# Does corporate sustainability mitigate firm risk? An empirical analysis on S&P 500 controversial companies

Mauro Sciarelli, Giovanni Landi, Lorenzo Turriziani and Anna Prisco

Mauro Sciarelli, Giovanni Landi, Lorenzo Turriziani, Anna Prisco are based at the Department of Economics, Management, Institutions, University of Naples Federico II, Naples, Italy.

**Abstract**

**Purpose** – *This study aims to explore the impact of controversial firms' corporate sustainability assessments on their risk exposure according to the environmental, social and governance (ESG) paradigm.*

**Design/methodology/approach** – *This study conducts a cross-sectional study using the ordinary least squares approach to test how corporate social responsibility practices affect firms' risk exposure, testing the three single impacts of ESG components and the impact of an overall ESG assessment. This study considers the largest Standard & Poor's (S&P) 500 stock market index companies and focus on a double-risk measurement – systematic and idiosyncratic – developing an empirical study on 132 controversial companies listed on the S&P index.*

**Findings** – *Empirical findings indicate that the overall ESG assessment and the environmental and social sub-dimensions decrease idiosyncratic firm risk. At the same time, no significant results are found according to the systematic risk component.*

**Originality/value** – *This study fits into the domain of risk management research, investigating whether additional and non-financial disclosures regarding sustainability issues decrease information asymmetries, improving investors' decision-making and stakeholders' relations. Prior literature has shown limited evidence on the relationship between corporate social performance (CSP) and firm risk based on controversial companies. The main contribution is to consider the controversy as an independent factor from the industry sector, given that the implications of CSP actions and practices are mainly firm-specific.*

**Keywords** *Corporate social performance, Firm risk, Controversial companies, Corporate sustainability assessment, ESG ratings, Idiosyncratic and systematic risk*

**Paper type** *Research paper*

Received 9 September 2021
Revised 7 March 2023
Accepted 17 April 2023



## 1. Introduction

Corporate social responsibility (CSR) can be defined as a firm's additional and discretionary efforts to foster effective corporate governance, thus ensuring the implementation of business practices and internal processes to promote accountability, information transparency and corporate philanthropy (Cai *et al.*, 2012). CSR is considered a response to social pressure relative to stakeholders' demands and expectations, environmental concerns and social demands, which characterize the dimensions of CSR (Cochran, 2007; Crowther and Aras, 2008; Dahlsrud, 2008; Prahalad and Hamel, 1994; Wood, 1991).

Consequently, an increasing number of companies have been willing to integrate CSR activities into different aspects of their business. CSR can match corporate strategies to social needs, build a positive corporate image and develop a stricter relationship with consumers and related stakeholders.

Moreover, the operationalization of CSR in an organizational context has given rise to the concept of corporate social performance (CSP) (Bouslah *et al.*, 2013; Waddock and Graves, 1997;

Wood, 1991). On this ground, Wood (1991) integrated previous CSR works in an acknowledged definition of CSP as the "configuration of the principles of social responsibility, processes of social responsiveness, and policies, programs, and observable outcomes as they relate to the firm's societal relationships" (Wood, 1991, p. 693). Recently, environmental, social and governance (ESG) ratings have emerged as the main tool to assess CSP, and their use is widely accepted by researchers (Chang *et al.*, 2014; Eccles *et al.*, 2014) and by the capital market (Bassen and Senkl, 2011).

Within the rapidly evolving research area of CSR, a large volume of literature has focused on the relationship between CSP and corporate financial performance (CFP) (Griffin and Mahon, 1997; Lu *et al.*, 2014; Margolis and Walsh, 2003; Margolis *et al.*, 2007; Oikonomou *et al.*, 2012; Orlitzky *et al.*, 2003), highlighting mixed and ambiguous results on the sign and direction of this relationship. For example, some studies have highlighted a positive CSP-CFP relationship (Hillman and Keim, 2001), whereas others have pointed to a negative link (Brammer *et al.*, 2006) or the absence of a significant association (Renneboog *et al.*, 2008).

On this ground, Brammer and Pavelin (2006) highlighted the importance of "fit" to explain the inconclusive findings in the literature concerning the relationship between social performance and financial performance.

Indeed, stakeholder groups have different expectations regarding firm behavior (Fombrun and Shanley, 1990), and the salience of each stakeholder group may vary across industries. Therefore, the impact of CSR on reputation is jointly contingent upon which type of CSR activity is undertaken and which industrial sector the firm is primarily associated with. In this sense, the effect of a firm's social performance on its reputation is primarily determined by the fit between the sector-specific characteristics of the firm's business environment and the type of social performance the firm exhibits.

Accordingly, non-financial performance and CSP have gained increased importance among firms and their stakeholder groups (Gramlich and Finster, 2013). Despite the fact that the academic discussion regarding the nature of the CSP-CFP link is contested, most studies have used accounting-based measures to assess financial performance without considering a firm's total risk as a proxy to estimate its profitability.

Moreover, although several studies have focused on companies belonging to controversial industry sectors (Banerjee and Bonnefous, 2011; Palazzo and Richter, 2005), controversy as an independent factor has not been considered in the relationship between the social commitment and financial performance of firms from the industry sector. Therefore, as the implications of CSP actions and practices are mainly firm-specific (Lee and Faff, 2009), studies that analyze firm-specific controversies would be required.

Accordingly, this study fills the gap in the literature by exploring the relationship between controversial firms' ESG assessments and their risk exposures. Specifically, we want to understand whether the firm's risk could be affected by corporate sustainability on the stock exchange market both from a systematic and idiosyncratic perspective.

Based on the above assumption, we limited our analysis to companies involved in specific controversial sectors (e.g. firms in the tobacco or alcohol industries), as controversial industry stakeholders may have more stringent expectations of these firms' social behaviors. They could recognize CSR activities as mere attempts of "window dressing" to legitimize questionable businesses (Palazzo and Richter, 2005).

First, we examine the relationship between all the singular dimensions of social performance according to the different ESG components (ESG) and the firm's risk exposure. Second, we explore how an overall ESG evaluation may influence financial risk.

To identify firms with a negative reputation, we refer to Sustainalytics' Controversies Research approach, which defines as "controversial" those companies involved in incidents

and events that may negatively impact stakeholders, the environment, or the company's operations.

The main findings denote that the overall ESG assessment and the environmental and social rating decrease firm idiosyncratic risk (volatility). On the contrary, we find no significant results regarding the systematic risk measure (BETA), confirming prior studies suggesting that BETA is driven more by the industry context than by firm-specific dynamics (Sassen *et al.*, 2016).

The study is organized as follows. Sections 2 and 3 describe the theoretical background of the model and the hypotheses. In Section 4, the methodology is carried out, and the empirical results are expounded. Analysis and discussion of results are discussed in Section 5. and Finally, in Section 6, we summarize the most critical findings, discuss several implications for policy-makers, introduce the potential limitations of the research and present areas for further study. In Section 7, we show the limitations and prospects for improving the work in the future.

## 2. Related literature

### *2.1 Corporate social performance–corporate financial performance relationship*

The literature on the empirical link between CSP and CFP has come a long way, yielding a considerable volume of literature with mixed results (Griffin and Mahon, 1997; Lu *et al.*, 2014; Margolis and Walsh, 2003; Margolis *et al.*, 2009; Orlitzky *et al.*, 2003).

However, several studies indicate unequivocal evidence for a positive association between CSP and CFP. For instance, Orlitzky *et al.* (2003) conducted a meta-analysis of 52 studies on the CSP-CFP link and found that social performance and environmental performance seem positively related to CFP. The extent of the impact is somewhat lower for environmental performance. Margolis and Walsh (2003) investigated 127 studies on the association of corporate social behavior and CFP, finding a mild positive impact of CSP on CFP. Moreover, Van Beurden and Gössling (2008) conducted a systematic literature review of 34 studies, positing clear empirical evidence for a positive association between CSP and CFP. Furthermore, Margolis *et al.* (2009) applied a meta-analytical approach to 251 studies and found an overall positive effect. Eccles *et al.* (2014) conducted an observation for 18 years and showed that companies with higher levels of sustainability outperformed those with lower ones.

By contrast, several authors have postulated an alternative view and showed a negative CSP-CFP relationship (Aupperle *et al.*, 1985; Friedman, 1970). According to Friedman (1970), the association is harmful because firms that voluntarily engage in more socially responsible activities incur higher costs, thus achieving lower financial performance. On this premise, Aupperle *et al.* (1985) referred to neoclassical economics and argued that socially irresponsible firms incur fewer direct costs and generate higher profits than socially responsive ones. Moreover, according to the managerial opportunism theory (Cespa and Cestone, 2007; Navarro, 1988), managers might opportunistically leverage CSP for their private benefit, thus providing no significant financial returns to companies.

