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A Bi-Directional Examination of the Relationship Between Corporate Social Responsibility Ratings and Company Financial Performance in the European Context

Bertrand P. Quéré¹ · Geneviève Nouyrigat¹ · C. Richard Baker²

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Abstract Research focusing on the relationship between measures of Corporate Social Responsibility (CSR) and company financial performance has led to mixed results in the North American context. In addition, the ethical attitudes and approaches toward CSR investments of both companies and rating agencies are not necessarily the same in Europe and the United States. In this study, we use CSR ratings issued by a major European CSR ratings agency (Vigeo) to examine in a bi-directional manner the relationships between CSR ratings and financial performance in the European context. By bi-directional, we mean an examination of the relationship between prior CSR ratings and subsequent accounting and financial performance and reciprocally, the impact of accounting and financial performance of year $N - 1$ on CSR ratings of year N . Our principal findings are: (1) the greater the market capitalization of a company, the higher the Vigeo rating, (2) the higher the risk of the company, the lower the Vigeo rating, and (3) the greater the stock market return of a company, the lower the Vigeo rating. Based on these findings, we propose (1) a concept of “political visibility” pursuant to which enterprises of a greater size are exposed to greater

pressure to conform to norms of socially acceptable behavior, (2) a concept of “priorities” in which enterprises that have resolved their most urgent financial needs have a greater ability to invest in CSR, (3) a concept of “rating downgrading” which reveals the sanctioning role of the rating agency from an ethical standpoint.

Keywords Corporate social responsibility · Prior and subsequent financial performance · Concept of “political visibility” · Concept of “rating downgrading” · Concept of “priorities”

Introduction

Corporate social responsibility (CSR) is a matter of increasing ethical concern to both corporate management and the public generally. Many researchers have sought to determine the impact of CSR investments and practices on accounting and financial performance of companies through empirical studies or meta-analyses of these studies, (e.g., [Alexander and Buchholz 1978](#); [Cochran and Wood 1984](#); [Aupperle et al. 1985](#); [McGuire et al. 1988](#); [Waddock and Graves 1997](#); [McWilliams and Siegel 2000](#); [Orlitzky et al. 2003](#)). At the organizational level, this type of research can be classified into a category referred to as “Outcomes of CSR” as defined by [Aguinis and Glavas \(2012\)](#). In the past, this type of study was based primarily on surveys conducted by business magazines such as *Fortune*. Currently, such studies are now based on CSR ratings and measurements produced by specialized agencies such as KLD created in 1988 in the United States or Vigeo created in 2002 in France. In general, the results of prior studies have been mixed. As [Tang et al. \(2012\)](#) point out, some authors highlight a positive relationship between

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CSR measures and corporate financial performance (CFP). This may be due to a favorable impact on the relationship between a company and its stakeholders and the beneficial effects of CSR in terms of reputation, while for others CSR appears to generate costs without significant returns in terms of the stock market or commercial effects. According to Hull and Rothenberg (2008): “[...] most of the research in this area does support a positive relationship”. However, these authors emphasize that there is no consensus in the CSR–financial performance relationship¹. In this context, questions may be raised about the ethical rationale for CSR investments and practices that go beyond the minimum legal requirements. In this context, investments in CSR may respond either to a pragmatic and opportunist marketing mix (instrumental rationale) or alternatively to a more ethical social motivation with no direct financial counterpart (altruistic rationale). In other words, CSR investments may be implemented to produce increased company performance, or these practices may lead to costs whose benefits are difficult to measure in the short run.

Prior studies focusing on the relationship between CSR and CFP have been conducted primarily in the North American context; however, the ethical attitudes and approaches toward CSR investments of both companies and rating agencies are not necessarily the same in Europe and the United States. As a result, the overall purpose of this study is to develop a better understanding of the factors that determine, in the European context, the level of a company's investment in CSR and how these factors are taken into account by a rating agency in arriving at its CSR rating.

Our methodological approach involves an empirical study of the relationship between prior CSR ratings and future accounting and financial performance (a prospective approach) and reciprocally, the impact of accounting and financial performance of year $N - 1$ on CSR ratings of year N (a retrospective approach). In other words, we will follow the bi-directional temporal logic employed by Waddock and Graves (1997) using a European database.

The contribution of our study to the prior literature is thus based on the following points:

- To our knowledge, this is the first research paper to use the Vigeo database of CSR ratings to study the relationship between CSR measures and company financial performance. Vigeo is a European leader in CSR ratings whose registered office is located in France. The Vigeo ratings are unique and proprietary, and their use is restricted to subscribing investment firms and selected researchers². This fact may allow the Vigeo ratings agency greater freedom in making ratings of CSR as compared with other rating agencies. The Vigeo ratings database includes ratings of 623 European companies from 20 countries.
- Unlike KLD ratings, which focus on American companies, Vigeo, which primarily rates European companies, does not have any exclusions for companies based on certain activities considered to be nonethical such as those related to tobacco, alcohol, and nuclear. This type of negative screening on the part of KLD tends to remove a significant number of observations from the sample of rated companies. Moreover, in the Vigeo rating system, there are six categories (i.e., human rights, human resources, environment, behavior in the markets, corporate governance, and societal commitment) very close to the criteria used by KLD. However, the KLD scores are dichotomous (1 for strength, -1 for weakness) while each Vigeo category is assigned a rating from 0 to 100. In other words, even if KLD assigned a CSR rating through a summation of the strengths and weaknesses, it would not have the precision of a Vigeo measurement. For example, two companies both rated $+1$ by KLD might have significantly different measures on the same criterion according to the Vigeo rating. Furthermore, according to Camprodon et al. (2008), the European approach to CSR stresses issues related to environmental matters, while the American approach focuses more on workplace diversity and equality. These significant differences justify investigations based on the Vigeo database. In this context, the use of a different ratings database increases our understanding of the CSR–CFP relationship. In addition, this paper makes a systematic comparison of accounting and stock market performance variables with their corresponding sectorial averages. Such an approach reduces cyclical effects which may obscure the performance measures of the companies concerned.

¹ This lack of consensus is demonstrated by the disparity of results reported in prior studies. For example, in the banking sector, Soana (2011), indicate that: “[...] our analyses [...] show no evidence of a significant relationship between CSP and CFP.” Baird et al. (2012) found that “In conflict with expectations, the unweighted average effect of CSP [Corporate Social Performance] on CFP is negative.” These authors find a positive effect of the CSP on CFP for only 17 % of the sectors examined. Finally, Servaes and Tamayo (2013) “[...] show that in certain circumstances CSR enhances the value of the firm, but in others, it could destroy value, suggesting that some firms adhere to the shareholder model, and others may consider broader objectives [...]”

² Unlike financial rating agencies, CSR ratings agencies are paid by investors. Their assessments of the CSR ratings agencies rely primarily on public data about the companies as well as data from NGOs, government agencies, or unions. This type of rating is called a “declarative notation.” The public is not a recipient of this information and can only rely on information about CSR issued by the company itself. (Translated by the authors from Novethic 2013).

- We use multiple time horizons in the “prospective” approach. In order to examine the performance of companies, the definition of a reference horizon is needed. During the time period of our study, a company could receive several Vigeo ratings. These ratings were not always issued on an annual basis; therefore, it was necessary to calculate horizon intervals in order to identify the years that make up the reference horizon with respect to a particular CSR rating. For example, a company that received a CSR rating in 2000 and one in 2004, the 2000 rating would have an impact on years 2001, 2002, and 2003 (therefore, a horizon interval comprising 3 years), but not 2004, since a new rating would have been issued in 2004. For a company that received a rating in 2003 and one in 2005, the 2003 rating would have an impact on years 2004 (therefore, a horizon comprising 1 year), but not 2005, since a new rating would be issued in 2005.
- This study takes up in a synthetic way most of the factors which in previous studies have been identified as variables exerting a significant influence on the CSR–CFP relationship and also considered to be “confounding” variables (Van Beurden and Gössling 2008).
- Many prior studies have used ROA or ROE as measures of company performance (e.g., [Aupperle et al. 1985](#); [McGuire et al. 1988](#); [Nelling and Webb 2009](#)). In contrast, we use measures of accounting performance which are highly robust intermediate income measures while systematically relating such measures to sales turnover and comparing them to corresponding industry sector averages. In utilizing these more robust, direct measures of company performance, we wanted to avoid the use of composite variables such as ROA or ROE, which include data from both the balance sheet and the income statement and may therefore cause difficulties of measurement, stability, and interpretation.
- Previous studies have overlooked the differences between a Prospective and a Retrospective approach in terms of causality. A Retrospective approach measures the impact of past financial performance on the current CSR rating decision made by Vigeo. Conversely, the Prospective approach measures the impact of the CSR rating on future financial performance. Even if the future financial performance variables are correlated with the CSR rating, the future performance variables are not the result of a decision taken by the rating agency. In other words, even if the Vigeo rating agency is responsible for the ratings that it assigns to companies which may be based partially on their past financial performance, the agency does not control the future performance of the companies rated. Therefore, our research leads to a better and more concrete

understanding of the direction of causality between CSR and the CFP. In addition, the bi-directional logic adopted in our study appears in a very limited number of prior studies.

