

# The Impact of Corporate Social Responsibility Rating Announcements on European Stock Prices

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## Abstract

Corporate Social Responsibility (CSR) ratings offer an opportunity to assess the financial market perception of Social Responsibility disentangling the different impacts of this multi-dimensional concept. We study the influence of Vigeo rating announcements (2004-2009) on short term European stock returns. The results show a positive effect over two days around the event. The detailed analysis reveals that the reaction varies according to the field. Human rights have a positive influence, Environment and Human resources a negative one and Community involvement a mixed one. Moreover, the aggregation level is also important since a confounding effect leads to non-significance of Corporate governance. These results suggest that the stock market rewards CSR. However, the relationship is complex and needs to be analyzed with care. Indeed, investors discriminate the various dimensions, search for the right information at different levels and do not necessarily interpret good and bad CSR practices in the same way.

*Keywords:* Corporate social responsibility rating, Corporate social performance, Financial performance, Event study

JEL classification: G11, G12, G39, L21, M14

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## 1. Introduction

The development of Socially Responsible Investment (SRI) and more generally the consideration by shareholders of non financial performance highlights puts CSR. Investors care increasingly about ethical, social, environmental, and corporate governance decisions and performances. Environmental, Social and Governance (ESG) criteria are today inescapable. According to Eurosif at the end of 2009, the SRI assets under management in Europe was €5 trillion<sup>2</sup>

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All errors and omission are the whole responsibility of the authors.

<sup>2</sup>Allocated between €3.8 trillion for broad SRI and €1.2 trillion for core SRI. "European SRI 2010": [www.eurosif.org/research/eurosif-sri-study/2010](http://www.eurosif.org/research/eurosif-sri-study/2010). As the Social Investment Forum (SIF) in the US, the European Sustainable Investment Forum (Eurosif) is a network and think-tank whose mission is to develop sustainability through European Financial Markets. Definitions of core and broad SRI are detailed on the website.

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representing 10% of total assets under management in Europe. This development generates a growing interest for CSR rating so as to satisfy the investors' demand (mainly socially responsible ones) for additional information to take and support their decisions. Beyond the sole consideration of sustainability, risk and returns are supposed to depend on such extra-financial information.

Over the last two decades, CSR ratings agencies have competed on the basis of differentiation of ratings' methodologies. Rating agencies assess firms on their Corporate Social Performance (CSP)<sup>3</sup>. Recently, the sector concentration increased in the United States where RiskMetrics Group acquired Innovest Strategic Value Advisors and KLD Research & Analytics in 2009 and in Europe where Vigeo became the leader of extra-financial analysis. This evolution confirms the interest of financial world for such ratings and should yield some standardization of the methodologies. So, it would be interesting to know if these ratings imply a market reaction and a modification of investors' behavior. The aim of the paper is to answer the question: *Do CSR ratings have an impact on stock prices?*

No study, to our knowledge, deals with the announcement impact of CSR ratings on financial markets and investors' behavior. Studies about CSR rating agencies are growing up in recent years. Some papers based on CSR ratings explore the link between CSR and financial performance. For example, on US market Derwall et al. (2005) use ratings from Innovest, Galema et al. (2008) from KLD and on European markets Dupré et al. (2006) employ ratings from Vigeo. However, a few studies on global impact of ratings sharply contrast with a surge of rating activity.

Rather than searching for an impact of the broad ratings, several studies focus on one component the CSR ratings: The corporate governance. In the US, using the rating of the three premier agencies from 2003 to July 2006 Ertugrul and Hegde (2009) state a poor predictive power of corporate governance summary score. Nevertheless, they document a higher information content for 8 sub-ratings on key dimensions. On European markets from 1999 to 2003 Renders et al. (2010) find a significant positive relationship between corporate governance ratings and performance. This result occurs after controlling for econometric concerns obscuring the relation like selection bias and endogeneity.

The closest paper to our scope (Ducassy and Jeannicot, 2008) measures the impact of announcements of social reporting ranking on share prices on the French market (CAC 40) during 2005-2007. They find a market reaction, but stronger for the modifications than for the rankings themselves. Lastly, two recent researches on US are also close to our topic. Krüger (2009) study market reaction to public news about social responsibility. He particularly examines the effect of the news announcement and the concordance between the market reaction and the KLD rating. He finds negative abnormal returns associated to negative news but no systematic reaction to positive ones. Mănescu (2010) offers a long term study of stock returns in relation with CSP. She examines the different effects of sustainability attributes and explains them either by mispricing or by the non-sustainability risk level of firms.

In this paper we offer an exploratory study of European stock markets reaction to announcement of CSR ratings. This is an innovative and relevant way to study CSR effects on financial performance for three reasons. First, we are

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<sup>3</sup>The CSP is defined by Wood (1991) and refined by Orlitzky (2008), is a larger concept than CSR. It "*includes organizational processes of environmental assessment, stakeholder management, and issues management, but also, and perhaps most important, various measures of its external manifestations and societal effects, such as social impacts*".

dealing with the still open question of the pricing (or not) of CSR by the market, but unlike the existing literature on the incorporation of CSR in the share prices (for a survey, see Renneboog et al., 2008b) we focus on CSR rating announcements. Second, the analysis of CSR rating announcements offers a good opportunity to understand the overall impact of CSR on financial markets since it mitigates several problems such as performance measurement. Third, focusing on European markets, we use ratings disclosed by Vigeo, which are published through the year, while others agencies (e.g. KLD) rate whole firms annually. Every month Vigeo rates a few sectors. This periodicity enables us to use an event study methodology to measure Abnormal Return (AR) associated with rating announcements.

Relying on the efficiency hypothesis, there are two ways to analyze the CSR announcement effect.

On one hand, in efficient markets any new information is incorporated in prices. So, we should expect no effect. Nevertheless, several reasons can explain a market reaction. Since the ratings (sold mainly to institutional investors) are not fully public it could reduce efficiency. Moreover, ratings are based not only on public information but also on non-public information collected by rating agencies. Thus, ratings can bring new information to the market. Lastly, rating agencies can have a superior ability to extract information from these mainly qualitative measures and to provide a relevant assessment of the risk including immaterial. Investors can use such additional information to take and support (justify) their decisions and to reduce their risks. . .

On the other hand, in efficient markets there is no difference between firms' risk adjusted returns. AR generated by the announcement can be explained either by mispricing or by emergence of a new risk. A stock is mispriced (Derwall et al., 2005) if it valued using a current model (for example Fama French factors models) missing a relevant risk factor such as the CSR<sup>4</sup>. It can also induce the appearance of a new risk factor: non-sustainability risk (Mănescu, 2010) but also sustainability risk (too strong CSR activity in the mind of investors).

This paper contributes to the literature dealing with two main questions.

- *Does the CSR rating announcement produce any effect on the stock prices?*

We measure the AR associated to Vigeo CSR rating announcements on the European market from 2004 to 2009. This enables us to analyze a large sample including 1588 events and 581 firms. We choose an event study methodology in the aim to measure the financial performance through the market reaction. This methodology is used in different studies on CSR impact on financial performance, for example on corporate news diffusion (Hall and Rieck, 1998), environmental awards (Klassen and McLaughlin, 1996) and recently on mergers and acquisitions announcements (Aktas et al., 2010).

- *What are the contributions of the different components of the rating?*

We use a two steps regression methodology to analyze the relationship between AR and CSR ratings. Then we study how the market reacts (what is the investors' interpretation) to the rating by components, taking in account the

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<sup>4</sup>Galema et al. (2008) show that there are non trivial relationships between CSR and financial risk factors.

different aggregation levels and their signs. This last point offers the opportunity to benchmark with concern and strength of KLD rating (refer to Galema et al., 2008, for an introduction to KLD methodology or to [www.kld.com](http://www.kld.com) for detailed information).

