that better sustainability performance represents the high engagement of firms with their stakeholders through mutual belief and cooperation that reduces agency costs and transaction costs, thereby decreasing leverage adjustment costs and enhancing the speed of leverage adjustment. To the extent that CSP helps to facilitate dynamic leverage adjustments through this mechanism, the impact of CSP on leverage SOA should be stronger for firms that engage poorly with their stakeholders and conversely, weaker for firms that engage better with their stakeholders. To establish a proxy for stakeholder engagement, we use the scores obtained from the Thomson Reuters ESG database that capture the degree to which a focal company explains the formal processes in place for engagement with its stakeholders. The higher the score, the stronger the firm's stakeholder engagement.

Panel A of Table 6 displays the evidence to explore this mechanism. Across the models, we continue to find that CSP has positive and significant impacts on leverage SOA, even when controlling for the impacts of stakeholder engagement as shown by the coefficients of CSP proxies in the models. We also find that the coefficients of the interactions between CSP proxies and stakeholder engagement are negative and statistically significant at the 1% level in all models. These results imply that the positive effects of CSP on leverage SOA are less pronounced for firms that engage highly with their stakeholders. This finding supports *H2c*.

We argue that strong CSP helps firms to build long term relationships with their stakeholders such as suppliers, customers, and creditors through mutual belief and corporation. For instance, Lins et al. (2017) suggest that high CSR firms build social capital through their CSR activities, which help them to perform better during the crisis. Bae et al. (2019) show that CSR impacts the interaction between firms and their customers and competitors such that it reduces the cost of high leverage. In this sub-section, we study the heterogeneity of social capital of the different countries and examine whether the association between CSP and leverage SOA is different.

Putnam (2000) shows that a firm's social trust is more valuable in a country with higher social capital. Lins et al. (2017) further argue that in countries where people have a lower social trust, a firm's sustainable activities are less likely to be considered by their stakeholders as trust-enhancing activities; they instead may be viewed as window dressing and less genuine. In a related study, using a large international sample of 65 countries, Faff et al. (2020) show that country-level social trust has a positive effect on corporate leverage SOA. Following the logic, higher country-level social capital can enhance agents' social trust, then improve their stakeholder engagement, thus strengthening the association between CSP and leverage SOA.

As an alternative argument, a country's social capital is set beyond the agents. Relying on a country's social trust to enhance stakeholder engagement is a less costly choice for firms to reduce leverage adjustment costs and speed up their SOAs. Thus, firms operating in countries with better (worse) social trust become less (more) reliant on cheaper macro-level tools to build long term relationships

with their stakeholders than investing in sustainable activities to enhance stakeholder engagement to save on their investment costs. Consequently, the positive association between CSP and leverage SOA is attenuated in countries with higher social capital.

We use the OECD social cohesion indicator that was originally derived from the survey administered in 2018 (OECD, 2019) as a proxy for country-level social trust. A cohesive society is one where citizens have confidence in public institutions, which is strongly related to societal trust. In the survey, respondents were asked to answer the binary questions: "Do you have confidence in each of the following: in the national government, in financial institutions or banks, in the judicial system and courts, in the local police force, in the military". A high score of social trust denotes that people in a specific country generally trust their public institutions. Indeed, this measure has been most widely used in prior studies that examine the country-level social trust (Kang & Kim, 2019; Qu & Yang, 2015; Rao, Pearce, & Xin, 2005).

We augment our baseline model with country-level social trust *(SOCTRU)* and its interactions with CSP measures (*ESP*SOCTRU).* The results are reported in Panel B of Table 6. We continue to find that ESP has positive and significant effects on leverage SOA in all models. The coefficients in *SOCTRU* are also positive and significant at the 1% level, consistent with Faff et al. (2020) that firms in high social trust countries have faster leverage adjustment. More importantly, the coefficients on the interaction term (*ESP*SOCTRU*Dist)* are negative and significant across models, implying that the effect of CSP on leverage SOA is attenuated in countries with higher social trust. This result is consistent with our second argument about the role of country-level social trust in shaping the association between CSP and leverage SOA.

[Insert Table 6 here]

5.2.4. Competitive advantage

The previous literature shows that CSP enhances a firm's position in the product market as a competitive advantage that results in an expectation of stronger and more stable cash flows and higher profitability in the future (Cao et al., 2019; Flammer, 2015b). We hypothesize the competitive advantage, as proxied by the expected future cash flow realization, to be another possible channel that links a firm's CSP and leverage SOA (*H2d*). We expect that the impacts of CSP performance on leverage SOA would be stronger for firms with low expected future cash flow realization and vice versa.

Following Daske, Hail, Leuz, and Verdi (2008), Doidge, Karolyi, and Stulz (2004), Jiao (2011), Lang, Lins, and Miller (2004), and Cahan, De Villiers, Jeter, Naiker, and Van Staden (2016), we use Tobin's Q to measure the market's assessment of a firm's long-term expected value. Tobin's Q includes the market's assessment of a firm's future cash flows and the riskiness of those cash flows. The results, shown in Panel A of Table 7, are consistent with our predication. Specifically, the coefficients on *CSP*Dist* and *TobinQ*Dist* are positive and highly statically significant, showing that a firm's CSP and future expected cash flows have positive impacts on leverage SOA, consistent with our main finding and the previous literature (Faulkender et al., 2012). More importantly, the coefficients of *TobinQ*CSP*Dist* are negative and highly significant across models, indicating that the impact of CSP

performance on leverage SOA is weaker for firms with higher market assessment of future cash flows. The result supports our hypothesis *H2d*.

In addition, as mentioned above, market competition can be seen as an incentive for firms to enhance the CSP, thus, improving the firm's general performance (Cao et al., 2019). In other words, firms in highly competitive industries have more incentives to enhance their CSP to distinguish them from their low CSP competitors, thus increasing their SOA. In line with this view, we expect the link between CSP and leverage SOA to be stronger for a highly competitive industry.

We use the Herfindahl-Hirschman (HH) index as a proxy for market competition. The dummy variable *(Concentrate)* takes the value of one if firms operate in a concentrated industry (HH index is above the median of the index) and zero if firms operating in competitive industries (HH index is below the median of the index) [9]. We estimate the regression that includes the triple interaction *CSP*Concentrate*Dist* to measures the impact of CSP on leverage SOA for each of the subsamples. The results, presented in Panel B Table 7, support our argument. Specifically, the coefficients on the interaction terms *CSP*Dist* are positive and highly significant across models, indicating the positive link between CSP and leverage SOA, consistent with our baseline results. Interestingly, the coefficients on triple interaction terms *CSP*Concentrate*Dist* are negative and highly significant at the 1% level, indicating that market competition helps low CSP firms in highly competitive industries to have more incentive to maximize their CSP, leading to an increase in their leverage SOA. This supplementary analysis for the impact of market competition provides additional support for our main findings.

[Insert Table 7 here]

5.3. Robustness tests

In this section, we investigate the robustness of our baseline results by using alternative and additional measures of leverage and target leverage ratio, alternative econometric method, and addressing the endogeneity issue.[10]

5.3.1. Alternative measures of leverage and target leverage ratios

We test the robustness of the baseline results using an alternative measure of leverage ratio. As suggested by Faulkender et al. (2012), the change in leverage ratio includes both passive and active adjustments, with the former being a mechanical adjustment and the latter involving firms actually visiting the capital markets. Since only active adjustments involve transaction costs, Faulkender et al. (2012) argue that studies on firm leverage adjustments should only focus on the active component. In this section, we measure leverage ratio focusing on the active component of the adjustment:

$$L^{p}_{i,j,t} = \frac{D_{i,j,t}}{TA_{i,j,t} + NI_{i,j,t+1}} \tag{14}$$

[9] HH index is measured as the sum of squared market shares in a given industry based on the four-digit SIC code. A HH index that is higher than median of the index implies concentrated industries; a HH index that is lower than median of the index implies competitive industries.

[10] We also check the robustness of our baseline results by using alternative and additional control variables and subsample of countries with different institutional characteristics. The results support our main hypothesis. Due to the space limitation, all the results will be available upon request.

where $NI_{i,j,t+1}$ is the net income during the year ending at time t+1. Leverage at t+1 would be $L^{p}_{i,j,t}$ if the firm engages in no net capital market activities.

Our baseline regression (Eq. 6) then becomes the following partial active adjustment model:

$$L_{i,j,t+1} - L^{p}_{i,j,t} = \alpha_0 + \gamma\left(L^{*}_{i,t+1,j} - L^{p}_{i,j,t}\right) + \vartheta_{i,j,t+1} \quad (15)$$

The left-hand side of Eq. (15) thus equals the firm's active adjustment toward its target leverage ratio.

The results of this robustness check are presented in Models (1) and (2) of Table 8a. We find that the coefficients of both CSP measures are positive and statistically significant at the 1% level, indicating that our main finding is robust if the alternative leverage ratio only captures active adjustments. The sign and significance of control variables are consistent with the baseline results presented in Table 3.

[Insert Table 8a here]

Following previous studies (Byoun, 2008; Devos et al., 2017; Warr et al., 2012), we measure target leverage ratio using the cross-sectional regressions of Fama and MacBeth (1973) to estimate target leverage. The results are reported in Models (3) to (6) of Table 8a. Again, the coefficients on CSP measures are positive and statistically significant, implying that our baseline finding is not sensitive to the method of estimating the target leverage ratios.

5.3.2. Alternative econometric method

Next, given that both CSP and leverage SOA are firm-level choices, we estimate our models with firm-fixed effects to control for time-invariant unobserved firm-specific factors that may be associated with CSP and leverage adjustments (An et al., 2015). Because there could be a correlation in error terms within the same country, we also cluster standard error at the country level as robustness. We still find qualitatively consistent results as presented in Table 8b. Specifically, models (1)-(4) of Table 8b show that firms with stronger CSP have significantly faster speed of leverage adjustment.

[Insert Table 8b here]

5.3.3. Endogeneity issue

One potential threat to our analysis of the effect of CSP on leverage adjustments is that our CSP variables may not be exogenous. In fact, firms do not randomly choose their CSP. It may be determined by unobserved variables that also affect the leverage adjustment speed. The literature has shown that CSP can be a signal of good performance or the so-called "doing well by doing good" argument (e.g., Dowell, Hart, and Yeung, 2000; Orlitzky et al., 2003; Renneboog, Ter Horst, and Zhang, 2008,; Renneboog, Ter Horst, and Zhang, 2011; Krüger, 2015). Specifically, Cheng, Hong, and Shue (2013) suggest that spending on CSP activities generates a halo impact on a firm's performance and increases a firm's profit. Accordingly, firms with better financial performance will invest more in CSP and could have superior leverage adjustment speeds. This endogeneity of CSP can lead to biased and inconsistent estimates.

We address this concern using an instrumental variable approach. Specifically, we use macroeconomic variables that affect firm performance and availability of fund including GDP growth rate and money supply growth rate as instruments for CSP variables. It is argued that firms from countries with high

GDP and money supply growth have higher investment in CSP than companies from low GDP and money supply growth. We also perform several tests to assess the instruments' validity and relevance.

We re-estimate Eq. (6) using the two-stage least squares regression technique. The results of the IV regressions are reported in Table 8c. We regress CSP proxies including *Ln(ESG)* and *Ln(ESGC)* on the instrument variables (*GGDP* and *GMS*) and the controls. Specifically, the results from the first stage as reported in Table 8c show a positive and significant coefficient at the 1% level for *GGDP* and *GMS*, implying that countries with high GDP growth rate and money supply growth rate have higher CSP, which is consistent with our argument (Models 1, 3, 5, & 7). In the second stage, we estimate the SOA model using the fitted values of CSP measures as explanatory variables (Models 2, 4, 6, & 8). Importantly, we continue to find a significantly positive association at the 1% level between CSP and the SOA. The p values of Wald tests are lower than 1% level indicating that CSP variables are endogenous. The p values of Sargan J statistics are higher than 0.1 demonstrating that the overidentification restriction is satisfied. The p values of the F-statistics on the first-stage instruments are all significant at 1% level, which passes the weak instrument test. In sum, these results reinforce the confidence in our analysis, confirming the previously documented positive relation between corporate sustainability variables and leverage SOA.[11]

[Insert Table 8c here]

5.4. CSP and leverage adjustments: the role of a country's institutions

Our next analysis considers various institutional factors that could potentially attenuate the positive impact of a firm's sustainability performance on its leverage SOA. Previous studies suggest that institutional environments are external mechanisms to mitigate agency conflicts, reduce asymmetric information and distress costs, and enhance accessibility to, and lessen the uncertainty of, capital markets (An et al., 2015; Çolak et al., 2018; La Porta et al., 1998; Öztekin, 2015; Öztekin & Flannery, 2012). Consequently, as proposed in *H3*, strong institutional environments can substitute the role of CSP in increasing the leverage SOA, making the positive impacts of CSP on adjustment speed less pronounced. To examine *H3*, we include institutional variables and their interaction terms with the CSP proxies (i.e., *Ln(ESG)* and *Ln(ESGC*)) in our baseline model as shown in Eq. (8). We then substitute Eq. (8) back to partial adjustment specification (Eq. 3) and run the estimation. The results are reported in Tables 9. Consistent with our baseline findings, the coefficients of CSP proxies across models and panels are positive and significant at the 1% level, indicating that the positive effect of CSP on leverage SOA still holds when we control for institutional factors. In line with previous studies, better institutions reduce adjustment costs and increase a firm's leverage SOA (Öztekin, 2015; Öztekin & Flannery, 2012). More importantly, in all models and panels, we find significantly negative effects of institutional factors on the relationship between CSP and leverage SOA. That is, strong institutions can be a cheaper choice for firms to substitute the roles of CSP in reducing information asymmetry

[11] We also use the legal origin and country average CSP excluding the industry in which the focal firm operates as instruments for CSP variables (Liang and Renneboog, 2017, Cheng et al., 2014). The results also confirm positive relation between corporate sustainability variables and leverage SOA.

and transaction costs. Consequently, in countries with better institutional settings, the positive relationship between CSP and leverage SOA is relatively weaker (*H3*).[12]

[Insert Table 9 here]

5.5. Further analyses

5.5.1. ESG pillars and leverage adjustments

Next, we deconstruct our aggregate ESG measure and investigate which of its components drive the results. We separately measure environment, social, and corporate governance performance by taking the natural logarithm of EVN, SOC, and CGV scores. Table 10 presents the results with ESG components as the main explanatory variables of both book and market leverage regressions. The results on the independent variables of interest are positive and statistically significant at the 1% level in all models, with the magnitude of the impacts being very similar. This suggests that all components of ESG performance significantly encourage the leverage SOA. In other words, the overall positive impact of corporate sustainability performance on leverage SOA is driven by the three pillars: the firm's environmental, social, and corporate governance performance.

