Journal of Contemporary Accounting & Economics 20 (2024) 100418

Contents lists available at ScienceDirect

Journal of Contemporary Accounting & Economics

journal homepage: www.elsevier.com/locate/jcae

Pretending to be sustainable: Is ESG disparity a symptom?

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ARTICLE INFO

JEL classification:
G30
L20
M14
O16

Keywords:
ESG
Corporate social responsibility
Firm value
Agency theory
Disparity

ABSTRACT

This study investigates a novel dimension of ESG (environmental, social, and governance), namely the degree of inequality in the distribution of a firm's overall ESG performance across the three pillars. By grounding our arguments on the agency theory, we argue that such a dimension can discern the degree of authenticity of managers' ESG awareness. A more unequal distribution might be due to a discretionary and self-interested adoption of ESG principles in order to win the favour of key stakeholders. Using a sample of U.S. listed companies, we provide empirical evidence that disparity in ESG scores between pillars detracts value from ESG engagement. Moreover, such a negative moderating effect worsens in companies that are more prone to agency problems (e.g. higher cash holdings), lack ESG-based compensation, have lower leverage, and are more exposed to the investor spotlight (e.g. higher analyst coverage). Overall, our findings suggest the importance of accounting for managerial motivations to engage in ESG and support the idea that a lower perceived authenticity of these programmes results in lower value outcomes.

Introduction

ESG (environmental, social, and governance) is becoming increasingly important for investors worldwide. BlackRock, the world's largest asset manager, has required companies not only to achieve financial performance but also to contribute to society. According to Laurence D. Fink, founder and chief executive of BlackRock, each company must have a sense of purpose or "it will ultimately lose the license to operate from key stakeholders" (The New York Times, 2018).

Hartzmark and Sussman (2019) support this view that investors collectively regard firms' orientation to ESG practices as a positive attribute. They show that investors allocate more money to funds that display a superior sustainability rating, yet they fail to find evidence of high-sustainability funds outperforming low-sustainability ones. Such evidence challenges the appreciative view of ESG as a key source of a firm's market value. Indeed, doubts have been cast on the "doing well by doing good" proposition since as early as Friedman's (1970) critical view *vis-à-vis* managers spending shareholders' money for general social interest rather than for pursuing profit-generating activities. Such a standpoint raises concerns regarding managerial opportunism in corporate engagement in ESG (Surroca & Tribó, 2008; Krüger, 2015; Masulis & Reza, 2015; Adhikari, 2016; Petrenko et al., 2016; Chachine et al., 2019; Cheng et al., 2023). For example, Surroca and Tribó (2008) reveal that managers can misuse ESG practices to collude with non-shareholder stakeholders in order to promote managerial entrenchment.

In spite of this evidence on 'good' and 'not so good' ESG, surprisingly few studies have delved into the characteristics and performance consequences of such a difference (Flammer, 2021). To date, ESG measurement has primarily been based on a firm's compliance with good practices. This has come at the expense of largely ignoring the perceived genuineness of a firm's ESG

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https://doi.org/10.1016/j.jcae.2024.100418
Received 28 May 2023; Received in revised form 3 March 2024; Accepted 18 March 2024
Available online 21 March 2024

engagement and how a sincere commitment to ESG might shape the value effect of this strategy differently across companies (Wang & Choi, 2013; Flammer, 2021; Fuente & Velasco, 2022). This paper intends to fill this research gap by exploring one attribute which might be a reasonable indicator of ESG genuineness –ESG disparity– which is defined as the degree of inequality (or relative concentration) in the distribution of overall firm ESG engagement efforts across pillars.

So far the bulk of the literature has characterized corporate engagement in ESG on the basis of either a firm's overall ESG performance, or on any of its three pillars (Ferrell et al., 2016; Mervelskemper & Streit, 2017). However, ESG disparity constitutes one dimension which remains overlooked, despite the latest research (Ongsakul et al., 2020; Uyar et al., 2022) having underscored that it deserves greater attention.[1]

One pioneering contribution in this area is Wang and Choi (2013), who shift attention towards diversity in ESG engagement. They operationalize the concept of diversity as separation (on the basis of the difference or degree of disagreement in scores between individual pillars), which is one of the types of diversity defined by Harrison and Klein's (2007) seminal paper. They show that greater consistency across the different domains of ESG (i.e. a lower variance in pillar scores) reinforces the credibility of this strategy and makes it more value-enhancing. Our paper takes a step forward beyond Wang and Choi (2013) on two fronts. First, Wang and Choi (2013) build on the instrumental stakeholder theory to align their arguments with the concept of consistency in a firm's treatment of its different stakeholder groups. In contrast, our arguments are based on the agency theory, which provides an appropriate framework to theorize the problem of self-interest in managers' ESG awareness and the impact of ESG genuineness on firm value. Second, Wang and Choi (2013) propose measuring consistency in stakeholder treatment in terms of the horizontal distance between ESG pillar scores. Building further on Harrison and Klein (2007), we explore another type of diversity to arise from vertical differences as the extent to which overall ESG engagement is distributed unequally among pillars (ESG disparity), which might be a better indicator to discern the degree of ESG genuineness.

We argue that concentrating ESG efforts in certain individual pillars might reflect a discretionary adoption of ESG principles and an absence of any genuine commitment to ESG in its primary sense, and thus be a symptom of agency problems within the company. Accordingly, we hypothesize that ESG disparity negatively moderates the impact of ESG engagement on a firm's value in such a way that the more unequally (i.e. more concentrated) a firm's overall ESG engagement is distributed across individual pillars, the less value-enhancing the ESG strategy will be. To test our hypotheses, we draw on a sample of U.S. publicly traded companies from 2010 to 2018. Our empirical findings are supportive of an ESG premium, although we do find evidence that disparity in ESG scores between pillars detracts value from ESG, offsetting its value-enhancing effects and even reversing the positive impact of this strategy on a firm's market value.

Moreover, our results suggest that the harmful effect of ESG disparity when implementing an ESG strategy worsens in firms that are more prone to suffer from managerial agency problems, such as firms that have greater cash holdings, those lacking managerial compensation incentives linked to ESG engagement, and those with weaker disciplinary mechanisms, such as lower leverage. This evidence supports the idea that ESG disparity signals the opportunistic use of ESG actions. However, we find that greater analyst coverage accentuates the pernicious effects of ESG disparity, which might be explained on the grounds that such informational mechanisms enhance a firm's visibility in financial markets and the subsequent penalties arising from its lower perceived authenticity.

We contribute to the literature in several ways. First, in response to recent calls (Wang et al., 2020; Uyar et al., 2022; Edmans, 2023), we provide a more nuanced understanding of firms' actual motivations to engage voluntarily in ESG. The agency approach is a well-established theory which we adapt to the particular nature of ESG strategy in order to elucidate why each firm might undertake it differently. Our research suggests that disparity in ESG performance across pillars may be perceived as a non-genuine engagement in this strategy by a firm's stakeholders. This may in turn serve as a driver to encourage companies to become engaged in further issues of ESG involved in other pillars as a means to adjust the balance between ESG efforts.

Second, this study is among the pioneers in articulating a comprehensive measurement of ESG genuineness. Measuring this dimension also advances current knowledge on potential reliable signals concerning the authenticity of ESG programmes (Flammer, 2021; Fuente & Velasco, 2022), which plays a part in their relative success (McShane & Cunningham, 2012; Nazari et al., 2017; Bae et al., 2021; Uyar et al., 2022). Our study advocates gauging the degree of inequality in the distribution of firms' overall ESG engagement across the different domains, which might be an indicator of managerial opportunism in the prioritization of ESG pillars and overinvestment. Similarly, we complement and provide interesting insights for emerging literature which presents ESG decoupling (namely, the gap between ESG disclosure and actual ESG engagement) as another indicator of insincerity attributed to managerial discretion which can be curbed through stronger monitoring mechanisms (Zhang, 2022; Gull et al., 2023a, 2023b).

Third, we shed further light on the conflicting evidence concerning the ESG engagement-value linkage by highlighting the importance of considering not only ESG engagement but also how this overall performance spreads across individual pillars. We show that self-interest in managers' ESG awareness –as measured by ESG disparity– may explain the heterogeneous impact of ESG on firm value and the underlying mechanisms linked to this relationship (Eccles et al., 2014). This answers calls to explore multiple dimensions of ESG strategy in order to appraise its diverse performance (Wang & Choi, 2013; Cuypers et al., 2016; Fuente & Velasco, 2022). Complementarily, we add to the literature which unveils potential moderating factors that shape the ESG engagement-value association heterogeneously across companies, such as the time period (Lins et al., 2017), market visibility of ESG actions (Economidou et al., 2023), or the signalling value of mandatory and voluntary ESG expenditure (Bose et al., 2023).

[1] From a different viewpoint, Lee et al. (2023) alert that the divergence between third-party agency weighted ESG scores and balanced weighted ESG scores is a result of the greenwashing effect, which undermines a firm's performance. Complementarily, another strand of literature has focused on analysing whether the credibility of ESG disclosure can be enhanced by external assurance (e.g., Clarkson et al., 2019; Hodge et al., 2009).

The rest of the paper is organized as follows. Section 2 reviews the relevant literature and sets out our central hypothesis. Section 3 describes the data and empirical methodology. Section 4 presents and discusses the results and robustness analyses. Section 5 concludes.

Theory and Hypotheses

Numerous studies have echoed how important it is for firms to embed their businesses in ESG principles and to secure stakeholder awareness of ESG practices (Servaes & Tamayo, 2013; Benlemlih & Girerd-Potin, 2017; Bose et al., 2023). Engagement in ESG has been shown to reward companies in a number of ways. One prominent value source to emerge from ESG is the accrual of firm reputation and moral capital, which can stimulate stakeholder trust and support (Godfrey et al., 2009; Benlemlih & Girerd-Potin, 2017; Lins et al., 2017). This value advantage of ESG becomes more prominent during periods of crisis of trust (Lins et al., 2017), major corporate events such as initial public offerings (Economidou et al., 2023), or in stakeholder-oriented institutional contexts (Benlemlih & Girerd-Potin, 2017). This stakeholder-friendly strategy confers insurance benefits against adversity, which improves corporate risk management (Godfrey et al., 2009; Shiu & Yang, 2017). Shiu and Yang (2017) report that ESG engagement mitigates the fall of a firm's stock and bond prices when a negative event occurs. Another important source of value to emerge from ESG may be seen in better relations with key stakeholders, which may result in attracting and retaining high-quality employees and more loyal customers and suppliers (Hillman & Keim, 2001).

Although mainstream academic research indeed points out that high ESG engagement firms trade at a premium relative to their lower ESG-engaged counterparts (Wang & Choi, 2013; Eccles, Ioannou & Serafeim, 2014; Koh et al., 2014; Flammer, 2015; Ferrell et al., 2016; Su et al., 2016; Awaysheh et al., 2020), counter evidence is also gaining importance on the grounds that ESG strategy might also conceal costs (i.e. resource depletion, agency costs) which can offset the benefits of such a strategy and make the ESG engagement-value relationship take an inverted U-shape (Wang et al., 2008; Sun, Yao & Govind, 2019), be neutral (Humphrey et al., 2012), or even turn negative in extreme instances (Surroca & Tribó, 2008; Masulis & Reza, 2015; Shohfi & White, 2020). Another group of works posit a number of factors which cause ESG strategy to perform differently across companies (Servaes & Tamayo, 2013; Koh et al., 2014; Benlemlih & Girerd-Potin, 2017). For instance, Servaes and Tamayo (2013) show that a firm's ESG strategy has a positive effect on the value of firms whose customers display high awareness (as revealed by their advertising activities), and that it has a negative or null impact on a firm's value otherwise. To reconcile this mixed evidence –and so advance a more fine-grained portrayal of ESG strategy across companies– recent studies have been shifting research efforts towards elucidating the genuineness of company ESG engagement and so identifying self-interested greenwashing practices (Flammer, 2021).