Our study offers four main results.

- First, we show that CSR rating announcement have a significant impact on stock prices. We suggest that CSR rating gives additional information to the market, modifying investors' beliefs and decisions. Our study reinforces the interest in CSR risk (or ESG risk). For, each CSR component there is a risk of weak CSR (non-sustainability risk), but also a risk of too much CSR (sustainability risk). This also strengthens the need to incorporate CSR into valuation models.
- Second, we find that there is no reaction to aggregated rating scores. An overall score incorporates too many elements leading to ambiguity. This result is in line with Vigeo views since no aggregated scores are provided.
- Third, we document that the market reaction is multivariate, depending on the field, on the aggregation level and of the sign of the components' score. Reactions to components are complex and must be analyzed with caution. A detailed analysis of market reactions, taking into account CSR ratings on different aggregation levels but also sector specificities, allows us to suggest that the reaction can be interpreted mainly in terms of value (excess or shortage) for some components and in terms of risk for others. These reactions are expected to evolve, according to the investor's demand for CSR and to the development of CSR pricing taking into account both the sustainability and the non-sustainability risk.
- Lastly, we show that market views environment and human resources mainly as a cost, human rights as benefit, community involvement as mixed. Corporate governance is significant but only at a disaggregated level.

The remainder of the paper is organized as follows. Section 2 develops background and hypotheses. Section 3 details our data and the methodology. Section 4 gives our results. Lastly, section 5 provides our conclusions.

## **2. Background and Hypotheses**

There is a large literature on the relationship between CSR, CSP and financial performance from both a theoretical and an empirical point of view. However, there is little on CSR rating effects on markets.

Allouche and Laroche (2006) survey the main hypotheses and theoretical models. Some authors like Mc Williams and Siegel (2001) argue for no relationship, but most consider that one exists. Some models establish a positive link. The CSP increases the financial performance because of the satisfaction of goals of stakeholders (Freeman, 1984) and the improvement of public image and reputation of the firm (Waddock and Graves, 1997). Other models state a negative link. The costs increase due to the CSR of the firm reduces the firms competitiveness and its financial performance (Friedman, 1962, 1970). Finally, models based on Preston and O'Bannon (1997) suppose a synergy,

positive or negative. On one hand, a virtuous circle is considered by Waddock and Graves (1997). A high level of CSP leads to a better financial performance which authorized new CSR actions. On the other hand, a poor CSP reduces financial performance and thus CSR expenditures.

Empirical studies results are much debated. They are difficult to compare directly because of limits concerning methodologies and data used (Allouche and Laroche, 2006). Based on a meta-analysis of literature Orlitzky et al. (2003); Orlitzky (2008) supports a positive link between CSR and financial performance: CSR "*helps improve managerial knowledge and skills and enhance corporate reputation*". Different benefits are obtained: increased efficiency or sales revenues, reduced business and shareholder risks. Results are dependent on measures of performances, as shown by the synthesis of Margolis and Walsh (2003). CSR seems to be more related to accounting measures of financial performance than to capital market measures. However, Allouche and Laroche (2006) point out that reputation indexes are correlated with financial market measures more than accounting ones. But, the relationship between CSR and financial performance is not completely established due to the action of many moderators, such as characteristics of firms, industry and economic situation. Moreover, CSR interacts with financial risk factors, for instance with Fama & French factors, as demonstrated by Galema et al. (2008). Further, some authors underline ambiguity of the links. So, even where positive relation can be shown, more research is needed to better understand the links and interactions between CSR and financial performance. The existence of a non-linear relationship between CSR and financial performance is an interesting perspective opened by Bowman and Haire (1975).

The literature focusing on the impact of CSR on capital market performance and shareholder wealth reveals contrasted results. Studies on specific aspects, such announcements of corporate donations or production of environmentally friendly products show a positive link (Hall and Rieck, 1998). But is CSR globally incorporated in share prices, remains a question. A first answer is given by Dupré et al. (2006). Using an aggregated measure based on Vigeo components ratings of European firms from 1999 to 2004, they found that ethical firms have a lower medium term return than non-ethical firms. They suggest that this result is explained more by a financial sacrifice accepted by investors to hold ethical stocks (over pricing) than by a lower risk premium of responsible firm (requirement of financially rational investors recognizing social risk). But, as shown by Renneboog et al. (2008b) in their review of empirical literature, the pricing of CSR by financial markets its still an open question. Based on previous elements, on the development of SRI and on the increasing interest of investors in CSR, we expect a significant effect of the announcement of CSR ratings on the stock market thus we state our first hypothesis:

**Hypothesis 1.** *The announcement of CSR ratings induces a significant reaction of the stock market.*

Galema et al. (2008) suggest that the difficulty in bringing to the fore the impact of CSR on returns could be explained by the use of aggregated measures of CSR. Such aggregation of different components could lead to confounded effects, due to opposite reactions. This confounding effect argument is documented in many empirical studies (Mănescu, 2010), but remains to be explored. Indeed, Galema et al. (2008) found a little evidence of this explanation in their empirical study of US portfolios. Scholtens and Zhou (2008) highlight the antinomic impacts on expected

returns of environmentally friendly products (positive) and employee relations (negative). Bird et al. (2007) suggest that share values are not only influenced by CSR components, but also by all CSR activities, in a way varying over time. Nevertheless, focusing on corporate governance rating Ertugrul and Hegde (2009) find a poor predictive power of summary score, compared to sub-scores. This leads to our second hypothesis:

**Hypothesis 2.** *The market does not react to aggregated CSR score.*

Most studies distinguishing components document an heterogeneous reaction depending on CSR component. The main finding summarized by Renneboog et al. (2008b): "*Good corporate governance, sound environmental standards and, to a lesser extent, care of stakeholder relations*" are associated with higher shareholder value. But, environmental performance does not systematically increase the share price, as event studies on announcement of corporate environmental news tends to show<sup>5</sup>. Derwall et al. (2005) formulate, to explain best returns of portfolios invested in high environment scores, the hypothesis of undervaluation of environmental information by the market. Such hypothesis could also be considered about corporate governance information. For stakeholder relations the results are various. Hillman and Keim (2001) distinguish two aspects with opposite implications on financial performance. They show that "stakeholder management" dealing with direct stakeholders of the firm (employees, customers, suppliers and communities) has a positive impact on shareholder values. Conversely, "social issue participation" corresponding to relationship with non-direct stakeholders and usual excluding factors in SRI (nuclear energy, military, "sin" industries [alcohol, tobacco, and gambling], human rights violations) often has a negative impact on a firm's value.

The reaction depends on CSR informational content of rating and on score level (strength/ or concern). The ability of scores elements to summarize the past or to predict the future is important<sup>6</sup>. For example, on environment, Chatterji et al. (2009) find that KLD concern ratings offer a good representation of the past performance, but that in contrast strong environmental ratings (strengths) are bad predictors of pollution levels and compliance violations. In the same way Krüger (2009) finds negative AR associated to news about negative social responsibility, but no systematic reaction to positive news. Bad news, and by extension bad scores, are easier to interpret than good ones.

The (main) interpretation of the score of CSR components as a benefit (reputation, increase of cash-flows and risk reduction) or as a cost (future expenses, increase of risk about corporate responsibility) determines the market reaction. A low rating of a component can be viewed as the consequence of a cost cutting strategy (beneficial) but a high rating could be interpreted as a profitable investment (also beneficial); thus both low and high scores could have a positive influence. From such line of reasoning it is straightforward to understand that strength and concern could induce any kind of market reaction (positive or negative). These arguments and evidences allow us to formulate our third hypothesis:

**Hypothesis 3.** *The market reaction varies according to three dimensions of the CSR rating announcement:*

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<sup>5</sup>A positive reaction to environmental performance can also be interpreted as relating to anticipated cash-flows taking in account risks and future costs link to environmental regulation or litigation.