[Insert Table 10 here]

5.5.2. The effect of corporate governance on the relationship between environment and social performance and leverage SOA

In this paper, we use ESG and ESGC scores from Thomson Reuters ESG database as the proxy for CSP, the database comprises more than 400 ESG metrics. The major scores are established from three categories: environmental, social, and governance. We argue that CSP firms with better CSP will have lower costs of leverage adjustments as they have lower information asymmetry, which prompts lower agency costs. The previous analysis of the impacts of ESG pillars on leverage adjustments also shows that all components of ESG performance significantly encourage the leverage SOA. However, the literature shows that corporate governance is one of the most critical internal factors to mitigate agency problems, reduce asymmetric information, and as a result, accelerate the leverage SOA. Specifically, Chang et al. (2014) find that both over- and under-levered firms with strong corporate governance adjust faster toward their target leverage ratio. Liao, Mukherjee, and Wang (2015) find that both a higher level of financial leverage and a faster leverage SOA are associated with better corporate governance quality, which is defined by a more independent board featuring CEO–chairman separation and a greater presence of outside directors, coupled with larger institutional shareholdings. The question is: to what extent the effect of CSP on leverage SOA is driven by a firm's good corporate governance practice? We address this question by analysing the cross-sectional differences in corporate governance in determining the relationship between environmental and social performance and leverage SOA.

Table 11 presents the results with the average of ENV and SOC scores (*EVNSOC*) and the interaction term between *EVNSOC* and the corporate governance dummy variable that takes the value of one if a firm's corporate governance score is greater than the median value and zero otherwise (*Dummy_CGV*)

[12] Due to the space limitation, we only report the results of regressions that use ESG as the proxy for CSP. The results for regressions that use ESGC as the proxy for CSP will be available upon request.

as the main explanatory variables of both book and market leverage models. The results show that both *EVNSOC* and *Dummy_CGV* have significantly positive relationships with a firm's leverage SOA at the 1% level, consistent with our findings and previous studies (Chang et al., 2014; Liao et al., 2015). More importantly, the interaction term *ENVSOC*Dummy_CGV*Dist* is negative and highly significant at the 1% level, indicating that strong firm-level corporate governance can be an alternative for firms to substitute for the roles of environmental and social performance in reducing information asymmetry. Consequently, for firms with strong corporate governance, the positive impact of environmental and social performance on leverage SOA is relatively weaker.

[Insert Table 11 here]

5.5.3. CSP and leverage adjustments: the role of financial constraints

A growing literature suggests that the speed that firms adjust to their target leverage differs between financially constrained and unconstrained firms (e.g., Dang, Kim, & Shin, 2014; Faulkender et al., 2012; Korajczyk & Levy, 2003). Indeed, one might argue that firms with high levels of financial constraints may be less likely to access the external capital markets, and hence would adjust slowly to their target leverage. In contrast, firms with a low level of financial constraints may face low adjustment costs, resulting in potentially quicker adjustment (Korajczyk & Levy, 2003). However, Dang, Kim, and Shin (2012) and Dang et al. (2014) show that more constrained firms move faster to their target leverage when compared to less constrained firms. The reason is that firms with more constraints rely heavily on external sources to offset their financing deficits; therefore, their costs of leverage adjustment are shared with the transaction costs of accessing external capital markets, resulting in a faster adjustment speed. Faulkender et al. (2012) demonstrate that financial constraints significantly impact leverage SOA in a highly asymmetric fashion. Specifically, firms that are highly financially constrained move much faster to their target compared to their unconstrained counterparties when they are over-levered, but more slowly when they are under-levered. Hong, Kubik, and Scheinkman (2012) suggest that firms that are highly financially constrained may have lower investments in sustainability activities that are considered as a luxury, and have lower scores on CSP, even though CSP may significantly relieve the firm's financial constraints (Chan, Chou, & Lo, 2017; Dhaliwal et al., 2011)[13]. Taken together, firms that face more financial constraints prefer to take the opportunity of offsetting their deficit to choose an appropriate debt-equity mix rather than investing in expensive CSP activities to adjust toward their target leverage. In other words, the positive effect of CSP on the leverage SOA is likely to be mitigated when firms are highly financially constrained.

To better gauge the impact of a firm's financial constraints on the association between CSP and leverage SOA, we use the interaction terms of CSP and the proxies of financial constraints. We use two main measures of financial constraints, the cash flow deficit (Faulkender et al., 2012) and the Kaplan-Zingales index (Kaplan & Zingales, 1997), supplemented by the "text-based" analysis adopted

[13] For example, Goss and Robert (2011) find that companies which perform better in social responsibility can achieve lower bank call rates and longer loan terms. Chan et al. (2017) using the KZ index and Altman's Z-score as the measurement of financial constraints, conclude that a firm's engagement in CSR is negatively associated with financial constraints.

by Hobert and Maksimovic (2015) and Bodnaruk, Loughran, and McDonald (2015). [14] Table 12 reports the results for both proxies of CSP measures (i.e., *Ln(ESG)* and *Ln(ESGC)*). We find that the coefficients of the interaction terms *CSP*Dist* are positive and highly significant. This indicates a consistently positive relationship between CSP and leverage SOA as in our baseline results. More importantly, the coefficients of the interaction terms between financial constraint proxies and CSP proxies are negative and statistically significant. This implies that the positive association between CSP and leverage adjustment speed is less pronounced for firms with a higher degree of financial constraints. This result is consistent with Dang et al. (2012, 2014), and Faulkender et al. (2012) suggesting that firms with more financial constraints are more likely to change their debt and equity mix to one that lowers the cost of leverage adjustment rather than participating in expensive CSP activities to move back to their target leverage.[15]

[Insert Table 12 here]

5.5.4. CSP and leverage adjustment activities

In this section, we explore whether a firm's CSP level facilitates leverage adjustment activities. Recent literature suggests that external capital market access, including debt issuance, debt retirement, equity issuance, and equity repurchase, is relevant for a firm's leverage rebalancing (Çolak et al., 2018; Dang et al., 2019; Öztekin & Flannery, 2012). To the extent that a firm's CSP can reduce the cost of equity but not certainly the cost of debt, it should enhance the firm's ability to access equity capital markets through these external adjustment mechanisms.

To examine this argument, we follow Çolak et al. (2018) and Dang et al. (2019) and estimate a series of logit models of a debt/equity issuance/retirement on CSP proxies including ESG and ESGC and the controls that are used in the baseline regression (Eq. 4) for over-levered and under-levered firms. Following the recent research (Çolak et al., 2018; Dang et al., 2019; Öztekin & Flannery, 2012), we define capital market access as a debt issuance, debt retirement or an equity issuance of at least 5% of the total book assets. An equity retirement is defined as a stock repurchase of at least 1.25% of the book assets.

Panels A and B of Table 13 report the regression results for securities issuance and retirement for over-levered and under-levered firms, respectively. We find that for both over-levered firms and under-levered firms, CSP has a significant and positive impact on a firm's equity issuance but not on debt issuance, debt retirement, or equity retirement. These results suggest that for over-levered firms that need to increase equity to adjust back to the leverage target, superior CSP reduces the firm's cost of equity, thus facilitating the equity issuance (El Ghoul et al., 2011; Breuer et al., 2018; Ghoul, Guedhami, Kim, and Park, 2018). Nonetheless, differently from over-levered firms, under-levered

[14] Most studies on financial constraints use accounting variables to measure financial constraint in a firm. However, these measures are influenced by firm operations and other fundamentals. We also use the text-based analysis to identify financial constraints. The results of such tests are consistent with our findings that use accounting-based financial constraint measures. Due to the space limitation, the results of this test will be available upon request.

[15] We also test the impact of financial constraints on the positive association between CSP and leverage SOA for over-levered and under-levered firms separately. The results show that for over-levered firms, the positive impact of CSP on leverage SOA is attenuated for financially constrained firms, whereas the association between CSP and leverage SOA is insignificant for over-levered firms. These results are consistent with Faulkender et al. (2012) and our previous findings.

firms need to increase the debt to move toward their target leverage levels. Therefore, even though superior CSP reduces the cost of equity issuance of under-levered firms, it has no impact on the debt transactions of such firms. This is consistent with Goss and Roberts (2011) who argue that CSP activities have very limited effects on bank loan costs and in line with our previous finding that CSP only has significant impacts on leverage SOA of over-levered firms but not for under-levered firms.

[Insert Table 13 here]

6. Conclusion

In this study, we have examined the relationship between corporate sustainability performance and the speed of corporate leverage adjustments. Using a large sample of firms across 31 countries, we have demonstrated that firms with superior sustainability performance are faster in adjusting their leverage ratios toward their targets. On average, a firm takes approximately 3 years to adjust half of the deviation between the actual and the target leverage. This duration decreases to 2.4 years with firms that show a high degree of sustainability. Such effect derives from all three pillars of CSP, namely, environmental, social, and corporate governance performance.

We have further investigated four channels that link CSP and leverage SOA. CSP not only drives a firm's voluntary CSP information disclosure and earnings quality but also reflects the firm's ethical concerns, and motivates transparency, and the reliability of financial reports, which, in turn, reduces information asymmetry, thereby lowering adjustment costs and increasing adjustment speeds. In addition, socially responsible institutions behave more patiently towards negative news and are less responsive to mispricing signals from the high CSP firms, making high CSP firms more likely to be overvalued. This, in turn, reduces costs of equity capital and accelerates the firm's leverage SOA. CSP also enhances engagement with the firm's stakeholders through mutual trust and cooperation, which helps firms to enjoy reductions in agency costs and transaction costs. Finally, CSP enhances a firm's position in the product market as a competitive advantage that results in an expectation of stronger and more stable cash flows and higher profitability in the future, lowering the marginal transaction costs. Hence, firms with superior sustainability performance adjust faster toward their targets. In addition, our further analyses have highlighted the role of financial constraints on a firm's capital structure policy, that is, financial constraints offset the positive impact of CSP on leverage SOA. Taken together, in this paper, we contribute to the capital structure literature by identifying a new factor which has a significant impact on corporate leverage adjustments and exploring the potential underlying economic mechanisms to explain the relationship identified.

We also contribute to the literature on the effects of institutional settings/environments on corporate financing policies. Our results show that all the institutional factors (including a country's enforcement mechanisms, information environments, corporate governance, English origin, public sector ethics, goodness of government, and media channels) play important roles in moderating the positive impact of CSP on leverage SOA.

Our study has important implications at both organisational and national levels. Executives who wish to increase the speed of leverage adjustment to enhance a firm's value need to give greater consideration to, and invest more in, their sustainable activities. The changes in the speed at which firms adjust back to their target levels which have been demonstrated in this study are large enough to

be economically meaningful. However, to the extent that sustainable activities are costly, including financial costs and opportunity costs, these need to be traded off against the benefits of increasing leverage SOA. From a policy perspective, our findings speak to the importance of CSP investments in a firm's financing performance. Governments and authorities should consider using regulations to encourage firms to improve their environmental, social, and corporate governance performance, as well as create good quality institutional settings. Our findings are consistent with previous literature that highlights the role of private politics in shaping corporate behaviour (Baron, 2009; Baron & Diermeier, 2007).

References

Ailawadi, K.L., Neslin, S.A., Luan, Y.J., & Taylor, G. A. (2014). Does retailer CSR enhance behavioral loyalty? A case for benefit segmentation. *International Journal of Research in Marketing, 31*(2), 156-167.

Albuquerque, R., Koskinen, Y., & Zhang, C. (2019). Corporate social responsibility and firm risk: Theory and empirical evidence. *Management Science, 65*(10), 4451-4469.

Alti, A. (2006). How persistent is the impact of market timing on capital structure? *The Journal of Finance, 61*(4), 1681-1710.

Altınkılıç, O., & Hansen, R. S. (2000). Are there economies of scale in underwriting fees? Evidence of rising external financing costs. *The Review of Financial Studies, 13*(1), 191-218.

An, Z., Li, D., & Yu, J. (2015). Firm crash risk, information environment, and speed of leverage adjustment. *Journal of Corporate Finance, 31*, 132-151.

Artiach, T., Lee, D., Nelson, D., & Walker, J. (2010). The determinants of corporate sustainability performance. *Accounting and Finance, 50*(1), 31-51.

Attig, N., El Ghoul, S., Guedhami, O., & Suh, J. (2013). Corporate social responsibility and credit ratings. *Journal of Business Ethics, 117*(4), 679-694.

Auger, P., Burke, P., Devinney, T. M., & Louviere, J. J. (2003). What will consumers pay for social product features? *Journal of Business Ethics, 42*(3), 281-304.

Bae, K. H., El Ghoul, S., Guedhami, O., Kwok, C. C., & Zheng, Y. (2019). Does corporate social responsibility reduce the costs of high leverage? Evidence from capital structure and product market interactions. *Journal of Banking & Finance, 100*, 135-150.

Bagnoli, M., & Watts, S. G. (2003). Selling to socially responsible consumers: Competition and the private provision of public goods. *Journal of Economics & Management Strategy, 12*(3), 419-445.

Baker, M., Stein, J. C., & Wurgler, J. (2003). When does the market matter? Stock prices and the investment of equity-dependent firms. *The Quarterly Journal of Economics, 118*(3), 969-1005.

Baltagi, B. (2008). *Econometric analysis of panel data*. John Wiley & Sons.

Baron, D. P. (2009). A positive theory of moral management, social pressure, and corporate social performance. *Journal of Economics & Management Strategy, 18*(1), 7-43.

Baron, D. P., & Diermeier, D. (2007). Strategic activism and nonmarket strategy. *Journal of Economics & Management Strategy, 16*(3), 599-634.

Bauer, R., Derwall, J., & Hann, D. (2009). *Employee relations and credit risk*. Working paper. Available at SSRN 1483112.

Bénabou, R., & Tirole, J. (2010). Individual and corporate social responsibility. *Economica, 77*(305), 1-19.

Bodnaruk, A., Loughran, T., & McDonald, B. (2015). Using 10-K text to gauge financial constraints. *Journal of Financial and Quantitative Analysis*, 623-646.

Booth, L., Aivazian, V., Demirguc□Kunt, A., & Maksimovic, V. (2001). Capital structures in developing countries. *Journal of Finance, 56*(1), 87-130.

Bradley, M., Jarrell, G. A., & Kim, E. H. (1984). On the existence of an optimal capital structure: Theory and evidence. *Journal of Finance, 39*(3), 857-878.

Brammer, S., & Millington, A. (2008). Does it pay to be different? An analysis of the relationship between corporate social and financial performance. *Strategic Management Journal, 29*(12), 1325-1343.

Branco, M. C., & Rodrigues, L. L. (2006). Corporate social responsibility and resource-based perspectives. *Journal of Business Ethics, 69*(2), 111-132.

Brennan, M. J., & Schwartz, E. S. (1978). Corporate income taxes, valuation, and the problem of optimal capital structure. *Journal of Business Ethics*, 103-114.

Breuer, W., Müller, T., Rosenbach, D., & Salzmann, A. (2018). Corporate social responsibility, investor protection, and cost of equity: A cross-country comparison. *Journal of Banking & Finance, 96*, 34-55.