An authentic commitment to ESG urges firms to display awareness about the whole spectrum of ESG issues (Hawn & Ioannou, 2016; Ongsakul et al., 2020; Fuente & Velasco, 2022). Too great a focus on one particular pillar at the expense of discarding others may trigger negative spillover effects. In contrast, demonstrating a balanced commitment to all stakeholders at whom the different ESG pillars are targeted lies at the core of great moral leadership (Caldwell, 2005) and of an aligned ESG strategy vis-à-vis fostering its perceived authenticity (McShane & Cunningham, 2012; Hawn & Ioannou, 2016). Consistent with this argument, Uyar et al. (2022) reveal that greater inequality in ESG scores across dimensions decreases the likelihood of better ESG-performing firms being rewarded. In a similar vein, Hawn and Ioannou (2016) report that a larger gap between external and internal ESG actions is detrimental for a firm's value. They attribute this finding to poorer legitimacy and credibility of this strategy.

In business practice, firms do not necessarily commit to all pillars in a balanced way. ESG allocation decisions across pillars are likely to mirror the principal-agent relationship, as postulated by the rationale of the agency theory (Jensen, 1986). From this perspective, unequal distribution of ESG efforts might be the result of managerial discretion and of managers' being likelier to allocate more resources and attention to the sustainability areas which best serve their personal interests (Masulis & Reza, 2015; Cheng et al., 2023). Conversely, if a firm's overall ESG is distributed equally across pillars, this could be a sign of managers' genuine commitment to creating value for the firm as a whole.

A dissimilar prioritization of ESG issues may have its antecedent in rent-seeking behaviour, which can prompt managers to ad-hoc overinvest in particular ESG pillars –in line with company stakeholder priorities– in an effort to conform to key stakeholders, gain stakeholder legitimacy, and enhance managers' reputation and career prospects (Surroca & Tribó, 2008; Chachine et al., 2019; Gao & Cai, 2020; Gull et al., 2023a, 2023b). Masulis and Reza (2015) analyse corporate charitable contributions made by Fortune 500 companies from 1996 to 2006, and find that 62 % of those firms contribute to CEO-affiliated charities. Chachine et al. (2019) show that corporate social responsibility has a negative impact on a firm's value in companies whose CEO holds a central position within a social network since they are more likely to implement this strategy opportunistically for entrenchment and the pursuit of private benefits for themselves. Consistent with this view, recent research such as Lee et al. (2023) has alerted to potential greenwashing practices in third-party agency combined ESG scores, which are sometimes based on discretionary weights for each individual pillar of sustainability in an effort to obscure dissimilar performance across the various pillars and so maximize a firm's ESG score.[2]

In support of this agency-based view, there is evidence to suggest that ESG investments decrease in the presence of monitoring

[2] Relatedly, another stream of literature casts doubt on the legitimacy of company-driven ESG initiatives because some are seen as symbolic, in that they merely wish to appear to key stakeholders as being engaged in ESG and so influence their attitude towards the firm, whereas in fact they lack any genuine ESG commitment (Haley, 1991; McShane & Cunningham, 2012; Cuypers et al., 2016; Bae et al., 2021). Some works alert to the fact that managers may embark on low-cost ESG initiatives solely to influence stakeholder perception of their legitimacy (Haley, 1991; Bansal & Clelland, 2004).

mechanisms (e.g. analyst following (Adhikari, 2016)) which can restrict managers' discretionary investments. For example, Ongsakul et al. (2020) use the exogenous regulatory shock of the Sarbanes-Oxley Act and find that firms who increase board independence after this shock significantly reduce their inequality in ESG across pillars. This evidence agrees with our agency theory-based arguments, since stronger board independence –which is traditionally felt to improve corporate governance efficiency and mitigate agency problems– could therefore alleviate managers' discretionary commitment to specific ESG areas. A similar rationale has been confirmed empirically for the gap between the ESG claims made by firms and their actual ESG achievements (ESG decoupling). This harmful and opportunistic engagement in ESG is mitigated by governance monitoring structures such as the presence of an ESG committee on the board (Gull et al., 2023a) and analyst coverage (Zhang, 2022), to name but a few examples.

Based on the preceding discussion, our central hypothesis is stated as follows:

Hypothesis: ESG disparity impairs the impact of ESG engagement on a firm's value.

In sum, we propose that the underlying mechanism likely to cause the detrimental value effects of ESG disparity is attributed to its tell-tale sign of agency problems arising from managerial rent-seeking. To further confirm the underlying causal mechanisms which spark this relationship, we complement our hypothesis testing with additional analyses to test whether our central relationship changes based on the intensity of managerial agency costs within a firm. We therefore expect such a negative moderating hypothesized effect of ESG disparity to worsen in firms that are subject to a more severe threat of managerial rent-seeking and weaker monitoring mechanisms.

Data and Methodology

Sample description

Our sample consists of U.S. publicly listed companies during the period 2010 to 2018. We gather annual financial statement data from Worldscope, closing stock prices on the last trading day of the year from Datastream, ESG data from Refinitiv Eikon (previously, Thomson Reuters ASSET4 ESG), and analysts' coverage from I/B/E/S. In order to ensure our sample is free from survivorship bias, we consider both currently active and non-active firms. Our sample period starts in 2010 due to the relatively poorer coverage of ESG data in previous years. ESG data by Refinitiv offer objective, relevant, auditable, and systematic CSR information (Hawn & Ioannou, 2016; Flammer, 2021).[3] It is elaborated on the basis of over 750 non-financial items linked to ESG and relies not only on self-reported information by firms but also on global news sources so as to avoid potential biases (Mervelskemper & Streit, 2017).

We use Fama and French's (1997) classification of 48 sectors as the reference industry standard in our analyses. To build our final sample, a number of sample selection and data cleaning procedures are applied. Table 1 summarizes the sample selection steps. First, we remove firm-year observations corresponding to finance, insurance and real estate industries (Fama and French's industries 45 to 48) due to the particular idiosyncrasy of these sectors. We omit observations that lack data coverage for ESG in Refinitiv. We also exclude observations with negative common equity and missing data in any of our primary model variables. Moreover, firm-year observations with inconsistent accounting information (i.e. negative or zero book value of assets and/or total sales) and with missing data in the relevant variables of our models are dropped. After excluding all of these observations, our final sample consists of 7,365 firm-year observations for 1,709 firms. To prevent extreme observations from biasing the empirical results, all the continuous variables are winsorized at the 1st and 99th percentiles, except for those variables built on ESG data, which do not show significant outlier observations.

Variables

Table 2 summarizes the variable definitions.

Dependent variable.-Our dependent variable is a firm's total market value. We draw on Tobin's Q (*TOBINQ*), which is calculated as the sum of market value of common stock, preferred stock and total debt over the book value of total assets (Lo & Sheu, 2007; Wang et al., 2008; Wang & Choi, 2013; Su et al., 2016; Buchanan et al., 2018).

Explanatory variables: ESG engagement and ESG disparity across pillars.-Our explanatory variables are two dimensions of the ESG strategy; namely, ESG engagement and ESG disparity. To approximate a firm's ESG engagement (*ESGscore*), we use a composite index defined as the equally-weighted average of a firm's environmental pillar, social pillar, and governance pillar scores (Mervelskemper & Streit, 2017; Murcia et al., 2021; Fuente et al., 2022). Scores are based on a 10-point scale format to avoid heteroscedasticity problems.

As regards the dimension of disparity in ESG scores across pillars, we draw on Harrison and Klein (2007) and construct two alternative proxies: the coefficient of variation and the Gini coefficient. The coefficient of variation (*CV*) is calculated as the standard deviation of ESG individual pillar scores within a firm divided by its *ESGscore* (Harrison & Klein, 2007):

$$CV = \frac{\sqrt{\frac{(E-ESGscore)^2+(S-ESGscore)^2+(G-ESGscore)^2}{n}}}{ESGscore} \quad [1]$$

[3] Certain variations exist in ESG-related regulations across the U.S. states, such as a growing trend in some to pass restrictive laws on the use of ESG factors in investment decision-making (Malone et al., 2023). However, this is not a concern for our empirical analyses. Refinitiv standardizes ESG information in order to ensure data comparability across companies worldwide (Refinitiv, 2022). We thank an anonymous reviewer for this insight.

Table 1
Sample selection steps.

Step	Firm-year observations
U.S. listed firms	72,962
less: firm-year observations operating in the finance, insurance, and real estate industries	−15,577
less: firm-year observations with missing ESG data	−47,413
less: firm-year observations with zero or negative common equity	−511
less: firm-year observations with missing and/or inconsistent data in relevant variables	−2,096
Final sample	**7,365**

Table 2
Variable description.

Variable	Description	Source	Label
Dependent variable			
Firm value	Tobin's Q, which is calculated as the sum of the market value of common stock, preferred stock, and total debt over the book value of total assets (Lo & Sheu, 2007; Wang et al., 2008; Wang & Choi, 2013; Su et al., 2016; Buchanan et al., 2018).	Worldscope, Datastream	*TOBINQ*
Explanatory variables			
ESG engagement	The equally-weighted average of the scores of the three individual pillars: environmental, social, and governance (Mervelskemper & Streit, 2017).	Refinitiv	*ESGscore*
ESG disparity	The coefficient of variation, calculated as the standard deviation of individual ESG scores within a firm divided by its average ESG score (Harrison & Klein, 2007).	Refinitiv	*CV*
	The Gini coefficient, computed as the sum of all pairwise absolute differences between individual pillar scores within a firm divided by 2 × ESG × n^2, with "n" being the number of pillars (n = 3) (Harrison & Klein, 2007).	Refinitiv	*GINI*
	The normalised Herfindahl–Hirschman index (Boydstun et al., 2014).	Refinitiv	*NHERF*
Dummy ESG disparity	A dummy equal to one if a firm's *CV* is equal to or higher than the yearly sample median, and zero otherwise.	Refinitiv	*dumCV*
	A dummy equal to one if a firm's *GINI* is equal to or higher than the yearly sample median, and zero otherwise.	Refinitiv	*dumGINI*
	A dummy equal to one if a firm's *NHERF* is equal to or higher than the yearly sample median, and zero otherwise.	Refinitiv	*dumNHERF*
Control variables			
Firm size	The natural logarithm of the book value of total assets.	Worldscope	*SIZE*
Firm leverage	The ratio of total debt divided by the book value of assets.	Worldscope	*LEVERAGE*
Firm asset tangibility	The ratio of net property, plant and equipment divided by the book value of assets.	Worldscope	*TANGIBILITY*
Firm investment	The ratio of capital expenditures to total sales.	Worldscope	*CAPEX*
Firm profitability	The ratio of EBIT to total sales.	Worldscope	*PROFITABILITY*
Firm cash holdings	Total cash divided by the book value of assets.	Worldscope	*CASH*

where E is the environmental pillar score, S is the social pillar score, G is the governance pillar score, and "n" is the number of individual ESG pillars (n = 3). *CV* ranges between 0 and $\sqrt{n-1}$ (Harrison & Klein, 2007). In this case, the maximum threshold equals $\sqrt{3-1} = \sqrt{2} = 1.4142$

The Gini coefficient (*GINI*) is computed as the sum of all pairwise absolute differences between individual pillar scores within a firm divided by 2 × *ESGscore* × n^2 (Harrison & Klein, 2007):

$$GINI = \frac{|E-S| + |E-G| + |S-G|}{2 \times ESGscore \times n^2} \quad [2]$$

GINI ranges between 0 and $1-(1/n)$ (Harrison & Klein, 2007). In this case, the maximum threshold is.$1-(1/3) = 0,6667$

By way of robustness, we apply an alternative measure to capture ESG disparity based on the degree of concentration in the distribution of the sum of individual ESG scores across the different pillars. We use the Herfindahl–Hirschman index, which has been widely applied for similar purposes in other areas of research such as market concentration (Keil, 2017), corporate diversification across businesses (Ammann et al., 2012) or political attention allotted across items (Boydstun et al., 2014). It is calculated as:

$$HERF = \sum_{j=1}^{3} P_j^2 = \left(\frac{E}{E+S+G}\right)^2 + \left(\frac{S}{E+S+G}\right)^2 + \left(\frac{G}{E+S+G}\right)^2 \quad [3]$$

where P_j denotes the share of total pillar scores allocated in pillar j. We adjust this measure to construct the normalized

Herfindahl–Hirschman index (*NHERF*) in order to account for the number of available pillars[4] (Boydstun et al., 2014):

$$NHERF = \frac{HERF - \frac{1}{n}}{1 - \frac{1}{n}} \quad [4]$$

where "*n*" represents the number of individual pillars. *NHERF* can take values in a normalized range between 0 and 1. The higher the *HERF*, the more concentrated total ESG engagement is in one single pillar.