We think the findings of this study will help to clarify a conceptual framework that allows a better understanding of the motivations of management in making CSR investments as well as the way in which the agencies evaluate the enterprises.

After a first section devoted to a review of prior literature and a brief description of the Vigeo CSR rating agency, we will discuss the research methodology used in this study to investigate both the Prospective and Retrospective relationships between CSR ratings and the performance of companies. The results will be discussed in the third section before finally presenting a general assessment of our study and its limitations in the conclusion.

Literature Review

The Link Between CSR and Corporate Performance

Because our research does not deal with the short-term effects of CSR on company performance, we would like to stress the difference between our research and the line of research generally referred to as “events studies” which examines the reaction of financial markets to the CSR policies of companies. That being said, there have been many prior studies that have looked at the relationship between financial performance and the CSR practices of companies.

In one of the first studies of the relationship between financial performance and CSR, Moskowitz (1975a, b) investigated American companies and established a list of the top ten companies according to their CSR practices and also the worst ten. He was able to show a positive relationship between financial performance and CSR. In contrast, shortly thereafter, Vance (1975) found a negative relationship between CSR and share price returns in the 1974–1975 period. In addition, after taking into account risk, Alexander and Buchholz (1978), found no effect of CSR on stock returns, thereby questioning the work of Moskowitz (1975a, b). Relying on the index of Moskowitz, and taking into account industry classification and modifying their results for the age of assets, Cochran and Wood (1984) found only a weak positive relationship between CSR and performance. Also taking risk into consideration, [Aupperle et al. \(1985\)](#), found no relationship between short-term or long-term return on assets (ROA) and CSR. Using a bi-directional approach, [McGuire et al. \(1988\)](#), indicate that low CSR firms display low ROA and weak

stock returns. They also show that accounting measures are better predictors of CSR than market variables.

Using data provided by KLD and also employing a bi-directional approach, [Waddock and Graves \(1997\)](#) found that CSR is positively related to past performance and they interpret their finding to be in accordance with the theory of “slack management.” They also found a positive relationship between CSR ratings and future performance, and they interpret this finding to be in accordance with the theory of “good management.” While claiming to control for size, risk, and industry, these authors place a great deal of emphasis on what they call the “virtuous circle” of CSR. In contrast, while also controlling for size, risk, and industry, [McWilliams and Siegel \(2000\)](#) found no link between past performance and CSR when R&D is added as a control variable. In a meta-analysis of 30 years of research, [Orlitzky et al. \(2003\)](#) confirmed the findings of [Waddock and Graves \(1997\)](#). Similarly, [Margolis and Elfenbein \(2009\)](#) following the same meta-analysis procedure as [Orlitzky et al. \(2003\)](#) found a positive but low association between CSR and the financial performance of companies.

Using data from KLD, [Nelling and Webb \(2009\)](#) found that CSR ratings have no relationship to the future financial performance of companies and that CSR ratings are only very weakly and positively related to past stock returns. Using data provided by a European CSR rating agency (Sustainalytics Platform Database) and a sample drawn from 28 countries, [Surroca et al. \(2010\)](#) found that there is no direct relationship between the CSR and the performance of firms but only indirectly through intangible assets. These authors also emphasize the concept of a “virtuous circle” of CSR, but only if new intangible assets are created as a result of investments in CSR. They also found that the link between intangible assets and CSR is much stronger in sectors experiencing rapid growth.

In the area of portfolio management, [Vermeir et al. \(2005\)](#) found no significant outperformance associated with ethical conduct for the relevant portfolios. In contrast, [Kempf and Ohsthoff \(2007\)](#) show that it is possible to adopt winning strategies by investing in securities of socially responsible companies.

In general then, both from the perspective of empirical corporate finance and in terms of portfolio management, there have been conflicting results that reflect uncertainty whether there is a clear positive relationship between CSR and performance. However, if there is a financial or economic benefit associated with CSR practices, it is logical to assume that there should also be an increase in shareholder wealth ([Margolis and Walsh 2001](#)). In such circumstances, far from constituting a sacrifice, there would be a business case for increased investment in CSR. Conversely, the absence of a relationship between CSR practices and either

accounting or financial performance might demonstrate that CSR does not conform to an economic logic. The motivating factors that drive companies to seek increased CSR investments are therefore of central importance to our study. We believe that our research constitutes an important step toward a deeper understanding of the CSR-CFP relationship.

Ratings Methodology Utilized by Vigeo

The creation of a system for measuring CSR is not an easy matter. Measurements of CSR must take into account the various elements that encompass the “Triple Bottom Line” which include financial criteria, as well as social and environmental variables that are often qualitative in nature. The degree of subjectivity associated with the CSR rating process leads to interpretations which may differ significantly among the rating agencies, investors who use the ratings, and the companies concerned. The diversity of ratings criteria also explains the multiplicity of scales used to measure CSR.

[Chelli \(2013\)](#) indicates that as of 2012 there were 37 CSR rating agencies worldwide, of which Vigeo is one. In this context, despite a relatively high degree of convergence among CSR rating criteria in a highly globalized economy, significant differences may exist from one agency to another, which may militate in favor of a comparative approach.

According to [Berthoin-Antal and Sobczak \(2007\)](#), the rating methodology of Vigeo is similar to that used by CSR rating agencies in other countries. Moreover Vigeo adopts a “best in class” approach by favoring companies with best practices in one or more areas without excluding companies on the basis of certain activities, as may be the case for other agencies using a negative “screening,” such as KLD.

From a technical perspective, each Vigeo rating includes a score in six different areas³, which are in turn subdivided into three sub-dimensions. These dimensions⁴ have been inspired by Total Quality Management. Each of the six rating areas is evaluated on a scale of 100 points⁵, which are summed, to produce an overall CSR rating⁶ taking into consideration a weighting linked to the “key CSR factors for the industry sector”⁷. According to [Vermeir et al.](#)

³ Human rights, human resources, environment, behavior in the markets, corporate governance, and societal commitment.

⁴ Policies and objectives, deployment and result.

⁵ The scale of Vigeo ratings is as follows: “companies below the industry average”, “companies at the average for the sector”, “companies active in the sector,” “companies which are the most committed in the sector.”

⁶ This CSR rating will be qualified as: “insignificant engagement,” “started,” “conclusive,” or “advanced” according to its level.

⁷ According to the Vigeo methodology 20/03/2008.

(2005) the advantage of Vigeo in relation to other CSR rating agencies is to provide a very detailed analysis of the CSR ratings.

Development of Research Hypotheses

This paper focuses on studying the prospective effectiveness of prior CSR ratings with respect to future accounting and financial performance (an approach which is referred to as Prospective in the current study) and reciprocally, the impact of accounting and financial performance of year $N - 1$ on CSR ratings of year N (an approach which is referred to as Retrospective in the current study). In other words, we will follow the bi-directional approach employed by Waddock and Graves (1997). As reported by prior research such as Baird et al. (2012), our hypotheses 1, 4, 5, and 6 assume a positive relationship between CSR and CFP. Hypotheses 2 and 3 focus on costs and not on performance variables. We extend the work of Becchetti et al. (2008) to formulate hypothesis 2 and that of McWilliams and Siegel (2000) for hypothesis 3.

Ratings and Subsequent Performance (“Prospective” Approach)

The overall purpose of this paper is to analyze the motivations that are at the foundation of CSR practices. These motivations may respond either to a pragmatic and opportunist marketing mix or alternatively to a kind of social motivation with no direct financial counterpart. In other words, CSR practices may be implemented to produce increased company performance, or they may lead to costs whose benefits are difficult to measure. Ultimately, a more nuanced approach highlights the following potential drivers of CSR.

CSR practices are motivated by demands imposed by consumers who are increasingly influencing ethical and environmental values. In order to achieve a competitive alignment imposed by the market, the company is obliged to comply with consumer demands in order to *maintain* sales and market share. In this context, the investment in CSR is driven primarily by a defensive strategic logic. In such a case, companies investing in CSR ought to be able to retain their customers and maintain their sales turnover, while those who do not would face a decrease in market share.

From a more traditional marketing perspective, which seeks to differentiate a company from its competitors, CSR practices are motivated by an offensive strategy which seeks to *increase* market share and improve profitability. In such a case the CSR rating would be a component of the marketing mix and a growth in CSR investment would be expected to lead to an increase in sales turnover.

These arguments lead to Hypothesis 1 which examines the explanatory power of the CSR rating with respect to the change in the turnover of the companies.