Bushman, R. M., Piotroski, J. D., & Smith, A. J. (2004). What determines corporate transparency? *Journal of Accounting Research, 42*(2), 207-252.

Byoun, S. (2008). How and when do firms adjust their capital structures toward targets? *The Journal of Finance, 63*(6), 3069-3096.

Cahan, S. F., De Villiers, C., Jeter, D. C., Naiker, V., & Van Staden, C. J. (2016). Are CSR disclosures value relevant? Cross-country evidence. *European Accounting Review, 25*(3), 579-611.

Cao, J., Liang, H., & Zhan, X. (2019). Peer effects of corporate social responsibility. *Management Science, 65*(12), 5487-5503.

Cao, J., Titman, S., Zhan, X., & Zhang, W. E. (2020). *ESG preference, institutional trading, and stock return patterns*. Working paper. Available at SSRN 3353623.

Chan, C. Y., Chou, D. W., & Lo, H. C. (2017). Do financial constraints matter when firms engage in CSR? *The North American Journal of Economics and Finance, 39*, 241-259.

Chan, M. C., Watson, J., & Woodliff, D. (2014). Corporate governance quality and CSR disclosures. *Journal of Business Ethics, 125*(1), 59-73.

Chang, Y. K., Chou, R. K., & Huang, T. H. (2014). Corporate governance and the dynamics of capital structure: New evidence. *Journal of Banking & Finance, 48*, 374-385.

Cheng, B., Ioannou, I., & Serafeim, G. (2014). Corporate social responsibility and access to finance. *Strategic Management Journal, 35*(1), 1-23.

Cheng, I. H., Hong, H., & Shue, K. (2013). *Do managers do good with other people's money?* Working paper. Retrieved from National Bureau of Economic Research. https://www.nber.org/system/files/working_papers/w19432/w19432.pdf.

Cho, S. Y., Lee, C., & Pfeiffer Jr, R. J. (2013). Corporate social responsibility performance and information asymmetry. *Journal of Accounting and Public Policy, 32*(1), 71-83.

Choi, J., & Wang, H. (2009). Stakeholder relations and the persistence of corporate financial performance. *Strategic Management Journal, 30*(8), 895-907.

Clarkson, P. M., Li, Y., Richardson, G. D., & Vasvari, F. P. (2008). Revisiting the relation between environmental performance and environmental disclosure: An empirical analysis. *Accounting, Organizations and Society, 33*(4-5), 303-327.

Çolak, G., Gungoraydinoglu, A., & Öztekin, Ö. (2018). Global leverage adjustments, uncertainty, and country institutional strength. *Journal of Financial Intermediation, 35*, 41-56.

Cook, D. O., & Tang, T. (2010). Macroeconomic conditions and capital structure adjustment speed. *Journal of Corporate Finance, 16*(1), 73-87.

Dang, T. L., Dang, V. A., Moshirian, F., Nguyen, L., & Zhang, B. (2019). News media coverage and corporate leverage adjustments. *Journal of Banking and Finance, 109*, 105666.

Dang, V. A., Kim, M., & Shin, Y. (2012). Asymmetric capital structure adjustments: New evidence from dynamic panel threshold models. *Journal of Empirical Finance, 19*(4), 465-482.

Dang, V. A., Kim, M., & Shin, Y. (2014). Asymmetric adjustment toward optimal capital structure: Evidence from a crisis. *International Review of Financial Analysis, 33*, 226-242.

Daske, H., Hail, L., Leuz, C., & Verdi, R. (2008). Mandatory IFRS reporting around the world: Early evidence on the economic consequences. *Journal of Accounting Research, 46*(5), 1085-1142.

De Pelsmacker, P., Driesen, L., & Rayp, G. (2005). Do consumers care about ethics? Willingness to pay for fair□trade coffee. *Journal of Consumer Affairs, 39*(2), 363-385.

Deng, X., Kang, J. K., & Low, B. S. (2013). Corporate social responsibility and stakeholder value maximization: Evidence from mergers. *Journal of Financial Economics, 110*(1), 87-109.

Devos, E., Rahman, S., & Tsang, D. (2017). Debt covenants and the speed of capital structure adjustment. *Journal of Corporate Finance, 45*, 1-18.

Dhaliwal, D., Heitzman, S., & Li, O. Z. (2006). Taxes, leverage, and the cost of equity capital. *Journal of Accounting Research, 44*(4), 691-723.

Dhaliwal, D. S., Li, O. Z., Tsang, A., & Yang, Y. G. (2011). Voluntary nonfinancial disclosure and the cost of equity capital: The initiation of corporate social responsibility reporting. *The Accounting Review, 86*(1), 59-100.

Djankov, S., La Porta, R., Lopez-de-Silanes, F., & Shleifer, A. (2010). Disclosure by politicians. *American Economic Journal: Applied Economics, 2*(2), 179-209.

Do, T. K., Huang, H. H., & Lo, T. C. (2018). *Corporate social responsibility and leverage speed of adjustment*. Working paper. Available at SSRN 3187924.

Doidge, C., Karolyi, G. A., & Stulz, R. M. (2004). Why are foreign firms listed in the US worth more? *Journal of Financial Economics, 71*(2), 205-238.
Doidge, C., Karolyi, G. A., & Stulz, R. M. (2007). Why do countries matter so much for corporate governance? *Journal of Financial Economics, 86*(1), 1-39.
Dowell, G., Hart, S., & Yeung, B. (2000). Do corporate global environmental standards create or destroy market value? *Management Science, 46*(8), 1059-1074.
Dyllick, T., & Hockerts, K. (2002). Beyond the business case for corporate sustainability. *Business Strategy and the Environment, 11*(2), 130-141.
Eccles, R. G., Ioannou, I., & Serafeim, G. (2014). The impact of corporate sustainability on organizational processes and performance. *Management Science, 60*(11), 2835-2857.
El Ghoul, S., Guedhami, O., Kim, H., & Park, K. (2018). Corporate environmental responsibility and the cost of capital: International evidence. *Journal of Business Ethics, 149*(2), 335-361.
El Ghoul, S., Guedhami, O., Kwok, C. C., & Mishra, D. R. (2011). Does corporate social responsibility affect the cost of capital? *Journal of Banking and Finance, 35*(9), 2388-2406.
Elfenbein, D. W., & McManus, B. (2010). A greater price for a greater good? Evidence that consumers pay more for charity-linked products. *American Economic Journal: Economic Policy, 2*(2), 28-60.
Elkington, J. 1997. Cannibals with Forks. Oxford: Capstone Publishing Limited.
Elsas, R., Flannery, M. J., & Garfinkel, J. A. (2014). Financing major investments: Information about capital structure decisions. *Review of Finance, 18*(4), 1341-1386.
Elsas, R., & Florysiak, D. (2011). Heterogeneity in the speed of adjustment toward target leverage. *International Review of Finance, 11*(2), 181-211.
Faff, R., Huang, P., & Lu, Y. (2020). Social trust and the speed of corporate leverage adjustment: Evidence from around the globe. *Accounting and Finance*, forthcoming.
Fama, E. F., & French, K. R. (1997). Industry costs of equity. *Journal of Financial Economics, 43*(2), 153-193.
Fama, E. F., & French, K. R. (2002). Testing trade-off and pecking order predictions about dividends and debt. *Review of Financial Studies, 15*(1), 1-33.
Fama, E. F., & MacBeth, J. D. (1973). Risk, return, and equilibrium: Empirical tests. *Journal of Political Economy, 81*(3), 607-636.
Fan, J. P., Titman, S., & Twite, G. (2012). An international comparison of capital structure and debt maturity choices. *Journal of Financial and Quantitative Analysis, 47*(1), 23-56.
Faulkender, M., Flannery, M. J., Hankins, K. W., & Smith, J. M. (2012). Cash flows and leverage adjustments. *Journal of Financial Economics, 103*(3), 632-646.
Fischer, E. O., Heinkel, R., & Zechner, J. (1989). Dynamic capital structure choice: Theory and tests. *Journal of Finance, 44*(1), 19-40.
Flammer, C. (2015a). Does corporate social responsibility lead to superior financial performance? A regression discontinuity approach. *Management Science, 61*(11), 2549-2568.
Flammer, C. (2015b). Does product market competition foster corporate social responsibility? Evidence from trade liberalization. *Strategic Management Journal, 36*(10), 1469-1485.
Flannery, M. J., & Rangan, K. P. (2006). Partial adjustment toward target capital structures. *Journal of Financial Economics, 79*(3), 469-506.
Frank, M. Z., & Goyal, V. K. (2009). Capital structure decisions: Which factors are reliably important? *Financial Management, 38*(1), 1-37.
Godfrey, P. C. (2005). The relationship between corporate philanthropy and shareholder wealth: A risk management perspective. *Academy of Management Review, 30*(4), 777-798.
Goldstein, R., Ju, N., & Leland, H. (2001). An EBIT□based model of dynamic capital structure. *The Journal of Business, 74*(4), 483-512.
Goss, A., & Roberts, G. S. (2011). The impact of corporate social responsibility on the cost of bank loans. *Journal of Banking and Finance, 35*(7), 1794-1810.
El Ghoul, S., Guedhami, O., Kim, H., & Park, K. (2018). Corporate environmental responsibility and the cost of capital: International evidence. *Journal of Business Ethics, 149*(2), 335-361.
Graham, J. R., & Harvey, C. R. (2001). The theory and practice of corporate finance: Evidence from the field. *Journal of Financial Economics, 60*(2), 187-243.

Gurun, U. G., & Butler, A. W. (2012). Don't believe the hype: Local media slant, local advertising, and firm value. *The Journal of Finance, 67*(2), 561-598.

Hartzmark, S. M., & Sussman, A. B. (2019). Do investors value sustainability? A natural experiment examining ranking and fund flows. *The Journal of Finance, 74*(6), 2789-2837.

Hennessy, C. A., & Whited, T. M. (2005). Debt dynamics. *The Journal of Finance, 60*(3), 1129-1165.

Hilger, J., Hallstein, E., Stevens, A. W., & Villas-Boas, S. B. (2019). Measuring willingness to pay for environmental attributes in seafood. *Environmental and Resource Economics, 73*(1), 307-332.

Ho, L., Lu, Y., & Bai, M. (2020). Liquidity and speed of leverage adjustment. *Australian Journal of Management*, forthcoming.

Hoberg, G., & Maksimovic, V. (2015). Redefining financial constraints: A text-based analysis. *The Review of Financial Studies, 28*(5), 1312-1352.

Hoberg, G., & Maksimovic, V. (2015). Redefining financial constraints: A text-based analysis. *The Review of Financial Studies, 28*(5), 1312-1352.

Hong, H., Kubik, J. D., & Scheinkman, J. A. (2012). *Financial constraints on corporate goodness*. Working paper. Retrieved from National Bureau of Economic Research. https://www.nber.org/system/files/working_papers/w18476/w18476.pdf.

Hovakimian, A. (2006). Are observed capital structures determined by equity market timing? *Journal of Financial and Quantitative Analysis, 41*(1), 221-243.

Hovakimian, A., Opler, T., & Titman, S. (2001). The debt-equity choice. *Journal of Financial and Quantitative Analysis, 36*(1).

Huang, R., & Ritter, J. R. (2009). Testing theories of capital structure and estimating the speed of adjustment. *Journal of Financial and Quantitative Analysis, 44*(02), 237-271.

Ioannou, I., & Serafeim, G. (2012). What drives corporate social performance? The role of nation-level institutions. *Journal of International Business Studies, 43*(9), 834-864.

Jiao, Y. (2011). Corporate disclosure, market valuation, and firm performance. *Financial Management, 40*(3), 647-676.

Jin, L., & Myers, S. C. (2006). R2 around the world: New theory and new tests. *Journal of Financial Economics, 79*(2), 257-292.

Jones, T. M. (1995). Instrumental stakeholder theory: A synthesis of ethics and economics. *Academy of Management Review, 20*(2), 404-437.

Kang, S., & Kim, A. (2019). Employee stock ownership and financial performance in European countries: The moderating effects of uncertainty avoidance and social trust. *Human Resource Management, 58*(6), 641-655.

Kaplan, S. N., & Zingales, L. (1997). Do investment-cash flow sensitivities provide useful measures of financing constraints? *The Quarterly Journal of Economics, 112*(1), 169-215.

Kaufmann, D. (2004). *Corruption, governance and security: Challenges for the rich countries and the world.* Policy Research Working Paper Series, World Bank, Washington, DC.

Kaufmann, D., Kraay, A., & Mastruzzi, M. (2009). Governance matters VIII: Aggregate and individual governance indicators, 1996-2008. *World Bank Policy Research Working Paper, No. 4978*.

Kim, Y., Park, M. S., & Wier, B. (2012). Is earnings quality associated with corporate social responsibility? *The Accounting Review, 87*(3), 761-796.

Korajczyk, R. A., & Levy, A. (2003). Capital structure choice: Macroeconomic conditions and financial constraints. *Journal of Financial Economics, 68*(1), 75-109.

Kraus, A., & Litzenberger, R. H. (1973). A state□preference model of optimal financial leverage. *Journal of Finance, 28*(4), 911-922.

Krüger, P. (2015). Corporate goodness and shareholder wealth. *Journal of Financial Economics, 115*(2), 304-329.

La Porta, R., Lopez-de-Silanes, F., & Shleifer, A. (2008). The economic consequences of legal origins. *Journal of Economic Literature, 46*(2), 285-332.

La Porta, R., Lopez-de-Silanes, F., Shleifer, A., & Vishny, R. W. (1998). Law and finance. *Journal of Political Economy, 106*(6), 1113-1155.

Lang, M. H., Lins, K. V., & Miller, D. P. (2004). Concentrated control, analyst following, and valuation: Do analysts matter most when investors are protected least? *Journal of Accounting Research, 42*(3), 589-623.

Law, K. K., & Mills, L. F. (2015). Taxes and financial constraints: Evidence from linguistic cues. *Journal of Accounting Research, 53*(4), 777-819.

Leary, M. T., & Roberts, M. R. (2005). Do firms rebalance their capital structures? *The Journal of Finance, 60*(6), 2575-2619.

Lee, C. M., Myers, J., & Swaminathan, B. (1999). What is the intrinsic value of the DOW? *The Journal of Finance, 54*(5), 1693-1741.

Lee, D. D., & Faff, R. W. (2009). Corporate sustainability performance and idiosyncratic risk: A global perspective. *Financial Review, 44*(2), 213-237.

Lemmon, M. L., Roberts, M. R., & Zender, J. F. (2008). Back to the beginning: Persistence and the cross□section of corporate capital structure. *The Journal of Finance, 63*(4), 1575-1608.

Liang, H., & Renneboog, L. (2017). On the foundations of corporate social responsibility. *The Journal of Finance, 72*(2), 853-910.

Liao, L. K., Mukherjee, T., & Wang, W. (2015). Corporate governance and capital structure dynamics: An empirical study. *Journal of Financial Research, 38*(2), 169-192.