Meanwhile, some studies highlight a non-linear CFP-CSP linkage hypothesizing a U-shaped relationship (Barnett and Salomon, 2012; Sturdivant and Ginter, 1977; Trumpp and Guenther, 2017). Indeed, according to the stakeholder management perspective (Hillman and Keim, 2001), the CSP-CFP association is positive whether the social commitment is associated with the effective management of stakeholders' relationships. Furthermore, other studies argue for an inverse U-shaped relationship (Bhattacharya and Sen, 2004), showing that higher financial performance is associated with either very high or very low CSP. On this ground, Bhattacharya and Sen (2004) found that firms undertaking a moderate degree of social behavior can neither allocate additional resources for alternative investments nor

reach a perceived differentiation strategy compared with the stakeholders' expectations, thus achieving lower financial performance.

Finally, another body of research suggests that a neutral CSP-CFP link should exist. For instance, Ullmann (1985) argued that there are many intervening variables between firms' social and financial performances that bias the significance of this relationship.

Even though several studies have suggested at least a mild positive association between CSP and CFP, most did not limit their analyses to a specific industry context, thereby frequently providing inconsistent results. Consequently, scholars were asked to keep delving into this relationship by adopting a contingent approach, as fitting CSP practices within the specific industry context can help explain such differences in this relationship. On this ground, academic literature has begun to fill this gap, and recent studies have emphasized the importance of CSP in controversial industry sectors (Cai *et al.*, 2012; Jo and Na, 2012; Reast *et al.*, 2013; Rodrigo *et al.*, 2016). The emerging literature focusing on this field has defined them as sectors with extremely salient social and environmental externalities: for example, tobacco, alcohol and gambling industries (Lindgreen *et al.*, 2012).

Moreover, both from theoretical and empirical perspectives, several authors have argued that controversial industries should be studied separately due to their conspicuous harmful consequences on society and the environment (Lindgreen *et al.*, 2012; Palazzo and Richter, 2005; Yani-de-Soriano *et al.*, 2012). Indeed, prior research in organizational behavior (De Roeck and Delobbe, 2012), finance (Jo and Na, 2012) and marketing (Yoon *et al.*, 2006) suggests that organizational outcomes in controversial industries are different from what has been established in mainstream studies based on non-controversial companies. This explains why scholars have called for more controversial industry-focused works. Hence, it can be stated that controversial companies' social practices tend to be more stringent, being constrained to more significant stakeholder pressure (Du and Vieira, 2012).

### *2.2 The operationalization of corporate social responsibility: corporate social performance and firm's risk*

In the absence of market imperfections, the main contribution of the portfolio theory is that a rational investor will hold a well-diversified portfolio to mitigate his risk exposure. Conversely, investment decisions based on CSP parameters are not based on economic returns, as a growing number of investors have been making financial decisions considering some non-financial aspects, given the long-term impacts their investment might pose on society (Hockerts and Moir, 2004; McLachlan and Gardner, 2004). Indeed, the theoretical models of the relationship between CSP and expected returns (Heinkel *et al.*, 2001; Mackey *et al.*, 2007) reject the assumption of perfect capital markets by considering differences in investor preferences and values. Remarkably, these models assume the existence of two types of investors in financial markets: traditional and socially responsible.

Traditional investors only examine financial and economic criteria in assessing their investment decisions, whereas socially responsible investors consider both financial and non-financial parameters. In particular, they tend to frame their investment decision-making by considering economic factors and non-financial parameters (Boatright, 2013; Margolis *et al.*, 2007). The rapidly changing dynamics of the modern world suggest that the adoption of socially responsible investing (SRI) is growing among investors and companies.

Consequently, SRIs and CSP have gained attention among professionals, private investors, researchers and local governments. On this premise, although several studies have attested to the capability of a CSP-screened portfolio to reduce social investors' risk, allowing them to outperform (Kempf and Osthoff, 2007; Waddock and Graves, 1997), researchers still show contrasting findings regarding this relationship (Margolis and Walsh, 2001; Ullmann, 1985; Wright and Ferris, 1997). Indeed, Oikonomou *et al.* (2012) found a

negative but non-significant association between CSP commitment and systematic risk, while socially irresponsible behavior is positively linked to systematic risk regarding Standard & Poor's (S&P's) 500 companies.

Moreover, Humphrey *et al.* (2012) suggested that high CSP scores do not offset low scores in systematic risk and performance. Ullmann (1985) presented a neutral CSP-risk link, as there are many latent intervening variables between social performance and a firm's total risk relationship. This neutral linkage could also be explained by the financial market's inability to assess and price CSP efforts (Statman, 2000).

The aggregate CSP measures are the combination of a company's performance relative to several dimensions. As CSP is a multidimensional construct that embraces several dimensions, the expected impacts on a firm's risk may differ according to the singular CSP dimensions. Consequently, Lee and Faff (2009) argued that singular CSP proxy measures show nontrivial limitations regarding their interpretation and reliability and suggested a multidimensional aggregate CSP measure. Conversely, other studies argue that CSP dimensions need to be dealt with separately to achieve an accurate picture of their impacts on overall firm performance, stock returns and equity cost (Berman *et al.*, 1999; Brammer *et al.*, 2006; Derwall and Verwijmeren, 2007; Oikonomou *et al.*, 2012). Berman *et al.* (1999) found that only two dimensions (employees and products) directly impact firms' financial performance. In addition, Brammer *et al.* (2006) argued that UK firms' stock returns are negatively associated with the environmental dimension while positively related to the employee dimension. Derwall and Verwijmeren (2007) showed that the cost of equity is negatively associated with three CSP dimensions (environment, governance and product). Oikonomou *et al.* (2012) reported that community, employee and environmental concerns positively impact systematic risks for S&P 500 companies.

Moreover, it can be argued that the different CSP dimensions might bring divergent impacts according to the nature of the firm's business or sector (Brammer *et al.*, 2006). Indeed, each industry and company are characterized by different configurations of stakeholders with disparate degrees of activism on social issues (Carroll, 1979; Griffin and Mahon, 1997). Specifically, some controversial industries seem to be more exposed to environmental or social issues than conventional ones and, thus, are of more significant concern to investors along these CSP dimensions.

According to the stakeholder management approach, a higher CSP could reduce firm risk through better social and environmental performance (Sharfman and Fernando, 2008). It might also improve the perceived top management quality by reducing information asymmetries between the company and external stakeholders (Waddock and Graves, 1997).

Therefore, investors could examine a company's commitment to the ESG dimensions according to the ESG paradigm.

Consistent with previous theoretical assumptions, it is argued that the different ESG dimensions integrated into the overall rating might impact firm risk differently (Bouslah *et al.*, 2013). Indeed, the three ESG perspectives concern other groups of stakeholders and related issues; this, in turn, could lead to different impacts on companies' financial risk, as the relevance of ESG factors to business activity might differ depending on the sectors under which companies belong (Eccles *et al.*, 2012). In addition, Sharfman and Fernando (2008) argued that improved environmental performance decreases firms' environmental crisis exposure, thus mitigating firms' risk.

Finally, according to the managerial opportunism theory, Preston and O'bannon (1997) found a positive CSP-firm risk relationship due to the positive impact of CSR practices on top-management entrenchment. Indeed, managers could over-invest in CSR for their private benefits (Barnea and Rubin, 2010) or strategically commit themselves to socially responsible behaviors to attain stakeholders' support (Cespa and Cestone, 2007).

Given the extensive literature on the CSP-firm risk relationship, Table 1 attempts to exhibit previous research on the CSP and CFP, together with the analyzed factors and industries:

## 3. Research gap and hypothesis development

As shown in the literature review, the relationship between CSP and firm risk has elicited much attention from researchers. Prior studies have suggested that fitting CSP within various industry contexts may explain the differences in this relationship (Brammer and Pavelin, 2006). Referring to the controversial sectors, stakeholders may exert pressure for a more profound social commitment, leading companies to urgently disclose non-financial information, thus facilitating the firm risk-reduction process. Therefore, this work aims to fill this gap in the literature by investigating whether the CSP implemented by controversial companies can mitigate the firm's risk exposure.

In general, firm risk can be explained as the potential of losing firm value as a result of uncertainty future outcomes or events (Chang *et al.*, 2014; Orlitzky and Benjamin, 2001). Risk can be measured by the fluctuation of financial performance over time regarding share prices (market risk) or internal accounting returns (accounting risk) (Orlitzky and Benjamin, 2001). Consequently, typical risk measures are subdivided into measures of accounting risk and market risk, although both types of measures operationalize the same underlying constructs in two different ways rather than being two different conceptual components of risk (Sassen *et al.*, 2016).