Following the logic of the “good management theory” of Waddock and Graves (1997), we anticipate a positive relationship between the Vigeo CSR rating and the change in the sales turnover of the companies concerned.

Hypothesis 1 The change in the turnover (sales revenue) of a company relative to the change in the average turnover of the sector for at least 1 year during the inter-rating interval horizon is positively associated with the Vigeo CSR rating of the company.

According to Becchetti et al. (2008) “[...] social responsibility implies, on the one side, decisions leading to higher cost of labour and of intermediate output, but may, on the other side, enhance involvement, motivation and identification of the workforce with company goals with positive effects on productivity.” These authors found that the turnover per employee is significantly higher for firms investing in CSR. This argument leads to Hypothesis 2 which examines the explanatory power of the CSR rating with respect to the ratio of cost of employees to turnover.

Hypothesis 2 The ratio of cost of employees to turnover relative to the corresponding average ratio of the sector for at least 1 year of the rating interval horizon is negatively associated with the Vigeo rating of the company.

Various studies have found evidence of the impact of R&D (innovation) on the relationship between CSR and CFP (McWilliams and Siegel 2000; Surroca et al. 2010; Hull and Rothenberg 2008). Following this logic, Hypothesis 3 examines the explanatory power of the CSR rating on the ratio R&D expenditures/turnover. According to McWilliams and Siegel (2000), the CSR rating is positively correlated with R&D expenditures/turnover. In Hypothesis 3, we postulate that there will be the same positive relationship between the two variables. However, it should be noted that R&D is a control variable in the McWilliams and Siegel (2000) study, whereas it is an explained variable in the Prospective part of our study.

Hypothesis 3 The ratio of R&D to turnover relative to the corresponding average ratio of the sector for at least 1 year of the rating interval horizon is positively associated with the Vigeo rating of the company.

According to the “good management theory” of Waddock and Graves (1997), there is a positive impact of CSR rating on the future accounting performance of companies (i.e., ROA, ROE, return on sales). Hypothesis 4 tests this theory in the European context with performance variables that have not been explored previously by these two authors (OperatingP&L, EBITDA, EBIT, FinancialP&L,

Net Income). These flow variables correspond to intermediate balances emanating directly from the annual accounts and are less likely to contain errors.

Hypothesis 4 The performance measures of the company (Operating P&L, EBITDA, EBIT, Financial P&L, Net Income) compared with the average for the sector is, for at least one year of the rating interval horizon, positively associated with the Vigeo rating of the company.

Based on the ‘good management theory’ of [Waddock and Graves \(1997\)](#), we anticipate a positive impact of the CSR rating on future accounting performance. Although these two authors have not specifically studied the impact of CSR on market returns, improving the accounting performance should lead to an improvement of the stock market performance of company shares. Hypothesis 5 is therefore intended to test this theory in the European context.

Hypothesis 5 The annual adjusted stock market return of the company relative to the adjusted stock market return of the sector is, for at least 1 year of the rating interval horizon, positively associated with the Vigeo rating of the company.

Prior Performances and Ratings (“Retrospective” Approach)

According to the “slack management theory” of [Waddock and Graves \(1997\)](#), there is a positive impact of accounting performance (ROA, ROE, return on sales) on the CSR rating. Hypothesis 6 is intended to test this hypothesis in the European context.

Hypothesis 6 The Vigeo rating for year t is positively related to at least one performance variable (compared the corresponding average variable of the sector) for the year $t - 1$.

Research Methodology

Vigeo Ratings and Subsequent Performance (“Prospective” Approach)

We follow the methodology previously used by [Waddock and Graves \(1997\)](#), and we apply this methodology to a sample of European companies assessed by Vigeo. Our study uses a number of robust accounting measures of profitability while relating them systematically to sales turnover and comparing them systematically to their sectorial averages. We wanted to avoid composite variables such as ROA or ROE which include data from both the balance sheet and the income statement and therefore may

cause additional difficulties of measurement, stability, and interpretation.

The first part of our study involves a Prospective approach which seeks to assess the impact of CSR practices (as reflected by CSR ratings), on the future performance of companies, measured over a fixed time horizon (i.e., the number of consecutive annual reporting periods after the issuance of a rating). In the Prospective approach, the independent variable is the CSR rating determined by Vigeo. This measure is a summation of the individual ratings in the six areas of rating established by Vigeo.

In order to measure the accounting and financial performance of the companies, we calculated the following ratios:

- Change in Turnover (sales revenue) compared to the prior year (%)
- Operating profit or loss/Turnover (%)
- EBITDA/Turnover (%)
- EBIT/Turnover (%)
- Financial P&L/Turnover (%)⁸
- Net income/Turnover (%)
- Cost of employees/Turnover (%)
- Research and development expenses/Turnover (%)

Each of these ratios is also compared with the average ratio of corresponding companies in its industry.

In addition the following market data were obtained:

- Yearly adjusted stock return.

This ratio is also compared to the average ratio of corresponding companies in its industry sector.

Control variables:

- Natural logarithm of market capitalization in Euros (in contrast to [Waddock and Graves \(1997\)](#) who utilized “total sales,” “total assets,” and “number of employees” as control variables).
- *Risk* which we measure by the difference between the standard deviation of the adjusted stock return of a company and the mean standard deviation of the adjusted stock returns of its industry sector calculated over a period of 5 years. Unlike [Waddock and Graves \(1997\)](#), we do not use the debt/total assets ratio as a risk variable. We adjust our accounting performance variables in the same way as our stock return variables. Therefore, we take into account, even for accounting performance variables, a market risk factor which seems more relevant than a risk variable calculated from the standard deviation of intermediate accounting balances. We also take into account the entire market

⁸ Financial P&L is the difference between financial revenues and financial expenses.

risk related to the share price (i.e., systematic risk and specific risk) and not just the beta.

Accounting data were extracted from the Van Dijk Osiris database. Return data and Market capitalization are from the Datastream database published by the Thomson-Reuters Corporation. The Vigeo ratings database includes ratings of 623 European companies from 20 countries classified by year, for a total of 2488 observations covering the period January 1, 1997 to June 1, 2008. After removing banking and insurance companies, a total of 509 industrial companies remained, leading to the number of observations referred to in Table 2 (company, year).

In order to examine the performance of the companies concerned, the definition of a reference horizon is needed. During the period investigated, a company could receive several Vigeo ratings. The ratings were not always issued on an annual basis; therefore, it was necessary to calculate rating intervals in order to identify the years that make up the reference horizon. For a company that received a rating in 2000 and one in 2004, the 2000 rating would have an impact on years 2001, 2002, and 2003 (therefore, a rating horizon comprising 3 years), but not 2004, since a new rating would be issued in 2004. Consequently, some observations covered an inter-rating interval of 6 years while others had an inter-rating interval horizon of zero, because ratings were received in two consecutive years. The majority of the inter-rating intervals covered a period of 3 years. We have therefore limited the length of the inter-rating interval to 3 years.

Details of performance and rating variables are defined for each company i for year t as follows:

$$\Delta\text{Performance}_{i,t} = \text{Company performance}_{i,t} - \text{performance of sector}_t,$$

where $\Delta\text{Performance}_{i,t}$ represents the difference between the accounting or market performance variables relative to the averages for its industry sector. The sectors were determined by Global Industry Classification Standard (GICS) two-digit MSCI. These average sectorial data, i.e., accounting data and the stock market return data, except for market capitalization, were calculated for a total of 6180 companies which represents almost all listed companies in Europe. Accounting and market performance outlier observations were eliminated⁹.

CSR Rating $_{i,t}$ represents the Vigeo rating of a Company i at the date t .

The regression model used in the Prospective analysis is as follows:

Model 1 (General Form)¹⁰

$$\begin{aligned} \Delta\text{Performance}_{i,t+k} = & \alpha_i + \beta_1 \text{CSR rating}_{i,t} \\ & + \beta_2 \ln \text{Market capitalization}_{i,t+k} \\ & + \beta_3 (\Delta\text{Risk}_{i,t+k}) + \varepsilon_{i,t} \end{aligned}$$

With $k \in [1, \dots, 3]$

This model measures the impact of the Vigeo rating on the future performance of the company concerned for each of the component years of the inter-rating interval “horizon.” The rating interval ranges from one to 3 years; “horizons” greater than 3 years did not have sufficient data to be statistically usable. The impact of the rating for the year t is therefore reflected at time $t + 1$, and later. The control variable, “Market capitalization,” takes into account the size of the company. Pressure from the investment community is greater when a company is more “visible” socially and politically, and by virtue of their reputation, they receive more pressure to implement CSR policies and practices (The “political visibility” of Watts and Zimmermann, 1978). Statistical analyses are based on observations of the quadruplet variables ($\Delta\text{Performance}_{i,t+k}$, CSR rating $_{i,t}$, ln Market capitalization $_{i,t+k}$, and $\Delta\text{Risk}_{i,t+k}$). A particular company may be rated more than once during the observation period, and at different dates.