Control variables.-Following previous literature (e.g. Buchanan et al., 2018; Li et al., 2018), we control for a number of factors that affect firm value such as: firm size (*SIZE*), measured as the natural logarithm of the book value of total assets; leverage (*LEVERAGE*), approximated by the ratio of total debt divided by the book value of assets; asset tangibility (*TANGIBILITY*), computed as the ratio of net property, plant and equipment divided by the book value of assets; investment opportunities (*CAPEX*), measured as the ratio of capital expenditures to total sales; profitability (*PROFITABILITY*), calculated as the ratio of EBIT to total sales; and cash holdings (*CASH*), approximated by total cash divided by the book value of assets. In all the models, we also control for industry- and year-fixed effects by including dummy variables.

Empirical models and estimation method

Similar to Servaes and Tamayo (2013) and others, we perform a fixed-effect regression analysis with panel data to control for unobservable time-invariant firm characteristics which might influence both a firm's value and its decision to engage in ESG. Our baseline model examines the impact of ESG engagement on a firm's value and is formulated as follows:

$$TOBINQ_{i,t} = \alpha + \beta_1 ESGscore_{i,t} + \beta_2 DISPARITY_{i,t} + \beta_3 X_{i,t} + \sum_{k=1}^{43} Industry_k + \sum_{t=2010}^{2017} Year_t + \eta_i + \varepsilon_{i,t} \quad [5]$$

where *i* represents each firm, *t* denotes the year of observation, $ESGscore_{i,t}$ is ESG engagement, $DISPARITY_{i,t}$ is ESG disparity between the scores of the individual pillars within a firm (measured either by *CV, GINI* or *NHERF*), $X_{i,t}$ is a set of firm-level control variables, $\sum_{k=1}^{43} Industry_k$ denotes a set of industry dummies (*k* ranges from 1 to 43) based on Fama and French's (1997) classification to control for the industry-fixed effect,[5] $\sum_{t=2010}^{2017} Year_t$ is a set of time dummies to control for the year-fixed effect, η_i is the individual effect of firm *i* that remains constant over time, and $\varepsilon_{i,t}$ denotes random disturbance.

To test our research hypothesis, we extend this baseline model by incorporating the moderating effect of ESG disparity across pillars on the relationship between ESG engagement and a firm's value. We specify the equation with an interaction effect as follows:

$$TOBINQ_{i,t} = \alpha + \beta_1 ESGscore_{i,t} + \beta_2 ESGscore \times DISPARITY_{i,t} + \beta_3 dumDISPARITY_{i,t} + \beta_4 X_{i,t} + \sum_{k=1}^{43} Industry_k + \sum_{t=2010}^{2017} Year_t + \eta_i + \varepsilon_{i,t} \quad [6]$$

where $dumDISPARITY_{i,t}$ is a dummy variable which takes the value one if a firm's *i* ESG disparity (either measured by *CV, GINI* or *NHERF*) in year *t* is equal to or above the yearly sample median, and zero otherwise.[6]

To further assess the causal mechanisms of our central relationships, we apply a sample-split approach and re-estimate our equation [6] by subsamples constructed on the basis of three categories of variables which determine the severity of agency problems: corporate cash holdings, the existence of compensation packages with incentives for managers to engage in ESG, and the strength of external monitoring mechanisms for managers' behaviour – specifically, debt financing and analyst following (Jensen, 1986; Adhikari, 2016; Fuente & Velasco, 2020).

Results and discussion

Descriptive statistics and univariate analyses

Table 3 summarizes the descriptive statistics of our variables. The mean *ESGscore* in our sample is 4.70, with values ranging from 0.74 to 9.29. Firms exhibit moderate levels of ESG disparity across pillars. For instance, the maximum value of *CV* reaches 0.87, which represents about 62 % of the maximum threshold value (1.41).

Table 4 presents the Pearson pairwise correlation matrix. The alternative proxies of ESG disparity (either *CV, GINI* or *NHERF*) show a correlation above 0.94, which confirms their agreement and appropriateness as alternative proxies for the same construct. All these

[4] This will facilitate the comparability of our dataset with that from alternative sustainability databases which use a different number of ESG items.

[5] Since we dropped finance, insurance, and real estate industries, Fama and French's sectors 1 to 44 remain in our final sample. We therefore construct 44–1 = 43 industry dummies to avoid the dummy trap problem. We proceed in the same way to define the year dummies.

[6] In equation [6], the variable ESG disparity is entered as a dummy when being considered individually to alleviate potential multicollinearity problems with the interaction term *ESGscore*×*DISPARITY* and *ESGscore*.

Table 3
Descriptive statistics.

	No. Obs.	Mean	Median	Std. Dev.	Min.	Max.
TOBINQ	7,365	2.0426	1.5261	1.5966	0.2271	10.6479
ESG engagement						
ESGscore	7,365	4.6965	4.4573	1.6389	0.7400	9.2927
ESG disparity						
CV	7,365	0.2535	0.2284	0.1477	0.0045	0.8670
GINI	7,365	0.0656	0.0595	0.0380	0.0012	0.2237
NHERF	7,365	0.0430	0.0261	0.0483	0.0001	0.3758
Control variables						
SIZE	7,365	14.7838	14.8789	1.2342	10.4968	16.7724
LEVERAGE	7,365	0.2635	0.2616	0.1834	0	0.7567
TANGIBILITY	7,365	0.5684	0.1795	1.0438	0.0007	6.2939
CAPEX	7,365	0.0971	0.0366	0.2092	0	2.1872
PROFITABILITY	7,365	0.0671	0.0974	0.2909	−2.4639	0.6848
CASH	7,365	0.1158	0.0807	0.1192	0	0.9785

This table presents the descriptive statistics of the main variables for the final sample of 7,365 firm-year observations (1,709 firms) for the period from 2010 to 2018. *TOBINQ* measures a firm's value, calculated as the sum of the market value of common stock, preferred stock, and total debt over the book value of total assets. *ESGscore* is a firm's ESG engagement as the equally-weighted average of the scores of the three individual pillars: environmental, social, and governance. The three alternative proxies for ESG disparity: *CV* (the coefficient of variation), *GINI* (the Gini coefficient), and *NHERF* (the normalised Herfindahl–Hirschman index). Control variables are: *SIZE* (the natural logarithm of the book value of total assets), *LEVERAGE* (the ratio of total debt divided by the book value of assets), *TANGIBILITY* (the ratio of net property, plant and equipment divided by the book value of assets), *CAPEX* (the ratio of capital expenditures to total sales), *PROFITABILITY* (the ratio of EBIT to total sales), and *CASH* (the ratio of total cash divided by the book value of assets). All variables are winsorized at the 1st and 99th percentiles, except those built on ESG data.

proxies have a negative correlation with *TOBINQ*, which is statistically significant at the 1 % level. *ESGscore* presents a low negative correlation with *TOBINQ* (-0.05), but has a positive correlation with *PROFITABILITY* at the 1 % level of statistical significance. It is also worth noting that the *ESGscore* displays a negative and significant correlation with the different proxies for ESG disparity (about −0.04). In Table 5, we conduct a complementary analysis to assess the interplay between the two dimensions of ESG strategy. On average, we find that firms with a better overall ESG engagement have lower disparity in ESG scores across pillars. The difference in ESG disparity between above-median ESG performers and below-median performers is statistically significant beyond the 1 % level (p-value = 0.000).

Additional descriptive statistics are included in the Appendix. Table A.1. reports the mean values of ESG engagement and the alternative proxies for ESG disparity over years. Both dimensions remain stable over time. Table A.2. of the Appendix shows the distribution of these mean values by industries. In this case, we observe greater differences between industry categories. Industries displaying greater ESG disparity are "Fabricated products", "Shipbuilding, railroad eq." and "Personal services", all of which have an *ESGscore* below the sample median/mean. Conversely, the industries with the lowest levels of ESG disparity are "Agriculture", "Alcoholic beverages" and "Precious metals", with the *ESGscore* being above 5.11 in the latter two cases.

ESG engagement, ESG disparity and firm value

Initially, in order to individually test the impact of the dimensions of ESG engagement and ESG disparity on a firm's value, we estimate equation [5]. Table 6 reports the results. We find a positive relationship between ESG engagement and firm value ($\beta = 0.0341$, p-value = 0.029). A one standard deviation increase in *ESGscore* increases *TOBINQ* by 5.59 percentage points. When we also incorporate ESG disparity in Columns [2] to [4], ESG engagement decreases its statistical significance, probably as a result of the degree of correlation between both dimensions of ESG strategy, which ranges between 0.37 and 0.42. However, we evaluate the variance inflation factor (VIF) values for all variables and observe that mean VIFs are about 1.75. We therefore rule out multicollinearity bias.

Interestingly, we find that all the alternative disparity proxies have a negative effect on firm value, and are statistically significant at the 5 % level or higher. The economic significance is greater with *GINI*, which shows that a one standard deviation increase in *GINI* causes a 3.82 percentage point decrease in *TOBINQ*. Similarly, if *CV* rises by one standard deviation, *TOBINQ* is reduced by 4.03 percentage points. These empirical findings agree with our arguments that ESG disparity is likely to signal discretionary engagement in ESG pillars, designed to satisfy key stakeholder preferences, whereas they in fact evidence a lack of any genuine commitment to an ESG strategy as a whole.

In addition, to account for the threat of endogeneity as a result of reverse causality between ESG engagement and firm value (Adhikari, 2016; Ferrell et al., 2016), we re-estimate equation [5] using an instrumental variable estimation method –the two-stage least squares (2SLS) procedure. We rely on two instruments for ESG engagement: the yearly industry mean *ESGscore* (Koh et al., 2014) and a dummy variable which indicates whether or not each firm has a CSR-sustainability committee. These two variables meet the two conditions required for instruments: relevance condition and exclusion restriction (Ferrell et al., 2016). As far as the former is concerned, both instruments display a high correlation with the endogenous variable (relevance condition). The *ESGscore* has a correlation equal to 0.32 (p-value = 0.000) with the yearly industry mean *ESGscore*, and a correlation equal to 0.59 (p-value = 0.000) with the CSR-sustainability committee dummy. The exclusion restriction imposes the requirement of no significant correlations between the instruments and the error terms of our model. Results from the 2SLS estimations –together with their corresponding tests for

Table 4
Pearson pairwise correlation matrix.