We have chosen to focus on market-based risk measures. The total market risk can be explained as the degree to which stock returns for a particular company vary over time and can be measured by the variance of the standard deviation of the stock returns over the previous year (Bouslah *et al.*, 2013; Jo and Na, 2012). Financial theory subdivides total market risk into idiosyncratic risk and systematic risk (Jo and Na, 2012). The idiosyncratic risk (unsystematic risk) is specific to the firm and cannot be explained by broad market movements. Systematic risk represents a firm's sensitivity to broad market dynamics or changes that are relevant to all stocks (Luo and Bhattacharya, 2009)

Based on stakeholder theory, high levels of CSP are linked with lower financial risk and boost more stable relations with the government and the financial community (McGuire *et al.*, 1988). Furthermore, market participants are more willing to allocate capital to companies with higher levels of CSP so that CSR engagement can lower capital constraints for companies (Cheng *et al.*, 2014). Better CSP can enhance a company's reputation (Cornell and Shapiro 1987), increase its brand value and improve the image of its products among consumers (Brown and Dacin 1997). Moreover, CSR might increase a firm's appeal as an employer and help attract and retain a high-quality workforce (Turban and Greening 1997; Greening and Turban, 2000). A suitable CSP might also be considered as a signal for superior management skills (Waddock and Graves, 1997). Taken together, these research findings suggest that better CSP leads to less financial risks and therefore to a lower degree of stock market risk and a lower likelihood of company crisis (Oikonomou *et al.*, 2012).

Risk management theory (Godfrey, 2005) further suggests that even in times of crisis a company's CSP can generate positive moral capital among various stakeholders that can provide "insurance-like" protection for the firm.

Given the predominance of arguments arguing a negative relationship, we assume that ESG factors have a negative impact on all market-based risk measures (total, idiosyncratic and systematic risk). However, considering the limited empirical results and the conceivably ambiguous theoretical predictions, we do not phrase our hypotheses to assume a clear direction of influence.

On this ground, we formulate the following hypotheses:

*HP1a.* The overall ESG rating influences systematic firm risk.

**Table 1** Main literature on CSP – firm risk relationship

| *Authors* | *Sample* | *N* | *Period* | *Measure of CSP* | *Measure of firm risk* | *Main empirical results* |
|---|---|---|---|---|---|---|
| McGuire *et al.* (1988) | The largest companies in 20–25 industry groups | 131 | 1983–1985 | Fortune "responsibility to the community/ environment" rating | Market risk: Systematic risk (*Beta*) and Total risk (*SD of total return*) Accounting risk: *debt/ assets, operating leverage, SD of operating income* | Accounting-based performance predicts CSR better than risk measures |
| Fombrun and Shanley (1990) | Large US companies | 292 | 1985 | Fortune surveys | Systematic risk (*Beta*) | Corporate reputation assessments are negatively related to market risk |
| Herremans *et al.* (1993) | Large US manufacturing companies | 38 | 1982–1987 | Fortune "responsibility to the community/ environment" rating | Total risk (*SD of return*) | Companies with better reputation outperform companies with poorer reputation |
| Pava and Krausz (1995) | CEP socially responsible companies | 106 | 1985–1987, 1989–1991 | CEP rankings | Systematic risk (*Beta*) | There is not a clear evidence in the CSP-risk relationship |
| Boutin-Dufresne and Savaria (2004) | Companies listed on the Toronto Stock Exchange | 400 | 1995–1999 | Canadian Social Investment database | Idiosyncratic risk | The adoption of CSR-based codes of conduct lowers companies' overall business risk |
| Bassen *et al.* (2006) | World (utilities) | 44 | 2004 | KLD | Systematic risk (Beta) | Environmental and social performance decreases systematic risk |
| Sharfman and Fernando (2008) | S&P 500 (USA) | 267 | 2002 | KLD | Systematic risk (Beta) | Environmental performance decreases systematic risk |
| Luo and Bhattacharya (2009) | World | 541 | 2002–2003 | Fortune's Most Admired Companies | Idiosyncratic risk | CSP decreases firm idiosyncratic risk |
| Lee and Faff (2009) | World | 400 | 1998–2002 | DJSI | Idiosyncratic risk | Leading (lagging) corporate social performance (CSP) firms exhibit significantly lower (higher) idiosyncratic risk |
| Salama *et al.* (2011) | UK | 1,625 | 1994–2006 | DJSI | Systematic risk (*Beta*) | Environmental performance is inversely related to its systematic financial risk |
| Oikonomou *et al.* (2012) | S&P 500 (USA) | 769 | 1991–2008 | KLD | Systematic risk (*Beta*) | Corporate Social Irresponsibility is positively and strongly related to financial risk |
| Jo and Na (2012) | USA (sinful industries) | 513 | 1991–2010 | KLD | Systematic risk (*Beta*) and Total risk (*SD of daily stock returns*) | Risk reduction through CSR engagement is more significant in controversial industry firms than in non-controversial ones. |

(*continued*)

**Table 1**

| *Authors* | *Sample* | *N* | *Period* | *Measure of CSP* | *Measure of firm risk* | *Main empirical results* |
|---|---|---|---|---|---|---|
| Albuquerque *et al.* (2014) | USA | 4,462 | 2003–2011 | MSCI ESG database | Systematic risk (*Beta*) | CSR decreases systematic risk and increases firm value, especially for firms with high product differentiation |
| Bouslah *et al.* (2013) | USA | 3,100 | 1991–2007 | KLD | Idiosyncratic and total risk | Employee relations and Human Rights are negatively related to firm risk |
| Chang *et al.* (2014) | S&P 500 (USA) | 583 | 1995–2009 | KLD | Systematic (*Beta*) and total risk (*SD stock returns*) | Institutional CSR activities targeting secondary stakeholders are negatively associated with total and systematic risk |
| Jo and Harjoto (2014) | USA | 3,079 | 1991–2009 | KLD | Total risk (*SD of daily stock return*) | Legal (normative) CSR decreases (increases) stock return volatility |
| Harjoto and Jo (2015) | US public companies | 2,034 | 1993–2009 | KLD | Idiosyncratic risk (*Volatility of monthly stock returns*) | CSR activities volatility of stock return and the cost of capital, and increase firm value |
| Sassen *et al.* (2016) | Europe | 921 | 2002–2014 | Asset4 | Systematic (*Beta*), idiosyncratic (*annualized SD of the residuals from the Carhart four-factor model*) and total risk (*SD of daily stock returns*) | Environmental and social performance decreases idiosyncratic risk, whereas total and systematic risk are only affected in environmentally sensitive industries. |
| Benlemlih *et al.* (2018) | UK listed companies | 1,835 | 2005–2013 | Asset4 | Systematic (*Beta*), idiosyncratic (*annualized SD of the residuals from the Carhart four-factor model*) and total risk (*SD of daily stock returns*) | High Environmental and Social performance mitigate firm's total and idiosyncratic risk |
| Chollet and Sandwidi (2018) | World | 3,787 | 2003–2012 | Asset4 | Systematic (*Beta*), idiosyncratic (*SD of the residuals from the CAPM model*) and total risk (*annualized SD of daily stock returns over the past year*) | Firm's good social and governance performance reduces its financial risk and thereby reinforces its commitment to good governance and environmental practices |
| Braune *et al.* (2019) | Companies listed in the S&P 100 index | 133 | 2005–2014 | Asset4 | Systematic Risk (Beta) | A negative CSP-systematic risk, resulting in a higher financial performance, especially in times of instability and depression in financial markets |

**Notes:** MSCI = Morgan Stanley Capital International; DJSI = The Dow Jones Sustainability Indices; KLD = Kinder, Lydenberg, and Domini
**Source**: Authors' own creation

*HP1b.* The overall ESG rating influences a firm's idiosyncratic risk.

The different ESG dimensions consolidated in the overall ESG score might impact firm risk differently (Bouslah *et al.*, 2013). For instance, social performance in terms of customer and employee needs directly influences company success more than aspects of environmental protection. Moreover, the three dimensions of ESG concern different kinds of stakeholders, which could lead to different impacts on companies' financial or risk metrics (Godfrey *et al.*, 2009; Girerd-Potin *et al.*, 2014). Furthermore, investors might differently assess the relevance of the three ESG dimensions to business activity. These distinctions could lead to different market interests (Eccles *et al.*, 2012), which might cause different market reactions to ESG activities. The differing relevance of the ESG aspects within the investment community could also be due to different levels of measurability and therefore reliability of information (Derwall and Verwijmeren, 2007). Recent research does not show clear correlations between the individual CSP measures and firm risk. Therefore, we do not *a priori* assume a significantly negative impact of the individual CSP measures (i.e. ESG dimensions) on firm risk; however, we assume that there is a significant impact. As the aggregated ESG score comprises the performance in three different ESG dimensions, it does not allow for distinct inferences about a potential differing impact of ESG aspects on firm risk. Therefore, companies with the same overall ESG score might have different relationships to firm risk because of different sub-scores in the three dimensions (Bouslah *et al.*, 2013). To shed light on the impact of the three pillars of ESG performance, we state our second – once again non-directional – hypothesis as follows:

*HP2a.* Each ESG dimension influences systematic firm risk individually.

*HP2b.* Each ESG dimension influences idiosyncratic firm risk individually.

## 4. Methodology

### *4.1 Sample and data*

We conducted a cross-sectional study using the ordinary least squares (OLS) approach to test how CSR practices affect firms' risk exposure, testing the three single impacts of ESG components as well as the impact of an overall ESG assessment (Table 2). We considered the 500 large-cap companies belonging to the S&P 500 stock market index, which lists 505 common stocks representing about 80% of the securities traded on the US stock exchange market. According to Bouslah *et al.* (2013), S&P 500 firms are highly visible to media and analysts; thus, they show a low information asymmetry and a more pronounced CSP-firm financial risk relationship.