<sup>6</sup>In a related study, Scalet and Kelly (2010) evidence little impact from the CSR rating on the subsequent CSR firms' behavior.

- a) *The field rated.*
- b) *The score aggregation level (fields, subfields or items)<sup>7</sup>.*
- c) *At last, the sign of the component' score, whether it is positive (an investment, a strength) or negative (a divestment, a concern)<sup>8</sup>.*

As shown by the literature, investors are mainly reacting to some components. These ones could be considered at a moment as more relevant than others (for example on environment or corporate governance), but also as more informative. Ertugrul and Hegde (2009) show that component sub-ratings focusing on eight key dimensions of corporate governance structure provide the information to predict performance. We try to verify if this important result is transferable to all CSR topics. The fact that investors take into account a limited information to form their decisions, specially in a context of short term trading decision, could also support this assumption. Our last hypothesis is:

**Hypothesis 4.** *A reduced number of detailed components (subfields, items) of CSR ratings is taken into account by investors.*

### 3. Data and Methodology

We first present our data in subsection 3.1 then, we turn to the methodology in subsection 3.2.

#### 3.1. Data

Our initial sample comprises all regular ratings (Equities - stocks belonging to the STOXX Europe 600) broadcast by Vigeo from 2004 until end 2009: 778 firms and 1945 announcements (events). Stock data are extracted from Datastream<sup>9</sup>. We mainly use the shares and index prices, shares' dividends and from Worldscope the market value and the book to market. First, we review the content of Vigeo ratings in subsection 3.1.1, then we present our event sample in subsection 3.1.2.

##### 3.1.1. Vigeo Ratings

Vigeo, the European leading supplier of extra-financial analysis, measures companies' performance in the area of Sustainable Development & Social Responsibility. The rating is based on internationally recognized CSR standards. Six *fields* are covered:

- 1) Business Behavior (*BB*);
- 2) Corporate Governance (*CG*);
- 3) Community Involvement (*CIN*);
- 4) Environment (*ENV*);

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<sup>7</sup>For instance, on field *BB* there are 3 subfields, we expect that some of them have a positive impact whereas others have a negative.

<sup>8</sup>For instance, strength *BB+* can be rewarded while at the same time concern *BB-* is also rewarded thus a positive influence whatever the news.

<sup>9</sup>Refer to Ince and Porter (2006) for a comparison between Datastream and CRSP data. Campbell et al. (2010) also use and detail Datastream's data.

- 5) Human Resources (*HR*);
- 6) Human Rights (*HRTS*).

The fields are disaggregated in 17 *subfields*, themselves made up of 37 generic criteria (hereafter *items*) detailed in appendix in tables 13 through 15. Thus, the ratings can be viewed as a hierarchical tree:

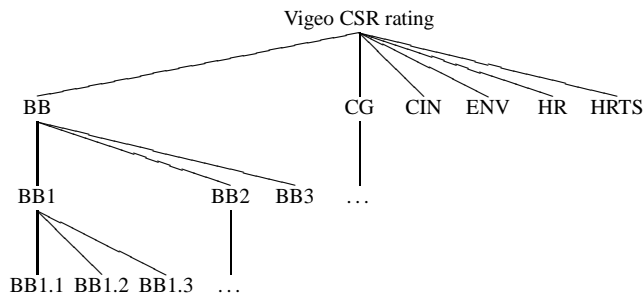


Table 1 provides the correlation between the fields.

Table 1: Correlation among CSR Fields

Variable	BB	CG	CIN	ENV	HR	HRTS
BB		37	53	59	60	61
CG	37		37	34	19	31
CIN	53	37		57	49	54
ENV	59	34	57		66	60
HR	60	19	49	66		72
HRTS	61	31	54	60	72	

This table gives, on the studied sample, the correlation between the 6 fields. All correlations are significant at a 1% level.

From table 1, we notice a strong correlation between the fields. All correlations are significant at a 1% level. *CG* is the least correlated field, all other fields have a correlation greater than 53%. *HR* and *HRTS* are the most correlated (72%). Such results suggest a common component among fields, where a firm chooses CSR as a management way and applies it, more or less, among all the fields. Table 2 provides the first two principal components among the fields.

Table 2: Factorial Analysis of CSR Fields

	Factor <sub>1</sub>	Factor <sub>2</sub>
Contribution (%)	59.39	14.61
BB	0.23	0.01
CG	0.14	0.94
CIN	0.21	0.15
ENV	0.23	-0.09
HR	0.23	-0.42
HRTS	0.24	-0.21

This table gives, on the studied sample, the first two factors among the 6 fields. First line provides the contribution of the factor and following lines the contribution of each field.



The first component explains 59% of the variation, all fields have similar contribution except *CG* that has a lower contribution. The second factor account for 15%, *CG* has a high contribution, *CIN* a lower whereas *HR* and *HRTS* have a negative one, others fields are negligible. Thus,  $Factor_1$  reflects the general investment in CSR whereas  $Factor_2$  represents a high investment in *CG*, a lower in *CIN* whereas *HR* and *HRTS* are clearly neglected.

To obtain the rating, each criterion is applied in relation to its sector relevance and is given a consideration representing the relative weight of social responsibility objectives relating to it. The management systems are rated according to three dimensions: The *relevance* of their policies; the *coherence* of implementation and the *effectiveness* of results<sup>10</sup>.

Vigeo provides two figures: A score ( $\in [0, 100]$ ) and a rating in five categories (++, +, =, -, --) which represents the rank of the firm within its' sector 5% best, 25% following, 40% central, 25% following and 5% worst. The score is relative to a sector and a production date since Vigeo continuously improves it's methodology. Thus even for the same firm two scores at two different dates are not directly comparable. With a relative score (to the sector that is to say to others firms), the score has an informational content beyond the variation since it enables to locate the firm within its' sector that is impossible with the variation only. Consequently, we expect that the score itself to be informative.

Table 3 provides ratings by countries. To give an overview of the ratings we compute an aggregated measure: *ACSR* the average of fields.

Table 3: CSR Ratings by Countries

Country	#	ACSR	F <sub>1</sub>	F <sub>2</sub>	BB	CG	CIN	ENV	HR	HRTS
United Kingdom	442	43.42	0.23	1.10	41.68	65.02	45.22	35.93	30.10	42.55
Norway	28	42.68	0.28	-0.05	41.14	50.71	40.32	34.89	38.46	50.57
Netherlands	73	42.36	0.22	0.35	42.99	54.81	42.45	33.64	35.40	44.86
France	269	42.10	0.27	-0.72	42.18	39.90	44.49	35.06	43.37	47.61
Germany	149	39.42	0.06	-0.61	39.34	39.86	38.77	36.13	38.14	44.26
Spain	92	37.83	-0.07	-0.49	40.68	40.23	37.74	29.93	36.51	41.90
Switzerland	103	36.84	-0.16	-0.16	39.81	43.56	34.61	33.05	30.03	39.96
Sweden	90	36.78	-0.13	-0.42	40.68	40.96	30.81	32.00	30.87	45.39
Finland	43	36.43	-0.20	-0.13	36.09	47.47	26.77	31.02	36.44	40.77
Portugal	25	36.21	-0.19	-0.64	40.28	34.88	41.80	29.84	33.40	37.08
Belgium	43	35.47	-0.25	-0.63	36.72	36.30	35.58	31.77	33.51	38.95
Italy	86	35.08	-0.25	-0.85	39.37	33.48	35.43	26.06	36.07	40.05
Austria	22	31.95	-0.53	-0.41	30.41	39.18	29.50	21.41	30.55	40.64
Denmark	47	30.72	-0.58	-0.84	34.74	29.91	29.38	26.13	26.43	37.72
Ireland	36	29.56	-0.77	0.39	33.83	47.72	25.25	17.31	22.31	30.94
Greece	35	27.02	-0.88	-0.89	31.60	25.66	28.94	23.34	22.60	30.00
Luxembourg	5	26.50	-0.94	-0.36	34.80	32.00	29.80	14.00	17.20	31.20
Fisher Test		12.18***	9.76***	138.1***	3.68***	109.9***	10.31***	6.26***	12.05***	7.54***

This table provides the results of an Anova on *ACSR* and each field by countries. # is the number of announcements. The first lines give the mean score by countries, and the last one (Fisher Test) gives the overall significance.