Prior Performances and CSR Rating (“Retrospective” Approach)

Previous studies do not seem to appreciate the intrinsic differences between a Prospective and a Retrospective approach in terms of causality. The Prospective approach measures the impact of the CSR rating on future financial performance. Even if correlated with the CSR rating, these future financial performance variables cannot be, by definition, the result of a decision taken by the rating agency. The Retrospective approach in contrast measures the impact of the past financial performance on the current CSR rating and is the result of a decision made by the agency based on its evaluation. In other words, even if the Vigeo rating agency is responsible for the ratings that it assigns to companies which may be based partially on their

⁹ Outliers were defined as accounting ratios in relation to turnover greater than 100 %, annual stock returns greater than 200 %, and annual change in turnover greater than 200 %.

¹⁰ The control variables “capitalization” and “risk”, are contemporaneous variables. This is the reason why we take into account ln Market capitalization “ $i, t + k$ ” and Risk “ $i, t + k$ ” and not ln Market capitalization “ i, t ” and Risk “ i, t .” In contrast to the approach that we have adopted for the calculation of the accounting and financial performance variables, we have not taken into account the sectorial average CSR ratings calculated by Vigeo. Our sectorial averages were estimated for 6180 companies while Vigeo takes into account in its calculation only 509 companies on which it issues an average sectorial rating. In fact, the average of the CSR ratings that could be attributed to these 6180 companies is not known.

past financial performance, the agency does not control the future performance of the companies rated.

In this Retrospective approach, the Vigeo CSR ratings constitute the dependent variable and the accounting and financial performance variables are the explanatory variables. Overall, we follow the same methodology used by [Waddock and Graves \(1997\)](#) in order to apply this methodology to a sample of European companies rated by Vigeo.

Assessing the impact of accounting and financial performance on CSR ratings allows an evaluation of the objectivity of the evaluation process. Good performance results in the past do not necessarily lead to good current CSR ratings if the performance is derived from cost savings contrary to environmental, human, or ethical criteria.

The variables used in the Retrospective analysis (accounting performance, stock return data, risk, and market capitalization of the companies concerned) are the same as those used in the Prospective approach. The regression model is nevertheless different because unlike the previous regression (Model 1), we investigate whether the CSR rating of the company for year t can be explained by the performance for year $t - 1$.

Model 2: (General Form)¹¹

$$\begin{aligned} \text{CSR Rating}_{i,t} = & \alpha_i + \beta_1 (\Delta(\text{Turnovergrowth}_{i,t-1})) \\ & + \beta_2 (\Delta(\text{OperatingP\&L}_{i,t-1} / \text{Turnover}_{i,t-1})) \\ & + \beta_3 (\Delta(\text{EBITDA}_{i,t-1} / \text{Turnover}_{i,t-1})) \\ & + \beta_4 (\Delta(\text{EBIT}_{i,t-1} / \text{Turnover}_{i,t-1})) \\ & + \beta_5 (\Delta(\text{Financial P\&L}_{i,t-1} / \text{Turnover}_{i,t-1})) \\ & + \beta_6 (\Delta(\text{Net income}_{i,t-1} / \text{Turnover}_{i,t-1})) \\ & + \beta_7 (\Delta(\text{Costs of employees}_{i,t-1} / \text{Turnover}_{i,t-1})) \\ & + \beta_8 (\Delta(\text{R\&D}_{i,t-1} / \text{Turnover}_{i,t-1})) \\ & + \beta_9 (\Delta(\text{Stock return}_{i,t-1})) \\ & + \beta_{10} (\ln \text{Market capitalization}_{i,t}) \\ & + \beta_{11} (\Delta(\text{Risk}_{i,t})) + \varepsilon_{i,t-1} \end{aligned}$$

For example, the formula $\Delta(\text{Cost of employees}_{i,t-1} / \text{Turnover}_{i,t-1})$ represents the difference between the company's cost of employees as a percent of turnover in relation to the average of its sector for year $t - 1$. The calculation is similar for other accounting and stock price variables except for the market capitalization. All the variables with the exception of the rating and the market capitalization represent differences between the measures of the variable for company i in year t and that of its sector

for the same period. In addition, all these differences with the exception of the rating and the adjusted returns are divided by the turnover (sales). In the results shown below, the term Δ is not included in the variable names. Consequently, the variable STOCKRETURN corresponds to the difference between the stock return of company i at year t and the stock return of its sector for the same year, as explained above. This is the same for TURNOVERGROWTH, OPERATINGP&L, EBITDA, EBIT, FINANCIALP&L, NETINCOME, COSTEMPLOY, and R&D. The detailed explanation of these variables appears in Table 1.

Results and Discussion

Results and Discussion of CSR Ratings and Subsequent Performances

The Model 1 regression is operationalized in the following manner (the variable names have been abbreviated as shown in Table 1):

$$\begin{aligned} \Delta \text{Performance}_{i,t+k} = & \alpha_i + \beta_1 (\text{CSR Rating}_{i,t}) \\ & + \beta_2 (\ln \text{MARKETCAP}_{i,t+k}) \\ & + \beta_3 (\text{RISK}_{i,t+k}) \\ & + \gamma (\text{YEAR Dummies}) + \varepsilon_{i,t} \end{aligned}$$

Avec $k \in [1, \dots, 3]$

$$\begin{aligned} \Delta \text{Performance}_{i,t} \in & \{ \text{TURNOVERGROWTH, OPERATINGP\&L,} \\ & \text{EBITDA, EBIT, FINANCIALP\&L, NETINCOME,} \\ & \text{COSTEMPLOY, R\&D, STOCKRETURN} \}. \end{aligned}$$

We performed a regression analysis since our observations include for each company i a couple involving the different accounting and stock market return variables appearing in the above regression at the time $t + k$ (explained variables) with the variable CSR Rating in the regression on the year t (predictors) taking into account market capitalization and risk in year $t + k$ ($\ln \text{MARKETCAP}_{i,t+k}$, $\text{RISK}_{i,t+k}$). We have emphasized the cross-sectional approach. In fact, a time series analysis would not be possible due to the low number of observations for each company over the period considered.

Ultimately, 509 companies received one or more ratings between 2000 and 2008, which leads to the number of observations shown in Table 2 for the periods ranging from one to 3 years. Descriptive statistics are shown in Table 2.

Table 3 shows the results of the regressions. The significance level of the variables FINANCIALP&L, EBITDA, and COSTEMPLOY are not reflected in Table 3, because they had no significant results in any period.

¹¹ The control variables “capitalization” and “risk” are contemporaneous with the rating. That is why we take into account $\ln \text{Market capitalization}_{i,t}$ and $\text{Risk}_{i,t}$ and not $\ln \text{Market capitalization}_{i,t-1}$ and $\text{Risk}_{i,t-1}$.

Table 1 Abbreviated name and definition of variables

Abbreviated name of variable	Formula definition	Detailed meaning
CSR RATING	$CSR\ RATING_{i,t} = \text{Company rating}_{i,t}$	The Vigeo CSR score for company i at year t
ln MARKETCAP	$\ln \text{Market capitalization}_{i,t}$	Neperian Logarithm of the stock market capitalization of company i at year t
RISK	$\Delta RISK_{i,t} = \text{Company Risk}_{i,t} - \text{Risk of sector}_t$	Difference between the risk of company i at year t and that of its industry sector at the same year
The accounting and stock market performance variable used in this study are stated in a general form in the following manner:		
$\Delta \text{Performance}_{i,t} = \text{Company Performance}_{i,t} - \text{Performance of sector}_t$		
TURNOVERGROWTH	$(\Delta \text{TURNOVERGROWTH}_{i,t}) = \Delta \text{Turnover}_{i,t} - \Delta \text{Turnover of sector}_t$	Difference in the percentage change of the turnover (sales) of company i from year $t - 1$ to year t as compared with the corresponding percentage change in the turnover of its industry sector
OPERATINGP&L	$\Delta \text{OPERATINGP\&L}_{i,t} = \text{Operating P\&L}_{i,t} - \text{Operating P\&L of sector}_t$	Difference between the change in the ratio of operating profit or loss in relation to the turnover for company i for the period ending at year t and the corresponding change for the industry sector for the same time period
EBITDA	$\Delta \text{EBITDA}_{i,t} = \text{EBITDA}_{i,t} - \text{EBITDA of sector}_t$	Difference between the change in the ratio of earnings before interest, taxes, depreciation and amortization (EBITDA) to turnover for company i for the period ending at year t and the corresponding change for the industry sector for the same time period
EBIT	$\Delta \text{EBIT}_{i,t} = \text{EBIT}_{i,t} - \text{EBIT of sector}_t$	Difference between the change in the ratio of earnings before interest and taxes (EBIT) to turnover for company i for the period ending at year t and the corresponding change for the industry sector for the same time period
FINANCIALP&L	$\Delta \text{FINANCIALP\&L}_{i,t} = \text{Financial P\&L}_{i,t} - \text{Financial P\&L of sector}_t$	Difference between the change in the ratio of Financial P&L to turnover for company i for the period ending at year t and the corresponding change for the industry sector for the same time period
NETINCOME	$\Delta \text{NETINCOME}_{i,t} = \text{Net Income}_{i,t} - \text{Net Income of sector}_t$	Difference between the change in the ratio of net income to turnover for company i for the period ending at year t and the corresponding change for the industry sector for the same time period
COSTEMPLOY	$\Delta \text{COSTEMPLOY}_{i,t} = \text{Costs of employees}_{i,t} - \text{Costs of employees of sector}_t$	Difference between the change in the ratio of cost of personnel to turnover for company i for the period ending at year t and the corresponding change for the industry sector for the same time period
R&D	$\Delta R\&D_{i,t} = \text{R\&D expenses}_{i,t} - \text{R\&D expenses of sector}_t$	Difference between the change in the ratio of research and development expenses to turnover for company i for the period ending at year t and the corresponding change for the industry sector for the same time period
STOCKRETURN	$\Delta \text{STOCKRETURN}_{i,t} = \text{Stock return}_{i,t} - \text{Stock return of sector}_t$	Difference between the stock return of company i at year t and that of its industry sector at the same date