Lins, K. V., Servaes, H., & Tamayo, A. (2017). Social capital, trust, and firm performance: The value of corporate social responsibility during the financial crisis. *The Journal of Finance, 72*(4), 1785-1824.

Lockhart, G. B. (2014). Credit lines and leverage adjustments. *Journal of Corporate Finance, 25*, 274-288.

Loughran, T., & McDonald, B. (2011). When is a liability not a liability? Textual analysis, dictionaries, and 10□Ks. *The Journal of Finance, 66*(1), 35-65.

Luo, X., & Bhattacharya, C. B. (2006). Corporate social responsibility, customer satisfaction, and market value. *Journal of marketing, 70*(4), 1-18.

Luo, X., & Bhattacharya, C. B. (2009). The debate over doing good: Corporate social performance, strategic marketing levers, and firm-idiosyncratic risk. *Journal of Marketing, 73*(6), 198-213.

Luo, J., Meier, S., & Oberholzer-Gee, F. (2011). *No news is good news: CSR strategy and newspaper coverage of negative firm events*. Working paper. Harvard Business School.

Mackenzie, C., Rees, W., & Rodionova, T. (2013). Do responsible investment indices improve corporate social responsibility? FTSE4Good's impact on environmental management. *Corporate Governance: An International Review, 21*(5), 495-512.

Margolis, J. D., Elfenbein, H. A., & Walsh, J. P. (2010). *Does it pay to be good? A meta-analysis and redirection of research on the relationship between corporate social and financial performance*. Working paper, Harvard University, Cambridge, MA.

Margolis, J. D., & Walsh, J. P. (2003). Misery loves companies: Rethinking social initiatives by business. *Administrative Science Quarterly, 48*(2), 268-305.

Modigliani, F., & Miller, M. H. (1958). The cost of capital, corporation finance and the theory of investment. *The American Economic Review, 48*, 261-297.

Morck, R., Yeung, B., & Yu, W. (2000). The information content of stock markets: Why do emerging markets have synchronous stock price movements? *Journal of Financial Economics, 58*(1-2), 215-260.

Murphy, D., & McGrath, D. (2016). *Australian class actions as a potential motivator for environmental, social and governance (ESG) reporting*. Working paper.

Myers, S. C. (1984). The capital structure puzzle. *Journal of Finance, 39*(3), 574-592.

Myers, S. C., & Majluf, N. S. (1984). Corporate financing and investment decisions when firms have information that investors do not have. *Journal of Financial Economics, 13*(2), 187-221.

OECD. (2019). *"Confidence in institutions", in Society at a Glance 2019: OECD Social Indicators*. OECD, Paris.

Oikonomou, I., Brooks, C., & Pavelin, S. (2014). The effects of corporate social performance on the cost of corporate debt and credit ratings. *Financial Review, 49*(1), 49-75.

Orlitzky, M., Schmidt, F. L., & Rynes, S. L. (2003). Corporate social and financial performance: A meta-analysis. *Organization Studies, 24*(3), 403-441.

Öztekin, Ö. (2015). Capital structure decisions around the world: Which factors are reliably important? *Journal of Financial and Quantitative Analysis, 50*(3), 301-323.

Öztekin, Ö., & Flannery, M. J. (2012). Institutional determinants of capital structure adjustment speeds. *Journal of Financial Economics, 103*(1), 88-112.

Pagan, A. (1984). Econometric issues in the analysis of regressions with generated regressors. *International Economic Review*, 221-247.

PRI. (2019). *Principles for responsible investment*. Retrived from https://www.unpri.org/annual-report-2019.

Putnam, R. D. (2000). *Bowling alone: The collapse and revival of American community*. London: Simon and Schuster.

Qu, W. G., & Yang, Z. (2015). The effect of uncertainty avoidance and social trust on supply chain collaboration. *Journal of Business Research, 68*(5), 911-918.

Rao, A. N., Pearce, J. L., & Xin, K. (2005). Governments, reciprocal exchange and trust among business associates. *Journal of International Business Studies, 36*(1), 104-118.

Renneboog, L., Ter Horst, J., & Zhang, C. (2008). Socially responsible investments: Institutional aspects, performance, and investor behavior. *Journal of Banking & Finance, 32*(9), 1723-1742.

Renneboog, L., Ter Horst, J., & Zhang, C. (2011). Is ethical money financially smart? Nonfinancial attributes and money flows of socially responsible investment funds. *Journal of Financial Intermediation, 20*(4), 562-588.

Rhodes–Kropf, M., Robinson, D. T., & Viswanathan, S. (2005). Valuation waves and merger activity: The empirical evidence. *Journal of Financial Economics, 77*(3), 561-603.

Rhou, Y., Singal, M., & Koh, Y. (2016). CSR and financial performance: The role of CSR awareness in the restaurant industry. *International Journal of Hospitality Management, 57*, 30-39.

Salzmann, A. J. (2013). The integration of sustainability into the theory and practice of finance: An overview of the state of the art and outline of future developments. *Journal of Business Economics, 83*(6), 555-576.

Sassen, R., Hinze, A.-K., & Hardeck, I. (2016). Impact of ESG factors on firm risk in Europe. *Journal of Business Economics, 86*(8), 867-904.

Servaes, H., & Tamayo, A. (2013). The impact of corporate social responsibility on firm value: The role of customer awareness. *Management Science, 59*(5), 1045-1061.

Siegel, D. S., & Vitaliano, D. F. (2007). An empirical analysis of the strategic use of corporate social responsibility. *Journal of Economics & Management Strategy, 16*(3), 773-792.

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

Smit, H. T., & Trigeorgis, L. (2006). Strategic planning: Valuing and managing portfolios of real options. *R&D Management, 36*(4), 403-419.

Starks, L. T., Venkat, P., & Zhu, Q. (2017). *Corporate ESG profiles and investor horizons*. Working paper. Available at SSRN 3049943.

Stellner, C., Klein, C., & Zwergel, B. (2015). Corporate social responsibility and Eurozone corporate bonds: The moderating role of country sustainability. *Journal of Banking and Finance, 59*, 538-549.

Stock, J., & Yogo, M. (2005). Asymptotic distributions of instrumental variables statistics with many instruments. *Identification and inference for econometric models: Essays in honor of Thomas Rothenberg*, 109-120.

Stoughton, N., Wong, K. P., & Yi, L. (2018). *Competitive corporate social responsibility*. Working paper. Available at SSRN 3074776.

Strebulaev, I. A. (2007). Do tests of capital structure theory mean what they say? *The Journal of Finance, 62*(4), 1747-1787.

Titman, S., & Tsyplakov, S. (2007). A dynamic model of optimal capital structure. *Review of Finance, 11*(3), 401-451.

Uysal, V. B. (2011). Deviation from the target capital structure and acquisition choices. *Journal of Financial Economics, 102*(3), 602-620.

Van Beurden, P., & Gössling, T. (2008). The worth of values: A literature review on the relation between corporate social and financial performance. *Journal of Business Ethics, 82*(2), 407.

Warr, R. S., Elliott, W. B., Koëter-Kant, J., & Öztekin, Ö. (2012). Equity mispricing and leverage adjustment costs. *Journal of Financial and Quantitative Analysis, 47*(03), 589-616.

Welch, I. (2004). Capital structure and stock returns. *Journal of Political Economy, 112*(1), 106-131.

Ye, K., & Zhang, R. (2011). Do lenders value corporate social responsibility? Evidence from China. *Journal of Business Ethics, 104*(2), 197.

Zhou, Q., Tan, K. J. K., Faff, R., & Zhu, Y. (2016). Deviation from target capital structure, cost of equity and speed of adjustment. *Journal of Corporate Finance, 39*, 99-120.

Table 1: Descriptive statistics

This table reports the number of observations and means of firm-level variables by country and for the entire sample in Panel A and full-sample summary statistics in Panel B. The study period is from 2002 to 2018. The variable definitions are in Appendix A

Panel A: Descriptive statistics

COUNTRY	Obs.	ESG score	ESGC score	ENV score	CGV score	SOC score	BLEV	MLEV	SIZE	TANG	PROF	R&D	DEP	MTB
AUSTRALIA	811	47.535	42.957	42.853	52.742	47.546	0.196	0.168	13.694	0.319	0.089	0.029	0.040	3.414
AUSTRIA	100	58.060	52.404	58.570	56.663	58.772	0.262	0.355	15.776	0.344	0.119	0.006	0.053	1.723
BELGIUM	128	54.783	49.582	54.245	54.849	55.244	0.235	0.279	15.505	0.240	0.100	0.042	0.045	1.853
BRAZIL	87	57.400	46.267	55.330	55.215	61.263	0.318	0.325	16.034	0.316	0.161	0.016	0.035	3.544
CANADA	594	46.901	44.289	44.766	48.465	47.601	0.196	0.201	14.414	0.504	0.095	0.015	0.051	2.809
CHINA	340	39.309	36.175	39.772	47.637	31.709	0.258	0.303	16.311	0.303	0.098	0.015	0.028	2.919
DENMARK	213	53.928	49.005	55.671	52.200	53.742	0.176	0.128	14.543	0.235	0.169	0.078	0.047	5.680
FINLAND	279	58.995	53.510	65.629	51.898	58.739	0.234	0.237	15.132	0.238	0.139	0.027	0.043	2.645
FRANCE	599	65.513	54.851	74.094	53.083	67.975	0.233	0.284	16.611	0.203	0.117	0.031	0.046	2.173
GERMANY	720	61.086	50.497	64.643	51.556	65.867	0.216	0.273	16.148	0.253	0.122	0.034	0.045	2.285
GREECE	45	47.123	45.049	50.326	47.634	43.618	0.302	0.416	15.219	0.344	0.099	0.001	0.031	1.530
HONG KONG	358	42.831	40.224	40.877	51.597	37.169	0.192	0.186	15.170	0.267	0.111	0.021	0.030	2.886
INDONESIA	54	48.365	48.365	44.294	46.621	53.763	0.095	0.050	14.505	0.524	0.250	0.008	0.041	3.954
ISRAEL	59	47.339	40.603	44.692	54.815	43.454	0.290	0.245	15.791	0.218	0.127	0.031	0.039	4.129
ITALY	146	62.406	49.136	63.505	57.222	65.809	0.326	0.441	16.862	0.235	0.121	0.020	0.043	2.066
JAPAN	3,897	53.376	49.756	59.918	51.289	48.902	0.202	0.258	15.794	0.289	0.105	0.029	0.042	1.691
MALAYSIA	88	47.450	45.638	44.282	46.161	51.592	0.264	0.189	15.156	0.422	0.146	0.001	0.041	3.996
MEXICO	15	38.065	35.765	34.335	47.171	33.813	0.326	0.259	15.770	0.468	0.154	0.002	0.045	3.509
NETHERLANDS	222	66.530	52.655	68.357	62.071	68.612	0.224	0.229	16.270	0.248	0.117	0.032	0.045	2.471
NEW ZEALAND	64	46.824	44.463	46.717	49.110	44.963	0.243	0.186	13.585	0.331	0.168	0.051	0.049	4.293
NORWAY	137	59.797	52.604	62.294	55.586	61.024	0.227	0.231	15.561	0.387	0.148	0.011	0.064	2.190
PHILIPPINES	19	37.688	36.588	44.838	30.146	37.316	0.346	0.360	15.666	0.354	0.135	0.000	0.035	2.595
SINGAPORE	64	44.227	41.768	42.517	49.544	41.295	0.210	0.231	15.356	0.193	0.100	0.027	0.028	2.154
SOUTH KOREA	612	52.739	46.428	58.027	49.914	50.101	0.259	0.351	15.911	0.350	0.109	0.018	0.042	1.789
SPAIN	112	55.415	49.498	61.501	42.510	60.675	0.337	0.263	15.188	0.234	0.119	0.049	0.044	5.027
SWEDEN	366	59.722	52.858	65.957	47.878	63.926	0.268	0.245	15.351	0.202	0.139	0.026	0.039	2.926

SWITZERLAND	494	54.887	47.057	57.137	48.308	57.657	0.182	0.147	15.171	0.216	0.119	0.054	0.040	3.772
THAILAND	11	53.108	53.108	57.558	33.489	65.708	0.233	0.282	15.086	0.388	0.152	0.020	0.037	2.463
TURKEY	87	52.392	49.652	55.919	49.256	51.707	0.314	0.318	15.448	0.350	0.149	0.005	0.040	3.093
UNITED KINGDOM	1,243	56.094	49.669	56.661	53.547	57.739	0.213	0.194	14.733	0.215	0.133	0.039	0.041	3.313
UNITED STATES	7,470	50.601	43.254	48.344	51.439	52.043	0.242	0.180	15.248	0.200	0.109	0.061	0.039	4.058
All countries	19,434	52.655	46.419	53.759	51.436	52.625	0.227	0.219	15.367	0.252	0.113	0.041	0.041	3.115

Panel B: Full-sample summary statistics

	Mean	Median	SD	Min.	P25	P75	Max.
ESG score	52.655	52.275	17.814	0.000	38.810	66.790	97.890
Ln(ESG)	3.918	3.975	0.385	0.000	3.684	4.216	4.594
ESGC score	46.419	44.170	15.988	0.000	34.790	57.320	95.600
Ln(ESGC)	3.797	3.810	0.369	0.000	3.578	4.066	4.571
ENV score	53.759	53.382	22.364	0.000	35.748	72.120	99.215
CGV score	51.436	51.919	21.044	0.000	34.880	68.202	99.006
SOC score	52.625	52.810	21.950	0.000	35.427	69.752	98.939
BLEV	0.227	0.216	0.168	0.000	0.099	0.327	1.155
MLEV	0.219	0.175	0.194	0.000	0.064	0.321	0.929
SIZE	15.367	15.322	1.544	7.427	14.451	16.331	20.497
TANG	0.252	0.211	0.185	0.000	0.109	0.353	0.922
PROF	0.113	0.119	0.135	0.000	0.076	0.168	0.455
R&D	0.041	0.018	0.084	-0.004	0.004	0.049	5.548
DEP	0.041	0.037	0.025	0.000	0.025	0.051	0.199
MTB	3.115	2.170	4.071	-8.470	1.320	3.600	29.210

Table 2: Pearson correlation coefficients

This table presents the correlation coefficients between firm financial variables in Panel A and between CSP performance scores in Panel B for the whole sample. Stars indicate significant at the 5% level ($p < 0.05$). The variable definitions are in Appendix A.