<sup>10</sup>We try to take into account this decomposition. The three categories are rarely significant and quite unstable. Thus they do not provide, according to us, interesting patterns and we do not report this analysis.

Four countries have an noticeably above the mean CSR: France, United Kingdom, Netherlands and Norway; Germany is close to zero. The worst countries are Austria, Denmark, Ireland and by far Greece<sup>11</sup>. There are change among the fields. Looking at the Fisher test, *CG* is the field with most important variations among the countries. In France, *CG* is quite low whereas *HR* is the highest, UK has the opposite behavior: High *CG* and low *HR*. Translating this into the factors UK has both a high  $Factor_1$  and  $Factor_2$  whereas France has a high  $Factor_1$  and a negative  $Factor_2$ .

### 3.1.2. Event Sample

Almost every month Vigeo broadcasts the rating on one (or a few) sector. To select the relevant events, we use 6 exclusion criteria: We exclude firms, without data in Datastream, not traded over the whole period, with conflicting Vigeo country and Datastream country, with low valuation (penny stocks  $\leq 1$  currency unit), we exclude abnormal cases: Iceland and Nokia<sup>12</sup>. At last we exclude events with missing data in the estimation or event window<sup>13</sup>. Table 4 gives the numbers of firms and events excluded by these filters.

Table 4: Filters

Filter	# Firms	# Event
<b>Initial Sample</b>	778	1945
No data in Datastream	3	6
Not traded over the whole period	179	311
Different Vigeo and Datastream countries	9	21
Penny Stock	2	5
Abnormal cases	1	3
Missing days in estimation or event window	8	11
$\Sigma$	202	357
<b>Final Sample</b>	581	1588

This table provides the numbers of firms and events excluded by the filters. Since the filter "missing days" is on an event basis, it can affect a firm without excluding all events (thus the firm remains in the sample). It explains why the final number of firms is not equal to the initial number minus the excluded number.

From table 4 we notice that these exclusion criteria albeit strict do not exclude too many firms (202) or events (357). Moreover, most of the deletions come from the filter "not traded over the whole period". The remaining sample contains 581 firms and 1588 events.

Vigeo covers stock belonging to the STOXX Europe 600 thus the final sample closely follows the index composition. Table 16 in the appendix details the geographic composition of the sample and the sectors covered. We see that the final sample encompass 17 countries. The Main countries are United-Kingdom, France, Germany. We clearly view a predominance of the financial sector: 332 events (21% of the sample). Following sectors are industrial (305) and consumer services (279). A more detailed analysis reveals the occurrence of sector under negative screening

<sup>11</sup>Luxembourg is special since there is a very few events.

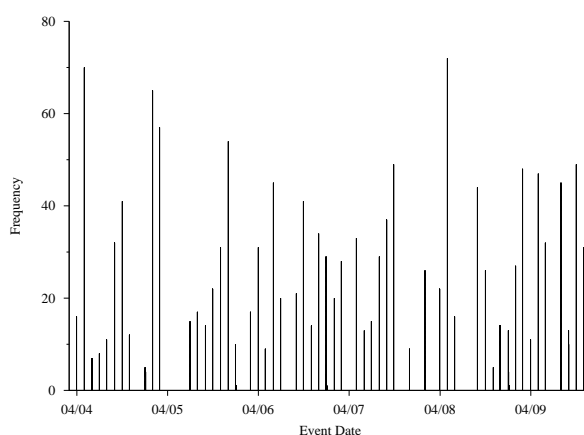
<sup>12</sup>Iceland since the Worldscope coverage is not sufficient and Nokia since it represents a too big part of the Finnish stock market.

<sup>13</sup>Since these shares are highly liquid a day without trading is abnormal and probably reflect a corporate event.

by SRI funds as tobacco, alcohol, weapons or nuclear (belongs to electric & gas utilities). Lastly, we should notice interactions between countries and sectors.

In accordance with an agenda, Vigeo broadcasts its ratings through a newsletter and an electronic platform at the end of each month to its clients (all major financial institutions). Thus, there are waves of ratings and the number of rated firms depends on the sector. We distinguish the production date (the date when Vigeo releases the rating) and the event date (the first trading day on or after the production date when the market is closed). Figure 1 details the numbers of firms rated according to the event dates.

Figure 1: Number of Announcements per Day



This figure gives the number of announcements on each event date (trading day).

Figure 1 shows that there are great variations of the numbers of firms rated on a given event day. The minimum is 1<sup>14</sup>, the maximum 72, the average 25 and the standard deviation 18. Moreover, Vigeo does not broadcast ratings every month.

### 3.2. Methodology

First, we present the event study methodology in subsection 3.2.1. Then, we analyze the impact of firms' features on ratings in subsection 3.2.2. At last, we detail the analysis of relationships between Cumulative Abnormal Return (CAR) and ratings in subsection 3.2.3.

#### 3.2.1. Event Study

Event study is a widely used methodology in finance (for surveys see for instance Khotari and Warner, 2006; Campbell et al., 1997). However, exact choices about main methodological steps remain an empirical question. The estimation windows covers six months:  $[-130, -10]$ , the event windows is eleven days:  $[-5, 5]$ . On these windows

<sup>14</sup>For a sector the event date can change among firms if they are quoted in different markets and one of them is closed on the production date.

we compute the returns taking into account dividends using the following formula:  $R_t = \frac{P_t + D_t - P_{t-1}}{P_{t-1}}$  where  $P_t$  and  $D_t$  are respectively the price and dividend on date  $t$ .

Event studies can use several different models: Among others the mean model, the market model, the CAPM, the Fama and French (1993) three factors or Carhart (1997) four factors. To compute the factors for the last two models, we follow the procedure detailed by Renneboog et al. (2008a)<sup>15</sup>. To tackle possible measurement error, all models include an intercept. We consider several candidates as benchmark the STOXX Europe 600 (this choice is natural since Vigeo follows this index), the emblematic index of each country (for instance the CAC 40 in France, the FTSE 100 in UK, or the DAX 30 in Germany...), and a self made country capital weighted index based on the shares covered by Worldscope<sup>16</sup>. To choose among these models and benchmarks, we retain the best combination on the estimation window using adjusted  $R^2$ . Results clearly favor the Carhart (1997) model since the adjusted  $R^2$  is on average about 36% whereas it is about 32% with the market model. Consequently, in the remainder, we use the Carhart (1997) four factor model given in equation (1).

$$R_{i,t} = \alpha + R_f + \beta_i(R_{m,t} - R_f) + \beta_{i, smb} \times SMB_t + \beta_{i, hml} \times HML_t + \beta_{i, mom} \times MOM_t + \varepsilon_{i,t} \quad (1)$$

There is a concern using Fama French Carhart's model in such framework since Galema et al. (2008) evidence that this model includes risk premia that interacts with the CSR. The remainder of the methodology (cf. subsection 3.2.2) deals with this topic.