We also filtered the sample based on Sustainalytics' Controversies Research, which identifies companies involved in incidents and events that may negatively impact stakeholders, the environment, or the company's operations. Controversies are rated on a scale from one to five, with five denoting the most severe controversies with the most significant potential impacts. Controversial categories range from Category 1 (low impact on the environment and society, posing negligible risks to the company) to Category 5 (severe environmental or social impacts, posing serious risks to the company). The topics include business ethics, society and community, environmental operations, environmental supply chain, product and service, employees, social supply chain, customer, governance and public policy. We selected only the companies showing at least a "significant controversy level" (from level three to five of the scale) in line with the research objective.

We worked on these companies to understand whether ESG – analyzed separately and jointly – affects a firm's risk exposure both from a systemic and conjunctural market perspective.

We collected ESG data from three global providers engaged in financial and non-financial disclosure:

**Table 2** Variables

| *Variables* | *Description* | *Measure* | *Source* |
|---|---|---|---|
| *Dependent Variables* | | | |
| BETA | 5-year monthly Systematic Risk estimation | Ratio | Thomson Reuters© |
| VOLATILITY | 5-year standard deviation on daily variation rate of stock prices | Standard Deviation | Yahoo Finance |
| *Independent Variables* | | | |
| SER | The 5-year compound average growth rate of ESG rating | Value | Sustainalytics© |
| ENV | The 5-year compound average growth rate of environmental scores | Value | Sustainalytics© |
| SOC | The 5-year compound average growth rate of social scores | Value | Sustainalytics© |
| GOV | The 5-year compound average growth rate of governance scores | Value | Sustainalytics© |
| *Control variables* | | | |
| TA | The total amount of assets owned by the companies | Value | Morningstar© |
| PE | Company's current share price relative to its per-share earnings | Ratio | Morningstar© |
| EMP | Full-time employees working at companies headquarter or branches within the 2018 fiscal year | Value | Yahoo Finance |
| *GICS Industry Sectors* | Industry taxonomy ranking all companies into 11 industrial sectors | | |
| CD | Consumer Discretionary Sector | 0.1 | GICS® |
| CS | Consumer Staples Sector | 0.1 | GICS® |
| ES | Energy Sector | 0.1 | GICS® |
| FIN | Financials Sector | 0.1 | GICS® |
| HC | Health Care Sector | 0.1 | GICS® |
| IND | Industrials Sector | 0.1 | GICS® |
| IT | Information Technology Sector | 0.1 | GICS® |
| MAT | Materials Sector | 0.1 | GICS® |
| RE | Real Estate Sector | 0.1 | GICS® |
| TS | Telecommunications Services Sector | 0.1 | GICS® |
| US | Utilities Sector | 0.1 | GICS® |

**Source**: Authors' own creation

- Sustainalytics, a rating agency that has adopted the ESG framework since 1992 for sustainability assessment;
- Yahoo Finance; and
- Morningstar, which are investment research and financial management organizations.

Sustainalytics formulates assessments intended to understand how each company is compliant with the ESG components, aiming to mitigate the risk exposure coming from stakeholders' adverse behaviors once they are involved in products, services and business activities. It measures how companies proactively manage the ESG issues that are the most material to their business and assesses companies' ability to mitigate ESG risks. The ESG rating is a quantitative score on a scale of 1–100 based on a balanced scorecard system.

### 4.2 Variables

We used ratio and ordinal scale measures for both dependent and independent variables, including ESG components and controls (Table 2). Moreover, to achieve a broader perspective of risk performance, we followed a double approach, namely, focusing on the systematic risk exposure of S&P companies to consider a market view and dealing with the volatility risk measure to give an overall investor perception.

*4.2.1 Dependent variables.* We measured firms' risk according to a double perspective:

1. A systematic risk through a five-year monthly beta risk estimation (from 2014 to 2018), with the values collected from the Thomson Reuters database.
2. An idiosyncratic risk through a five-year standard deviation of companies daily adjusted close prices (from 2014 to 2018) based on Morningstar's analyses.

The first measure (beta risk) is a ratio that explains the undiversifiable investment risk over the five-year timeframe. Systematic risk depends on a company's sensitivity to changes in market returns. It accounts for the part of the risk that is explained by how a stock's return responds to general market movements that affect the entire universe of securities (Oikonomou *et al.*, 2012; Sharpe, 1964).

The second risk measure (volatility) looks at the idiosyncratic risk of an investment portfolio and market microstructure phenomena through an overview of the price formation process and estimates its daily volatility by standard deviation. The idiosyncratic risk is caused by firm-specific characteristics and is associated with the residual risk that cannot be explained by changes in average market portfolio returns (Luo and Bhattacharya, 2009). Although the traditional portfolio theory shows that investors consider only systematic risk, as portfolio diversification can neutralize the idiosyncratic one, recent studies have argued that financial markets also price in unsystematic risk (Ang *et al.*, 2009).

*4.2.2 Independent variables: environmental, social and governance measures.* In assessing the impacts of the ESG components on companies' risk measures, we considered – standing alone – ESG ratings and the overall ESG assessment employing the five-year geometric mean on an annual basis of the ESG score growth rates issued by Sustainalytics from 2014 to 2018. The geometric mean has been relatively rare in the social sciences (Liern and Pérez-Gladish, 2018). However, we chose this measure because its return is the yield – with continuous compounding – from holding a portfolio for a given period (Evans and Archer, 1968). Thus, we refer to a "buy and hold" approach consistent with the timeframe of the analysis and considering the compound investment's ethical rate compared with the previous annual ESG evaluation.

On this ground, we identified how each pillar of corporate sustainability affects firms' risk to highlight which component plays a driving role in long-term investment risk analysis. Accordingly, we verified the relationship between the full ESG evaluation and corporate risk exposure, pointing out where a reliable synthesis of the three components – issued by the same agency – can steer investors more easily toward a sustainable investment portfolio.

Our interest in testing the impact of all sustainability measures, from a single perspective to an overall evaluation, can explain the main factors underlying a socially responsible investment and whether investors pay attention to deeper information about each ESG component rather than a gross sustainability assessment. Moreover, a five-year average is aligned to the risk measurement timeframe and reflects the buy-and-hold timeframe of a socially responsible investor, besides all the potential up/downgrades of the investment portfolio.

*4.2.3 Control variables.* To improve the reliability of the present analysis, we used four control factors to explain the variability related to risk exposures. In doing so, each control provided a different corporate perspective, such as a market-based measure using the

multiple price/earnings regarding financial statements disclosed in 2018, an accounting-based measure expressed by the total assets of companies, and an organization-based measure reporting the number of employees that proxies a firm's dimension. Finally, we also considered the industry sectors to which companies belong following the Global Industry Classification Standard (GICS), an industry taxonomy applied for the first time in 1999 by Morgan Stanley Capital International and S&P that ranks companies into 11 industrial sectors.

### *4.3 Descriptive statistics*

Table 3 highlights the descriptive statistics for risk measures and explanatory and control variables. Regarding risk measures, the mean (median) systematic risk is 1.01 (1.01), whereas the mean (median) idiosyncratic risk is 0.117 (0.126). The risk measure average and median values align with prior studies on firm risk (Bouslah *et al.*, 2013; Sassen *et al.*, 2016). Meanwhile, ESG scores are calculated through the five-year compound average growth rate according to the Sustainalytics assessment. The mean (median) scores in the sample are −0.003 (−0.004) for SER, 0.009 (0.008) for ENV, −0.007 (−0.009) for SOC and −0.011 (−0.010) for GOV.

Moreover, Table 4 shows that idiosyncratic risk is significantly negatively correlated with the overall ESG rating and the social performance score at the 5% level. Correlation coefficients suggest that companies displaying a suitable CSP have a lower unsystematic risk. On the contrary, the association between idiosyncratic risk and GOV seems to be positive. As the singular ESG dimension and the full rating are significantly related, we decided to test the overall assessment and the ESG sub-dimensions in separate regression models. Indeed, given the correlation of some of the explanatory variables, for each model, we checked for multicollinearity conditions through the variance inflation factor (VIF). A VIF greater than 10 implies several multicollinearity problems. However, in our data, no VIF exceeds 4,697 (Table 3), so multicollinearity should not bias the results.