	1.	2.	4.	5.	6.	7.	8.	9.	10.	11.	12.
1. *TOBINQ*	1.0000										
2. *ESGscore*	−0.0506***	1.0000									
4. *CV*	−0.0374***	−0.4208***	1.0000								
5. *GINI*	−0.0395***	−0.4215***	0.9963***	1.0000							
6. *NHERF*	−0.0367***	−0.3665***	0.9534 ***	0.9459***	1.0000						
7. *SIZE*	−0.3373***	0.4830***	−0.1870***	−0.1859***	−0.1692***	1.0000					
8. *LEVERAGE*	−0.2502***	0.0954***	−0.0343***	−0.0323***	−0.0269**	0.3486***	1.0000				
9. *TANGIBILITY*	−0.2190***	−0.0394***	0.0172	0.0168	0.0228*	0.1926***	0.2096***	1.0000			
10. *CAPEX*	−0.1248***	−0.0743***	0.0126	0.0128	0.0110	0.1225***	0.1471***	0.7689***	1.0000		
11. *PROFITABILITY*	−0.0120	0.0776***	−0.0150	−0.0167	−0.0067	0.2500***	0.0454***	−0.0243**	−0.0600***	1.0000	
12. *CASH*	0.3856***	−0.0913***	−0.0056	−0.0067	−0.0096	−0.3508***	−0.3529***	−0.2375***	−0.1585***	−0.1463***	1.0000

This table summarises the Pearson pairwise correlations between the main variables for the final sample of 7,365 firm-year observations (1,709 firms) for the period from 2010 to 2018. *TOBINQ* measures a firm's value, calculated as the sum of the market value of common stock, preferred stock, and total debt over the book value of total assets. *ESGscore* is a firm's ESG engagement as the equally-weighted average of the scores of the three individual pillars: environmental, social, and governance. The three alternative proxies for ESG disparity: *CV* (the coefficient of variation), *GINI* (the Gini coefficient), and *NHERF* (the normalised Herfindahl–Hirschman index). Control variables are: *SIZE* (the natural logarithm of the book value of total assets), *LEVERAGE* (the ratio of total debt divided by the book value of assets), *TANGIBILITY* (the ratio of net property, plant and equipment divided by the book value of assets), *CAPEX* (the ratio of capital expenditures to total sales), *PROFITABILITY* (the ratio of EBIT to total sales), and *CASH* (the ratio of total cash divided by the book value of assets). Continuous variables are winsorized at the 1st and 99th percentiles, except those built on ESG data. ***, **, * stand for statistical significance at the 1%, 5%, and 10% level, respectively.

Table 5
Difference-of-means tests.

Firm-year obs. with *ESGscore* below the yearly sample median (1)	Firm-year obs. with *ESGscore* above the yearly sample median (2)	(1)-(2)
CV = 0.3058	*CV* = 0.2016	0.1042***(32.3510)
GINI = 0.0790	*GINI* = 0.0523	0.0267***(32.2816)
NHERF = 0.0591	*NHERF* = 0.0271	0.0320***(30.1933)

This table provides the difference-of-means tests for the ESG disparity proxies between firm-year observations with ESG engagement equal to or above the yearly sample median and those with ESG engagement below the yearly sample median. t-statistics are reported in parentheses. ***, **, * stand for statistical significance at the 1%, 5%, and 10% level, respectively.

Table 6
ESG engagement, ESG disparity and firm value.

	Dependent variable: *TOBINQ*			
	(1)	(2)	(3)	(4)
Constant	10.9520***(0.5768)	11.1786***(0.5828)	11.1693***(0.5829)	11.1419***(0.5815)
ESG engagement				
ESGscore	0.0341** (0.0155)	0.0240 (0.0160)	0.0244 (0.0160)	0.0259* (0.0159)
ESG disparity				
CV		−0.2727***(0.1031)		
GINI			−1.0047**(0.3980)	
NHERF				−0.8254**(0.3293)
Control variables				
SIZE	−0.6157***(0.0385)	−0.6232***(0.0386)	−0.6229***(0.0386)	−0.6234***(0.0386)
LEVERAGE	−0.2356* (0.1270)	−0.2378*(0.1270)	−0.2363*(0.1270)	−0.2382*(0.1270)
TANGIBILITY	−0.0919***(0.0347)	−0.0878**(0.0348)	−0.0881**(0.0348)	−0.0876**(0.0348)
CAPEX	0.3505***(0.1160)	0.3482***(0.1160)	0.3488*** (0.1160)	0.3501***(0.1159)
PROFITABILITY	0.2903***(0.0511)	0.2898***(0.0511)	0.2898***(0.0511)	0.2898***(0.0511)
CASH	1.1253***(0.1522)	1.1295***(0.1521)	1.1288***(0.1521)	1.1293***(0.1521)
Industry dummies	Yes	Yes	Yes	Yes
Year dummies	Yes	Yes	Yes	Yes
No. Obs.	7,365	7,365	7,365	7,365
F-statistic	32.34***	31.22***	31.19***	31.18***
Adjusted R^2	0.8183	0.8185	0.8185	0.8185

This table contains the OLS estimations of equation [5] with firm fixed effects. Firm value is regressed on ESG engagement, disparity in ESG scores between individual pillars, firm-level control variables, industry fixed effects, and year fixed effects. A firm's value is approximated by *TOBINQ*, calculated as the sum of the market value of common stock, preferred stock, and total debt over the book value of total assets. ESG engagement is measured by the *ESGscore*, defined as the equally-weighted average of the scores of the three individual pillars: environmental, social, and governance. ESG disparity is captured by three alternative proxies: *CV* (the coefficient of variation), *GINI* (the Gini coefficient), and *NHERF* (the normalised Herfindahl–Hirschman index). Firm-level control variables are: *SIZE* (the natural logarithm of the book value of total assets), *LEVERAGE* (the ratio of total debt divided by the book value of assets), *TANGIBILITY* (the ratio of net property, plant and equipment divided by the book value of assets), *CAPEX* (the ratio of capital expenditures to total sales), *PROFITABILITY* (the ratio of EBIT to total sales), and *CASH* (the ratio of total cash divided by the book value of assets). Continuous variables are winsorized at the 1st and 99th percentiles, except those built on ESG data. Standard errors are reported in parentheses. The F-statistic contrasts the null hypothesis of no joint significance of the explanatory variables. ***, **, * stand for statistical significance at the 1%, 5%, and 10% level, respectively.

instrument relevance and validity– are presented in Table 7. First-stage results are reported in column (1). Columns (2) to (5) report the estimation results of the second stage.

As observed, our empirical findings remain robust to endogeneity. Again, a higher ESG engagement enhances a firm's value, whereas greater disparity in ESG scores between individual pillars has a negative effect on a firm's value. The Cragg-Donald statistic is statistically significant beyond the 1 % level, thus supporting the strength of our instrumental variables. The Sargan test of over-identifying restrictions does not reject the null hypothesis that the instruments are exogenous. Moreover, we compute the Durbin-Wu-Hausman statistic to assess the endogeneity of ESG. Results indicate that the null hypothesis of the exogeneity of ESG engagement cannot be rejected in our data (p-value > 0.10 in all cases). In view of this result, our prior OLS estimates are free from endogeneity bias and are more efficient than 2SLS estimates (Bartoli et al., 2013). Therefore, we continue using fixed-effects OLS regressions in our remaining analyses, in line with some previous studies, such as Servaes and Tamayo (2013).

ESG engagement, ESG disparity and firm value: complementary robustness checks by pillar credibility

As complementary analyses, we evaluate whether or not the negative influence of ESG disparity on firm value is alleviated when ESG practices focus on more external spheres such as environmental and social ones, which relate to secondary stakeholders of the firm and often enjoy *per se* more credibility and signal genuine ESG engagement (Godfrey et al., 2009; Fuente et al., 2022). In so doing, we calculate the relative importance of external sustainability (denoted by *E&S*) as the sum of the scores of the environmental and social

Table 7
ESG engagement, ESG disparity and firm value – Controlling for endogeneity.

	PANEL A: First-stage 2SLS	PANEL B: Second-stage 2SLS			
	Dependent variable: *ESGscore*	Dependent variable: *TOBINQ*			
	(1)	(2)	(3)	(4)	(5)
Constant	−5.6019***	6.4030***	6.6776***	6.6851***	6.5693***
	(0.3367)	(0.2869)	(0.2760)	(0.2759)	(0.2788)
ESG engagement					
ESGscore		0.0709***	0.0529**	0.0524**	0.0601**
		(0.0233)	(0.0258)	(0.0258)	(0.0249)
ESG disparity					
CV			−0.5578***		
			(0.1407)		
GINI				−2.2211***	
				(0.5474)	
NHERF					−1.3437***
					(0.3991)
Control variables					
SIZE	0.5532***(0.0148)	−0.3204***	−0.3233***	−0.3234***	−0.3243***
		(0.0246)	(0.0242)	(0.0243)	(0.0242)
LEVERAGE	−0.5426***(0.0871)	−0.5708***	−0.5757***	−0.5751***	−0.5730***
		(0.0998)	(0.0997)	(0.0997)	(0.0997)
TANGIBILITY	−0.1100***(0.0248)	−0.1767***	−0.1777***	−0.1778***	−0.1764***
		(0.0283)	(0.0283)	(0.0283)	(0.0283)
CAPEX	−0.1030	0.5019***	0.4971***	0.4971***	0.4978***
	(0.1103)	(0.1257)	(0.1256)	(0.1255)	(0.1256)
PROFITABILITY	−0.1361*** (0.0497)	0.6123***	0.6124***	0.6119***	0.6140***
		(0.0568)	(0.0567)	(0.0567)	(0.0567)
CASH	0.1035 (0.1342)	3.0999***	3.0639***	3.0625***	3.0726***
		(0.1530)	(0.1527)	(3.0625)	(0.1528)
Instrumental variables					
ESGmean_ind	0.4829***(0.0527)				
CSRcommittee	1.6489***(0.0353)				
Industry dummies	Yes	Yes	Yes	Yes	Yes
Year dummies	Yes	Yes	Yes	Yes	Yes
No. of obs.	7,365	7,365	7,365	7,365	7,365
F-statistic	1193.58***	55.70***	55.57***	55.60***	55.31***
Weak identification test (Cragg-Donald statistic)		1193.58***	1087.69***	1087.78***	1138.38***
Sargan overidentification test p-value		0.7554	0.8007	0.8033	0.7591
Durbin-Wu-Hausman test p-value		0.3975	0.4822	0.4861	0.4870

This table contains the 2SLS estimations of equation [5]. First-stage results are reported in column (1). We use two instruments for ESG engagement (*ESGscore)*: the yearly industry mean ESGscore (*ESGmean_ind*) and a dummy variable that indicates whether or not each firm has a CSR-sustainability committee (*CSRcommittee)*. Columns (2) to (5) report the estimation results of the second stage. Firm value is regressed on ESG engagement, disparity in ESG scores between individual pillars, firm-level control variables, industry fixed effects, and year fixed effects. A firm's value is approximated by *TOBINQ*, calculated as the sum of the market value of common stock, preferred stock, and total debt over the book value of total assets. ESG engagement is measured by the *ESGscore*, defined as the equally-weighted average of the scores of the three individual pillars: environmental, social, and governance. ESG disparity is captured by three alternative proxies: *CV* (the coefficient of variation), *GINI* (the Gini coefficient), and *NHERF* (the normalised Herfindahl–Hirschman index). Firm-level control variables are: *SIZE* (the natural logarithm of the book value of total assets), *LEVERAGE* (the ratio of total debt divided by the book value of assets), *TANGIBILITY* (the ratio of net property, plant and equipment divided by the book value of assets), *CAPEX* (the ratio of capital expenditures to total sales), *PROFITABILITY* (the ratio of EBIT to total sales), and *CASH* (the ratio of total cash divided by the book value of assets). Continuous variables are winsorized at the 1st and 99th percentiles, except those built on ESG data. Standard errors are reported in parentheses. The F-statistic contrasts the null hypothesis of no joint significance of the explanatory variables. The Cragg-Donald statistic tests for weak instruments. The Sargan statistic of overidentifying restrictions contrasts the null hypothesis that the instruments are exogenous. The Durbin-Wu-Hausman statistic tests for endogeneity of the *ESGscore* variable. ***, **, * stand for statistical significance at the 1%, 5%, and 10% level, respectively.

pillars and divide it by the sum of the scores of all three pillars. Results are shown in Table 8.