On the reference windows, we check the AR stationarity with the KPSS test, the normality using the Jarque-Bera test, the auto-correlation using the Durbin Watson test and the Lagrange multiplier test for arch effect. All tests are made on an event basis and then compared on the sample. On the 1588 reference windows the KPSS reject the stationarity in 3% of the cases. The Jarque Bera's test rejects the normality in about 67% of the cases. With one lag, the Durbin Watson reject the absence of auto-correlation in 21% of the cases (15% with a diagnostic of negative auto-correlation and 6% with a positive one) at last, the Lagrange multiplier highlights the presence of arch effect in 15% of cases.

On the event window we compute the AR following equation (2):

$$AR_{i,t} = R_{i,t} - \left( \widehat{\alpha} + R_f + \widehat{\beta}_i(R_{m,t} - R_f) + \widehat{\beta}_{i, smb} \times SMB_t + \widehat{\beta}_{i, hml} \times HML_t + \widehat{\beta}_{i, mom} \times MOM_t \right) \quad (2)$$

In this analysis, there are a few important points to take into account:

- The study encompass several countries with different currencies

<sup>15</sup>To avoid influence of extreme abnormal values we winsorize individual data prior to computation of the factors. According to the features we observe, we winsorize returns at a 0.25% level, market capitalization at a 0.5% and market to book value at a 1%. Following these operations we obtain for  $SMB$ ,  $HML$  and  $UMD$  values in the range [-18%, 19%].

<sup>16</sup>This index is the only one used for Fama and French (1993) and Carhart (1997) models.

- Event dates are clustered in time: figure 1 shows that there are several ratings on the same day. It induces cross-correlation among the events that affects the test statistics.
- The rating effect can change according to the firm. The event can induce change in variance Harrington and Shrider (2006). Thus, tests must be robust to change of the variance.
- The normality of the AR is strongly rejected on the estimation window.

According to Campbell et al. (2010), in such a multi-countries (and currencies) event study, a model with local index, no currency conversion (and preferably buy and hold returns<sup>17</sup>) are adequate. Moreover, results favor the Cowan (1992) and Corrado (1989) tests. Numerous studies analyze the tests features (see for instance, among others Cowan (1992), Giaccotto and Sfiridis (1996), Seiler (2000), Hamill et al. (2002), Corrado and Truong (2008)). Major conclusions are the superiority of non-parametric tests (Corrado and Zivney (1992), Cowan (1992)) and tests that account for change in variance (Boehmer et al. (1991))<sup>18</sup>.

One drawback of the Corrado and Zivney (1992) is that it is a one day test (not suited for the CAR since to aggregate several AR one need to hypothesis that they are independents!). In this case, we use the adjustment proposed by Kolari and Pynnönen (2009) that standardizes the returns before computation of the test and re-base the number of days to obtain a properly specified test. According to the authors, these tests are robust to serial correlation, event induced volatility and cross-correlation due to event day clustering.

However, one strength of the parametric tests is that they enable quantification of the phenomenon. Thus we also compute parametric test: The standard Patell (1976) t-test<sup>19</sup> and Boehmer et al. (1991) test that accounts for induced variance. However, none of these tests are robust to cross-correlation. Thus we use the simple adjustment proposed by Kolari and Pynnönen (2005) that takes into account the cross-correlation among the events on a same date<sup>20</sup>.

All computations use the Standardized Abnormal Return (SAR) and Standardized Cumulative Abnormal Return (SCAR), the standardization accounts for the prediction error (see Campbell et al., 1997, for details) and are done using the SAS software. In the remainder we only report parts of the results, whole results are available upon request.

This analysis enables us to check our main hypothesis (hypothesis 1).

### 3.2.2. Analysis of Firms' Features Influence on Ratings

Here, without loss of generality we illustrate the methodology using the *ACSR* variable: the average of the fields. The same methodology is used for all elements of the rating (*ACSR*, factors, fields, subfields and items).

One advantage of the event study methodology is that it controls for firms' features. More specifically, since we use the Fama French Carhart's model, AR are adjusted according to market return, systematic risk, book to market, market value and momentum.

<sup>17</sup>With a small event window the difference between buy and hold returns and log returns is negligible.

<sup>18</sup>They also recommend a equal weighted index however, no such index is available during all the period and in all countries. Computing such index could lead to significant differences.

<sup>19</sup>Also referenced as *J2* test in Campbell et al. (1997).

<sup>20</sup>Roughly speaking, this adjustment deflates the test statistic by the value induced by the correlation among observations on the same date.

Thus, to assess the impact of CSR on the stock returns we should also control for the influence of these features on CSR. Following the literature (Orlitzky, 2008), organization size (market value) has a positive influence on the CSR. Firm risk (systematic risk), has a less clear link with social responsibility. The relationship between business risk and CSR is negative and ambivalent (Orlitzky and Benjamin, 2001). On the one hand, a low risk of the firm can lead to an increase of discretionary spending on social responsibility, but on the other hand CSR reputation induces a reduction of business risk. The book to market relationship with CSR depends of components: Positive for corporate governance and negative for diversity (Galema et al., 2008). For environment the authors found a negative link on sum of scores, but a positive one when they consider separately strengths and concerns. Moreover, economic sectors are very different in terms of firms' features, these differences could modify the relationship to CSR behavior. Consequently, we estimate the following model:

$$\begin{aligned}
ACSR_{i,t} = & \alpha + \sum_{s=0}^9 DS_s \times (MV_{i,t-1} \times \beta_{MV,s} \\
& + BTMV_{i,t-1} \times \beta_{BTMV,s} + BETA_{i,t-1} \times \beta_{BETA,s}) \\
& + \epsilon_{i,t}
\end{aligned} \tag{3}$$

where  $DS_s$  are sector dummies that are equal to 1 if the firm belongs to the sector  $s$  (first level of the ICB classification) and 0 otherwise.  $MV$  is the firm market value (in ln million €),  $BTMV$  is the firm's book to market value and  $BETA$  is the CAPM firm's  $\beta$ . These variables are lagged in event time that is to say  $MV_{t-1}$  is the capitalization measured during the estimation window of the previous event. Since there is one lag, we necessarily lose the first event for all firms. The resulting sample contains 1007 events.

Since the rating belongs to  $[0, 100]$ , we use truncated regression to estimate equation (3)<sup>21</sup>. This regression enables us to estimate the expected CSR according to the firms' features. What really matters in the announcement is not the announced value, but the surprise (the innovation). In the remainder, we only use the residual ( $\epsilon_{i,t}$ ) from equation (3). A critical question is how to translate the ratings into variables. The proper translation relies on the true (unknown) relationship between AR and the CSR. Moreover, as several studies (Galema et al., 2008; Krüger, 2009) underline a different reaction according to good and bad news (positive or negative; strength or concern), we construct two variables:

$$\begin{aligned}
ACSR_{i,t}^+ &= \epsilon_{i,t} & \text{when } \epsilon_{i,t} & \geq 0 \\
ACSR_{i,t}^- &= -\epsilon_{i,t} & \text{when } \epsilon_{i,t} & < 0
\end{aligned} \tag{4}$$

$ACSR^+$  corresponds to a good score from a CSR point of view (an investment of the firm into the CSR, a strength) and  $ACSR^-$  to a bad one (a divestment from CSR activities, a concern). Using this transformation enables a

---

<sup>21</sup>Factors are by construction free from this constrain, they are estimated as usual. For details about the estimation process refer to proc qlim in SAS documentation, option truncated.

simple interpretation of parameters of AR regressions. Whatever the variable, if we obtain a positive parameter then the market views this activity (either a strength or a concern) as a benefit whereas negative value shows a costly interpretation<sup>22</sup>.

The parameters interpretation have to be made with caution, due to the sign of variables. On the one hand, a positive parameter on *ACSR+* and a negative parameter on *ACSR-* means that the market interprets investments of the firm into CSR activities as beneficial for the firm. On the other hand, a negative parameter on *ACSR+* and a positive one on *ACSR-* evidences that the market considers investments of the firm into these activities as detrimental for the firm.