**Table 3** Descriptive statistics

| *Variables* | *Obs.* | *Mean* | *Median* | *SD* | *Min* | *Max* |
|---|---|---|---|---|---|---|
| *Dependent variables* | | | | | | |
| BETA | 132 | 1.01 | 1.01 | 0.420 | −0.0200 | 2.58 |
| VOLATILITY | 132 | 0.117 | 0.126 | 0.0306 | 0.0150 | 0.144 |
| *Independent variables* | | | | | | |
| SER | 132 | −0.00302 | −0.00406 | 0.0236 | −0.0518 | 0.0848 |
| ENV | 132 | 0.00910 | 0.00812 | 0.0278 | −0.0739 | 0.0910 |
| SOC | 132 | −0.00725 | −0.00979 | 0.0287 | −0.0665 | 0.0863 |
| GOV | 132 | −0.0115 | −0.0103 | 0.0224 | −0.0733 | 0.0606 |
| *Control variables* | | | | | | |
| TA | 132 | 1.54e+008 | 4.49e+007 | 3.92e+008 | 2.27e+006 | 2.62e+009 |
| PE | 132 | 25.5 | 19.3 | 36.6 | 5.02 | 388.00 |
| EMP | 132 | 1.04e+005 | 5.30e+004 | 2.08e+005 | 2.66e+003 | 2.20e+006 |
| CD | 132 | 0.167 | 0.00 | 0.374 | 0.00 | 1.00 |
| CS | 132 | 0.121 | 0.00 | 0.328 | 0.00 | 1.00 |
| ES | 132 | 0.0455 | 0.00 | 0.209 | 0.00 | 1.00 |
| FIN | 132 | 0.114 | 0.00 | 0.319 | 0.00 | 1.00 |
| HC | 132 | 0.205 | 0.00 | 0.405 | 0.00 | 1.00 |
| IND | 132 | 0.152 | 0.00 | 0.360 | 0.00 | 1.00 |
| IT | 132 | 0.0833 | 0.00 | 0.277 | 0.00 | 1.00 |
| MAT | 132 | 0.0455 | 0.00 | 0.209 | 0.00 | 1.00 |
| RE | 132 | 0.00758 | 0.00 | 0.0870 | 0.00 | 1.00 |
| TS | 132 | 0.0152 | 0.00 | 0.123 | 0.00 | 1.00 |

**Source**: Authors' own creation

**Table 4** Correlation matrix and variance inflation factors (VIF) estimation

| *Variables* | | *1* | *2* | *3* | *4* | *5* | *6* | *7* | *8* | *9* | *10* | *11* | *12* | *13* | *14* | *15* | *16* | *17* | *18* | *19* | *VIF1* | *VIF2* | *VIF3* | *VIF4* |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| BETA | (1) | 1 | | | | | | | | | | | | | | | | | | | | | | |
| VOLA. | (2) | −0.11 | 1 | | | | | | | | | | | | | | | | | | | | | |
| SER | (3) | 0.02 | −0.19* | 1 | | | | | | | | | | | | | | | | | 1.626 | – | 1.626 | – |
| ENV | (4) | 0.08 | −0.16 | 0.63* | 1 | | | | | | | | | | | | | | | | – | 1.218 | – | 1.218 |
| SOC | (5) | 0.07 | −0.22* | 0.79* | 0.23* | 1 | | | | | | | | | | | | | | | – | 1.180 | – | 1.180 |
| GOV | (6) | 0.01 | 0.10 | 0.43* | 0.02 | 0.14 | 1 | | | | | | | | | | | | | | – | 1.705 | – | 1.705 |
| TA | (7) | −0.02 | −0.42* | −0.02 | 0.03 | −0.04 | 0.01 | 1 | | | | | | | | | | | | | 1.084 | 1.094 | 1.084 | 1.094 |
| PE | (8) | −0.10 | 0.00 | 0.11 | 0.03 | 0.04 | 0.16 | 0.02 | 1 | | | | | | | | | | | | 1.159 | 1.188 | 1.159 | 1.188 |
| EMP | (9) | 0.14 | 0.09 | 0.13 | 0.21* | 0.11 | −0.05 | −0.11 | 0.14 | 1 | | | | | | | | | | | 4.140 | 4.195 | 4.140 | 4.195 |
| CD | (10) | 0.18* | −0.09 | −0.16 | −0.04 | −0.12 | −0.11 | 0.00 | 0.10 | −0.11 | 1 | | | | | | | | | | 3.631 | 3.699 | 3.631 | 3.699 |
| CS | (11) | −0.26* | 0.11 | 0.05 | 0.04 | 0.01 | 0.09 | −0.04 | 0.20* | −0.09 | −0.16 | 1 | | | | | | | | | 1.932 | 1.964 | 1.932 | 1.964 |
| ES | (12) | −0.02 | 0.09 | 0.08 | 0.04 | 0.09 | 0.06 | −0.03 | −0.05 | 0.00 | −0.09 | −0.07 | 1 | | | | | | | | 4.035 | 4.197 | 4.035 | 4.19 |
| FIN | (13) | 0.17 | 0.13 | 0.09 | 0.24* | −0.01 | 0.04 | −0.10 | −0.03 | 0.60 | −0.15 | −0.13 | −0.07 | 1 | | | | | | | 4.593 | 4.697 | 4.593 | 4.697 |
| HC | (14) | −0.08 | −0.29* | −0.10 | 0.00 | −0.02 | −0.17 | 0.24 | −0.09 | −0.11 | −0.21* | −0.18* | −0.10 | −0.17 | 1 | | | | | | 4.092 | 4.088 | 4.092 | 4.088 |
| IND | (15) | 0.11 | 0.15 | −0.14 | −0.17 | −0.11 | 0.06 | −0.07 | −0.01 | −0.12 | −0.18* | −0.16 | −0.09 | −0.15 | −0.21* | 1 | | | | | 3.005 | 3.083 | 3.005 | 3.083 |
| IT | (16) | −0.04 | −0.12 | 0.28* | 0.12 | 0.25* | −0.02 | −0.01 | −0.04 | −0.03 | −0.13 | −0.12 | −0.06 | −0.11 | −0.15 | −0.14 | 1 | | | | 2.092 | 2.099 | 2.092 | 2.099 |
| MAT | (17) | 0.22* | 0.04 | 0.00 | −0.12 | 0.03 | 0.06 | −0.02 | −0.07 | −0.06 | −0.09 | −0.08 | −0.04 | −0.08 | −0.11 | −0.10 | −0.07 | 1 | | | 1.192 | 1.204 | 1.192 | 1.204 |
| RE | (18) | 0.13 | 0.02 | −0.05 | −0.04 | −0.08 | 0.07 | 0.00 | −0.04 | −0.03 | −0.03 | −0.03 | −0.01 | −0.03 | −0.04 | −0.04 | −0.03 | −0.02 | 1 | | 1.410 | 1.424 | 1.410 | 1.424 |
| TS | (19) | −0.1 | 0.03 | 0.08 | −0.02 | 0.05 | 0.12 | −0.04 | 0.06 | 0.07 | −0.05 | −0.04 | −0.02 | −0.05 | −0.06 | −0.06 | −0.04 | −0.03 | −0.01 | 1 | 1.084 | 1.094 | 1.084 | 1.094 |

**Notes:** This table shows the correlation coefficients for risk measures, ESG ratings and control variables. All variables are explained in Table 1. Stars indicate significance at the 5% level ($p < 0.05$). VIF1 refers to Model 1; VIF2 refers to Model 2; VIF3 refers to Model 3; VIF4 refers to Model 4

**Source**: Authors' own creation

## 5. Analysis and discussion of results

We adopted a cross-sectional approach using an OLS regression analysis. To test the impact of ESG ratings on firm risk exposure, we developed four separate models, two for each risk measure. All control factors of our research framework were included in each of them, as shown in Table 2.

- (Model 1) – $BETA = \alpha_0 + \alpha_1 SERi + \alpha_2 TAi + \alpha_3 EMPi + \alpha_4 PEi + \sum_{k=1}^{n} \alpha_k sector_i + e_i$
- (Model 2) – $VOLATILITY = \delta_0 + \delta_1 SERi + \delta_2 TAi + \delta_3 EMPi + \delta_4 PEi + \sum_{k=1}^{n} \delta_k sector_i + e_i$
- (Model 3) – $BETA = \gamma_0 + \gamma_1 ENVi + \gamma_2 SOCi + \gamma_3 GOVi + \gamma_4 TAi + \gamma_5 EMPi + \gamma_6 PEi + \sum_{k=1}^{n} \gamma_k sector_i + e_i$
- (Model 4) – $VOLATILITY = \eta_0 + \eta_1 ENVi + \eta_2 SOCi + \eta_3 GOVi + \eta_4 TAi + \eta_5 EMPi + \eta_6 PEi + \sum_{k=1}^{n} \eta_k sector_i + e_i$

Model 1 estimates how an overall ESG assessment impacts systematic risk; Model 2 analyzes whether the single ESG dimensions mitigate firm systematic risk; Model 3 explores the impact of the full ESG rating on firm idiosyncratic risk, and Model 4 verifies whether the three ESG pillars decrease unsystematic risk.