Our empirical findings support the notion that *E&S* alleviates and offsets the negative effect of ESG disparity on firm value, and even reverses it. A higher proportion of total ESG scores allocated in the environmental and social pillars seems to counterbalance the lower credibility attributed to ESG disparity between pillars. For example, as reported in Column (1), if ESG disparity measured by *CV* increases by 1 percentage point, *TOBINQ* decreases by 0.92 percentage points in firms with *E&S* equal to zero. However, an increase in *E&S* alleviates such a prior negative effect (the interaction term $CV \times E\&S$ is positive and significant ($\beta = 1.0732$, p-value $= 0.002$)) and can reverse it. Results remain similar across the alternative proxies for ESG disparity.

We interpret these results as further evidence that the lower perceived authenticity of ESG programmes based on an unequal

Table 8
ESG engagement, ESG disparity and firm value by relevance of the environmental and social pillars.

	Dependent variable: *TOBINQ*		
	(1)	(2)	(3)
Constant	11.1843***(0.5823)	11.1767***(0.5825)	11.1350***(0.5812)
ESG engagement			
ESGscore	0.0308* (0.0161)	0.0311* (0.0161)	0.0306*(0.0160)
ESG disparity			
CV	−0.9231***(0.2365)		
GINI		−3.5062***(0.9221)	
NHERF			−2.5041***(0.7881)
CV × E&S	1.0732***(0.3513)		
GINI × E&S		4.1001***(1.3636)	
NHERF × E&S			2.8932**(1.2340)
Control variables			
SIZE	−0.6256***(0.0386)	−0.6253***(0.0386)	−0.6244***(0.0386)
LEVERAGE	−0.2435*(0.1269)	−0.2418* (0.1269)	−0.2408*(0.1269)
TANGIBILITY	−0.0889**(0.0347)	−0.0892***(0.0347)	−0.0887**(0.0348)
CAPEX	0.3486***(0.1159)	0.3496***(0.1159)	0.3508***(0.1159)
PROFITABILITY	0.2875***(0.0510)	0.2874***(0.0510)	0.2890***(0.0510)
CASH	1.1286***(0.1520)	1.1274***(0.1520)	1.1262***(0.1521)
Industry dummies	Yes	Yes	Yes
Year dummies	Yes	Yes	Yes
No. Obs.	7,365	7,365	7,365
F-statistic	30.31***	30.27***	30.09***
Adjusted R^2	0.8188	0.8187	0.8186

This table contains the robustness OLS estimations of equation [5] with firm fixed effects including the moderating effect of the external domains of sustainability (environmental and social pillars). Firm value is regressed on ESG engagement, disparity in ESG scores between individual pillars, the interaction effect between ESG disparity and the relative importance of the environmental and social pillars, firm-level control variables, industry fixed effects, and year fixed effects. A firm's value is approximated by *TOBINQ*, calculated as the sum of the market value of common stock, preferred stock, and total debt over the book value of total assets. ESG engagement is measured by the *ESGscore*, defined as the equally-weighted average of the scores of the three individual pillars: environmental, social, and governance. ESG disparity is captured by three alternative proxies: *CV* (the coefficient of variation), *GINI* (the Gini coefficient), and *NHERF* (the normalised Herfindahl–Hirschman index). *E&S* captures the relative importance of the external domains of sustainability, computed as the sum of the scores of the environmental and social pillars divided by the sum of the scores of all three pillars. Firm-level control variables are: *SIZE* (the natural logarithm of the book value of total assets), *LEVERAGE* (the ratio of total debt divided by the book value of assets), *TANGIBILITY* (the ratio of net property, plant and equipment divided by the book value of assets), *CAPEX* (the ratio of capital expenditures to total sales), *PROFITABILITY* (the ratio of EBIT to total sales), and *CASH* (the ratio of total cash divided by the book value of assets). Continuous variables are winsorized at the 1st and 99th percentiles, except those built on ESG data. Standard errors are reported in parentheses. The F-statistic contrasts the null hypothesis of no joint significance of the explanatory variables. ***, **, * stand for statistical significance at the 1%, 5%, and 10% level, respectively.

commitment between pillars might be one of the mechanisms which explain the detrimental value effect of ESG disparity. The reported evidence that such a negative influence reverses the higher the investment efforts in ESG areas connected with secondary stakeholders is consistent with the idea that the external spheres of ESG enhance stakeholder trust in the genuineness of the ESG practices implemented by companies.

The moderating role of ESG disparity on the relationship between ESG engagement and firm value

In this section, we empirically test our hypothesis. To do this, we estimate equation [6] in which we additionally consider how ESG disparity might shape the impact of ESG engagement on a firm's value by playing a moderating role in such a relationship. In these regressions, ESG disparity is entered in a dichotomous form when considered individually, but remains as a continuous variable in the interaction terms in order to alleviate multicollinearity concerns.[7] We define *dumCV* as a dummy variable which equals one if a firm's *CV* is equal to or higher than the yearly sample median, and zero otherwise. In a similar way, we derive the dummy variables *dumGINI* and *dumNHERF* based on *GINI* and *NHERF*, respectively.

As shown in Table 9, our findings support our hypothesis that ESG disparity plays a negative moderating role in the impact of ESG engagement on firm value. A one percentage point increase in *ESGscore* is associated with an increase in *TOBINQ* of about 0.03–0.04 percentage points in all regressions. However, a greater disparity between the ESG scores of the individual pillars reduces this ESG premium. Results are more economically significant when using *GINI* or *NHERF* as disparity measures (the interaction terms *ESGscore*

[7] When we included the individual term of ESG disparity as a continuous variable, the variance inflation factor (VIF) associated with it exceeded the threshold of 10 (i.e. equal to 10.11 for *CV*, equal to 10.15 for *GINI*, and equal to 11.90 in the case of *NHERF*), which is widely applied in prior literature to evaluate the severity of collinearity problems (Fu et al., 2020). For this reason, the ESG disparity control variable is defined as a dummy variable (*dumCV*, *dumGINI* and *dumNHERF*, alternatively). Doing so reduces the VIF associated with such dichotomous measures of ESG disparity to about 3.63.

× *GINI* and *ESGscore* × *NHERF*). For instance, as shown in Column (2), the interaction term *ESGscore* × *GINI* has a negative sign (β = -0.2280, p-value = 0.050) and diminishes the value-enhancing effects attached to ESG strategy (represented by the *ESGscore*). This result ties in with our arguments that disparity in ESG efforts between pillars signals a lack of genuine commitment to ESG principles.

Robustness analyses: exploring underlying mechanisms in the interplay between ESG engagement and ESG disparity

Next, we explore whether agency conflicts within a firm indeed drive the interplay previously found between the dimensions of ESG engagement and ESG disparity between pillars. The underlying mechanism which we expect will explain such a negative interaction is grounded on the existence of managerial opportunistic behaviour designed to convey an image of "doing good" so as to curry favour with stakeholders and extract private benefits (e.g. managerial reputation, promotion).

To assess whether agency problems drive the adverse effects of ESG disparity, we apply a sample-split approach and consider different subsamples of firms according to three categories of aspects: (i) the level of agency problems within the firm, (ii) the existence of managerial alignment incentives to ESG engagement, and (iii) the presence of informational and monitoring mechanisms. With regard to the first aspect, we draw on an agency proxy widely used in the literature (Jensen, 1986; Krüger, 2015; Ferrell et al., 2016), namely the level of cash holdings, measured by the ratio of total cash to the book value of assets (*CASH*). Traditional literature considers that greater liquidity exacerbates agency costs and encourages managers to invest in negative NPV investment projects (e.g. empire-building).

As regards managerial alignment devices, we identify whether each firm has a part of managerial compensation linked to ESG engagement. We define *dumCOMPENSATION* as a dummy variable which equals 1 if the firm has compensation incentives based on ESG engagement, and 0 otherwise. Firms that lack managerial compensation packages linked to ESG engagement display lower alignment between shareholder-manager interests, thereby accentuating the threat of managers misusing a sustainability strategy in an opportunistic manner to gain the support of key stakeholders and favour their personal interests.

Finally, we account for two external monitoring mechanisms that discipline managers: leverage and analyst coverage. Debt is considered as a control device to mitigate the agency costs of free cash flow by forcing managers to pay out future cash flows and by reducing the free cash flow available to them for discretionary spending (Jensen, 1986). At the same time, a firm's ability to meet its contractual debt obligations disseminates private information about the firm to capital markets and helps reduce informational asymmetries (Harris & Raviv, 1990). As a result, debt financing is found to increase the efficiency of corporate investment strategies (Fuente & Velasco, 2020). We define *LEVERAGE* as the ratio of total debt divided by the book value of assets. Another external control mechanism that helps to align managers and shareholders is analyst coverage (*ANALYST*). Adhikari (2016) finds that analyst coverage restricts managers' discretionary investments in sustainability. Analyst coverage is approximated by the natural logarithm of the number of financial analysts following a firm's stocks in the financial market (Harjoto & Jo, 2015). In sum, more severe agency problems are expected to arise in companies with higher cash holdings, an absence of compensation packages linked to ESG engagement, lower leverage, and lower analyst coverage.

In a first step, we perform univariate analyses based on difference of means tests to examine whether the degree of ESG disparity is different between firms that are more and less likely to be affected by agency conflicts. These preliminary analyses are reported in Table 10. As shown in Panel A, we find no statistically significant differences in ESG disparity (as proxied by *CV*) between firms in the top and bottom quartiles of *CASH*. Panel B splits the sample into those firm-year observations which indicate the existence of managerial compensation linked to ESG engagement, and those which report the absence of such ESG-based compensation packages. Our results suggest that *CV* is greater in firms with no ESG-based compensation incentives, with the difference being statistically significant beyond the 1 % level (p-value = 0.000). This result is consistent with our arguments. Panel C divides the sample between the top and bottom quartiles of *LEVERAGE* and *ANALYSTS*. Both monitoring mechanisms display statistically significant differences. We find that firms with lower leverage and narrower coverage by analysts exhibit greater *CV*. Those firms possess weaker monitoring mechanisms to restrict managerial misconduct, and discipline managers to pursue shareholder wealth maximization. Differences are more pronounced in the case of *ANALYST*. For instance, firms in the top quartile of the distribution of analyst following have a *CV* which is on average seven percentage points lower than their counterparts in the bottom quartile of the distribution. These results prove to be robust to the alternative measures for the degree disparity in ESG scores between individual pillars (namely, *GINI* and *NHERF*).

In the second step, we test the prediction that ESG disparity has more pervasive effects for firm value in companies that are subject to a greater threat of managerial opportunistic behaviour. To do so, we conduct the estimations of equation [6] by subsamples. We expect the negative influence of ESG disparity on the relationship between ESG engagement and firm value to worsen in those subsamples of firms who are more prone to suffer agency conflicts.

Panel A in Table 11 presents the results of our model by subsamples of cash holdings. As can be seen, the interaction term *ESGscore* × *CV* is only negative and statistically significant in the subsample of companies with cash holdings equal to or above the yearly sample median (β = -0.1561, p-value = 0.010). Moreover, in these high cash-holdings firm-year observations, *ESGscore* presents statistical significance and has a positive impact on a firm's value. In the subsample of companies with cash holdings below the yearly sample median, both *ESGscore* and *ESGscore* × *CV* display no statistical significance. The main results are also robust to the alternative measures of disparity (either *GINI* or *NHERF*), as shown in Columns (2) to (4), and again reveal that disparity in ESG scores between pillars offsets the value-enhancing effects arising from the ESG strategy in companies in which managers have more incentives to engage in a discretionary allocation of the free cash flow. These results provide support for our theoretical argument that managerial agency problems are the causal drivers of the relationship of our hypothesis.