### 3.2.3. Analysis of CAR

In order to analyze the influence of the CSR on AR we use the model given in equation (5).

$$CAR_{i,t} = A + B \times VIGEO_{i,t} + C \times X_{i,t} + \varepsilon_{i,t} \quad (5)$$

where  $CAR_{i,t}$  is the cumulative abnormal return of firm  $i$  on date  $t$ ,  $VIGEO_{i,t}$  is a vector containing the ratings of the firm<sup>23</sup> and the vector  $X_{i,t}$  contains several control variables.

We initially consider a set of control variables similar to Galema et al. (2008), after removing non significant variables, we use: *Date*  $\geq 07-2007$  a dummy variable that is equal to 1 if the date is after July 2007<sup>24</sup>; *Abnormal Volume* the percent deviation of the monetized daily trading volume on that day from the reference period<sup>25</sup>; the *Sector Return* the country sector return extracted from Datastream according to the classification of the firm (variable *INDXEG*). This variable enables to control for several features: A sector effect, a country effect and also a historical effect<sup>26</sup>.

We also try to include control variables for others phenomena for instance a short term momentum behavior of investors. We thus compute the total return of the share on a window before the event ( $[-11, -6]$  or  $[-16, -6]$  or  $[-21, -6]$ ) and include this variable into the regression (one at a time). However, the result is barely significant. Thus, short term momentum is not significant here.

Since, the rating is nested it is not possible to include the different levels of the rating (for instance field and subfields) into the same regression due to a collinearity problem. Thus, on a given regression we include content of the CSR rating according to their level: Overall (*ACSR* or factors), fields, subfields or items. All these variables are residuals obtained from equation (3) and split according to their sign (cf. equation 4).

<sup>22</sup>At last, one can ask whether the change of rating has an influence. Thus we also compute the change of rating  $\Delta ACS R_t = ACS R_t - ACS R_{t-1}$ , to avoid losing too many observations, we consider that when no previous rating is available,  $\Delta ACS R_t = 0$ . However, these changes of rating do not produce significant results thus we do not include them into the presented results.

<sup>23</sup>The exact content varies among regressions, we study the overall influence (one variable), the fields influence (6 variables), the subfields or the items.

<sup>24</sup>This variable comes from a Chow test evidencing the influence of the financial crisis on the stock market.

<sup>25</sup>We first compute on the reference period the average daily trading volume ( $\mu_v$ ) then, on the event day(s) we compute abnormal volume $_{i,t} = (volume_{i,t} - \mu_v) / \mu_v$ .

<sup>26</sup>Interestingly, we also tried the AR but this variable was not significant. Thus abnormal shares' returns are not influenced by the abnormal sector return.

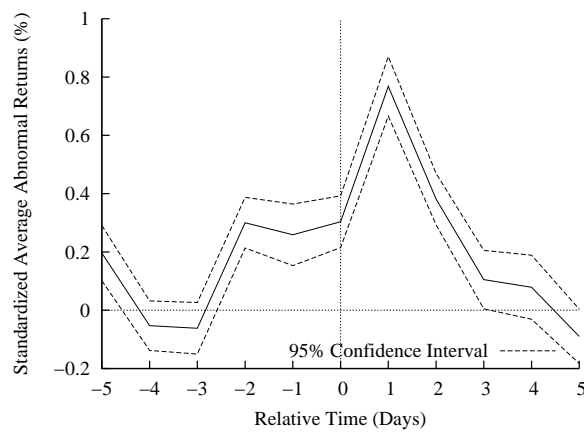
## 4. Results

We first present results on the effect of announcements on returns in subsection 4.1. Second we take into account the effects of firms' features on CSR ratings in subsection 4.2. Then, we review the impact of the overall CSR in subsection 4.3. Following, we turn to a detailed analysis of the announcements content in subsection 4.4. At last, we present the robustness check in subsection 4.5.

### 4.1. Effect of Announcements on Returns

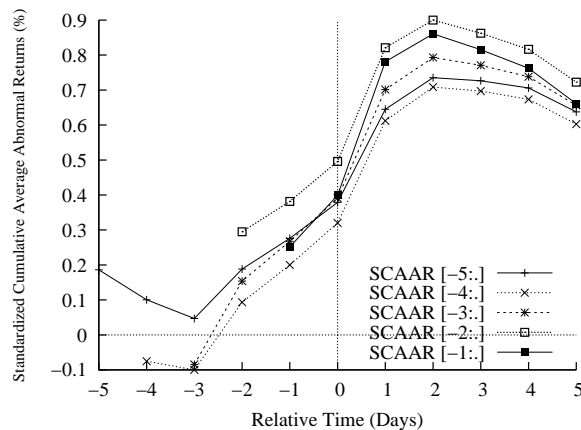
Figure 2 and 3 provides the SAR and Standardized Cumulative Average Abnormal Returns (SCAAR) over the event windows.

Figure 2: Standardized Average Abnormal Returns (SAAR)



This figure gives the SAAR in the event window. 95% confidence interval is build using a reversed t-test.

Figure 3: Standardized Cumulative Average Abnormal Returns (SCAAR)



This figure gives the SCAAR in the event window. The various SCAAR only change according to the beginning date.



Table 5: Standardized Abnormal Return (SAR) Tests

Variable	Average (%)	% Positive	Patell	Boehmer	Adj. Boehmer	Corrado	Corrado-Zivney
$SAR_{-5}$	0.20	54.28	7.66***	4.08***	2.90***	1.09	1.38
$SAR_{-4}$	-0.05	46.41	-2.07**	-1.23	-0.87	-0.75	-0.82
$SAR_{-3}$	-0.06	49.62	-2.41**	-1.37	-0.98	-0.44	0.11
$SAR_{-2}$	0.30	61.02	11.71***	6.78***	4.82***	2.27**	3.27***
$SAR_{-1}$	0.26	58.12	10.10***	4.81***	3.42***	2.17**	2.75***
$SAR_0$	0.30	55.10	11.84***	6.69***	4.76***	1.85*	2.10**
$SAR_1$	0.77	69.27	29.97***	14.73***	10.48***	5.73***	6.46***
$SAR_2$	0.38	58.82	14.87***	8.47***	6.03***	2.86***	3.16***
$SAR_3$	0.11	53.72	4.10***	2.06**	1.46	0.83	1.55
$SAR_4$	0.08	57.56	3.08***	1.41	1.00	1.06	2.32**
$SAR_5$	-0.09	50.31	-3.50***	-1.89*	-1.34	-0.25	0.16
$SCAR[-2 : -1]$	0.38	62.34	14.95***	7.92***	5.63***	2.82***	3.63***
$SCAR[0 : 2]$	0.83	69.65	32.42***	16.75***	11.92***	6.16***	6.49***
$SCAR[-2 : 2]$	0.88	70.91	34.24***	17.33***	12.33***	5.71***	6.30***

This table provides the test of the SAAR/SCAAR significance. When a cumulative return is studied, the Corrado and Corrado-Zivney statistics have been adapted to the multi-day framework following Kolari and Pynnönen (2009). The adjusted Boehmer test accounts for event day clustering following Kolari and Pynnönen (2005). \* 10%, \*\* 5% and \*\*\* 1% significance.

Figure 2 shows that SAAR are significant a 5% level (using a cross-sectional t-test also known as J1) over the window  $[-2, 2]$ . The overall reaction is firmly positive. The sequence of SAAR generates SCAAR from  $-5$  in figure 3: They are first slightly negative and thus grow up until 2 to become positive and significant, then they slightly decrease from 3. Table 5 details the statistical tests on these data.

Table 5 highlights that SAAR are significant and positive over the window  $[-2, 2]$ . Even accounting for the induced variance, the effect remains positive (Boehmer test). This one is not due to event clustering since the Adjusted Boehmer is also significant. The reaction is particularly concentrated on the days following the announcement. Moreover, SCAAR show a significant anticipation on the two days preceding the announcement.