The impacts of the full rating (Model 1) and the single ESG components on beta risk measure (Model 3), as shown in Table 4, do not significantly affect systematic risk exposure. Indeed, in line with previous literature (Sassen *et al.*, 2016), BETA is driven more by the industry context ($p_{sector}<0.01$) than by firm-specific dynamics. For the other riskiness versant (Table 5) (i.e. price volatility), the models (Model 2) highlight a negative and significant effect of the overall ESG assessment on firms' risk exposure ($p_{SER}<0.01$). Moreover, regarding the singular ESG dimensions (Model 4), both the corporate environmental performance ($p_{ENV}<0.05$) and the CSP ($p_{SOC}<0.05$) tend to adjust the idiosyncratic risk of investors' portfolios. Otherwise, corporate governance performance is

**Table 5** OLS regression models

| *Variables* | *Model 1 Dependent variable BETA (*HP1a*)* | *Model 2 Dependent variable VOLATILITY (*HP1b*)* | *Model 3 Dependent variable BETA (*HP2a*)* | *Model 4 Dependent variable VOLATILITY (*HP2b*)* |
|---|---|---|---|---|
| *Independent variables* | | | | |
| SER (*HP1a*; *HP2a*) | 2.00330 | −0.334014*** | – | – |
| ENV (*HP1b*: *HP2b*) | – | – | 0.809615 | −0.0117164** |
| SOC (*HP1b*: *HP2b*) | – | – | 1.63573 | −0.0118367** |
| GOV (*HP1b*: *HP2b*) | – | – | 0.593593 | 0.0576531 |
| *Control variables* | | | | |
| TA | 1.19753e-010 | −4.19586e-013 | 1.09090e-010 | 1.82692e-012 |
| PE | 0.000107313 | −0.000299401*** | 0.000121206 | −0.000303409*** |
| EMP | −2.26273e-07 | 3.97447e-09 | −2.25108e-07 | −5.55595e-010 |
| CD | 0.962508*** | −0.0218872 | 0.945059*** | −0.0144256 |
| CS | 0.496979*** | −0.00356749 | 0.477417** | 0.000217982 |
| ES | 0.673639*** | 0.00206031 | 0.643907*** | 0.00519251 |
| FIN | 0.853606*** | −0.00160702 | 0.840404*** | −0.000457210 |
| HC | 0.691709*** | −0.0261151* | 0.669643*** | −0.0200388 |
| IND | 0.887219*** | −0.00598573 | 0.872078*** | −0.00333024 |
| IT | 0.646716*** | −0.0175785 | 0.623260*** | −0.0165293 |
| MAT | 1.16196*** | −0.00719168 | 1.14502*** | −0.00700385 |
| RE | 1.40157*** | −0.00777673 | 1.40187*** | −0.0121903 |
| TS | 0.284725 | −0.00364110 | 0.269371*** | 0.000700993 |
| $R^2$ | 0.372122 | 0.326039 | 0.379762 | 0.352658 |
| $R^2$_Adj | 0.288405 | 0.237025 | 0.283414 | 0.253067 |
| *Model F* | 4.445002*** | 3.662790*** | −36.90004*** | 3.541068*** |

**Notes:** Refer to Table 1. for the description of the variables; *$p < 0.1$; **$p < 0.05$; ***$p < 0.01$; Model 1 tests *HP1a*; Model 2 tests *HP1b*; Model 3 tests *HP2a*; Model 4 tests *HP2b*
**Source**: Authors' own creation

non-significant for both risk measures. Accordingly, we can only support *Hp1b* for the overall assessment and partially *Hp2b* for the three ESG pillars.

It means that ethical investors can adjust their perceived idiosyncratic risk mainly through an overall ESG assessment of controversial companies. Indeed, an overall ESG rating helps socially responsible investors save time in asset allocation. It shows the consistency between the ESG perspectives, thus lowering their information asymmetry.

## 6. Conclusion and practical implications

This research work contributes to the risk management research field by investigating how additional and non-financial disclosures regarding sustainability issues decrease information asymmetries in investors' decision-making and stakeholders' relations. Therefore, further information available for investors can imply a lower risk perception if it is easily accessible on the market.

The literature shows limited evidence on the relationship between CSP and firm risk with regard to controversial companies. This study used a large sample of 132 contentious S&P corporations spanning the five-year period from 2014 to 2018. To analyze the impact of ESG elements on company risk, two distinct risk assessments were adopted: systemic and individualistic.

We found that the higher the overall ESG score, as well as the environmental and social components, the lower the idiosyncratic risk. In line with previous research (Sassen *et al.*, 2016), our results suggest that systematic risk (BETA) is driven more by industry-specific dynamics than by firm-specific dynamics and, thus, is less responsive to the singular ESG dimensions.

Moreover, empirical findings support the assumptions provided by stakeholder management (Freeman, 2010) and the risk management theory (Godfrey, 2005) that highlight a negative CSP-firm risk relationship. According to the stakeholder management approach, risk reduction might result from meeting the external stakeholders' instances, leading to fewer financial risks and lower volatility of a firm's stock in the capital market. For the risk management theory, a higher CSP can build and improve moral capital, making stakeholders more loyal to the company. They might be less overly sensitive to negative news, leading to fewer financial risks and less volatility and lower market risks.

In addition, as we cannot detect a significant impact of corporate governance performance on both risk measures, the findings suggest that companies' top managers do not over-invest in CSR for their private benefits, as predicted by the managerial opportunism theory (Preston and O'bannon, 1997). Indeed, controversial companies might be under pressure to improve their corporate governance, thus potentially biasing the corporate governance performance score (Bouslah *et al.*, 2013). On this ground, we can frame our conclusions from three main perspectives.

*Investor's perspective*. Investors seem to pay attention to a full rating, aiming to manage their investment risk. On this ground, CSR could be framed as a reliable risk-reduction tool over periods featured by high market volatility. Accordingly, following a "buy-and-hold" strategy (i.e. one buys a stock and holds it for a long time) (Malkiel and Fama, 1970), an investor would handle the risk portfolio through a CSR stock-picking diversification whether its investment covers a multi-year timeframe. Indeed, an overall ESG assessment could decrease investors' risk perception once the lower transaction costs in getting additional information allow an investor to undertake a socially responsible investment within a short timeframe. Such evidence is in line with the previous literature (Sassen *et al.*, 2016). Hence, an overall ESG rating is helpful for socially responsible investors in terms of saving time in asset allocation on sustainable blue chip securities.

Conversely, concerning systematic risk, investors might only refer to the extent of the regression parameters in their portfolio management due to the total industry sectors' positive impact on beta risk. Therefore, they could identify which have a lesser, although significant, impact on systematic risk growth.

*Stakeholders' perspective.* According to a stakeholder management perspective, social and environmental performances tend to be relevant in decreasing risk, as they are strongly related to the external environment (e.g. community, customers). This implies that a positive corporate image and reputation influence the impact of ESG factors on firm risk. On this ground, investing in environmental and social performance is particularly fruitful for controversial companies, as those firms suffer from stakeholders' pressure and skepticism, as well as regulatory and reputational risks.

*Company perspective*. Regarding managerial implications, our results suggest that managers could improve a company's reputation by engaging in socially responsible activities, thus increasing equity fundraising on the stock exchange market. Specifically, controversial firms might leverage ESG commitment to hiding their practices that negatively impact stakeholder relations (Bouslah *et al.*, 2013).

In addition, the positive CSP-CFP linkage based on the single ESG components should be considered in shaping corporate strategies and practices, as managers should be able to identify which component has to be managed to decrease idiosyncratic risk. For instance, the inclusion of ESG in a firm's operations could support managers in aligning their companies' strategies with stakeholder interests.

## 7. Limitations and future research

For the limitations of our research, we used the ESG and sustainability scores issued by just one ESG rating agency. Many agencies could apply divergent ESG methodologies in social rating issuance, implying different assessments of the same firms' clusters. Finally, we did not consider the impact of CSR practices on information asymmetry [e.g. bid-ask spread (Chiang and Venkatesh, 1988)].

To improve the reliability of the work, we propose a "research agenda" in four different directions. First, we could extend the study to other industry contexts to verify whether the empirical findings can be confirmed. Second, as the CSP-CFP association still shows ambiguous results, we could analyze the CSP-CFP reverse causation (Preston and O'bannon, 1997; Salzmann *et al.*, 2005). In addition, we should integrate other CSP measures to understand whether these results can be accepted by adopting different ESG rating methodologies. Finally, we could analyze whether CSP can improve a company's reputation according to a stakeholder management perspective (Freeman, 2010).

## References


Ang, A., Hodrick, R.J., Xing, Y. and Zhang, X. (2009), "High idiosyncratic volatility and low returns: International and further US evidence", *Journal of Financial Economics*, Vol. 91 No. 1, p. 123.

Aupperle, K.E., Carroll, A.B. and Hatfield, J.D. (1985), "An empirical examination of the relationship between corporate social responsibility and profitability", *Academy of Management Journal*, Vol. 28 No. 2, pp. 446-463.

Banerjee, S.B. and Bonnefous, A.M. (2011), "Stakeholder management and sustainability strategies in the French nuclear industry", *Business Strategy and the Environment*, Vol. 20 No. 2, pp. 124-140.

Barnea, A. and Rubin, A. (2010), "Corporate social responsibility as a conflict between shareholders", *Journal of Business Ethics*, Vol. 97 No. 1, pp. 71-86.