Table 2 Descriptive statistics (prospective approach)

Variables	Min.	1st <i>Q</i>	Median	Mean	3rd <i>Q</i>	Max.	Number of observations
CSR RATING	50	171	237	233	294	471	1557
Test de Shapiro: $W = 0.94$, p value $< 2.2e-16$, Kurtosis = -1.29 , Skewness = $9.6e-2$							
Variables examined in periods 1 to 3	Min.	1st <i>Q</i>	Median	Mean	3rd <i>Q</i>	Max.	Number of observations
lnMARKETCAP 1	10.85	14.53	15.34	15.36	16.18	18.86	852
lnMARKETCAP 2	12.00	13.86	14.49	14.48	15.21	18.01	152
lnMARKETCAP 3	11.03	13.19	14.24	14.10	14.88	17.05	34
RISK 1	-0.31	-0.15	-0.08	-0.05	0.01	0.57	662
RISK 2	-0.28	-0.14	-0.05	-0.02	0.05	0.62	121
RISK 3	-0.26	-0.17	-0.05	-0.04	0.03	0.48	28
STOCKRETURN 1	-0.67	-0.14	-0.00	0.01	0.16	1.25	762
STOCKRETURN 2	-0.62	-0.19	-0.05	-0.02	0.14	1.37	136
STOCKRETURN 3	-0.40	-0.23	-0.09	-0.01	0.18	0.61	31
TURNVERGROWTH 1	-0.64	-0.10	-0.04	-0.02	0.03	1.28	846
TURNVERGROWTH 2	-0.94	-0.12	-0.03	-0.02	0.04	1.29	152
TURNVERGROWTH 3	-0.64	-0.23	-0.04	-0.08	-0.01	0.47	34
NETINCOME 1	-0.72	0.01	0.04	0.05	0.10	0.72	871
NETINCOME 2	-0.77	-0.01	0.03	0.03	0.09	0.86	151
NETINCOME 3	-0.10	-0.01	0.01	0.01	0.04	0.12	35
OPERATINGP&L 1	-0.79	0.00	0.05	0.07	0.12	0.67	883
OPERATINGP&L 2	-0.78	-0.01	0.03	0.07	0.15	0.66	158
OPERATINGP&L 3	-0.09	-0.01	0.02	0.03	0.08	0.43	31
EBIT 1	-0.76	0.00	0.04	0.07	0.12	0.67	877
EBIT 2	-1.10	-0.01	0.04	0.07	0.14	0.65	157
EBIT 3	-0.11	-0.01	0.02	0.03	0.08	0.43	36
EBITDA 1	-1.13	-0.01	0.04	0.07	0.14	0.69	879
EBITDA 2	-0.81	-0.02	0.03	0.07	0.15	0.63	158
EBITDA 3	-0.07	0.00	0.03	0.04	0.07	0.40	35
COSTEMPLOY 1	-0.62	-0.02	0.04	0.03	0.10	0.64	809
COSTEMPLOY 2	-0.57	0.00	0.05	0.04	0.12	0.3	141
COSTEMPLOY 3	-0.26	-0.04	0.05	0.0	0.10	0.23	34
R&D 1	-0.25	0.00	0.01	0.01	0.02	0.1	422
R&D 2	-0.52	0.00	0.01	0.01	0.03	0.16	75
R&D 3	-0.09	-0.02	0.01	0.01	0.01	0.11	12
FINANCIALP&L 1	-0.89	-0.01	0.00	0.00	0.01	0.18	889
FINANCIALP&L 2	-0.46	-0.01	0.00	-0.02	0.01	0.03	158
FINANCIALP&L 3	-0.19	-0.01	0.00	0.00	0.01	0.07	36

In Table 3, the Periods represent the number of fiscal years following the year of the Vigeo rating. i.e., Period 1 includes the accounting performance and stock market return variables for the first fiscal year following the rating. Period 2 includes the accounting performance and stock market return variables for the second fiscal year following the rating. Period 3 includes the accounting performance

and stock market return variables for the third fiscal year following the rating.

The results of the regressions highlight the significant effect of market capitalization for the stock market returns of Period 1 (STOCKRETURN). In other words, the larger the company in terms of market capitalization the greater the difference between its annual stock market return and

the average market return of the corresponding sector (coefficients significant at the 0.01 %) for year 1.

Surprisingly the difference between the stock market return of the companies versus the sector is negatively related to CSR rating (coefficient significant at the 0.1 % level). This means that as the Vigeo rating of the company increases, the stock market return is lower than the average for its sector in year 1.

In general, the negative correlation between the Vigeo ratings and the stock market returns of Year 1 indicates that shareholders perceive the investment in CSR as a cost without a positive counterpart. In Period 1, there is a negative and significant impact of the CSR rating on the variables (OPERATING P& L, EBIT, NETINCOME) at the respective thresholds of 5, 1, and 5 %. In other words, investment in CSR appears to constitute a burden affecting accounting results and stock performance in period 1, causing these performance variables to be less than the corresponding sectorial averages. This conclusion appears to support the idea of CSR as a cost with a significant accounting impact¹². Moreover, the simultaneous fall in market profitability shows that shareholders anticipate the cost of CSR¹³. A corporation's investment in CSR is therefore not merely a form of discourse since it represents a real cost which involves a "sacrifice" on the part of the shareholders. This "sacrifice" is effectively the counterpart of the ethical dimension of CSR

Table 3 also highlights a negative and significant relationship between the CSR rating and R&D expenditures for period 2 (at the threshold of 1 %). Because R&D expenditures are shown as negative numbers in the Van Dijk database, this result indicates that a higher CSR rating is related to a parallel increase in expenditures for R&D in period 2, making such expenditures greater than the average of the corresponding sectors. In other words, CSR seem to contribute to expenditures that could eventually result in new products in the short term.

Surprisingly, however, there is a negative and significant link between the CSR rating and the growth rate of turnover of period 1 (at the threshold of 1 %). In other words, the higher the CSR rating the lower the rate of growth of the turnover of companies in comparison with the average of the corresponding sector. However, a more detailed examination of the data at the level of companies shows that 77.9 % of the observations highlight a positive

growth rate of their turnover, while only 22.1 % displayed a negative change in this rate. This decrease in turnover appears to be exceptional. When the sample was subdivided on the basis of the negative and positive rates of growth in turnover and each of the two sub-samples observations was included in the regression Model 1, the significant relationship no longer appeared in the two separate regressions. In other words, the impact of the CSR rating on the growth rate of the turnover compared with those of the sector is not supported. Conversely, the absence of positive effect on the growth rate of turnover shows that unlike the possibility of new products as a result of expenditures for R&D, the amounts spent on CSR apparently have no direct commercial effect for the three years observed. Moreover, even in the absence of new products, these expenses appear not to lead to a recoverable "supplement" for marketing in the short or medium term.