Hence, the announcement induces a positive stock return whatever the news, good or bad. It underlines the strong demand of investors for social ratings. The anticipated effect can be explained by data collection of rating agencies. Vigeo uses public information and also data directly obtained from firms and stakeholders. Based on public information, investors could anticipate the rating. Operating one or two days before the announcement limits their risk. Such behavior incorporates part of the information prior the announcement. Another explanation could be insider trading.

Table 6 gives the (non-standardized) Cumulative Average Abnormal Return (CAAR) distribution. The statistics and tests (t-test, sign-test) shows that, over the window  $[-2, 2]$ , the CAR are positive and significant albeit dispersed (the minimum is negative). Thus, these evidences confirm the results obtained on SAR, they strongly support hypothesis 1: *The announcement of CSR rating induces a significant reaction of the market.* Moreover, this reaction is firmly positive and partly anticipated.

Our finding shows, as suggested by Aktas et al. (2010) in the mergers and acquisitions context, that markets care about social responsibility. The rating announcement seems to satisfy expectation of investors looking for information

Table 6: Cumulative Abnormal Return (CAR) Distribution

	CAR[-2, -1]	CAR[0, 2]	CAR[-2, 2]
Mean	0.90	1.91	2.81
Standard Deviation	4.60	6.79	8.04
T Stat	7.78***	11.20***	13.90***
Sign Stat	196.00***	312.00***	332.00***
Min	-43.81	-33.35	-39.26
Median	0.80	1.96	2.72
Max	25.24	54.18	75.45

This table provides the distribution (mean, standard deviation, minimum, median and maximum) of the AR. Moreover t-stat gives the student statistic and sign stat the sign test statistic with the associated confidence levels: \* 10%, \*\* 5% and \*\*\* 1% significance.

Table 7: Descriptive Statistics

Variable	#	$\mu$	$\sigma$	Min.	P1	Median	P99	Max.
Panel A: Rating Regression Lag Stock Variables								
$\beta$ (CAPM)	1007	0.89	0.36	0.01	0.16	0.88	1.98	3.56
Book to Market	1003	0.49	0.27	0.00	0.06	0.44	1.30	1.87
Market Value (ln 10 <sup>6</sup> €)	1006	8.52	1.25	4.89	5.83	8.41	11.5	12.1
Panel B: Abnormal Returns Regression Market Variables								
Sector Return (%)	995	1.21	3.76	-11	-5.9	1.20	6.67	35.9
Abnormal Volume (% deviation)	1007	0.18	48.7	-99	-70	-9.4	159	436

This table describes variables entering in equation (3) in panel A and equation (5) in panel B.

$\beta$  (CAPM) is the CAPM beta, book to market is the ratio book value ÷ market value, market value is the ln market value in million €.

Sector Return is the country sector return extracted from Datastream, Abnormal Volume is the percent deviation of the volume compared to the estimation window.

Panel B figures refer to the window [-2, 2].

about social responsibility of firms and especially about the risks attached (sustainability risk or unsustainability risk). Given the development of SRI in the last years this additional information could reinforce the demand for these stocks and explain an increase of transactions. Another interpretation could be the portfolio re-balancing of institutional SR investors, to show appropriate composition (companies with good CSR scores) to their customers. This explanation is to explore in other research. Since this study clearly shows that the effect is concentrated over the window [-2, 2], in the remainder of the analysis, we only consider this window.

#### 4.2. Effects of Firms' Features on CSR Ratings

Table 7 provides descriptive statistics of variables included in equation (3) in panel A and in equation (5) in panel B. As one can notice from table 7, variables in panel B have extreme values. To avoid the influence of these observations in estimation of equation (5) control variables are winsorized at a 1% level.

Table 8 summarizes the results from estimation of equation (3). We see that market capitalization is overwhelmingly significant. Whatever the sector or the aspect under review, the greater the firm the greater its' investment in CSR. However, considering the distribution (average, the minimum, maximum and dispersion) we notice variations between the sectors and between the aspects (for instance *ENV* and *CIN* are more influenced by the size of firm).

Beta is less significant. It has a positive on *CG* (and consequently on *Factor<sub>2</sub>*) and negative but mostly not significant

Table 8: Summary of Effects of Stocks Features on CSR Ratings

Variable	$\mu$	$\sigma$	Min.	Median	Max.	# Significant - 5% > 0	< 0
ACSR $\rho^2$ : 0.33							
Btmv - Sector	0.18	9.71	-14.18	0.97	16.40	2	2
Capitalization - Sector	5.21	0.72	4.25	5.30	6.14	10	0
Beta - Sector	-1.19	5.47	-14.24	-1.12	6.84	1	1
FACTOR1 $\rho^2$ : 0.22							
Btmv - Sector	-0.19	0.78	-1.26	-0.09	0.91	3	2
Capitalization - Sector	0.35	0.07	0.22	0.38	0.43	10	0
Beta - Sector	-0.22	0.47	-1.00	-0.35	0.75	1	2
FACTOR2 $\rho^2$ : 0.08							
Btmv - Sector	-0.66	1.01	-2.98	-0.43	0.72	0	3
Capitalization - Sector	0.07	0.05	0.02	0.06	0.18	3	0
Beta - Sector	0.24	0.43	-0.58	0.42	0.65	2	0
BB $\rho^2$ : 0.22							
Btmv - Sector	-4.34	8.85	-18.24	-4.01	10.66	1	3
Capitalization - Sector	4.06	0.64	3.16	3.84	5.12	10	0
Beta - Sector	-1.31	5.14	-8.25	-2.27	7.40	0	0
CIN $\rho^2$ : 0.22							
Btmv - Sector	-4.96	10.50	-19.58	-5.81	8.99	0	0
Capitalization - Sector	6.91	1.05	5.49	6.81	8.63	10	0
Beta - Sector	0.54	12.27	-31.35	3.39	11.39	0	1
CG $\rho^2$ : 0.16							
Btmv - Sector	-9.46	13.49	-28.65	-7.70	6.48	0	3
Capitalization - Sector	3.32	1.23	1.79	3.35	5.70	9	0
Beta - Sector	0.88	9.56	-12.37	0.65	17.44	3	0
ENV $\rho^2$ : 0.31							
Btmv - Sector	10.76	10.70	-9.24	11.26	27.05	4	0
Capitalization - Sector	7.39	1.23	6.14	7.04	10.17	10	0
Beta - Sector	-1.51	11.17	-31.40	1.71	5.68	0	1
HR $\rho^2$ : 0.28							
Btmv - Sector	6.63	17.56	-23.89	8.87	31.31	4	2
Capitalization - Sector	5.95	1.32	3.63	5.98	7.80	10	0
Beta - Sector	-7.78	9.35	-30.74	-5.63	4.48	0	2
HRTS $\rho^2$ : 0.21							
Btmv - Sector	1.69	12.03	-14.49	2.72	24.86	2	1
Capitalization - Sector	4.73	0.76	3.58	4.78	5.74	10	0
Beta - Sector	-1.41	4.37	-7.89	-1.12	6.46	0	0

This table summarizes the results from estimation of equation (3) on ACSR, factors and fields.  $\rho^2$  is the squared correlation between observed and predicted values (a rough estimate of the R-square).

First five columns give the mean ( $\mu$ ), the standard deviation ( $\sigma$ ), minimum (*Min.*) median (*Median*) and maximum (*Max.*) of the estimated parameters.

Last two columns count the number (out of the 10 sectors) of parameters significant (likelihood ratio test) at least at a 5% level.

Estimation takes care of the truncation of the rating (ACSR and fields) over the range [0, 100] using proc qlim (SAS).

influence on the CSR. Thus firm with high risk may invest in *CG* and improve their rating.