Panel A: Firm financial variables

	BLEV	MLEV	SIZE	TANG	PROF	R&D	DEP	MTB
BLEV	1							
MLEV	0.7208*	1						
SIZE	0.2368*	0.3928*	1					
TANG	0.1690*	0.2527*	0.1534*	1				
PROF	-0.0650*	-0.1568*	0.1679*	0.1085*	1			
R&D	-0.1253*	-0.2323*	-0.2896*	-0.2491*	-0.4245*	1		
DEP	0.1085*	0.0896*	0.0186*	0.3972*	0.1531*	-0.0127	1	
MTB	0.0300*	-0.2381*	-0.1617*	-0.1284*	0.0640*	0.1962*	-0.0295*	1

Panel B: CSP performance scores

	ESG score	ESGC score	ENV score	CGV score	SOC score
ESG score	1				
ESGC score	0.7514*	1			
ENV score	0.8586*	0.6541*	1		
CGV score	0.6943*	0.5410*	0.3663*	1	
SOC score	0.8762*	0.6340*	0.6852*	0.4059*	1

Table 3: CSP and leverage speed of adjustments – baseline regression results

This table reports the regression results for the effect of CSP, proxied by natural logarithm of ESG and ESGC scores, on the leverage speed of adjustment using following model:

$$\Delta L_{i,j,t+1} = (\varphi_{i,j,t} CSP_{i,j,t} + \rho_{i,j,t} X_{i,j,t})\,(Dist_{i,j,t}) + \vartheta_{i,j,t+1}$$

The dependent variable is the change in book and market leverage ratio($\Delta L_{i,j,t+1}$). $Dist_{i,t,j}$ is the difference between the target leverage ratio and the actual leverage ratio. $CSP_{i,t,j}$ is proxied by the natural logarithm of ESG and ESGC scores. Control variables (vector $X_{i,j,t}$) including firm characteristics and industry median leverage ratio *(INDLEV)*. Results of pooled OLS regression with bootstrapped standard errors. ***, **, * indicate significance at the 1%, 5%, and 10% levels, respectively. Standard errors are bootstrapped. T-statistics are reported in parenthesis. The variable definitions are in Appendix A.

VARIABLES	Ln(ESG)		Ln(ESGC)	
	ΔBL_{t+1}	ΔML_{t+1}	ΔBL_{t+1}	ΔML_{t+1}
	(1)	(2)	(3)	(4)
*CSP*Dist*	0.0804***	0.0687***	0.0720***	0.0592***
	(4.3434)	(6.2832)	(4.1892)	(4.7991)
*SIZE*Dist*	-0.0114***	-0.0052*	-0.0081***	-0.0020
	(-2.8138)	(-1.8914)	(-2.7249)	(-1.0388)
*TANG*Dist*	0.0230	0.0620*	0.0197	0.0572
	(0.5126)	(1.6619)	(0.6570)	(1.6085)
*PROF*Dist*	0.0185	-0.0266	0.0233	-0.0243
	(0.4006)	(-0.5497)	(0.3080)	(-0.4962)
*RD*Dist*	0.1003	0.0287	0.1115	0.0400
	(0.8388)	(0.2516)	(0.9071)	(0.3644)
*RDDUM*Dist*	-0.0174	-0.0299	-0.0230	-0.0345
	(-0.8711)	(-1.5871)	(-1.1259)	(-1.5170)
*DEP*Dist*	-0.8405***	-0.4991***	-0.8245***	-0.4674**
	(-3.3076)	(-2.8331)	(-6.0033)	(-2.5140)
*MTB*Dist*	0.0022	-0.0017	0.0021*	-0.0016
	(1.4910)	(-1.4486)	(1.9023)	(-1.4844)
*INDLEV*Dist*	-0.0875	-0.1006***	-0.1059	-0.1073***
	(-1.2749)	(-2.7928)	(-1.2748)	(-3.0978)
Constant	-0.0006	-0.0227	-0.0011	-0.0236
	(-0.0533)	(-0.9458)	(-0.0738)	(-1.0763)
Observations	18,471	18,471	18,471	18,471
R-squared	0.0815	0.2370	0.0819	0.2370
Industry FE	YES	YES	YES	YES
Year FE	YES	YES	YES	YES
Country FE	YES	YES	YES	YES

Table 4: CSP and leverage speed of adjustments: ESG Information Disclosure as possible channels
This table reports the regression results for the following model:

$$\Delta L_{i,j,t+1} = (\varphi_{i,j,t} CSP_{i,j,t} + \mu_{i,j,t} ID_{i,j,t} + \pi_{i,j,t} CSP_{i,j,t} * ID_{i,j,t} + \rho_{i,t,j} X_{i,j,t})\,(Dist_{i,j,t}) + \vartheta_{i,j,t+1}$$

The dependent variable is the change in book and market leverage ratio ($\Delta L_{i,j,t+1}$). $Dist_{i,j,t}$ is the difference between the target leverage ratio and the actual leverage ratio. $CSP_{i,j,t}$ is proxied by the natural logarithm of ESG and ESGC scores. $ESGDIS_{i,j,t}$ is the firm's ESG information disclosure, which is measured by the ESG disclosure score developed by Bloomberg (ESGDIS_BB) in Model (1)-(4) and by Thomson Reuter ESG database (ESGDIS_DS) in Model (5)-(8). Control variables (vector $X_{i,t,j}$) including firm characteristics and industry median leverage ratio *(INDLEV)*. The coefficients of control variables are not reported in the interests of brevity. ***, **, * indicate significance at the 1%, 5%, and 10% levels, respectively. Standard errors are bootstrapped. T-statistics are reported in parenthesis. The variable definitions are in Appendix A.

	ESGDIS_BB				*ESGDIS_DS*			
	Ln(ESG)		*Ln(ESGC)*		*Ln(ESG)*		*Ln(ESGC)*	
VARIABLES	ΔBL_{t+1}	ΔML_{t+1}	ΔBL_{t+1}	ΔML_{t+1}	ΔBL_{t+1}	ΔML_{t+1}	ΔBL_{t+1}	ΔML_{t+1}
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
*CSP*Dist*	0.1252***	0.1298***	0.1252***	0.1298***	0.1287***	0.1448***	0.1410***	0.1664***
	(3.3055)	(5.1696)	(3.3055)	(5.1696)	(4.9014)	(6.0281)	(5.1810)	(6.5971)
*ESGDIS*CSP*Dist*	-0.0258***	-0.0293***	-0.0258***	-0.0293***	-0.0186***	-0.0264***	-0.0233***	-0.0325***
	(-3.8410)	(-5.8844)	(-3.8410)	(-5.8844)	(-3.6234)	(-6.1836)	(-4.2130)	(-5.8059)
*ESGDIS *Dist*	0.0893***	0.0949***	0.0893***	0.0949***	0.0776***	0.0994***	0.0746***	0.1009***
	(4.6925)	(4.2548)	(4.6925)	(4.2548)	(4.3057)	(6.3489)	(4.2760)	(5.6434)
*Controls*Dist*	YES	YES	YES	YES	YES	YES	YES	YES
Constant	0.0045	-0.0180***	0.0045	-0.0180***	-0.0178*	-0.0116**	-0.0119***	-0.0115***
	(0.2891)	(-3.3917)	(0.2891)	(-3.3917)	(-1.7361)	(-2.0860)	(-2.6792)	(-2.6921)
Observations	10,256	10,256	10,256	10,256	15,141	15,141	15,141	15,141
R-squared	0.0810	0.2318	0.0810	0.2318	0.0894	0.2371	0.0840	0.2371
Industry FE	YES	YES	YES	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES	YES	YES	YES
Country FE	YES	YES	YES	YES	YES	YES	YES	YES

Table 5: CSP and leverage speed of adjustments: equity mispricing as a possible channel and over- and under-levered firms
Panel A of this table reports the regression results for the following model:

$$\Delta L_{i,j,t+1} = (\varphi_{i,j,t} CSP_{i,j,t} + \mu_{i,j,t} Oveval_{i,j,t} + \pi_{i,j,t} CSP_{i,j,t} * Oveval_{i,j,t} + \rho_{i,t,j} X_{i,j,t})\,(Dist_{i,j,t}) + \vartheta_{i,j,t+1}$$

Panel B of this table reports the regression results for the effect of CSP on the leverage speed of adjustment of following model:

$$\Delta L_{i,j,t+1} = (\varphi_{i,j,t} CSP_{i,j,t} + \infty_{i,j,t} Under_{i,j,t} + \alpha_{i,j,t} CSP_{i,j,t} * Under_{i,j,t} + \rho_{i,j,t} X_{i,j,t})\,(Dist_{i,j,t}) + \vartheta_{i,j,t+1}$$

The dependent variable is the change in book and market leverage ratio ($\Delta L_{i,j,t+1}$). $Dist_{i,j,t}$ is the difference between the target leverage ratio and the actual leverage ratio. $CSP_{i,j,t}$ is proxied by the natural logarithm of ESG and ESGC scores. $Oveval_{i,j,t}$ is dummy variable that equals one if firms are overvalued and zero otherwise. $Under_{i,j,t}$ is the dummy variable that takes value of one if a firm is under levered and zero otherwise. Control variables (vector $X_{i,t,j}$) including firm characteristics and industry median leverage ratio *(INDLEV)*. The coefficients of control variables are not reported in the interests of brevity. ***, **, * indicate significance at the 1%, 5%, and 10% levels, respectively. Standard errors are bootstrapped. T-statistics are reported in parenthesis. The variable definitions are in Appendix A.

Panel A. Equity mispricing as a possible channel

	Ln(ESG)		*Ln(ESGC)*	
VARIABLES	ΔBL_{t+1}	ΔML_{t+1}	ΔBL_{t+1}	ΔML_{t+1}
	(1)	(2)	(3)	(4)
*CSP*Dist*	0.0859***	0.0817***	0.0791***	0.0747***
	(10.6324)	(5.0908)	(4.8846)	(6.1581)
*Oveval*CSP*Dist*	-0.0368***	-0.0821***	-0.0439**	-0.0900***
	(-2.6414)	(-3.7067)	(-2.5581)	(-4.0724)
*Oveval*Dist*	0.1377**	0.3242***	0.1607**	0.3437***
	(2.5180)	(3.6759)	(2.4203)	(3.9441)
*Controls*Dist*	YES	YES	YES	YES
Constant	-0.0016	-0.0282	-0.0021	-0.0285
	(-0.1158)	(-1.0158)	(-0.1479)	(-1.2902)
Observations	18,471	18,471	18,471	18,471
R-squared	0.0819	0.2382	0.0824	0.2383
Industry FE	YES	YES	YES	YES
Year FE	YES	YES	YES	YES
Country FE	YES	YES	YES	YES

	Ln(ESG)	*Ln(ESGC)*

Panel B. Over- and under-levered firms

VARIABLES	ΔBL_{t+1} (1)	ΔML_{t+1} (2)	ΔBL_{t+1} (3)	ΔML_{t+1} (4)
*CSP*Dist*	0.0967***	0.1066***	0.0894***	0.0981***
	(5.1045)	(9.1228)	(6.0434)	(7.2467)
Under CSP*Dist*	-0.0016***	-0.0020***	-0.0016***	-0.0022***
	(-5.1123)	(-7.8958)	(-3.0113)	(-5.9829)
*Under*Dist*	0.0379*	-0.0974***	0.0292	-0.1012***
	(1.9084)	(-6.9432)	(1.1845)	(-4.7751)
*Controls*Dist*	YES	YES	YES	YES
Constant	-0.0005	0.0015	-0.0001	0.0020
	(-0.0329)	(0.0607)	(-0.0051)	(0.0843)
Observations	18,471	18,471	18,471	18,471
R-squared	0.0838	0.2497	0.0838	0.2497
Industry FE	YES	YES	YES	YES
Year FE	YES	YES	YES	YES
Country FE	YES	YES	YES	YES

Table 6: CSP and leverage speed of adjustments: stakeholder engagement as a possible channel and the role of a country's social trust

Panel A of this table reports the regression results for the following model:

$$\Delta L_{i,j,t+1} = (\varphi_{i,j,t} CSP_{i,j,t} + \infty_{i,j,t} SE_{i,j,t} + \alpha_{i,j,t} CSP_{i,j,t} * SE_{i,j,t} + \rho_{i,j,t} X_{i,j,t})\,(Dist_{i,j,t}) + \vartheta_{i,j,t+1}$$

Panel B of this table reports the regression results for the following model:

$$\Delta L_{i,j,t+1} = (\varphi_{i,j,t} CSP_{i,j,t} + \mu_{i,j,t} SOCTRU_j + \pi_{i,j,t} CSP_{i,j,t} * SOCTRU_j + \rho_{i,t,j} X_{i,j,t})\,(Dist_{i,j,t}) + \vartheta_{i,j,t+1}$$

The dependent variable is the change in book and market leverage ratio ($\Delta L_{i,j,t+1}$). $Dist_{i,j,t}$ is the difference between the target leverage ratio and the actual leverage ratio. $CSP_{i,j,t}$ is proxied by the natural logarithm of ESG and ESGC scores. $SE_{i,j,t}$ is the stakeholder engagement, which captures the degree to which a focal company explains the formal processes in place for engagement with its stakeholders. $SOCTRU_j$ is the country's social trust score. Control variables (vector $X_{i,t,j}$) including firm characteristics and industry median leverage ratio *(INDLEV)*. The coefficients of control variables are not reported in the interests of brevity. ***, **, * indicate significance at the 1%, 5%, and 10% levels, respectively. Standard errors are bootstrapped. T-statistics are reported in parenthesis. The variable definitions are in Appendix A.