We have also taken into account the approach of McWilliams and Siegel (2000) by transferring the R&D variable to the right side of the regression among the control variables, whereas it was considered among the accounting performance variables in the previous approach. The corresponding equation is therefore:

$$\Delta\text{Performance}_{i,t+k} = \alpha_i + \beta_1(\text{CSR rating}_{i,t}) + \beta_2(\ln \text{MARKETCAP}_{i,t+k}) + \beta_3(\text{RISK}_{i,t+k}) + \beta_4(\text{R\&D}_{i,t+k}) + \gamma(\text{YEAR Dummies}) + \varepsilon_{i,t}$$

with $k \in [1, \dots, 3]$

$$\Delta\text{Performance}_{i,t} \in \{\text{TURNOVERGROWTH, OPERATINGP\&L, EBITDA, EBIT, FINANCIALP\&L, NETINCOME, COSTEMPLOY, STOCKRETURN}\}.$$

The results are the same as those in Table 3 for STOCKRETURN. In other words, even with R&D as a control variable, STOCKRETURN is negatively and significantly related to CSR rating, while the effect of ln MARKETCAP is still positive and significant but to a lesser degree. With the exception of NETINCOME which is more significant and OPERATING P&L which is significant at the level of 5 %, other variables produce results not only similar to those of the previous model but also with varying degrees of significance and R²'s which are lower. In other words, the model of McWilliams and Siegel (2000) did not show results that were superior to those found in the present study.

Overall, Hypothesis 1 is rejected for the change in turnover (TURNOVERGROWTH); Hypothesis 2 is rejected for COSTEMPLOY and Hypothesis 3 is validated for R&D² expense; Hypothesis 4 is rejected for OPERATINGP&L,

¹² Our work suggests that the CSR is a cost. Nevertheless, one can imagine that certain less costly expenditures may be effective from a CSR perspective.

¹³ These conclusions support the work of Becchetti et al. (2008) who indicate that their results are: "[...] consistent with the hypothesis that CSR is expected in principle to redirect the focus of corporate activity from the maximization of shareholders to that of the stakeholders interests."

Table 3 Explained variable: performance

Explained variable ↓	Period	CSR RATING (predictor)	ln MARKETCAP (control variable)	RISK (control variable)	R ²	Adjusted R ²	F-statistics
TURNOVERGROWTH	1	-2.0e-4 (0.04)*	1.5e-2 (0.02)*	-6e-2 (0.21)	4.54 %	3.03 %	3 p value: 4.3e-3
OPERATINGP&L	1	-1.64e-04 (8.33e-2)*	1.87e-2 (2.3e-3)**	-1.75e-1 (1.4e-3)**	7.06 %	5.57 %	4.75 p value: 3.62e-5
EBITDA	NON SIGNIFICANT AT ANY PERIOD						
EBIT	1	-1.82e-4 (0.04)*	2.3e-2 (8.44e-5)***	-1.7e-1 (1.16e-3)**	7.98 %	6.50 %	5.38 p value: 6.3e-06
FINANCIALP&L	NON SIGNIFICANT AT ANY PERIOD						
NETINCOME	1	-1.45e-4 (0.07)*	2.00e-2 (2e-4)***	-1.38e-1 (4e-3)**	6.60 %	5.03 %	4.34 p value: 1.15e-4
NETINCOME	2	-8.07e-4 (0.07)*	1.43e-2 (0.60)	-0.31 (0.16)	11.8 %	2.98 %	1.33 p value: 0.25
COSTEMPLOY	NON SIGNIFICANT AT ANY PERIOD (the number of observations was insufficient in period 3)						
R&D	2	-4.15e-4 (0.03)*	2.8e-3 (8.02e-1)	-0.16 (0.06)*	22.79 %	7.35 %	1.47 p value: 0.21
STOCKRETURN	1	-4e-4 (1.19e-3)**	5.58e-2 (3.68e-08)***	-0.11 (0.18)	8.64 %	7.20 %	6.04 p value: 9.70e-07

$$\Delta \text{Performance}_{i,t} + \kappa = \alpha_i + \beta_1(\text{CSR RATING}_{i,t}) + \beta_2(\ln \text{MARKETCAP}_{i,t} + \kappa) + \beta_3(\text{RISK}_{i,t} + \kappa) + \gamma(\text{YEAR Dummies}) + \varepsilon_{i,t}$$

Avec $k \in [1, \dots, 3]$

*** $p < 0.0001$, ** $p < 0.001$, * $p < 0.01$, *' $p < 0.05$

EBITDA, EBIT, FINANCIALP&L, and NETINCOME; and Hypothesis 5 is rejected for STOCKRETURN.

Results and discussion of prior performances and ratings

Descriptive statistics are shown in Table 4.

Table 5 shows a correlation ratio matrix which demonstrates strong co-linearities between OPERATINGP&L, EBITDA, EBIT, and NETINCOME, which is logical since all four variables are measures of company performance. We therefore conducted a principal (ACP) components analysis using the method of Akaike in order to select the best explanatory variables in the proposed regression. This analysis shows that EBITDA is the best predictor while conversely variables, OPERATINGP&L, EBIT, and NETINCOME, are not as good. All of these variables are correlated, thus, we have retained EBITDA rather than OPERATINGP&L, EBIT, and NETINCOME. Furthermore EBITDA is the only variable which does not include depreciation and amortization expenses. EBITDA also is a variable which avoids the impact of corporate taxes, which eliminates one of the primary distortions among companies in different countries.

We have adapted the Model 2 regression after the elimination of the variables OPERATINGP&L, EBIT, and NETINCOME and in the following manner (the variables are defined in the same way as in Table 1):

$$\begin{aligned} \text{CSR Rating}_{i,t} = & \alpha_i + \beta_1(\text{TURNOVERGROWTH}_{i,t-1}) \\ & + \beta_2(\text{EBITDA}_{i,t-1}) \\ & + \beta_3(\text{FINANCIALP\&L}_{i,t-1}) \\ & + \beta_4(\text{COSTSEMPLOY}_{i,t-1}) \\ & + \beta_5(\text{R\&D}_{i,t-1}) \\ & + \beta_6(\text{STOCKRETURN}_{i,t-1}) \\ & + \beta_7(\ln \text{MARKETCAP}_{i,t}) \\ & + \beta_8(\text{RISK}_{i,t}) + \gamma(\text{YEAR Dummies}) \\ & + \varepsilon_{i,t-1} \end{aligned}$$

As with the Prospective approach, we have used cross-sectional analysis rather than time series analysis. In fact, a time series analysis would not be possible due to the low number of observations for a company over the period considered¹⁴.

¹⁴ From this point of view, arguably, subject to verification, a time series analysis would not have as much discriminatory power as a cross-sectional analysis in terms of variance. The CSR rating is probably more sensitive to a difference between companies than it is

Table 4 Descriptive Statistics (Prior performances and CSR ratings)

Variables	Min.	1st <i>Q</i>	Median	Mean	3rd <i>Q</i>	Max.	Number of observations
CSR RATING	50	171	237	233	294	471	1557
ln MARKETCAP	11.58	14.77	15.55	15.63	16.44	19.18	1538
NETINCOME	-0.91	0.00	0.03	0.05	0.09	0.86	1600
STOCKRETURN	-0.70	0.15	0.01	0.04	0.19	1.79	1345
OPERATINGP&L	-0.51	-0.01	0.04	0.07	0.12	0.72	1601
EBIT	-0.58	-0.01	0.04	0.06	0.12	0.67	1598
EBITDA	-0.80	-0.01	0.04	0.07	0.13	0.69	1587
COSTEMPLOY	-0.69	-0.01	0.04	0.03	0.09	1.0	1466
R&D	-0.52	0.00	0.01	0.01	0.02	0.18	755
RISK	-0.32	-0.13	-0.06	-0.02	0.04	0.69	1103
TURNVERGROWTH	-0.96	-0.10	-0.03	-0.08	0.04	1.79	1535

Table 6 indicates a 95 % adjusted R^2 for the Model 2 regression. Market capitalization is significantly and positively related to CSR rating at the threshold of 0.01 %. In other words, the greater the market capitalization of the company the higher the Vigeo rating. This observation confirms the results of Stanwick and Stanwick (2005) and is consistent with intuition because larger companies are scrutinized to a greater extent by the investment community. Consequently, there is an incentive to act in a socially responsible manner. This finding can be compared with the finding of Watts and Zimmermann (1978), in which large American companies for whom a proposed FASB standard had a positive impact on their accounting income systematically rejected the proposed standard in their comment letters to the FASB. Watts and Zimmerman (1978) argued that the reason for this behavior was related to political visibility in that the companies feared that showing too high a profit would cause regulatory and fiscal constraints to be imposed by the legislature because of their political “visibility.” As applied to our study, the impact of “visibility” may explain the interest of larger companies regarding the implementation of CSR policies and practices. In addition, larger companies have greater resources to implement such policies. We therefore propose as a result of our findings and by induction, a concept of “political visibility” pursuant to which larger firms as measured by market capitalization invest more in CSR. In other words, if the enterprise is not intentionally more ethical, it becomes so when its size exposes the enterprise to social pressures which obliges the enterprise to be more conscious of its behavior. Waddock and Graves (1997) used “total sales,” “assets,” and “number of employees” as indicators

Footnote 14 continued

with respect to the evolution of performance within the same firm over a given period due to a certain level of inertia in ratings.

of size but none of these variables were significant in their retrospective approach.