Panel B in Table 11 shows the results by subsamples of companies depending on the presence or absence of managerial

Table 9
The moderating role of ESG disparity on the relationship between ESG engagement and firm value.

	Dependent variable: *TOBINQ*		
	(1)	(2)	(3)
Constant	11.0659***(0.5788)	11.0698*** (0.5790)	11.0765***(0.5795)
ESG engagement			
ESGscore	0.0385**(0.0162)	0.0364** (0.0162)	0.0312**(0.0158)
Interaction effects			
ESGscore × CV	−0.0709**(0.0304)		
ESGscore × GINI		−0.2280** (0.1172)	
ESGscore × NHERF			−0.1767* (0.0999)
ESG disparity			
dumCV	0.0178 (0.0329)		
dumGINI		0.0035 (0.0328)	
dumNHERF			−0.0030(0.0300)
Control variables			
SIZE	−0.6202***(0.0385)	−0.6202***(0.0385)	−0.6210***(0.0386)
LEVERAGE	−0.2391** (0.1270)	−0.2371*(0.1270)	−0.2387*(0.1270)
TANGIBILITY	−0.0880** (0.0348)	−0.0883**(0.0347)	−0.0881**(0.0348)
CAPEX	0.3469***(0.1160)	0.3473***(0.1159)	0.3491***(0.1160)
PROFITABILITY	0.2897***(0.0511)	0.2896***(0.0510)	0.2900***(0.0511)
CASH	1.1240***(0.1522)	1.1259***(0.1522)	1.1285***(0.1522)
Industry dummies	Yes	Yes	Yes
Year dummies	Yes	Yes	Yes
No. Obs.	7,365	7,365	7,365
F-statistic	29.88***	29.83***	29.76***
Adjusted R^2	0.8185	0.8184	0.8184

This table contains the OLS estimations of equation [6] with firm fixed effects. Firm value is regressed on ESG engagement, the interaction term between ESG engagement and ESG disparity, disparity in ESG scores between individual pillars, firm-level control variables, industry fixed effects and year fixed effects. A firm's value is approximated by *TOBINQ*, calculated as the sum of the market value of common stock, preferred stock, and total debt over the book value of total assets. ESG engagement is measured by the *ESGscore*, defined as the equally-weighted average of the scores of the three individual pillars: environmental, social, and governance. ESG disparity is captured by three alternative proxies: *CV* (the coefficient of variation), *GINI* (the Gini coefficient), and *NHERF* (the normalised Herfindahl–Hirschman index). Dummy variables based on ESG disparity proxies are included as controls: *dumCV* (a dummy which takes the value of 1 if a firm's *CV* is equal to or higher than the yearly sample median, and zero otherwise), *dumGINI* (a dummy which takes the value of 1 if a firm's *GINI* is equal to or higher than the yearly sample median, and zero otherwise), and *dumNHERF* (a dummy which takes the value of 1 if a firm's *NHERF* is equal to or higher than the yearly sample median, and zero otherwise). Firm-level control variables are: *SIZE* (the natural logarithm of the book value of total assets), *LEVERAGE* (the ratio of total debt divided by the book value of assets), *TANGIBILITY* (the ratio of net property, plant and equipment divided by the book value of assets), *CAPEX* (the ratio of capital expenditures to total sales), *PROFITABILITY* (the ratio of EBIT to total sales), and *CASH* (the ratio of total cash divided by the book value of assets). Continuous variables are winsorized at the 1st and 99th percentiles, except those built on ESG data. Standard errors are reported in parentheses. The F-statistic contrasts the null hypothesis of no joint significance of the explanatory variables. ***, **, * stand for statistical significance at the 1%, 5%, and 10% level, respectively.

compensation linked to ESG engagement. Our arguments gain further support since the interaction term *ESGscore* × *CV* is only negative and statistically significant in the subsample of firms that have no ESG compensation incentives. Again, this result supports our agency hypothesis that one of the underlying mechanisms explaining the detrimental value effects attached to ESG disparity comes from a lack of alignment compensation mechanisms to motivate managers to implement genuine ESG strategies. It is also worth noting that *ESGscore* has no statistically significant effect on a firm's value for the subsample of firms with ESG-based compensation packages. In the subsamples of firms without such compensation incentives (for example, in Column (2)), a one standard deviation increase in *ESGscore* causes an increase in *TOBINQ* by 9.11 percentage points. However, disparity measured by *CV* reduces the previous value-enhancing effect of *ESGscore* and reverses the overall effect of ESG engagement, thus leading to an ESG discount. Our empirical findings remain stable with the alternative proxies for ESG disparity in Columns (3) to (6).

Additionally, we consider whether such harmful effects associated with ESG disparity disappear when companies have external monitoring mechanisms such as debt financing and analyst following, which help to discipline managers and curb agency problems (e.g. Jensen, 1986; Adhikari, 2016; Fuente & Velasco, 2020). Table 12 summarizes the results. Again, our empirical findings are supportive that agency conflicts within the firm shape the effects of ESG disparity. In view of our results by subsamples of *LEVERAGE* (equal to or above the yearly sample median, and below the yearly sample median), ESG disparity only reduces the value-enhancing effects of ESG engagement in companies with a below sample median *LEVERAGE*, which is consistent with the idea that external monitoring devices can curb agency problems and improve the efficiency of the investment strategies implemented.

However, in the regressions by subsamples of analyst following (with *ANALYSTS* equal to or above the yearly sample median, and below the yearly sample median), our results indicate that ESG disparity negatively moderates the relationship between ESG engagement and firm value in companies with broader analyst coverage. Apparently, this might run counter to our expectations that ESG disparity impairs a firm's value to a lesser extent in companies with stronger monitoring, such as that provided by greater analyst following. However, we should consider the two-fold role of analysts in firms: on the one hand, as an external monitoring mechanism;

Table 10
Difference-of-means tests by agency conflicts, managerial alignment mechanisms and monitoring mechanisms.

	Panel A: LEVEL OF AGENCY CONFLICTS	
	Difference of means test by quartiles of *CASH*	
1st quartile subsample of *CASH*	4th quartile subsample of *CASH*	Difference (1)-(2)
(1)	(2)	
$CV = 0.2533$	$CV = 0.2587$	−0.0054 (1.1207)
	Panel B: MANAGERIAL ALIGNMENT MECHANISMS	
	Difference of means test by subsamples based on the existence or not of compensation linked to ESG	
Subsample with compensation linked to ESG	Subsample with no compensation linked to ESG	Difference (1)-(2)
(1)	(2)	
$CV = 0.2310$	$CV = 0.2587$	−0.0277*** (6.3024)
	Panel C: INFORMATIONAL AND MONITORING MECHANISMS	
	Difference of means test by quartiles of *LEVERAGE*	
1st quartile subsample of *LEVERAGE*	4th quartile subsample of *LEVERAGE*	Difference (1)-(2)
(1)	(2)	
$CV = 0.2524$	$CV = 0.2638$	−0.0114**(2.3285)
	Difference of means test by quartiles of *ANALYST*	
1st quartile subsample of *ANALYST*	4th quartile subsample of *ANALYST*	Difference (1)-(2)
(1)	(2)	
$CV = 0.2100$	$CV = 0.2836$	−0.0736***(16.3389)

This table summarizes the difference-of-means tests for ESG disparity (as proxied by *CV*) between different subsamples of firm-year observations. Panel A considers the subsamples of firm-year observations which belong to the top and bottom quartiles of cash holdings, measured by *CASH* (the ratio of total cash divided by the book value of assets). Panel B divides the sample into firm-year observations that report the existence of managerial compensation linked to ESG and those that lack such ESG-based compensation incentives. Panel C considers the subsamples of firm-year observations that belong to the top and bottom quartiles of leverage (*LEVERAGE*, which is the ratio of total debt divided by the book value of assets) and the top and bottom quartiles of analyst coverage (*ANALYST*, which is the natural logarithm of the number of financial analysts following a firm's stocks in the financial market). t-statistics are reported in parentheses. ***, **, * stand for statistical significance at the 1%, 5%, and 10% level, respectively.

and on the other hand, as an informational device to improve a firm's transparency to investors. One plausible explanation for our finding that ESG disparity impairs firm value to a higher degree in firms subject to greater analyst coverage might lie in the importance attached to analysts' informational role in the ESG domain. This greater informativeness granted by analysts might enhance firm visibility in financial markets, thus making it more likely that firms will be penalised for engaging in unequal ESG practices as a result of lower perceived authenticity. The statistical significance of the results is greater when *CV* is used as a proxy for ESG disparity.

Finally, we investigate the robustness of our results to the inclusion of additional control variables related to corporate board and ownership characteristics,[8] which may also be important determinants of firm value. Specifically, we control for board size (*BOARDSIZE*), measured as the natural logarithm of the number of board directors; board independence (*BOARDINDEP*), approximated by the ratio of independent directors to total board directors (Bradbury et al., 2022); and ownership concentration (*OWNERSHIP*), computed as the percentage of closely-held ownership (Fuente & Velasco, 2020). Our findings prove to be robust.[9]

Concluding remarks

One central issue in ESG literature is to delve into the authenticity of corporate ESG programmes in order to identify 'good' and 'not so good' ESG engagement, which might shed further light on prior puzzling evidence concerning the appropriateness of implementing this strategy at the firm level and its value effect on firms. Stakeholders often mistrust the "doing well by doing good" paradigm, since it proves difficult to distinguish between firms who display genuine ESG awareness and those who pretend to be engaged in ESG in order to convey a positive image of the company to their stakeholders. Our study focuses attention on the importance of accounting for additional dimensions of an ESG strategy in order to enrich our ability to discern its degree of authenticity and so be better placed to explain its heterogeneous effects on a firm's value.

We investigate one dimension of ESG strategy which has been largely overlooked so far: the degree of inequality in the distribution of overall firm ESG engagement across pillars –namely, disparity in ESG scores. Drawing on the rationale of the agency theory, we argue that ESG disparity detracts credibility from a firm's ESG strategy since unequal implementation of this strategy between domains is likely to result from agency problems within the firm, which leads managers to ad-hoc overinvest in particular ESG pillars according to their private interests. Our empirical findings support the idea that ESG disparity impairs the credibility of ESG practices and negatively moderates the relationship between ESG engagement and firm value, rendering this strategy less valuable. This finding agrees with recent research, such as Uyar et al. (2022) who draw on the social reputation theory and document that greater ESG inequality across dimensions reduces the likelihood of good ESG performance being rewarded. Our evidence also joins the call

[8] We thank an anonymous reviewer for this suggestion.

[9] All these results are available upon request. Moreover, we perform additional robustness estimations by also controlling for R&D expenditures. The negative effect of ESG disparity on a firm's value persists, although the size of the sample drops considerably to 3,620 firm-years observations, which impairs the reliability and comparability of the results. Results are available upon request.

Table 11
Robustness analyses by subsamples of agency problems.