Panel A. Stakeholder engagement as a possible channel

VARIABLES	*Ln(ESG)*		*Ln(ESGC)*	
	ΔBL_{t+1}	ΔML_{t+1}	ΔBL_{t+1}	ΔML_{t+1}
	(1)	(2)	(3)	(4)
*CSP*Dist*	0.0990***	0.1167***	0.0896***	0.1149***
	(5.7220)	(7.1685)	(5.8581)	(5.8513)
*SE*CSP*Dist*	-0.0142***	-0.0266***	-0.0140***	-0.0312***
	(-4.4912)	(-5.8627)	(-2.6637)	(-5.5412)
*SE*Dist*	0.0570***	0.1072***	0.0573**	0.1254***
	(4.3369)	(5.1399)	(2.3716)	(4.6550)
*Controls*Dist*	YES	YES	YES	YES
Constant	-0.0041	-0.0269	-0.0041	-0.0275
	(-0.6442)	(-1.3550)	(-0.2990)	(-1.1137)
Observations	15,981	15,981	15,981	15,981
R-squared	0.0794	0.2352	0.0794	0.2354
Industry FE	YES	YES	YES	YES
Year FE	YES	YES	YES	YES
Country FE	YES	YES	YES	YES

Panel B. The role of a country's social trust

VARIABLES	*Ln(ESG)*		*Ln(ESGC)*	
	ΔBL_{t+1}	ΔML_{t+1}	ΔBL_{t+1}	ΔML_{t+1}
	(1)	(2)	(3)	(4)
*CSP*Dist*	0.1073***	0.1214***	0.0981***	0.1144***
	(5.3672)	(6.1152)	(5.1039)	(7.5726)
*SOCTRU*Dist*	0.0073***	0.0110***	0.0073***	0.0119***
	(3.7545)	(7.6285)	(3.6491)	(8.4455)
*CSP*SOCTRU*Dist*	-0.0017***	-0.0025***	-0.0017***	-0.0028***
	(-3.2095)	(-7.2099)	(-3.6387)	(-7.0581)
*Controls*Dist*	YES	YES	YES	YES
Constant	0.0209	0.0230	0.0215	0.0239
	(0.4050)	(0.2799)	(0.6463)	(0.3565)
Observations	17,679	17,679	17,679	17,679
R-squared	0.0867	0.2469	0.0866	0.2468
Industry FE	YES	YES	YES	YES
Year FE	YES	YES	YES	YES
Country FE	YES	YES	YES	YES

Table 7: CSP and leverage speed of adjustments: competitive advantage as a possible channel and effect of product market competition

Panel A of this table reports the regression results for the following model:

$$\Delta L_{i,j,t+1} = (\varphi_{i,j,t} CSP_{i,j,t} + \mu_{i,j,t} TobinQ_{i,j,t} + \pi_{i,j,t} CSP_{i,j,t} * TobinQ_{i,j,t} + \rho_{i,t,j} X_{i,j,t})\,(Dist_{i,j,t}) + \vartheta_{i,j,t+1}$$

Panel B of this table reports the regression results for the following model:

$$\Delta L_{i,j,t+1} = (\varphi_{i,j,t} CSP_{i,j,t} + \mu_{i,j,t} Concentrate_{i,j,t} + \pi_{i,j,t} CSP_{i,j,t} * Concentrate_{i,j,t} + \rho_{i,j,t} X_{i,j,t})\,(Dist_{i,j,t}) + \vartheta_{i,j,t+1}$$

The dependent variable is the change in book and market leverage ratio ($\Delta L_{i,j,t+1}$). $Dist_{i,j,t}$ is the difference between the target leverage ratio and the actual leverage ratio. $CSP_{i,j,t}$ is proxied by the natural logarithm of ESG and ESGC scores. $TobinQ_{i,j,t}$ measures the market's assessment of a firm's future cash flow. $Concentrate_{i,j,t}$ is a dummy variable that takes value of one if a firm operates in concentrated industry and zero otherwise. Control variables (vector $X_{i,t,j}$) including firm characteristics and industry median leverage ratio *(INDLEV)*. The coefficients of control variables are not reported in the interests of brevity. ***, **, * indicate significance at the 1%, 5%, and 10% levels, respectively. Standard errors are bootstrapped. T-statistics are reported in parenthesis. The variable definitions are in Appendix A.

Panel A. Competitive advantage as a possible channel

	Ln(ESG)		*Ln(ESGC)*	
VARIABLES	ΔBL_{t+1}	ΔML_{t+1}	ΔBL_{t+1}	ΔML_{t+1}
	(1)	(2)	(3)	(4)
*CSP*Dist*	0.1032***	0.1260***	0.0829***	0.1149***
	(6.6680)	(7.5865)	(9.0089)	(6.9598)
*TobinQ*CSP*Dist*	-0.0191***	-0.0379***	-0.0121***	-0.0408***
	(-2.9536)	(-4.9043)	(-3.3899)	(-5.0244)
*TobinQ*Dist*	0.0777***	0.1332***	0.0515***	0.1410***
	(3.1987)	(4.5334)	(4.0112)	(4.4387)
*Controls*Dist*	YES	YES	YES	YES
Constant	-0.0144	-0.0413***	-0.0147	-0.0424***
	(-1.1769)	(-3.5672)	(-0.9765)	(-3.5594)
Observations	15,203	15,203	15,203	15,203
R-squared	0.0879	0.2415	0.0869	0.2416
Industry FE	YES	YES	YES	YES
Year FE	YES	YES	YES	YES
Country FE	YES	YES	YES	YES

Panel B. The effect of product market competition

	Ln(ESG)		*Ln(ESGC)*	
VARIABLES	ΔBL_{t+1}	ΔML_{t+1}	ΔBL_{t+1}	ΔML_{t+1}
	(1)	(2)	(3)	(4)
*CSP*Dist*	0.1057***	0.0986***	0.0921***	0.0880***
	(4.3914)	(6.1198)	(5.6257)	(6.6597)
*CSP*Concentrate*Dist*	-0.0758***	-0.0908***	-0.0688***	-0.0965***
	(-3.2669)	(-4.4412)	(-2.8020)	(-4.5024)
*Concentrate*Dist*	0.2943***	0.3510***	0.2590***	0.3606***
	(3.2573)	(4.4149)	(2.8549)	(4.4368)
*Controls*Dist*	YES	YES	YES	YES
Constant	-0.0034	-0.0286*	-0.0033	-0.0291
	(-0.3206)	(-1.7745)	(-0.2324)	(-1.4598)
Observations	18,471	18,471	18,471	18,471
R-squared	0.0834	0.2391	0.0834	0.2393
Industry FE	YES	YES	YES	YES
Year FE	YES	YES	YES	YES
Country FE	YES	YES	YES	YES

Table 8a: Robustness tests: Alternative measures of leverage and target leverage

This table reports the robustness checks using partial active leverage adjustment as alternative measure of leverage (Model (1)-(2) and using Fama-McBeth method to estimate target leverage (Model (3)-(6) for following regressions:

$$\Delta L_{i,j,t+1} = (\varphi_{i,j,t} CSP_{i,j,t} + \rho_{i,j,t} X_{i,j,t})\,(Dist_{i,j,t}) + \vartheta_{i,j,t+1}$$

The dependent variable is the change in leverage ratio ($\Delta L_{i,j,t+1}$). $Dist_{i,j,t}$ is the difference between the target leverage ratio and the actual leverage ratio. $CSP_{i,j,t}$ is proxied by the natural logarithm of ESG and ESGC scores. Control variables (vector $X_{i,j,t}$) including firm characteristics and industry median leverage ratio *(INDLEV)*. The coefficients of control variables are not reported in the interests of brevity. ***, **, * indicate significance at the 1%, 5%, and 10% levels, respectively. Standard errors are bootstrapped. T-statistics are reported in parenthesis. The variable definitions are in Appendix A.

	Alternative leverage measure: AL		Alternative target leverage measure: Fama-McBeth method			
			Ln(ESG)		Ln(ESGC)	
VARIABLES	Ln(ESG)	Ln(ESGC)	ΔBL_{t+1}	ΔML_{t+1}	ΔBL_{t+1}	ΔML_{t+1}
	(1)	(2)	(3)	(4)	(5)	(6)
*CSP*Dist*	0.308***	0.247***	0.0804***	0.0720***	0.0687***	0.0592***
	(5.171)	(6.264)	(4.690)	(5.008)	(5.926)	(4.349)
*Controls*Dist*	YES	YES	YES	YES	YES	YES
Constant	-0.0338*	-0.0417**	-0.0006	-0.0011	-0.0227	-0.0236
	(-1.949)	(-2.125)	(-0.0505)	(-0.0793)	(-1.113)	(-1.254)
Observations	17,758	17,758	18,471	18,471	18,471	18,471
R-squared	0.701	0.696	0.081	0.082	0.237	0.237
Industry FE	YES	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES	YES
Country FE	YES	YES	YES	YES	YES	YES

Table 8b: CSP and leverage speed of adjustments – Alternative econometric method

This table reports the regression results for the effect of CSP, proxied by natural logarithm of ESG and ESGC scores, on the leverage speed of adjustment using of firm fixed effects regression with clustered standard error at the country level:

$$\Delta L_{i,j,t+1} = (\varphi_{i,j,t} CSP_{i,j,t} + \rho_{i,j,t} X_{i,j,t})\,(Dist_{i,j,t}) + \vartheta_{i,j,t+1}$$

The dependent variable is the change in book and market leverage ratio($\Delta L_{i,j,t+1}$). $Dist_{i,t,j}$ is the difference between the target leverage ratio and the actual leverage ratio. $CSP_{i,t,j}$ is proxied by the natural logarithm of ESG and ESGC scores. Control variables (vector $X_{i,j,t}$) including firm size *(SIZE)*, tangibility *(TANG)*, profitability *(PROF)*, R&D expenses *(RD)*, R&D dummy*(RDDUM)*, depreciation expenses *(DEP)*, market-to-book ratio *(MTB)*, and industry median leverage ratio *(INDLEV)*. The coefficients of control variables are not reported in the interests of brevity. ***, **, * indicate significance at the 1%, 5%, and 10% levels, respectively. Standard errors are bootstrapped. T-statistics are reported in parenthesis. The variable definitions are in Appendix A.

	Ln(ESG)		Ln(ESGC)	
VARIABLES	ΔBL_{t+1}	ΔML_{t+1}	ΔBL_{t+1}	ΔML_{t+1}
	(1)	(2)	(3)	(4)
*CSP*Dist*	0.1129***	0.0790***	0.0973***	0.0659***
	(3.6072)	(3.3278)	(4.9756)	(3.0256)
*Controls*Dist*	YES	YES	YES	YES
Constant	-0.0100***	-0.0197***	-0.0099***	-0.0196***
	(-3.4834)	(-3.6139)	(-3.3060)	(-3.5060)
Observations	18,471	18,471	18,471	18,471
R-squared	0.1775	0.3714	0.1779	0.3715
Firm FE	YES	YES	YES	YES
Year FE	YES	YES	YES	YES

Table 8c: Instrumental variable approach

This table reports the first-stage and second-stage regression from our IV regressions. In the first stage, we regress the CSP variables ***(****Ln(ESG) and Ln(ESGC))*** interacted with *Dist* on the instruments and the controls, where a given firm's CSP proxies are instrumented using GDP growth rate *(GGDP)* and money supply growth rate *(GMS)***.** $CSP_{i,t,j}$ is proxied by the natural logarithm of ESG and ESGC scores. Control variables including firm characteristics and industry median leverage ratio *(INDLEV)*. ***, **, * indicate significance at the 1%, 5%, and 10% levels, respectively. Standard errors are bootstrapped. T-statistics are reported in parenthesis. The variable definitions are in Appendix A. In the second stage, we regress dependent variable that is the change in book leverage ratio ($\Delta\, LEV_{i,t+1,j}$) on the predicted values of *Ln(ESG)*Dist* and *Ln(ESGC)*Dist*, respectively, and the control variables. $Dist_{i,t,j}$ is the difference between the target leverage ratio and the actual leverage ratio. ***, **, * indicate significance at the 1%, 5%, and 10% levels, respectively. Standard errors are bootstrapped and reported in parenthesis. The p values of Wald tests, Sargan J statistics and first-stage F tests are reported. The variable definitions are in Appendix A.

	Ln(ESG)				*Ln(ESGC)*			
	BL		*ML*		*BL*		*ML*	
VARIABLES	First stage *Ln(ESG)* Dist* *(1)*	Second stage ΔBL_{t+1} *(2)*	First stage *Ln(ESGC) *Dist* *(3)*	Second stage ΔBL_{t+1} *(4)*	First stage *Ln(ESG)* Dist* *(5)*	Second stage ΔBL_{t+1} *(6)*	First stage *Ln(ESGC) *Dist* *(7)*	Second stage ΔBL_{t+1} *(8)*
*CSP*Dist*		0.8744***		1.4669***		0.7300***		1.0543***
		(0.1884)		(0.4870)		(0.1505)		(0.3087)
*SIZE*Dist*	0.2300***	-0.1957***	0.2277***	-0.3233***	0.2117***	-0.1485***	0.2095***	-0.2113***
	(0.0009)	(0.0436)	(0.0008)	(0.1109)	(0.0010)	(0.0322)	(0.0010)	(0.0650)
*TANG*Dist*	0.0620***	-0.0194	0.0808***	-0.0629	0.1162***	-0.0587*	0.1647***	-0.1236**
	(0.0195)	(0.0287)	(0.0180)	(0.0507)	(0.0227)	(0.0314)	(0.0212)	(0.0599)
*PROF*Dist*	0.1646***	-0.1148***	0.2457***	-0.3842***	0.1099***	-0.0413	0.2387***	-0.2789***
	(0.0185)	(0.0405)	(0.0239)	(0.1287)	(0.0216)	(0.0299)	(0.0281)	(0.0854)
*RD*Dist*	1.5298***	-1.1296***	1.3981***	-1.9472***	1.5460***	-0.9179***	1.3816***	-1.3600***
	(0.0337)	(0.2963)	(0.0497)	(0.6921)	(0.0393)	(0.2413)	(0.0583)	(0.4407)
*RDDUM*Dist*	0.1970***	-0.1719***	0.1645***	-0.2663***	0.2956***	-0.2220***	0.2783***	-0.3171***
	(0.0104)	(0.0402)	(0.0101)	(0.0827)	(0.0122)	(0.0473)	(0.0119)	(0.0875)
*DEP*Dist*	1.9466***	-2.3948***	1.8113***	-3.0396***	1.9753***	-2.1538***	1.5547***	-2.0109***
	(0.1090)	(0.3919)	(0.1143)	(0.8995)	(0.1272)	(0.3269)	(0.1342)	(0.5062)
*MTB*Dist*	0.0039***	-0.0011	0.0071***	-0.0115***	0.0053***	-0.0015	0.0064***	-0.0082***
	(0.0004)	(0.0010)	(0.0006)	(0.0036)	(0.0005)	(0.0010)	(0.0007)	(0.0022)
*INDLEV*Dist*	-0.2728***	0.1452**	-0.0727***	0.0219	-0.0348	-0.0866*	0.0280	-0.1133***
	(0.0352)	(0.0705)	(0.0228)	(0.0559)	(0.0410)	(0.0464)	(0.0267)	(0.0372)
*GGDP*Dist*	0.0023*		0.0042***		0.0038**		0.0050***	
	(0.0013)		(0.0012)		(0.0016)		(0.0014)	
*GMS*Dist*	0.4456***		-0.1044		0.5174***		0.1878**	
	(0.0740)		(0.0719)		(0.0864)		(0.0843)	
Constant	0.0154	-0.0039	0.0133	-0.0474**	0.0202	-0.0143	0.0276*	-0.0595***
	(0.0127)	(0.0172)	(0.0120)	(0.0224)	(0.0154)	(0.0176)	(0.0141)	(0.0214)
Observations	17,950	17,950	17,950	17,950	17,950	17,950	17,950	17,950
R-squared	0.9908	0.0878	0.9911	0.0631	0.9866	0.1951	0.9869	0.2002
Industry FE	YES	YES	YES	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES	YES	YES	YES
Country FE	YES	YES	YES	YES	YES	YES	YES	YES
Wald test		0.0092		0.0000		0.0000		0.0000
Sargan J statistic		0.1550		0.1089		0.1267		0.1091
First-stage F test		0.0000		0.0012		0.0000		0.0000

Table 9: CSP and leverage speed of adjustments: the role of country's institution

This table reports the regression results for the effect country's institution on CSP – leverage SOA relationship using the following model:

$$\Delta L_{i,j,t+1} = (\varphi_{i,j,t} CSP_{i,j,t} + \Delta_{i,j,t} IN_{i,j,t} + \wedge_{i,j,t} CSP_{i,j,t} * IN_{i,j,t} + \rho_{i,j,t} X_{i,j,t})(Dist_{i,j,t}) + \vartheta_{i,j,t+1}$$

The dependent variable is the change in book and market leverage ratio ($\Delta L_{i,j,t+1}$). $Dist_{i,j,t}$ is the difference between the target leverage ratio and the actual leverage ratio. $CSP_{i,j,t}$ is proxied by the natural logarithm of ESG. $IN_{i,j,t}$ is the country's institution variables, which is measured by the legal and regulatory variables in panel A, information environment variables in Panel B, country's corporate governance variables in panel C, and other country's institutional factors in panel D. Control variables (vector $X_{i,j,t}$) including firm characteristics and industry median leverage ratio *(INDLEV)*. The coefficients of control variables are not reported in the interests of brevity. ***, **, * indicate significance at the 1%, 5%, and 10% levels, respectively. Standard errors are bootstrapped. T-statistics are reported in parenthesis. The variable definitions are in Appendix A.