Surprisingly, our results also highlight a negative relationship at the threshold of 1 % between STOCKRETURN and CSR rating. In other words, the greater the difference between the stock market return of the company and the average of its sector, the lower the CSR rating of the company. Following this logic, companies with the highest stock market returns would also be those which, according to the rating agencies, invest less in CSR precisely in order to save on costs perceived correctly by the shareholders as being detrimental to the value of their shares as confirmed by the Prospective approach¹⁵.

This initially disconcerting negative relationship does not necessarily mean that the financially weakest companies are the best rated. Fortunately, as shown in Table 6, there is no significant negative relationship between past poor accounting performance and CSR ratings, and in fact a total absence of relationship is found. In other words, while the rating agency appears to take into account the past stock returns when determining the CSR rating, it appears to disregard the past in measuring accounting performance. This surprising a priori oversight may be attributable to the generally good financial health of rated companies which leads the rating agency to not use

¹⁵ This perception is confirmed by the Prospective approach which explains the future performance of firms based on CSR ratings (see “Model 1” section). The results indicate that companies that invest more in CSR are those that have lower OPERATINGP&L, EBIT, and NETINCOME and logically the worst stock market returns compared to their sector. Implementing CSR policies may therefore be perceived by shareholders as a potential source of performance decline (see Prospective approach). Furthermore this result confirms the conclusions of Mackey et al. (2007) who, in a theoretical article, argued that, under certain conditions, making an investment in CSR can have a negative impact on shareholder wealth.

Table 5 Correlation table among the different variables

Variables	CSR RATING	Ln MARKET CAP	NET INCOME	STOCK RETURN	OPERATING P&L	FINANCIAL P&L
CSR RATING	1					
LnMARKETCAP	0.52 (2.2e-16)	1	0.02 (0.44)	-0.11 (9e-4)	0.02 (0.48)	-0.01 (0.59)
NETINCOME		1	0.07 (4e-3)	0.04 (1.19e-1)	0.06 (1.58e-2)	0.07 (4.2e-3)
STOCKRETURN			1	0.09 (4e-4)	0.76 (2.2e-16)	-0.14 (2.26e-9)
OPERATINGP&L				1	6.33e-2 (2.15e-2)	4e-3 (8.7e-1)
FINANCIALP&L					1	-0.39 (2.2e-16)
EBIT						1
EBITDA						
COSTEMPLOY						
R&D						
RISK						
TURNOVERGROWTH						
Variables	EBIT	EBITDA	COSTEMPLOY	R&D	RISK	TURNOVER GROWTH
CSR RATING	0.01 (0.67)	0.06 (0.03)	0.08 (6e-3)	-0.08 (0.05)	-0.26 (1.0e-12)	-0.13 (3.9e-05)
LnMARKETCAP	0.06 (8.7e-3)	0.08 (1.2e-3)	0.14 (3.36e-8)	-0.094 (0.01)	-0.16 (9.06e-8)	-0.06 (0.01)
NETINCOME	0.77 (2.2e-16)	0.62 (2.2e-16)	0.17 (4.15e-11)	0.06 (0.06)	-0.14 (1.20e-6)	0.05 (0.02)
STOCKRETURN	0.06 (1.28e-2)	0.05 (6.28e-2)	0.06 (2.65e-2)	-0.01 (7.63e-1)	0.02 (0.49)	0.10 (2e-4)
OPERATINGP&L	0.98 (2.2e-16)	0.89 (2.2e-16)	0.16 (2.22e-10)	0.23 (3.72e-11)	-0.01 (1.92e-6)	0.09 (4e-4)
FINANCIALP&L	-0.36 (2.2e-16)	-0.37 (2.2e-16)	-0.06 (1.91e-2)	0.05 (1.20e-1)	0.06 (0.02)	-0.04 (0.07)
EBIT	1	0.87 (2.2e-16)	0.16 (6.84e-10)	0.24 (2.43e-11)	-0.14 (3.1e-6)	0.09 (3e-4)
EBITDA		1	0.16 (2.31e-10)	0.23 (4.69e-11)	-0.13 (1.75e-5)	0.07 (5.00e-3)
COSTEMPLOY			1	0.18 (1.12e-6)	-0.11 (3e-4)	0.13 (2.39e-7)
R&D				1	-0.07 (8.67e-2)	0.04 (0.28)
RISK					1	0.07 (0.01)
TURNOVERGROWTH						1

Table 6 Explained variable: CSR RATING (multiple regression)

Predictors	Coefficients	SE	t value	Pr (> t)
TURNOVERGROWTH	-37.97	19.38	-1.95	0.05'.
EBITDA	21.22	32.64	0.66	0.50
FINANCIALP&L	-100.6	129.77	-0.77	0.43
COSTEMPLOY	-37.7	40.34	-0.93	0.35
R&D	-38.77	75	-0.51	0.60
STOCKRETURN	-26.66	13.20	-2.01	4.4e-2*
ln MARKETCAP	32.98	2.94	11.20	2e-16***
RISK	-71.02	24.5	-2.89	4e-3**

$$CSR\ RATING_{i,t} = \alpha_i + \beta_1(TURNOVERGROWTH_{i,t-1}) + \beta_2(EBITDA_{i,t-1}) + \beta_3(FINANCIALP\&L_{i,t-1}) + \beta_4(COSTEMPLOY_{i,t-1}) + \beta_5(R\&D_{i,t-1}) + \beta_6(STOCKRETURN_{i,t-1}) + \beta_7(\ln\ MARKETCAP_{i,t}) + \beta_8(RISK_{i,t}) + \gamma(YEAR\ Dummies) + \varepsilon_{i,t-1}$$

$R^2 = 0.95$ adjusted $R^2: 0.95$

F-statistics: 412, p value < 2.2e-16

*** $p < 0.0001$, ** $p < 0.001$, * $p < 0.01$, ' $p < 0.05$

accounting performance as a differentiating criterion in the rating process.

Thus, a thorough review of the data shows that companies rated by Vigeo are generally of very good quality. About 91.3 % of companies examined in the Retrospective approach displayed a positive net income, and 73.9 % of them had a net income higher than the average of their corresponding sectors. In other words, even if the companies in our sample seem to exhibit performance that does not necessarily meet the expectations of shareholders, they are in good financial health. The negative relationship between past stock returns and present CSR rating is therefore primarily situated in the top right quarter of a coordinate system where financial performance is on the abscissa and the CSR rating on the ordinate. Following this logic, and in the spirit of Maslow's needs hierarchy, CSR appears to be a sort of "improvement," adopted by well-established businesses that are among the best in their categories. In fact, it is known that Vigeo focuses on "best in class." Pursuant to this perspective, the findings of this study may not be extendable to companies in a more delicate financial situation, because it may be that in a difficult financial situation the question of CSR would not be at the center of the concerns of managers facing important emergencies. From this point of view, the CSR rating may itself be an important signal of financial health. As a result of this finding we propose a concept of "priorities" pursuant to which enterprises that have resolved their most essential and urgent financial needs have a greater ability to invest in CSR.

This conclusion is also confirmed by the results shown in Table 6 which indicate that the difference between the risks of a company with respect to the risk of its sector is significantly and negatively related to the CSR rating (0.1 % threshold). In other words, the higher the risk the

lower the Vigeo rating. This result confirms that of Waddock and Graves (1997). This may be interpreted to mean that firms with highly variable results would, in a logic comparable to that of Maslow's needs hierarchy, be focused more on satisfying their shareholders than engaging in CSR practices which might reduce their stock market performance. In other words, only companies well positioned in their market and offering good returns would have the opportunity to invest in CSR (i.e., our concept of "priorities").

From a global point of view, if a company has a stock market return significantly higher than its sector, this might be considered by Vigeo to be indicative of a failure to take other stakeholders into account. It is in the context of this finding, and by induction, that we propose a concept of "CSR rating downgrading" pursuant to which the ratings agencies assign a lower CSR rating to companies having stock market returns superior to the average of their sector. In this context, the rating agency plays a role in controlling the ethical behavior of corporations.

Table 6 also shows, in a counter-intuitive way, but in a manner symmetrical with the results of the Prospective approach, that CSR Rating is negatively and significantly related to TURNOVERGROWTH at the 5 % threshold. In other words, when the rate of growth of the turnover of the company as compared with its sector is low, the better the CSR rating assigned by the agency. However, a more detailed examination of the data at the level of companies shows that 77.0 % of the companies in the sample have a positive growth rate in their turnover, while only 23.0 % display a negative change in their turnover. Because the finding of negative relationship between growth in turnover and CSR rating was considered to be unusual, the sample was subdivided into observations with a negative growth

rate in turnover and observations with a positive growth rate. Each of the observations of the two sub-samples were then included in regression Model 2. The significant negative relationship that was found previously for the whole sample no longer appears for the negative growth sample. However, the relationship remains significantly negative (at the threshold of 0.1 %) for the sample of observations corresponding to companies displaying a positive growth rate in turnover. The companies in the positive growth sub-sample are companies with growth rates in turnover below that of their sector who nevertheless receive higher CSR ratings. This surprising result may be due to the possibility that these companies are marketing mature products with revenues and margins which are regular and stable. Because they are well established in their markets, these companies may be in a position of minimal risk. This result is consistent with our concept of “priorities” developed previously above since the companies may be less risky and therefore have the opportunity to invest in CSR.