	Panel A: LEVEL OF AGENCY CONFLICTS					
	Dependent variable: *TOBINQ*					
	Above-median *CASH* subsample	Below-median *CASH* subsample	Above-median *CASH* subsample	Below-median *CASH* subsample	Above-median *CASH* subsample	Below-median *CASH* subsample
	(1)	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**
Constant	14.1972***(1.1274)	7.6106***(0.5509)	14.2435***(1.1280)	7.6104***(0.5510)	14.2936***(1.1295)	7.6212***(0.5509)
ESG engagement						
ESGscore	0.0634**(0.0321)	−0.0012 (0.0138)	0.0567*(0.0321)	0.0013 (0.0138)	0.0490 (0.0314)	0.0010(0.0134)
Interaction effects						
ESGscore × CV	−0.1561***(0.0603)	0.0188 (0.0251)				
ESGscore × GINI			−0.4726**(0.2323)	0.0274(0.0969)		
ESGscore × NHERF					−0.4124**(0.2035)	0.0379 (0.0810)
ESG disparity						
dumCV	0.0079 (0.0631)	−0.0076 (0.0280)				
dumGINI			−0.0340 (0.0630)	0.0106 (0.0106)		
dumNHERF					−0.0331 (0.0578)	−0.0005(0.0256)
Control variables	Yes	Yes	Yes	Yes	Yes	Yes
Industry dummies	Yes	Yes	Yes	Yes	Yes	Yes
Year dummies	Yes	Yes	Yes	Yes	Yes	Yes
No. of obs.	3,685	3,680	3,685	3,680	3,685	3,680
F-statistic	15.68***	21.00***	15.64***	21.00***	15.53***	20.98***
Adjusted R^2	0.7882	0.8504	0.7882	0.8504	0.7880	0.8504
	Panel B: MANAGERIAL ALIGNMENT MECHANISMS					
	Dependent variable: *TOBINQ*					
	Subsample WITH ESG linked compensation	**Subsample WITHOUT ESG linked compensation**	**Subsample WITH ESG linked compensation**	**Subsample WITHOUT ESG linked compensation**	**Subsample WITH ESG linked compensation**	**Subsample WITHOUT ESG linked compensation**
	(1)	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**
Constant	8.7212***(1.0515)	11.9272***(0.6973)	8.7004***(1.0518)	11.9369***(0.6977)	8.7048***(1.0513)	11.9594***(0.6986)
ESG engagement						
ESGscore	−0.0084 (0.0258)	0.0556***(0.0206)	−0.0078(0.0258)	0.0518**(0.0206)	−0.0088(0.0257)	0.0442**(0.0201)
Interaction effects						
ESGscore × CV	−0.0228 (0.0474)	−0.1041***(0.0384)				
ESGscore × GINI			−0.1104(0.1804)	−0.3289**(0.1482)		
ESGscore × NHERF					0.0738 (0.1715)	−0.2654**(0.1226)
ESG disparity						
dumCV	0.0729 (0.0550)	0.0205 (0.0397)				
dumGINI			0.0776 (0.0545)	−0.0021 (0.0395)		
dumnNHERF					0.0421(0.0518)	−0.0072 (0.0358)
Control variables	Yes	Yes	Yes	Yes	Yes	Yes
Industry dummies	Yes	Yes	Yes	Yes	Yes	Yes
Year dummies	Yes	Yes	Yes	Yes	Yes	Yes

(*continued on next page*)

Table 11 (*continued*)

Panel A: LEVEL OF AGENCY CONFLICTS						
	Dependent variable: *TOBINQ*					
	Above-median *CASH* subsample	Below-median *CASH* subsample	Above-median *CASH* subsample	Below-median *CASH* subsample	Above-median *CASH* subsample	Below-median *CASH* subsample
No. of obs.	1,374	5,991	1,374	5,991	1,374	5,991
F-statistic	11.64***	22.80***	11.65***	22.75***	11.64***	22.67***
Adjusted R^2	0.8556	0.8132	0.8557	0.8132	0.8556	0.8131

This table contains the OLS estimations of equation [6] with firm fixed effects by subsamples of agency problems. Panel A divides the sample into firm-year observations with *CASH* equal to or above the yearly sample median, and those with *CASH* below the yearly sample median. Panel B splits the sample into firm-year observations that have managerial compensation linked to ESG engagement, and those that do not. In all cases, firm value is regressed on ESG engagement, the interaction term between ESG engagement and ESG disparity, disparity in ESG scores between individual pillars, firm-level control variables, industry fixed effects, and year fixed effects. A firm's value is approximated by *TOBINQ*, calculated as the sum of the market value of common stock, preferred stock, and total debt over the book value of total assets. ESG engagement is measured by the *ESGscore*, defined as the equally-weighted average of the scores of the three individual pillars: environmental, social, and governance. ESG disparity is captured by three alternative proxies: *CV* (the coefficient of variation), *GINI* (the Gini coefficient), and *NHERF* (the normalised Herfindahl–Hirschman index). Dummy variables based on ESG disparity proxies are included as controls: *dumCV* (a dummy that takes the value of 1 if a firm's *CV* is equal to or higher than the yearly sample median, and zero otherwise), *dumGINI* (a dummy that takes the value of 1 if a firm's *GINI* is equal to or higher than the yearly sample median, and zero otherwise), and *dumNHERF* (a dummy that takes the value of 1 if a firm's *NHERF* is equal to or higher than the yearly sample median, and zero otherwise). Firm-level control variables are: *SIZE* (the natural logarithm of the book value of total assets), *LEVERAGE* (the ratio of total debt divided by the book value of assets), *TANGIBILITY* (the ratio of net property, plant and equipment divided by the book value of assets), *CAPEX* (the ratio of capital expenditures to total sales), *PROFITABILITY* (the ratio of EBIT to total sales), and *CASH* (the ratio of total cash divided by the book value of assets). Continuous variables are winsorized at the 1st and 99th percentiles, except those built on ESG data. Standard errors are reported in parentheses. The F-statistic contrasts the null hypothesis of no joint significance of the explanatory variables. ***, **, * stand for statistical significance at the 1%, 5%, and 10% level, respectively.

Table 12
Robustness analyses by subsamples of informational and monitoring mechanisms.

	Panel C: INFORMATIONAL AND MONITORING MECHANISMS: LEVERAGE					
	Dependent variable: *TOBINQ*					
	Above-median *LEVERAGE* subsample	Below-median *LEVERAGE* subsample	Above-median *LEVERAGE* subsample	Below-median *LEVERAGE* subsample	Above-median *LEVERAGE* subsample	Below-median *LEVERAGE* subsample
	(1)	(2)	(3)	(4)	(5)	(6)
Constant	9.7040***	12.0885***	9.7004***	12.0872***	9.7070***	12.1209***
	(0.6182)	(1.1565)	(0.6184)	(1.1564)	(0.6183)	(1.1582)
ESG engagement						
ESGscore	0.0120(0.0160)	0.0560*(0.0314)	0.0104(0.0160)	0.0525*(0.0314)	0.0108 (0.0157)	0.0442 (0.0308)
Interaction effects						
ESGscore × CV	−0.0124 (0.0299)	−0.1211**				
		(0.0571)				
ESGscore × GINI			−0.0213(0.1152)	−0.3950*		
				(0.2221)		
ESGscore × NHERF					−0.0461	−0.3016(0.1933)
					(0.0952)	
ESG disparity						
dumCV	0.0254(0.0338)	−0.0196				
		(0.0575)				
dumGINI			0.0146(0.0338)	−0.0405		
				(0.0579)		
dumNHERF					−0.0244	−0.3016(0.1933)
					(0.0306)	
Control variables	Yes	Yes	Yes	Yes	Yes	Yes
Industry dummies	Yes	Yes	Yes	Yes	Yes	Yes
Year dummies	Yes	Yes	Yes	Yes	Yes	Yes
No. of obs.	3,683	3,682	3,683	3,682	3,683	3,682
F-statistic	25.53***	13.84***	25.51***	13.83***	25.54***	13.73***
Adjusted R^2	0.8585	0.8051	0.8584	0.8050	0.8585	0.8049
	Panel D: INFORMATIONAL AND MONITORING MECHANISMS: ANALYST COVERAGE					
	Dependent variable: *TOBINQ*					
	Above-median *ANALYST* subsample	**Below-median *ANALYST* subsample**	**Above-median *ANALYST* subsample**	**Below-median *ANALYST* subsample**	**Above-median *ANALYST* subsample**	**Below-median *ANALYST* subsample**
	(1)	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**
Constant	15.3333***	7.3839***	15.3388***	7.3926***	15.3573***	7.3986***
	(0.9244)	(0.8615)	(0.9244)	(0.8618)	(0.9264)	(0.8614)
ESG engagement						
ESGscore	0.0404*(0.0245)	0.0162(0.0228)	0.0388(0.0244)	0.0130 (0.0229)	0.0291(0.0240)	0.0153 (0.0223)
Interaction effects						
ESGscore × CV	−0.1201***	−0.0077				
	(0.0466)	(0.0408)				
ESGscore × GINI			−0.4352**	0.0365(0.1558)		
			(0.1803)			
ESGscore × NHERF					−0.2905*	−0.0625
					(0.1679)	(0.1222)
ESG disparity						
dumCV	0.0361 (0.0518)	−0.0157(0.0406)				
dumGINI			0.0252 (0.0518)	−0.0363		
				(0.0403)		
dumNHERF					−0.0026(0.0484)	−0.0108
						(0.0362)
Control variables	Yes	Yes	Yes	Yes	Yes	Yes
Industry dummies	Yes	Yes	Yes	Yes	Yes	Yes
Year dummies	Yes	Yes	Yes	Yes	Yes	Yes

(*continued on next page*)

Table 12 (*continued*)

	Panel C: INFORMATIONAL AND MONITORING MECHANISMS: LEVERAGE					
	Dependent variable: *TOBINQ*					
	Above-median *LEVERAGE* subsample	Below-median *LEVERAGE* subsample	Above-median *LEVERAGE* subsample	Below-median *LEVERAGE* subsample	Above-median *LEVERAGE* subsample	Below-median *LEVERAGE* subsample
No. of obs.	3,817	3,420	3,817	3,420	3,817	3,420
F-statistic	23.72***	10.79***	23.70***	10.81***	23.51***	10.80***
Adjusted R^2	0.8079	0.8668	0.8079	0.8669	0.8077	0.8669

This table contains the OLS estimations of equation [6] with firm fixed effects by subsamples of informational and monitoring mechanisms such as firm leverage (Panel C) and analyst coverage (Panel D). Panel C divides the sample into firm-year observations with *LEVARAGE* equal to or above the yearly sample median, and those with *LEVERAGE* below the yearly sample median. Panel D splits the sample into firm-year observations with *ANALYST* equal to or above the yearly sample median, and those with *ANALYST* below the yearly sample median. In all cases, firm value is regressed on ESG engagement, the interaction term between ESG engagement and ESG disparity, disparity in ESG scores between individual pillars, firm-level control variables, industry fixed effects, and year fixed effects. A firm's value is approximated by *TOBINQ*, calculated as the sum of the market value of common stock, preferred stock, and total debt over the book value of total assets. ESG engagement is measured by the *ESGscore*, defined as the equally-weighted average of the scores of the three individual pillars: environmental, social, and governance. ESG disparity is captured by three alternative proxies: *CV* (the coefficient of variation), *GINI* (the Gini coefficient), and *NHERF* (the normalised Herfindahl–Hirschman index). Dummy variables based on ESG disparity proxies are included as controls: *dumCV* (a dummy that takes the value of 1 if a firm's *CV* is equal to or higher than the yearly sample median, and zero otherwise), *dumGINI* (a dummy that takes the value of 1 if a firm's *GINI* is equal to or higher than the yearly sample median, and zero otherwise), and *dumNHERF* (a dummy that takes the value of 1 if a firm's *NHERF* is equal to or higher than the yearly sample median, and zero otherwise). Firm-level control variables are: *SIZE* (the natural logarithm of the book value of total assets), *LEVERAGE* (the ratio of total debt divided by the book value of assets), *TANGIBILITY* (the ratio of net property, plant and equipment divided by the book value of assets), *CAPEX* (the ratio of capital expenditures to total sales), *PROFITABILITY* (the ratio of EBIT to total sales), and *CASH* (the ratio of total cash divided by the book value of assets). Continuous variables are winsorized at the 1st and 99th percentiles, except those built on ESG data. Standard errors are reported in parentheses. The F-statistic contrasts the null hypothesis of no joint significance of the explanatory variables. ***, **, * stand for statistical significance at the 1%, 5%, and 10% level, respectively.

prompted by earlier literature (Wang & Choi, 2013; Cuypers et al., 2016; Fuente & Velasco, 2022; Lee et al., 2023) to characterize a firm's ESG engagement based on multiple dimensions whose different configuration might lead this strategy to have a dissimilar impact across companies.