Barnett, M.L. and Salomon, R.M. (2012), "Does it pay to be really good? Addressing the shape of the relationship between social and financial performance", *Strategic Management Journal*, Vol. 33 No. 11, pp. 1304-1320.

Bassen, A., Meyer, K. and Schlange, J. (2006), "The influence of corporate responsibility on the cost of capital", available at SSRN 984406.

Bassen, A. and Senkl, D. (2011), "ESG-Environmental, social, governance issues", *Die Betriebswirtschaft*, Vol. 71 No. 5, p. 506.

Berman, S.L., Wicks, A.C., Kotha, S. and Jones, T.M. (1999), "Does stakeholder orientation matter? The relationship between stakeholder management models and firm financial performance", *Academy of Management Journal*, Vol. 42 No. 5, pp. 488-506.

Bhattacharya, C.B. and Sen, S. (2004), "Doing better at doing good: when, why, and how consumers respond to corporate social initiatives", *California Management Review*, Vol. 47 No. 1, pp. 9-24.

Brown, T.J. and Dacin, P.A. (1997), "The company and the product: corporate associations and consumer product responses", *Journal of Marketing*, Vol. 61 No. 1, pp. 68-84.

Boatright, J.R. (2013), *Ethics in Finance*, John Wiley & Sons, New York, NY.

Bouslah, K., Kryzanowski, L. and M'Zali, B. (2013), "The impact of the dimensions of social performance on firm risk", *Journal of Banking & Finance*, Vol. 37 No. 4, pp. 1258-1273.

Boutin-Dufresne, F. and Savaria, P. (2004), "Corporate social responsibility and financial risk", *The Journal of Investing*, Vol. 13 No. 1, pp. 57-66.

Brammer, S.J. and Pavelin, S. (2006), "Corporate reputation and social performance: the importance of fit", *Journal of Management Studies*, Vol. 43 No. 3, pp. 435-455.

Brammer, S., Brooks, C. and Pavelin, S. (2006), "Corporate social performance and stock returns: UK evidence from disaggregate measures", *Financial Management*, Vol. 35 No. 3, pp. 97-116.

Cai, Y., Jo, H. and Pan, C. (2012), "Doing well while doing bad? CSR in controversial industry sectors", *Journal of Business Ethics*, Vol. 108 No. 4, pp. 467-480.

Carroll, A.B. (1979), "A three-dimensional conceptual model of corporate performance", *Academy of Management Review*, Vol. 4 No. 4, pp. 497-505.

Cespa, G. and Cestone, G. (2007), "Corporate social responsibility and managerial entrenchment", *Journal of Economics & Management Strategy*, Vol. 16 No. 3, pp. 741-771.

Chang, K., Kim, I. and Li, Y. (2014), "The heterogeneous impact of corporate social responsibility activities that target different stakeholders", *Journal of Business Ethics*, Vol. 125 No. 2, pp. 211-234.

Cheng, B., Ioannou, I. and Serafeim, G. (2014), "Corporate social responsibility and access to finance", *Strategic Management Journal*, Vol. 35 No. 1, pp. 5-23.

Chiang, R. and Venkatesh, P.C. (1988), "Insider holdings and perceptions of information asymmetry: a note", *The Journal of Finance*, Vol. 43 No. 4, pp. 1041-1048.

Cochran, P.L. (2007), "The evolution of corporate social responsibility", *Business Horizons*, Vol. 50 No. 6, pp. 449-454.

Cornell, B. and Shapiro, A.C. (1987), "Corporate stakeholders and corporate finance", *Financial Management*, Vol. 16 No. 1, pp. 5-14.

Crowther, D. and Aras, G. (2008), "Corporate social responsibility", Bookboon.

Dahlsrud, A. (2008), "How corporate social responsibility is defined: an analysis of 37 definitions", *Corporate social Responsibility and Environmental Management*, Vol. 15 No. 1, pp. 1-13.

De Roeck, K. and Delobbe, N. (2012), "Do environmental CSR initiatives serve organizations' legitimacy in the oil industry? Exploring employees' reactions through organizational identification theory", *Journal of Business Ethics*, Vol. 110 No. 4, pp. 397-412.

Derwall, J. and Verwijmeren, P. (2007), "Corporate governance and the cost of equity capital: evidence from GMI's governance rating", *European Centre for Corporate Engagement Research Note*, Vol. 6 No. 1, pp. 1-11.

Du, S. and Vieira, E.T. (2012), "Striving for legitimacy through corporate social responsibility: insights from oil companies", *Journal of Business Ethics*, Vol. 110 No. 4, pp. 413-427.

Eccles, R.G., Ioannou, I. and Serafeim, G. (2012), "The impact of a corporate culture of sustainability on corporate behavior and performance", No. W17950, Cambridge, MA, USA: National Bureau of Economic Research.

Eccles, R.G., Ioannou, I. and Serafeim, G. (2014), "The impact of corporate sustainability on organizational processes and performance", *Management Science*, Vol. 60 No. 11, pp. 2835-2857.

Evans, J.L. and Archer, S.H. (1968), "Diversification and the reduction of dispersion: an empirical analysis", *The Journal of Finance*, Vol. 23 No. 5, pp. 761-767.

Fombrun, C. and Shanley, M. (1990), "What's in a name? Reputation building and corporate strategy", *Academy of Management Journal*, Vol. 33 No. 2, pp. 233-258.

Freeman, R.E. (2010), *Strategic Management: A Stakeholder Approach*, Cambridge university press, Cambridge.

Friedman, M. (1970), "A Friedman doctrine: the social responsibility of business is to increase its profits", *The New York Times Magazine*, Vol. 13, pp. 32-33.

Godfrey, P.C. (2005), "The relationship between corporate philanthropy and shareholder wealth: a risk management perspective", *Academy of Management Review*, Vol. 30 No. 4, pp. 777-798.

Godfrey, P.C., Merrill, C.B. and Hansen, J.M. (2009), "The relationship between corporate social responsibility and shareholder value: an empirical test of the risk management hypothesis", *Strategic Management Journal*, Vol. 30 No. 4, pp. 425-445.

Gramlich, D. and Finster, N. (2013), "Corporate sustainability and risk", *Journal of Business Economics*, Vol. 83 No. 6, pp. 631-664.

Girerd-Potin, I., Jimenez-Garcés, S. and Louvet, P. (2014), "Which dimensions of social responsibility concern financial investors?", *Journal of Business Ethics*, Vol. 121 No. 4, pp. 559-576.

Greening, D.W. and Turban, D.B. (2000), "Corporate social performance as a competitive advantage in attracting a quality workforce", *Business & Society*, Vol. 39 No. 3, pp. 254-280.

Griffin, J.J. and Mahon, J.F. (1997), "The corporate social performance and corporate financial performance debate: twenty-five years of incomparable research", *Business & Society*, Vol. 36 No. 1, pp. 5-31.

Heinkel, R., Kraus, A. and Zechner, J. (2001), "The effect of green investment on corporate behavior", *The Journal of Financial and Quantitative Analysis*, Vol. 36 No. 4, pp. 431-449.

Herremans, I.M., Akathaporn, P. and McInnes, M. (1993), "An investigation of corporate social responsibility reputation and economic performance", *Accounting, Organizations and Society*, Vol. 18 Nos 7/8, pp. 587-604.

Hillman, A.J. and Keim, G.D. (2001), "Shareholder value, stakeholder management, and social issues: what's the bottom line?", *Strategic Management Journal*, Vol. 22 No. 2, pp. 125-139.

Hockerts, K. and Moir, L. (2004), "Communicating corporate responsibility to investors: the changing role of the investor relations function", *Journal of Business Ethics*, Vol. 52 No. 1, pp. 85-98.

Humphrey, J.E., Lee, D.D. and Shen, Y. (2012), "Does it cost to be sustainable?", *Journal of Corporate Finance*, Vol. 18 No. 3, pp. 626-639.

Jo, H. and Na, H. (2012), "Does CSR reduce firm risk? Evidence from controversial industry sectors", *Journal of Business Ethics*, Vol. 110 No. 4, pp. 441-456.

Kempf, A. and Osthoff, P. (2007), "The effect of socially responsible investing on portfolio performance", *European Financial Management*, Vol. 13 No. 5, pp. 908-922.

Lee, D.D. and Faff, R.W. (2009), "Corporate sustainability performance and idiosyncratic risk: a global perspective", *Financial Review*, Vol. 44 No. 2, pp. 213-237.

Liern, V. and Pérez-Gladish, B. (2018), "Ranking corporate sustainability: a flexible multidimensional approach based on linguistic variables", *International Transactions in Operational Research*, Vol. 25 No. 3, pp. 1081-1100.

Lindgreen, A., Maon, F., Reast, J. and Yani-De-Soriano, M. (2012), "Guest editorial: corporate social responsibility in controversial industry sectors", *Journal of Business Ethics*, Vol. 110 No. 4, pp. 393-395.

Lu, W., Chau, K.W., Wang, H. and Pan, W. (2014), "A decade's debate on the nexus between corporate social and corporate financial performance: a critical review of empirical studies 2002–2011", *Journal of Cleaner Production*, Vol. 79, pp. 195-206.