Panel A. Legal and regulatory variables

VARIABLES	*LEGREG = EFFJUD*		*LEGREG = RULLAW*		*LEGREG = CORRUP*		*LEGREG = RISEXP*		*LEGREG = RISCON*	
	ΔBL_{t+1}	ΔML_{t+1}	ΔBL_{t+1}	ΔML_{t+1}	ΔBL_{t+1}	ΔML_{t+1}	ΔBL_{t+1}	ΔML_{t+1}	ΔBL_{t+1}	ΔML_{t+1}
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
*CSP*Dist*	0.1305***	0.1429***	0.1143***	0.0999***	0.1125***	0.1158***	0.1087***	0.0685**	0.1502***	0.1845***
	(5.3523)	(5.9848)	(2.8885)	(5.3539)	(5.9072)	(4.7981)	(3.8617)	(2.2220)	(4.5674)	(6.2033)
*LEGREG *CSP*Dist*	-0.0090***	-0.0121***	-0.0076**	-0.0083***	-0.0082***	-0.0107***	-0.0067**	-0.0047	-0.0115***	-0.0166***
	(-4.0406)	(-5.0003)	(-2.2528)	(-5.1078)	(-4.9608)	(-4.1433)	(-2.1450)	(-1.4817)	(-3.9032)	(-5.9756)
*LEGREG *Dist*	0.0348***	0.0466***	0.0352***	0.0482***	0.0384***	0.0516***	0.0349***	0.0497***	0.0357***	0.0477***
	(5.4511)	(5.2155)	(3.4452)	(8.4630)	(5.0905)	(6.5757)	(4.5621)	(6.9452)	(5.1455)	(5.4751)
*Controls*Dist*	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Constant	-0.0043	-0.0305**	-0.0040	-0.0289	-0.0040	-0.0298	-0.0033	-0.0254	-0.0048	-0.0330
	(-0.4559)	(-2.2954)	(-0.3633)	(-1.1784)	(-0.5227)	(-1.5914)	(-0.3185)	(-1.3050)	(-0.3329)	(-1.4001)
Observations	17,935	17,935	17,935	17,935	17,935	17,935	17,935	17,935	17,935	17,935
R-squared	0.0867	0.2409	0.0868	0.2422	0.0866	0.2412	0.0867	0.2425	0.0867	0.2414
Industry FE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Country FE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES

Panel B. Information environments

VARIABLES	*FINENV = DISCLO*		*FINENV = ANALYST*		*FINENV = AUDIT*		*FINENV = DISCON*		*FINENV = DISPUB*	
	ΔBL_{t+1}	ΔML_{t+1}	ΔBL_{t+1}	ΔML_{t+1}	ΔBL_{t+1}	ΔML_{t+1}	ΔBL_{t+1}	ΔML_{t+1}	ΔBL_{t+1}	ΔML_{t+1}
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
*CSP*Dist*	0.1220***	0.1557***	0.1182***	0.1216***	0.1213***	0.1555***	0.1001***	0.0973***	0.1020***	0.0911***
	(4.6733)	(7.9174)	(4.8487)	(7.2597)	(5.8525)	(6.7390)	(4.1590)	(5.4298)	(5.0248)	(5.8205)
*INFENV*CSP*Dist*	-0.0164***	-0.0238***	-0.0029***	-0.0038***	-0.0202***	-0.0327***	-0.0865**	-0.1205***	-0.0902***	-0.1118***
	(-4.0971)	(-6.7675)	(-3.2517)	(-7.4104)	(-4.5356)	(-6.9652)	(-2.5004)	(-4.3654)	(-4.1566)	(-5.0513)
*INFENV*Dist*	0.0670***	0.0838***	0.0123***	0.0167***	0.0885***	0.1165***	0.4083***	0.5744***	0.4146***	0.5334***
	(3.6624)	(5.7927)	(3.7509)	(7.8357)	(5.1075)	(8.3373)	(3.0092)	(4.9350)	(4.9835)	(6.3023)
*Controls*Dist*	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Constant	-0.0053	-0.0319	-0.0042	-0.0308*	-0.0046	-0.0306*	-0.0050	-0.0293	-0.0052	-0.0286
	(-0.4257)	(-1.2441)	(-0.3113)	(-1.8036)	(-0.3376)	(-1.7265)	(-0.4658)	(-1.3248)	(-0.3636)	(-1.3814)
Observations	17,959	17,959	17,885	17,885	17,885	17,885	18,243	18,243	18,243	18,243
R-squared	0.0864	0.2408	0.0864	0.2405	0.0871	0.2412	0.0882	0.2435	0.0880	0.2429
Industry FE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Country FE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES

Panel C. Country's corporate governance

VARIABLES	*CORGOV = VOIACC*		*CORGOV = POLSTA*		*CORGOV = GOVEFF*		*CORGOV = REGQUA*		*CORGOV = RULLAW2*		*CORGOV = CONCOR*	
	ΔBL_{t+1}	ΔML_{t+1}	ΔBL_{t+1}	ΔML_{t+1}	ΔBL_{t+1}	ΔML_{t+1}	ΔBL_{t+1}	ΔML_{t+1}	ΔBL_{t+1}	ΔML_{t+1}	ΔBL_{t+1}	ΔML_{t+1}
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
*CSP*Dist*	0.1012***	0.1066***	0.1035***	0.1131***	0.1038***	0.1182***	0.0831**	0.1196***	0.0977***	0.1196***	0.1007***	0.1185***
	(4.1751)	(5.6325)	(3.2599)	(6.2001)	(3.2906)	(6.6604)	(2.4271)	(7.2957)	(4.0105)	(7.0603)	(4.0452)	(6.4078)
*CORGOV*CSP*Dist*	-0.0568***	-0.0769***	-0.0735***	-0.0880***	-0.0435***	-0.0571***	-0.0372**	-0.0605***	-0.0401***	-0.0598***	-0.0458***	-0.0610***
	(-2.9150)	(-4.4932)	(-2.9229)	(-4.3582)	(-2.7766)	(-4.7628)	(-2.4197)	(-4.1515)	(-3.5479)	(-4.8869)	(-3.4466)	(-4.8360)
*CORGOV*Dist*	0.2408***	0.3280***	0.2693***	0.3100***	0.1988***	0.2448***	0.2029***	0.2464***	0.1889***	0.2460***	0.2026***	0.2468***
	(3.0919)	(4.9839)	(2.8184)	(4.1359)	(3.1620)	(6.1067)	(3.5077)	(4.4730)	(4.6054)	(5.8976)	(3.6211)	(5.1248)
*Controls*Dist*	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Constant	0.0005	-0.0218	-0.0009	-0.0265	-0.0018	-0.0286	-0.0043	-0.0289	-0.0016	-0.0274	-0.0019	-0.0272
	(0.0419)	(-0.9453)	(-0.0838)	(-0.9786)	(-0.1220)	(-0.8585)	(-0.2981)	(-1.1615)	(-0.1140)	(-1.3608)	(-0.1281)	(-1.3224)
Observations	15,964	15,964	15,964	15,964	15,964	15,964	15,964	15,964	15,964	15,964	15,964	15,964
R-squared	0.0847	0.2529	0.0829	0.2512	0.0851	0.2528	0.0865	0.2523	0.0851	0.2525	0.0854	0.2526
Industry 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
Country FE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES

Panel D. Other country's institutional factors

VARIABLES	*OTHER = ENGORI*		*OTHER = PUBETH*		*OTHER = GOOGOV*		*OTHER = MEDIA*	
	ΔBL_{t+1}	ΔML_{t+1}	ΔBL_{t+1}	ΔML_{t+1}	ΔBL_{t+1}	ΔML_{t+1}	ΔBL_{t+1}	ΔML_{t+1}
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
*CSP*Dist*	0.0975***	0.0898***	0.1020***	0.1249***	0.1234***	0.1489***	0.0743***	0.0716***
	(5.6704)	(5.8468)	(7.5394)	(5.8231)	(5.3053)	(7.9483)	(3.9525)	(6.0549)
*OTHER*CSP*Dist*	-0.0713***	-0.0768***	-0.0010***	-0.0015***	-0.0043***	-0.0063***	-0.0000	-0.0000**
	(-3.9943)	(-2.9705)	(-6.4976)	(-5.0528)	(-4.0880)	(-7.4144)	(-1.2516)	(-2.5579)
*OTHER*Dist*	0.3187***	0.3365***	0.0048***	0.0061***	0.0177***	0.0233***	0.0001	0.0001***
	(4.6123)	(3.3055)	(8.7906)	(5.6901)	(4.1715)	(7.2154)	(1.5940)	(2.9985)
*Controls*Dist*	YES	YES	YES	YES	YES	YES	YES	YES
Constant	-0.0069	-0.0340	-0.0064	-0.0319*	-0.0046	-0.0309*	-0.0060	-0.0304*
	(-0.4733)	(-1.6195)	(-0.4542)	(-1.8938)	(-0.4211)	(-1.8070)	(-0.4196)	(-1.8864)
Observations	18,243	18,243	18,243	18,243	17,959	17,959	17,885	17,885
R-squared	0.0869	0.2392	0.0870	0.2406	0.0864	0.2407	0.0866	0.2388
Industry FE	YES	YES	YES	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES	YES	YES	YES
Country FE	YES	YES	YES	YES	YES	YES	YES	YES

Table 10: ESG pillars and leverage speed of adjustments

This table reports the regression results for the effect of ESG pillars including environment *(ENV)*, social *(SOC)*, and corporate governance *(CGV)* on the leverage speed of adjustment using the following models:

$$\Delta L_{i,j,t+1} = (\varphi_{i,j,t} ESGpillar_{i,j,t} + \rho_{i,j,t} X_{i,j,t})\,(Dist_{i,j,t}) + \vartheta_{i,j,t+1}$$

The dependent variable is the change in book and market leverage ratio ($\Delta L_{i,j,t+1}$). $Dist_{i,j,t}$ is the difference between the target leverage ratio and the actual leverage ratio. $ESGpillar_{i,j,t}$ is proxied by the natural logarithm of environment (Model (1)-(2)), social (Model (3)-(4)), and corporate governance scores (Model (5)-(6)). Control variables (vector $X_{i,j,t}$) including characteristics and industry median leverage ratio *(INDLEV)*. The coefficients of control variables are not reported in the interests of brevity. ***, **, * indicate significance at the 1%, 5%, and 10% levels, respectively. Standard errors are bootstrapped. T-statistics are reported in parenthesis. The variable definitions are in Appendix A.

	ENVIRONMENT		SOCIAL		GOVERNANCE	
VARIABLES	ΔBL_{t+1}	ΔML_{t+1}	ΔBL_{t+1}	ΔML_{t+1}	ΔBL_{t+1}	ΔML_{t+1}
	(1)	(2)	(3)	(4)	(5)	(6)
*Ln(ENV)*Dist*	0.0429***	0.0262***				
	(4.0597)	(2.9745)				
*Ln(SOC)*Dist*			0.0576***	0.0380***		
			(5.4021)	(7.2508)		
*Ln(CGV)*Dist*					0.0421***	0.0467***
					(5.9923)	(5.9770)
*Controls*Dist*	YES	YES	YES	YES	YES	YES
Constant	0.0006	-0.0217	0.0001	-0.0216	-0.0014	-0.0249
	(0.0812)	(-1.0280)	(0.0053)	(-1.1915)	(-0.1108)	(-1.2918)
Observations	18,465	18,465	18,465	18,465	18,463	18,463
R-squared	0.0783	0.2348	0.0809	0.2358	0.0790	0.2366
Industry FE	YES	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES	YES
Country FE	YES	YES	YES	YES	YES	YES

Table 11: CSP and leverage speed of adjustments: Effect of firm's corporate governance practice

This table reports the regression results for the following model:

$$\Delta L_{i,j,t+1} = (\varphi_{i,j,t} ENVSOC_{i,j,t} + \mu_{i,j,t} Dummy\_CGV_{i,j,t} + \pi_{i,j,t} ENVSOC_{i,j,t} * Dummy\_CGV_{i,j,t} + \rho_{i,t,j} X_{i,j,t})\,(Dist_{i,j,t}) + \vartheta_{i,j,t+1}$$

The dependent variable is the change in book and market leverage ratio ($\Delta L_{i,j,t+1}$). $Dist_{i,j,t}$ is the difference between the target leverage ratio and the actual leverage ratio. $ENVSOC_{i,j,t}$ is proxied by the natural logarithm of average of environment and social performance scores. $Dummy\_CGV_{i,j,t}$ is a dummy variable that equals one if firms have strong corporate governance and zero otherwise. Control variables (vector $X_{i,t,j}$) including firm characteristics and industry median leverage ratio *(INDLEV)*. The coefficients of control variables are not reported in the interests of brevity. ***, **, * indicate significance at the 1%, 5%, and 10% levels, respectively. Standard errors are bootstrapped. T-statistics are reported in parenthesis. The variable definitions are in Appendix A.

VARIABLES	ΔBL_{t+1}	ΔML_{t+1}
	(1)	(2)
*ENVSOC*Dist*	0.0722***	0.0693***
	(6.0466)	(5.0613)
*Dummy_CGV*Dist*	0.0055**	0.0086***
	(2.4205)	(3.2839)
*ENVSOC*Dummy_CGV*Dist*	-0.0155***	-0.0547***
	(-2.7858)	(-8.6514)
*Controls*Dist*	YES	YES
Constant	0.0019	0.0029
	(0.1617)	(0.1158)
Observations	18,463	18,463
R-squared	0.0821	0.2481
Industry FE	YES	YES
Year FE	YES	YES
Country FE	YES	YES

Table 12: CSP and leverage speed of adjustments: financial constraints

This table reports the regression results for the following model:

$$\Delta L_{i,j,t+1} = (\varphi_{i,j,t} CSP_{i,j,t} + \mu_{i,j,t} FINCON_{i,j,t} + \pi_{i,j,t} CSP_{i,j,t} * FINCON_{i,j,t} + \rho_{i,j,t} X_{i,j,t})\,(Dist_{i,j,t}) + \vartheta_{i,j,t+1}$$

The dependent variable is the change in book and market leverage ratio ($\Delta L_{i,j,t+1}$). $Dist_{i,j,t}$ is the difference between the target leverage ratio and the actual leverage ratio. $CSP_{i,j,t}$ is proxied by the natural logarithm of ESG and ESGC scores. $FINCON_{i,j,t}$ is the financial constraints variables, which is measured by firm's cash flow (CASHFLOW) in Model (1)-(4) and KZ index (KZINDEX) in Model (5)-(8). Control variables (vector $X_{i,j,t}$) including firm characteristics and industry median leverage ratio *(INDLEV)*. The coefficients of control variables are not reported in the interests of brevity. ***, **, * indicate significance at the 1%, 5%, and 10% levels, respectively. Standard errors are bootstrapped. T-statistics are reported in parenthesis. The variable definitions are in Appendix A.