Overall, our results are consistent with the notion that a more unequal distribution of ESG engagement across pillars might signal managerial discretion to opportunistically misuse ESG for personal interests. This evidence is also in line with Hawn and Ioannou (2016), who show that the stock market penalises misalignment between external and internal CSR actions. Our evidence also reveals that such a tell-tale sign of opportunistic behaviour provided by ESG disparity is stronger in firms that are more prone to agency problems or to greater market visibility. This ties in with preceding research that underscores the relevance of accompanying ESG with monitoring mechanisms (Adhikari, 2016; Zhang, 2022; Gull et al., 2023a, 2023b) to minimize managerial agency problems. Our findings also fit in with the latest research, such as Lee et al. (2023), concerning the importance of looking at pillar scores to enhance the informativeness of a firm's ESG practices for external stakeholders. Aggregated ESG score measures might be obscuring potential discretionary opportunistic behaviour in companies.

This research provides some interesting theoretical implications. First, recent studies such as Flammer (2021) have assessed the genuineness of a firm's engagement in ESG, exploring potential signals of sincere commitment by looking at complementary decisions such as financing policies (e.g. issuance of green bonds). Our study provides further insights about an alternative signal (ESG disparity) embedded in the ESG strategy configuration itself. Additionally, our insights complement earlier evidence, such as Hawn and Ioannouu (2016), by underscoring the importance of aligning a firm's ESG efforts across all domains of sustainability, thereby avoiding performance divergences across them. Second, whereas most literature has overfocused on the ex-post effect of ESG strategy on a firm's value –seen as a major limitation by earlier studies (Ferrell et al., 2016)– we point to the relevance of exploring ex-ante motivations to embark on this strategy. Such incentives –that play a part before implementing this strategy in real practice– can determine the guiding motives of managers and, as a result, whether their engagement in ESG actions is genuine or mere window-dressing (McShane & Cunningham, 2012).

Additionally, this research offers direct implications for business practitioners, consultants and policymakers. Our results urge a holistic view to be adopted of a firm's engagement in ESG, taking care to build an aligned commitment in all areas of sustainability. A more equal distribution of efforts across all ESG pillars is likely to satisfy a wider range of stakeholders and favour the legitimacy of this strategy in their eyes and, therefore, enhance its value effect for companies. Moreover, our research suggests that a firm's ESG strategy may respond to managerial self-interested motivations, thereby deviating from its *raison d'être* of aligning a firm's business activity with its stakeholders' interests. This reveals how important it is to endow ESG-engaged firms with appropriate corporate governance devices in order to ensure that this strategy is value-creation oriented, instead of being opportunistically misused by top managers to maximize their personal utility at the expense of firm wealth.

This study evidences certain limitations, which offer the starting point for further research. First, our analyses are constrained to a single data source for ESG –the widely used Refinitiv scores. Future research could address dissimilar ESG engagement across pillars by drawing on multiple-database data so as to control for potential differences in sustainability theorization and commensurability across

leading ESG rating agencies (Chatterji et al., 2016; Lee et al., 2023). Second, this research could be expanded by simultaneously accounting for additional indicators of ESG sincerity, such as ESG decoupling as well as by exploring whether (and how) the different indicators align with one another. Looking not only at ESG scores but also at the ESG claims that firms make in their ESG information disclosure might result in a more comprehensive view of the extent to which they pursue genuine ESG engagement. Moreover, it may be interesting to adopt a survey-approach and to gain stakeholder perception of a firm's ESG strategy as a way of triangulating sources of information. Third, it might prove enlightening to delve into the antecedents of how each firm sets out its ESG strategy and distributes its efforts across sustainability domains. Recent papers such as Ongsakul et al. (2020) point to board independence, although this is only a first thread to pull on. Another unexplored avenue concerns whether the harmful effect of ESG disparity on the credibility of ESG programmes varies across different ownership structures. For instance, family firms are strongly committed to protecting their socioemotional wealth endowment, which might provide their ESG strategies with greater legitimacy. Our research marks only the beginning of a research path aimed at advancing a more fine-grained characterization of its diversity across companies. The increasingly broad coverage of ESG data in recent years by database providers might make this issue more feasible and would allow further progress by incorporating a longitudinal approach. In addition, we think that more work is still needed –both conceptually and empirically– in order to gain insights into the multidimensional nature of this strategy, unveil its underlying value mechanisms, and endow them with a solid theoretical base.

CRediT authorship contribution statement

Gabriel de la Fuente: Conceptualization, Data curation, Formal analysis, Investigation, Methodology, Writing – original draft, Writing – review & editing, Funding acquisition. **Pilar Velasco:** Conceptualization, Data curation, Formal analysis, Investigation, Methodology, Writing – original draft, Writing – review & editing.

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Data availability

The authors do not have permission to share data.

Acknowledgements

The authors gratefully acknowledge the valuable comments from Peter Clarkson (the Editor), an anonymous reviewer, and participants at the Spanish Academy of Management ACEDE conference (2021), the International Mentoring Foundation for the Advancement of Education IMFAHE conference (2021), and the 16th Corporate Responsibility Research conference (2021). This paper was a finalist for the Best Paper Award in this latter conference. The authors benefited from financial support from the Spanish Ministry of Science, Innovation and Universities (MICIU/AEI/10.13039/501100011033, ref. PID2020-114797GB-I00). This research was conducted while Pilar Velasco was a visiting researcher at the University of Valladolid before she joined the faculty staff. She greatly appreciates the hospitality and the research support provided by the research group in finance.

Appendix

Table A.1. Mean ESG engagement and mean ESG disparity over years

	ESGscore	*CV*	*GINI*	*NHERF*
2010	4.9673	0.2553	0.0659	0.0426
2011	4.9813	0.2440	0.0635	0.0397
2012	4.8712	0.2583	0.0671	0.0443
2013	4.8878	0.2531	0.0656	0.0428
2014	4.8837	0.2468	0.0640	0.0409
2015	4.6452	0.2497	0.0645	0.0415
2016	4.5695	0.2515	0.0650	0.0425
2017	4.6188	0.2565	0.0664	0.0439
2018	4.5783	0.2583	0.0667	0.0667

This table reports the mean values for ESG engagement (*ESGscore*) and the alternative proxies for ESG disparity (either *CV*, *GINI* or *NHERF*) by year.

Table A.2. Mean ESG engagement and mean ESG disparity by Fama and French's (1997) industries

Fama & French industries		No. Obs. (%)	*ESGscore*	*CV*	*GINI*	*NHERF*
1	**Agriculture**	15 (0.20%)	3.8485	0.1897	0.0487	0.0260
2	**Food products**	148 (2.01%)	5.8381	0.2107	0.0547	0.0300
3	**Candy & Soda**	41 (0.56%)	4.3334	0.2772	0.0703	0.0462
4	**Alcoholic beverages**	28 (0.38%)	5.2620	0.1857	0.0479	0.0218
5	**Tobacco products**	2 (0.03%)	3.2086	0.3136	0.0785	0.0502
6	**Recreational products**	51 (0.69%)	4.9724	0.2148	0.0551	0.0357
7	**Entertainment**	77 (1.05%)	3.7127	0.2233	0 .0585	0.0308
8	**Printing & publishing**	79 (1.07%)	4.9890	0.2229	0.0569	0.0317
9	**Consumer goods**	172 (2.34%)	5.1338	0.2387	0.0623	0.0373
10	**Apparel**	74 (1.00%)	5.3561	0.2274	0.0583	0.0352
11	**Healthcare**	130 (1.77%)	4.7734	0.2252	0.0583	0.0340
12	**Medical equipment**	268 (3.64%)	4.5819	0.2534	0.0653	0.0409
13	**Pharmaceutical products**	327 (4.44%)	4.6397	0.2449	0.0635	0.0389
14	**Chemicals**	257 (3.49%)	5.0809	0.2348	0.0603	0.0389
15	**Rubber & plastic products**	58 (0.79%)	4.7207	0.2836	0.0745	0.0604
16	**Textiles**	20 (0.27%)	4.7841	0.2412	0.0629	0.0413
17	**Construction materials**	195 (2.65%)	4.6551	0.2447	0.0630	0.0406
18	**Construction**	163 (2.21%)	3.9687	0.2876	0.0754	0.0540
19	**Steel Works**	122 (1.66%)	4.7526	0.2271	0.0589	0.035
20	**Fabricated products**	12 (0.16%)	3.7754	0.4198	0.4198	0.0958
21	**Machinery**	284 (3.86%)	4.7789	0.2554	0.0662	0.0450
22	**Electrical equipment**	76 (1.03%)	4.3592	0.2710	0.0706	0.0468
23	**Miscellaneous**	3 (0.04%)	4.4357	0.1747	0.0433	0.0180
24	**Automobiles & trucks**	201 (2.73%)	4.5893	0.2689	0.0700	0.0478
25	**Aircraft**	42 (0.57%)	4.7756	0.2645	0.0693	0.0480
26	**Shipbuilding, railroad eq.**	24 (0.33%)	3.9084	0.3954	0.1031	0.0886
27	**Defence**	24 (0.33%)	3.8905	0.2805	0.0725	0.0498
28	**Precious metals**	32 (0.43%)	5.1094	0.1971	0.0511	0.0250
29	**Non-metallic mining**	69 (0.94%)	4.5291	0.3284	0.0850	0.0655
30	**Coal**	35 (0.48%)	5.8539	0.2486	0.0646	0.0415
31	**Petroleum & natural gas**	386 (5.24%)	4.4686	0.2429	0.0630	0.0382
32	**Utilities**	318 (4.32%)	5.1118	0.2894	0.0748	0.0574
33	**Telecommunications**	163 (2.21%)	3.8308	0.3237	0.0840	0.0661
34	**Personal services**	110 (1.49%)	3.4709	0.3717	0.0951	0.0819
35	**Business services**	1,187 (16.12%)	4.6181	0.2552	0.0661	0.0426
36	**Computers**	186 (2.53%)	4.8973	0.2481	0.0638	0.0400
37	**Electronic equipment**	481 (6.53%)	4.7366	0.2389	0.0617	0.0397
38	**Measuring & control eq.**	188 (2.55%)	5.0107	0.2621	0.0678	0.0477
39	**Business supplies**	73 (0.99%)	5.8555	0.2331	0.0601	0.0394
40	**Shipping containers**	49 (0.67%)	4.6326	0.2644	0.0693	0.0439
41	**Transportation**	265 (3.60%)	4.0751	0.2605	0.0669	0.0457
42	**Wholesale**	250 (3.39%)	4.4947	0.2601	0.0675	0.0454
43	**Retail**	469 (6.37%)	4.9657	0.2242	0.0578	0.0329
44	**Restaurants, hotel, motel**	211 (2.86%)	4.9903	0.2444	0.2444	0.0384
45	**Banking**	0 (0%)	-	-	-	-
46	**Insurance**	0 (0%)	-	-	-	-
47	**Real Estate**	0 (0%)	-	-	-	-
48	**Trading**	0 (0%)	-	-	-	-

This table reports the mean values for ESG engagement (*ESGscore*) and the alternative proxies for ESG disparity (either *CV*, *GINI* or *NHERF*) by industry.

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