Luo, X. and Bhattacharya, C.B. (2009), "The debate over doing good: corporate social performance, strategic marketing levers, and firm-idiosyncratic risk", *Journal of Marketing*, Vol. 73 No. 6, pp. 198-213.

McGuire, J.B., Sundgren, A. and Schneeweis, T. (1988), "Corporate social responsibility and firm financial performance", *Academy of management Journal*, Vol. 31 No. 4, pp. 854-872.

McLachlan, J. and Gardner, J. (2004), "A comparison of socially responsible and conventional investors", *Journal of Business Ethics*, Vol. 52 No. 1, pp. 11-25.2.

Mackey, A., Mackey, T.B. and Barney, J.B. (2007), "Corporate social responsibility and firm performance: investor preferences and corporate strategies", *Academy of Management Review*, Vol. 32 No. 3, pp. 817-835.

Margolis, J.D. and Walsh, J.P. (2001), *People and Profits?: The Search for a Link between a Company's Social and Financial Performance*, Psychology Press, London.

Margolis, J.D. and Walsh, J.P. (2003), "Misery loves companies: rethinking social initiatives by business", *Administrative Science Quarterly*, Vol. 48 No. 2, pp. 268-305.

Margolis, J.D., Elfenbein, H.A. and Walsh, J.P. (2007), "Does it pay to be good? A meta-analysis and redirection of research on the relationship between corporate social and financial performance", *Ann Arbor*, Vol. 1001 Nos 48109/1234, pp. 1-68.

Margolis, J.D., Elfenbein, H.A. and Walsh, J.P. (2009), "Does it pay to be good... and does it matter? A meta-analysis of the relationship between corporate social and financial performance", *SSRN Electronic Journal*.

Navarro, P. (1988), "Why do corporations give to charity?", *The Journal of Business*, Vol. 61 No. 1, p. 65.

Oikonomou, I., Brooks, C. and Pavelin, S. (2012), "The impact of corporate social performance on financial risk and utility: a longitudinal analysis", *Financial Management*, Vol. 41 No. 2, pp. 483-515.

Orlitzky, M. and Benjamin, J.D. (2001), "Corporate social performance and firm risk: a meta-analytic review", *Business & Society*, Vol. 40 No. 4, pp. 369-396.

Orlitzky, M., Schmidt, F.L. and Rynes, S.L. (2003), "Corporate social and financial performance: a meta-analysis", *Organization Studies*, Vol. 24 No. 3, pp. 403-441.

Palazzo, G. and Richter, U. (2005), "CSR business as usual? The case of the tobacco industry", *Journal of Business Ethics*, Vol. 61 No. 4, pp. 387-401.

Pava, M.L. and Krausz, J.J. (1995), "Corporate responsibility and financial performance: the paradox of social cost", Quorum, London.

Prahalad, C.K. and Hamel, G. (1994), "Strategy as a field of study: why search for a new paradigm?", *Strategic Management Journal*, Vol. 15 No. 2, pp. 5-16.

Preston, L.E. and O'bannon, D.P. (1997), "The corporate social-financial performance relationship: a typology and analysis", *Business & Society*, Vol. 36 No. 4, pp. 419-429.

Reast, J., Maon, F., Lindgreen, A. and Vanhamme, J. (2013), "Legitimacy-seeking organizational strategies in controversial industries: a case study analysis and a bidimensional model", *Journal of Business Ethics*, Vol. 118 No. 1, pp. 139-153.

Renneboog, L., Ter Horst, J. and Zhang, C. (2008), "Socially responsible investments: institutional aspects, performance, and investor behavior", *Journal of Banking & Finance*, Vol. 32 No. 9, pp. 1723-1742.

Rodrigo, P., Duran, I.J. and Arenas, D. (2016), "Does it really pay to be good, everywhere? A first step to understand the corporate social and financial performance link in Latin American controversial industries", *Business Ethics: A European Review*, Vol. 25 No. 3, pp. 286-309.

Salama, A., Anderson, K. and Toms, J.S. (2011), "Does community and environmental responsibility affect firm risk? Evidence from UK panel data 1994–2006", *Business Ethics: A European Review*, Vol. 20 No. 2, pp. 192-204.

Salzmann, O., Ionescu-Somers, A. and Steger, U. (2005), "The business case for corporate sustainability: literature review and research options", *European Management Journal*, Vol. 23 No. 1, pp. 27-36.

Sassen, R., Hinze, A.K. and Hardeck, I. (2016), "Impact of ESG factors on firm risk in Europe", *Journal of Business Economics*, Vol. 86 No. 8, pp. 867-904.

Sharfman, M.P. and Fernando, C.S. (2008), "Environmental risk management and the cost of capital", *Strategic Management Journal*, Vol. 29 No. 6, pp. 569-592.

Sharpe, W.F. (1964), "Capital asset prices: a theory of market equilibrium under conditions of risk", *The Journal of Finance*, Vol. 19 No. 3, pp. 425-442.

Statman, M. (2000), "Socially responsible mutual funds (corrected)", *Financial Analysts Journal*, Vol. 56 No. 3, pp. 30-39.

Sturdivant, F.D. and Ginter, J.L. (1977), "Corporate social responsiveness: management attitudes and economic performance", *California Management Review*, Vol. 19 No. 3, pp. 30-39.

Trumpp, C. and Guenther, T. (2017), "Too little or too much? Exploring U-shaped relationships between corporate environmental performance and corporate financial performance", *Business Strategy and the Environment*, Vol. 26 No. 1, pp. 49-68.

Turban, D.B. and Greening, D.W. (1997), "Corporate social performance and organizational attractiveness to prospective employees", *Academy of Management Journal*, Vol. 40 No. 3, pp. 658-672.

Ullmann, A.A. (1985), "Data in search of a theory: a critical examination of the relationships among social performance, social disclosure, and economic performance of US firms", *The Academy of Management Review*, Vol. 10 No. 3, pp. 540-557.

Van Beurden, P. and Gössling, T. (2008), "The worth of values–a literature review on the relation between corporate social and financial performance", *Journal of Business Ethics*, Vol. 82 No. 2, p. 407.

Waddock, S.A. and Graves, S.B. (1997), "The corporate social performance–financial performance link", *Strategic Management Journal*, Vol. 18 No. 4, pp. 303-319.

Wood, D.J. (1991), "Corporate social performance revisited", *The Academy of Management Review*, Vol. 16 No. 4, pp. 691-718.

Wright, P. and Ferris, S.P. (1997), "Agency conflict and corporate strategy: the effect of divestment on corporate value", *Strategic Management Journal*, Vol. 18 No. 1, pp. 77-83.

Yani-de-Soriano, M., Javed, U. and Yousafzai, S. (2012), "Can an industry be socially responsible if its products harm consumers? The case of online gambling", *Journal of Business Ethics*, Vol. 110 No. 4, pp. 481-497.

Yoon, Y., Gürhan-Canli, Z. and Schwarz, N. (2006), "The effect of corporate social responsibility (CSR) activities on companies with bad reputations", *Journal of Consumer Psychology*, Vol. 16 No. 4, pp. 377-390.

## Further readings

Fama, E.F. and French, K.R. (2007), "Disagreement, tastes, and asset prices", *Journal of Financial Economics*, Vol. 83 No. 3, pp. 667-689.

Flammer, C. (2013), "Corporate social responsibility and shareholder reaction: the environmental awareness of investors", *Academy of Management Journal*, Vol. 56 No. 3, pp. 758-781.

Ioannou, I. and Serafeim, G. (2015), "The impact of corporate social responsibility on investment recommendations: analysts' perceptions and shifting institutional logics", *Strategic Management Journal*, Vol. 36 No. 7, pp. 1053-1081.

Jiraporn, P., Jiraporn, N., Boeprasert, A. and Chang, K. (2014), "Does corporate social responsibility (CSR) improve credit ratings? Evidence from geographic identification", *Financial Management*, Vol. 43 No. 3, pp. 505-531.

Jo, H. and Harjoto, M.A. (2011), "Corporate governance and firm value: the impact of corporate social responsibility", *Journal of Business Ethics*, Vol. 103 No. 3, pp. 351-383.

Jo, H. and Harjoto, M.A. (2012), "The causal effect of corporate governance on corporate social responsibility", *Journal of Business Ethics*, Vol. 106 No. 1, pp. 53-72.

Kilian, T. and Hennigs, N. (2014), "Corporate social responsibility and environmental reporting in controversial industries", *European Business Review*, Vol. 26 No. 1, pp. 79-101.

McWilliams, A. and Siegel, D. (2001), "Corporate social responsibility: a theory of the firm perspective", *The Academy of Management Review*, Vol. 26 No. 1, pp. 117-127.

Waller, D.S., Fam, K.S. and Zafer Erdogan, B. (2005), "Advertising of controversial products: a cross-cultural study", *Journal of Consumer Marketing*, Vol. 22 No. 1, pp. 6-13.

## Corresponding author

Lorenzo Turriziani can be contacted at: lorenzo.turriziani@unina.it