	FINCON = CASHFLOW				FINCON = KZINDEX			
	Ln(ESG)		*Ln(ESGC)*		*Ln(ESG)*		*Ln(ESGC)*	
VARIABLES	ΔBL_{t+1}	ΔML_{t+1}	ΔBL_{t+1}	ΔML_{t+1}	ΔBL_{t+1}	ΔML_{t+1}	ΔBL_{t+1}	ΔML_{t+1}
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
*CSP*Dist*	0.1106***	0.1048***	0.1001***	0.0935***	0.1057***	0.1019***	0.0943***	0.0906***
	(4.1634)	(4.6785)	(5.7448)	(6.0871)	(5.9201)	(9.7886)	(6.1591)	(8.1837)
FINCON CSP*Dist*	-0.0756***	-0.1108***	-0.0744***	-0.1067***	-0.0857***	-0.1050***	-0.0903***	-0.1030***
	(-3.3385)	(-5.0190)	(-3.7977)	(-5.1926)	(-4.5865)	(-8.0812)	(-5.1902)	(-8.9039)
*FINCON*Dist*	0.2889***	0.4138***	0.2726***	0.3836***	0.3991***	0.4636***	0.4038***	0.4427***
	(3.1690)	(4.5730)	(3.2737)	(4.8672)	(5.3587)	(8.7462)	(5.9911)	(8.8373)
*Controls*Dist*	YES	YES	YES	YES	YES	YES	YES	YES
Constant	-0.0004	-0.0275	-0.0015	-0.0292	0.0035	-0.0151	0.0030	-0.0162
	(-0.0389)	(-1.6420)	(-0.1269)	(-1.3424)	(0.2652)	(-0.6495)	(0.2102)	(-0.5767)
Observations	16,418	16,418	16,418	16,418	18,428	18,428	18,428	18,428
R-squared	0.0926	0.2503	0.0931	0.2501	0.0893	0.2421	0.0894	0.2417
Industry FE	YES	YES	YES	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES	YES	YES	YES
Country FE	YES	YES	YES	YES	YES	YES	YES	YES

Table 13. CSP and leverage adjustment activities

This table reports the marginal effects from the logit regressions modelling firm's decision to access capital markets regarding to CSP levels. Panels A and B present the results for over-levered and under-levered firms, respectively. Debt issuances, debt retirements, and equity issuances are defined as a security issuance or repurchase of at least 5% of the book assets. Equity retirements are defined as a stock repurchase of at least 1.25% of the book assets. $CSP_{i,t,j}$ is proxied by the natural logarithm of ESG and ESGC scores. Control variables (vector $X_{i,j,t}$) including firm characteristics and industry median leverage ratio *(INDLEV)*. The coefficients of control variables are not reported in the interests of brevity. ***, **, * indicate significance at the 1%, 5%, and 10% levels, respectively. Standard errors are bootstrapped. T-statistics are reported in parenthesis. The variable definitions are in Appendix A.

Panel A. Over-levered firms

	Debt Issuance		Debt Retirement		Equity Issuance		Equity Retirement	
VARIABLES	ESG	ESGC	ESG	ESGC	ESG	ESGC	ESG	ESGC
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
*CSP*Dist*	0.1168	0.1352**	-0.0683	0.0155	0.4414***	0.4106***	0.0035	0.0380
	(1.4623)	(1.9640)	(-0.8665)	(0.2285)	(6.4169)	(6.9291)	(0.2974)	(1.5853)
*Controls*Dist*	YES	YES	YES	YES	YES	YES	YES	YES
Constant	0.2098	0.2089	0.5101**	0.5061**	0.4904***	0.4888***	0.5572***	0.5578***
	(1.0401)	(1.0361)	(2.5633)	(2.5429)	(2.8246)	(2.8164)	(2.9536)	(2.9589)
Observations	8,007	8,007	8,007	8,007	8,007	8,007	8,007	8,007
R-squared	0.0964	0.0966	0.1095	0.1094	0.1371	0.1378	0.1834	0.1837
Industry FE	YES	YES	YES	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES	YES	YES	YES
Country FE	YES	YES	YES	YES	YES	YES	YES	YES

Panel B. Under-levered firms

	Debt Issuance		Debt Retirement		Equity Issuance		Equity Retirement	
VARIABLES	ESG	ESGC	ESG	ESGC	ESG	ESGC	ESG	ESGC
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
*CSP*Dist*	0.1106	0.1104	0.0159	0.0433	0.4316***	0.4431***	0.0054	0.1188*
	(1.3758)	(1.6293)	(0.6233)	(1.2993)	(6.4862)	(7.9062)	(0.1681)	(1.8659)
*Controls*Dists*	YES	YES	YES	YES	YES	YES	YES	YES
Constant	0.4105***	0.4076***	0.4960***	0.4694***	0.0501	0.0379	0.5325***	0.2547**
	(3.7246)	(3.6968)	(5.0078)	(4.8203)	(0.5489)	(0.4161)	(2.8193)	(2.4573)
Observations	10,464	10,464	10,464	10,464	10,464	10,464	10,464	10,464
R-squared	0.1079	0.1079	0.1320	0.1321	0.1341	0.1358	0.2283	0.2272
Industry FE	YES	YES	YES	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES	YES	YES	YES
Country FE	YES	YES	YES	YES	YES	YES	YES	YES

Appendix A. Variable definitions

Variables	Acronym	Description	Data source
Book leverage	BLEV	Book value of total debt divided by book value of total assets.	Worldscope
Market leverage	MLEV	Book value of total debt divided by the sum of market value of equity and the book value of total debt	Worldscope
Active leverage	ALEV	Book value of total debt divided by the sum book value of total assets and the total net income	Worldscope
ESG score	ESG	ESG score that measures firm's ESG performance across three pillars (environment (E), social (S), and governance (G)) and ten topics (resource use, emissions, innovation, management, shareholders, CSR strategy, workforce, human rights, community, and product responsibility)	Thomson Reuters ESG database
ESG combined score	ESGC	ESG combined score, which incorporates ESG controversies captured from global media sources that materially and significantly affect the companies.	Thomson Reuters ESG database
Environment	ENV	Environmental pillar that examines factors including resource usage and reduction; emissions and emissions reductions; environmental activism and initiative and product or process innovation.	Thomson Reuters ESG database
Social	SOC	Social pillar that examines factors including employment quality, health and safety issues, training, diversity, human rights, community involvement and product responsibility.	Thomson Reuters ESG database
Corporate governance	CGV	Corporate governance pillar that examines factors including board structure, compensation policy, board functions, financial and operational transparency, shareholder rights and vision and strategy.	Thomson Reuters ESG database
Target Distance	Dist	Difference between target and observed leverage ratio	Self-calculated
Firm size	SIZE	Natural logarithm of book value of total assets	Worldscope
Tangibility	TANG	Net property, plant and equipment dividend by book value of assets	Worldscope
Growth opportunity	MTB	Ratio of book value of assets less book value of equity plus market value of equity to book value of assets	Worldscope
Profitability	PROF	Earning before interests, taxes, depreciation and amortization divided by book value of assets	Worldscope
Depreciation	DEP	Depreciation and amortization divided by book value of assets	Worldscope
Research and development	RD	Research and development expenses divided by book value of assets	Worldscope
Research and development dummy	RDDUM	Dummy variable that equals one if research and development expenses are not reported and zero	Worldscope

		otherwise	
ESG disclosure	ESGDIS_BB	Score that is collected from company-sourced filings, such as corporate social responsibility reports, annual reports, the company website, and a proprietary Bloomberg survey that requests corporate data directly	Bloomberg
	ESGDIS_DS	Measures the degree to which a focal company discloses ESG information in a given year. The score ranges from zero to 100. The higher the score, the stronger the firm's ESG disclosure.	Thomson Reuters ESG database
Stakeholder engagement	SE	Measures the degree to which a focal company explains the formal processes in place for engagement with its stakeholders. The higher the score, the stronger the firm's stakeholder engagement.	Thomson Reuters ESG database
Book Equity	B	Book value of equity	Worldscope
Income before extraordinary items	E	Net Income before Extraordinary Items/Preferred Dividends	Worldscope
Cost of equity	r	Measured using Fama and French's (1997) one-factor model with the short-term T-bill as a proxy for the risk-free rate of interest	Self-calculated
Cash flow deficit	CASHFLOW	A dummy that equals one if the firm has a cash flow deficit and zero otherwise	Worldscope
KZ index	KZINDEX	The index that consists of a linear combination of five accounting ratios: cash flow to total assets, the market to book ratio, debt to total assets, dividends to total assets, and cash holding to total assets.	Self-calculated following Baker, Stein, & Wurgler (2003)
Under-target leverage	UNDER	A dummy that equals one if firm is under-levered relative to target leverage and zero otherwise.	Self-calculated
Industry median of leverage	INDMED	The median leverage ratio of an industry to which a firm belongs.	Self-calculated
GDP growth rate	GGDP	Annual GDP growth rate.	World Development Indicator
Money supply growth rate	GMS	Annual money supply (M2) growth rate.	Datastream
Social trust	SOCTRU	Measure where citizens have confidence in public institutions, which is strongly related to societal trust.	OECD
Efficiency of judicial system	EFFJUD	Measures the efficiency and integrity of the country's legal environment. The index is scaled from zero to 10; lower scores, indicate lower efficiency levels.	La Porta et al. (1998)
Rule of law	RULLAW	Measures the law and order tradition in the country. The index is scaled from zero to 10, with lower scores for less tradition for law and order.	La Porta et al. (1998)
Level of corruption	CORRUP	Measures the corruption level of the government in the	La Porta et al.

		country. The index is scale from zero to 10, with lower scores for lower level of corruption.	(1998)
Risk of expropriation	RISEXP	Measures the risk of ‘‘outright confiscation’’ or ‘‘forced nationalization’’. The index is scaled from zero to 10, with lower scores for higher risks.	La Porta et al. (1998)
Repudiation of contracts by government	RISCON	Measures the ‘‘risk of a modification in a contract taking the form of a repudiation, postponement, or scaling down’’ due to ‘‘budget cutbacks, indigenization pressure, a change in government, or a change in government economic and social priorities’’. The index is scaled from zero to 10, with lower scores for higher risks.	La Porta et al. (1998)
Comprises disclosure score index	DISCLO	Measures the level of financial disclosure and availability of information to investors.	Jin & Myers (2006)
Financial analyst	ANALYST	Number of analysts following the largest 30companies in each country in 1996.	Bushman et al. (2004)
Auditing practice	AUDIT	Variable indicating the percentage of firms in the country audited by the Big 5 accounting firms. AUDIT equals 1, 2, 3, or 4 if the percentage ranges between (0, 25%), (25%, 50%), (50%, 75%), and (75%, 100%), respectively.	Bushman et al. (2004)
Disclosure to congress	DISCON	Measures the ratio of all source items contained in the country’s blank disclosure form available to congress over all source items potentially disclosed in the artificial “universal” form.	Djankov et al. (2010)
Disclosure to public	DISPUB	Measures the ratio of all source items contained in the country’s disclosure form available to the public over all source items potentially disclosed in the artificial “universal” form.	Djankov et al. (2010)
Voice and Accountability	VOIACC	Measures perceptions of the extent to which a country's citizens are able to participate in selecting their government, as well as freedom of expression, freedom of association, and a free media.	Kaufmann et al. (2009)
Political Stability and Absence of Violence	POLSTA	Measures perceptions of the likelihood that the government will be destabilized or overthrown by	Kaufmann et al. (2009)
Government effectiveness	GOVEFF	Measures perceptions of the quality of public services, the quality of the civil service and the degree of its independence from political pressures, the quality of policy formulation and implementation, and the credibility of the government's commitment to such policies.	Kaufmann et al. (2009)
Regulation quality	REGQUA	Measures perceptions of the ability of the government to formulate and implement sound policies and regulations	Kaufmann et al. (2009)

		that permit and promote private sector development.	
Rule of law	RULLAW2	Measures perceptions of the extent to which agents have confidence in and abide by the rules of society, and in particular the quality of contract enforcement, property rights, the police, and the courts, as well as the likelihood of crime and violence.	Kaufmann et al. (2009)
Control of corruption	CONCOR	Measures perceptions of the extent to which public power is exercised for private gain, including both petty and grand forms of corruption, as well as "capture" of the state by elites and private interests.	Kaufmann et al. (2009)
English origin	ENGORI	Dummy variable equal to unity if the firm operates under English law, and zero otherwise.	La Porta et al. (1998)
Public sector ethics	PUBETH	Measures the percentage of firms in the country giving satisfactory ratings to the questions on honesty of politicians, government favouritism in procurement, diversion of public funds, trust in postal office, and the average bribe frequencies for permits, utilities, and taxes.	Kaufmann (2004)
Good government index	GOOGOV	Measures how well the country protects private property rights.	Morck et al. (2000)
Media channel	MEDIA	Average rank of the countries' media development (print and television) between 1993 and 1995.	Bushman et al. (2004)

Highlights

1. We find firms with superior CSP adjust faster toward their target leverage ratios.

2. Our results show superior CSP helps to lower a firm's leverage adjustment costs (e.g. agency costs, transaction costs and issuance costs).

3. We find firms with better CSP enhance their leverage adjustment speeds dramatically for over-levered firms but not for under-levered firms.

4. The study further investigates four mechanisms through which CSP positively affects the speed of leverage adjustment and find that information asymmetry, equity mispricing, stakeholder engagements, and competitive advantages are significantly associated with this relationship in the predicted direction.

5. Our results show that all the institutional factors -- including a country's enforcement mechanisms, information environments, corporate governance, English origin, public sector ethics, goodness of government, and media channels -- play important roles in moderating the positive association between CSP and speed of adjustment.

6. We find that CSP has a significant and positive impact on a firm's equity issuance but not on debt issuance, debt retirement, or equity retirement.

7. Two policy/profession implications: 1. At the firm level, corporations should have greater consideration to and invest more in, their sustainable activities to enhance the positive effect of their sustainability performance on leverage adjustment speeds. 2. At the market/country level, governments and authorities should consider using regulations to encourage firms to improve their environment, social, and corporate governance performance, as well as create good-quality institutional settings.

8. Collectively, this study highlights the important role of CSP in shaping corporate capital structure dynamics and provides implications for corporate strategic planning on the privately optimal levels of CSP activities.