Overall, the Retrospective approach leads to the rejection of Hypothesis 6 since contrary to Waddock and Graves (1997) and to the meta-analysis of Orlitzky et al. (2003), no accounting variable for the Year $t - 1$ is positively and significantly related to the Vigeo CSR rating for the year t .

Conclusion

The purpose of this study has been, on the one hand to prospectively evaluate the impact of CSR ratings on the accounting and stock market returns of companies receiving such ratings. Performance was measured by various accounting and stock market return variables for up to three consecutive financial years (CSR rating year and one, two, or three subsequent years). A second approach was also undertaken in order to evaluate the impact of performance in year $N - 1$ on the CSR ratings received in year N (prior performances and CSR rating).

Our principal results are as follows for the retrospective approach:

- First, our findings show that the greater the market capitalization of the companies the higher their Vigeo ratings. Therefore, our study of European companies confirms the existence of a significant size effect consistent with the results of Stanwick and Stanwick (2005), but which surprisingly did not appear in a systematic manner in other studies (Waddock and Graves 1997 did not find statistically significant results in the retrospective case). We refer to this finding as the concept of “political visibility” pursuant to which larger companies invest more in CSR due to their greater visibility. Large companies are those which are

the most followed by the financial community and the general public. Corporate social behavior deemed to be contrary to the public interest may result in negative publicity leading to greater regulation¹⁶. This concept of “political visibility” is therefore more pertinent than the simple idea of “reputation” discussed in the prior literature. In other words, if the enterprise is not intentionally ethical, it becomes more so when its size exposes the enterprise to social pressures which oblige the enterprise to be more conscious of its behavior.

- Second, while the rating agency takes into account past stock returns to determine the CSR rating, it seems that, and contrary to the theory of “slack management,” it neglects the past in assessing accounting performance¹⁷. Therefore, our findings do not support the theory of the “slack resources” developed by Waddock and Graves (1997). In contrast, our findings highlight a logic of “priorities” which resembles that of Maslow’s hierarchy of needs with respect to determining the level of a company’s investment in CSR. In other words, enterprises that have resolved their most urgent financial needs have a greater ability to invest in CSR. Ultimately, this concept of “priorities” when integrated with the notion of risk, leads to a broader concept than the “slack resources” theory of Waddock and Graves (1997).

Third, the negative relationship between stock market return of year $N - 1$ and CSR rating of year N leads to the concept of “CSR rating downgrading.” Our study shows in effect that stock market returns which are significantly higher than those of the industry sector appear to be considered by Vigeo as indicative of a failure to take the broader spectrum of stakeholders into account. In this context, the rating agency plays a role in controlling the ethical behavior of companies. (It should be noted once again that the companies rated by Vigeo are among the “best in their class,” and therefore the concept of rating downgrading concerns only companies of good quality.)

The findings of the prospective approach are the followings:

- First, our results indicate an impact of CSR policies on R&D expenditures. In other words, CSR investments lead to expenses that should theoretically allow for longer-term development of new revenues. However, there is no apparent increase in the short term in the

¹⁶ This intuition is implicitly present in McGuire et al. (1988) since these authors state that “[...] government agencies may find it necessary to pass more stringent regulations, constituting explicit contracts, to force the firm to act in a socially responsible social manner.”

¹⁷ This attitude seems logical since stock prices include certain elements which are not reflected in accounting numbers.

Table 7 Explained variable: CSR RATING (univariate regression)

Predictors	Coefficients	SE	t value	Pr (> t)	R ² (%)	Adjusted R ² (%)	F-statistics
STOCKRETURN	-35.41	9.4	-3.72	2e-4***	89.2	89.16	10 p value: 2.2e-16

$$CSR\ RATING_{i,t} = \alpha_i + \beta_1(STOCKRETURN_{i,t-1}) + \gamma(YEAR\ Dummies) + \varepsilon_{i,t-1}$$

*** $p < 0.0001$, ** $p < 0.001$, * $p < 0.01$, . $p < 0.05$

growth rate of turnover as compared with the sector resulting from the emergence new products. This absence of a positive impact on the growth rate in turnover may indicate that the investment in CSR is not necessarily an additional component in the marketing strategy of companies used to increase sales. Ultimately, the apparent lack of positive operating effect derived from the investment in CSR may explain the lower accounting performance results and the lower stock market returns.

- Second, the negative relationship between CSR ratings and subsequent stock market performance indicates that the investment in CSR is “[...] consistent with the shift in focus from shareholder wealth maximization to a multi-stakeholder welfare approach.” (Becchetti et al. 2008). This result is also consistent with Brammer et al. (2006). A corporation’s investment in CSR is therefore not merely a form of discourse since it represents a real cost which involves a “sacrifice” on the part of the shareholders. This “sacrifice” is effectively the counterpart of the ethical dimension of CSR. As a matter of fact, in the European context, businesses do not seem to receive direct financial gains from the CSR investment that might encourage ethical behavior through simple economic interest. Therefore, there does not appear to be a “business case” for CSR. This absence of a “business case” seems to be confirmed by the size effect. In other words, if the CSR investment constitutes a source of profit, every company would be probably interested in making such investments, and consequently the size effect would be less pronounced.¹⁸
- Third, there is no evidence of a positive relationship between CSR and subsequent performance in the European context. Therefore, our study does not confirm the “good management” theory of Waddock and Graves (1997).

In a comprehensive manner, a Retrospective approach explains CSR ratings better than the Prospective approach. It should be noted; however, that if the characteristics of the examined company are the only parameters which determine the CSR rating, then CSR is obviously not the only factor that determines the performance of the firm. The greater explanatory power of the Retrospective approach therefore seems to be logical since the CSR rating proceeds from the judgment of the rating agency while the performance of the companies, although dependent on the decisions of their management, are obviously not the product of decisions of the rating agency. From this point of view, our study emphasizes how the rating agency integrates the characteristics of the company into its CSR rating (adjusted $R^2 = 95\%$) rather than demonstrating an impact of CSR on performance (maximum adjusted $R^2 = 7.35\%$). If the criteria of evaluation have common characteristics, the final approach of the rating agencies differ, thus favoring a comparative approach among agencies. One might therefore consider whether the difference in the results obtained in our study as compared with those derived from the North American may be based on an “agency bias” arising from ideological and cultural factors.

Our study in the European context does not confirm the “virtuous circle” theory of Waddock and Graves (1997) which was based on the American context and confirmed by Orlitzky et al. (2003). Our results indicate that CSR has a low-negative impact on future stock returns (adjusted $R^2 = 7.20\%$) which, in turn, are strongly negatively related to subsequent CSR ratings (adjusted $R^2 = 89.16\%$, see Table 7). If the circle that we highlight is also a type of positive feedback, it does not appear to increase accounting or stock market performance but amplifies only the CSR rating. In fact, a better CSR rating in the past is associated with future CSR spending that simultaneously affects the accounting results and stock returns. The decrease in the performance measures contributes in turn to improve the CSR ratings subsequently issued by the agency. In accordance with this positive feedback, the “sacrifice”¹⁹ agreed to by the stockholders would be rewarded by the rating agency in a higher future CSR rating.

¹⁸ A difference in managerial culture might account for the persistence of a size effect in the presence of a business case for CSR. However, if a cultural difference exists between managers of large companies as compared with managers of small and medium sized companies, it is less likely to be present in our sample composed of good quality companies quoted on stock exchanges and therefore headed by managers who would presumably be familiar with “good” management techniques.

¹⁹ Becchetti et al. (2008) speak about a “[...] penalty that social responsibility (SR) imposes on shareholders [...]”

Finally, the three principal concepts identified in this study (“political visibility,” “priority,” and “rating downgrading”), combined with the findings previously reported by other authors, help to clarify a conceptual framework that allows a better understanding of the motivations of management in making CSR investments as well as the way in which the rating agencies evaluate the enterprises. Our study originally intended to cover 7 years was ultimately restricted to 3 years due to the fact that the number of data points was too small to be statistically usable. In other words, the effects of CSR were assessed in the short term, even though the effects of CSR ought to be judged over the long term. Moreover, the difference found between the results of our study and those obtained in the American context may be due to a cultural difference which calls for a comparative study of the process of CSR evaluation in different countries. Finally, we suggest that the future research ought to be devoted to the validation of our three main concepts (Political visibility, priorities, and CSR rating downgrading).

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