Book to market has a puzzling influence on scores with a same number of significant positive and negative cases. The relationship changes among the fields. Firms with high book to market tend to perform (invest) in *ENV* and *HR* while they underperform (disinvest) from *BB* or *CG*. Our results are consistent with Galema et al. (2008) for *ENV*, but contrasted for other fields. The differences could be explained by the fact that their study focused on the inverse relationship (impact of scores on book to market), by the non-totally correspondence between KLD and Vigeo rating, by the geographic areas (United States Vs Europe) or sectors considered.

Looking at the detailed parameters estimates (available on request) we notice clear differences between sectors about book to market. Indeed in sectors *consumers goods*, *consumers services* and *financials* the effect is positive (and significant at a 5%) on *ENV*, *HR*, *HRTS*, *Factor<sub>1</sub>*. On *ACSR* only *consumers goods*, *consumers services* are positive and on *BB* *consumers goods*. On the contrary, in sectors *telecoms* and *utilities* the effect is negative (and significant at a 5%) on *ACSR*, *BB*, *HR*, *Factor<sub>1</sub>*. On *BB* we also obtain a negative parameter for *industrials*, on *CG* for *industrials*, *health care* and *utilities* and on *HRTS* for *consumers services*. Consequently, it seems that in sectors with direct public relations (*consumers goods*, *consumers services* and *financials*) a high book to market induces an investment in CSR while in network infrastructure sectors (*telecoms* and *utilities*) the higher the book to market the lower the investment in CSR.

#### 4.3. Influence of Overall Score

Tables 9 provides the parameters' estimation considering the overall influence of CSR.

From table 9 panel A evidences that there is no significant impact of aggregated scores (*ACSR*) on stock market. This result is in line with the findings of Ertugrul and Hegde (2009) on corporate governance ratings and reinforce the existing literature on confounding effect. Panel B confirms this result since the dominant *Factor<sub>1</sub>* reflecting the general investment in CSR has no significant influence.

However, panel B also reveals a positive influence at 5% on the entire window of the *Factor<sub>2</sub>* that represents a high investment in *CG* and a low one in *HR* and *HRTS* (this factor explains only 15% of the overall score dispersion). Such a result should be linked to the impact of the component of *Factor<sub>2</sub>* and particularly *CG*.

Moreover, we observe a significant effect of sector returns on market reaction to rating announcements. This effect is linked to the period and to the Vigeo methodology, that is to say to the announcement waves of ratings by sector. The financial crisis also affects AR. Lastly, the abnormal volume has a significant impact after the announcement but a low coefficient. Such simultaneous increase of volume and positive return could be due to a buy pressure from SR investors. Effects of these three control variables will be also observed on the next regressions (table 10 through 12).

These findings allow us to validate hypothesis 2: the aggregated score does not directly influence the AR.

Table 9: Influence of *ACSR* and Factors on Abnormal Return (AR)

Variable	<i>SCAR</i> [-2, -1]	<i>SCAR</i> [0, 2]	<i>SCAR</i> [-2, 2]
Panel A: <i>ACSR</i>			
Adj. R <sup>2</sup>	0.56	0.48	0.48
F test	261.***	187.***	190.***
<i>ACSR</i> +	-0.000	0.029	0.031
	0.93	0.46	0.48
<i>ACSR</i> -	0.012	0.03	0.031
	0.58	0.36	0.37
Abnormal Volume (#)	0.002	0.011***	0.007
	0.61	0.01	0.15
Sector Return	1.717***	1.427***	1.557***
	0.00	0.00	0.00
Date ≥ 07-2007	0.202**	0.583***	0.567***
	0.03	0.00	0.00
Panel B: Factors			
Adj. R <sup>2</sup>	0.56	0.48	0.48
F test	187.***	134.***	136.***
FACTOR1 +	0.023	-0.05	-0.03
	0.92	0.91	0.96
FACTOR1 -	0.021	0.211	0.016
	0.93	0.64	0.97
FACTOR2 +	0.236	0.606*	0.773**
	0.21	0.06	0.03
FACTOR2 -	-0.15	0.457	0.319
	0.45	0.22	0.41
Abnormal Volume (#)	0.002	0.011***	0.007
	0.60	0.00	0.14
Sector Return	1.713***	1.444***	1.558***
	0.00	0.00	0.00
Date ≥ 07-2007	0.208**	0.569***	0.567***
	0.02	0.00	0.00

This table reports the estimation of model (5).

First two lines Adj. R<sup>2</sup> and F test provide respectively the regression's adjusted R-square and the Fisher test. Following lines provide the parameters estimate with significance (\* 10%, \*\* 5% and \*\*\* 1%) and below the p-value.

Panel A considers only the influence of *ACSR*, the average of the fields.

Panel B decomposes the CSR between the first two factors (refer to table 2 for the meaning)

In each panel, the variable is the residual from equation (3) differentiated according to the sign (cf. equation 4).

Control variables are *Abnormal Volume*: The percent deviation from the reference window; *Sector Return*: The country sector return and *Date*: A dummy variable taking value 1 if the date is after July 2007.

To obtain robust inference, we use MacKinnon and White (1985) HCC 3 estimator.

#### 4.4. Influence of Components' Score

Table 10 through 12 provide the parameters' estimations of equation (5) considering respectively the influence of fields, of subfields and, at last, of items<sup>27</sup>. Due to size constraint in subfields and items we only present elements of which at least one of the components (strength or concern) is significant at 10% level. *However, we always use all (filled) subfields and items in the regression*<sup>28</sup>.

Table 10: Influence of Fields on Cumulative Abnormal Return (CAR)

Variable	SCAR[-2, -1]	SCAR [0, 2]	SCAR [-2, 2]
Adj. R <sup>2</sup>	0.56	0.49	0.49
F test	88.***	66.***	66.***
BB +	-0.000	0.056*	0.045
	0.98	0.08	0.21
BB -	0.022	0.03	0.029
	0.21	0.38	0.41
CIN +	0.008	-0.04**	-0.02
	0.46	0.03	0.25
CIN -	0.002	-0.06***	-0.05**
	0.85	0.00	0.04
CG +	0.006	0.02	0.03
	0.63	0.38	0.21
CG -	-0.03*	0.011	-0.01
	0.06	0.67	0.79
ENV +	-0.01	0.005	0.005
	0.60	0.87	0.88
ENV -	0.017	0.09***	0.099***
	0.28	0.00	0.00
HR +	0.02	-0.06**	-0.04
	0.15	0.02	0.17
HR -	0.017	-0.01	0.005
	0.32	0.78	0.88
HRTS +	-0.01	0.101***	0.083**
	0.55	0.01	0.05
HRTS -	-0.01	0.005	-0
	0.68	0.88	0.94
Abnormal Volume (#)	0.002	0.012***	0.008
	0.58	0.00	0.11
Sector Return	1.727***	1.409***	1.545***
	0.00	0.00	0.00
Date ≥ 07-2007	0.201**	0.615***	0.592***
	0.02	0.00	0.00

This table gives the influence of the fields on the CAR.  
Report to table 9 for full legend and to table 13 for the meaning of the fields.

A cross analysis of tables 10 to 12 shows important results. Two fields provide a significant influence whatever the aggregation level<sup>29</sup>. Market views mainly *ENV* as a cost and *HRTS* as a benefit.

Some fields are significant only for some aggregation levels. Contrary to Renders et al. (2010) we do not find a link between aggregated *CG* and financial performance. We show, as Ertugrul and Hegde (2009), that the market does not

<sup>27</sup>We only use items filled in at least 33% of cases. Refer to table 15 for details.

<sup>28</sup>Results remains qualitatively similar when we select only significant variables in the regression.

<sup>29</sup>In comments, we only consider parameters significant at a 1% and a 5% level.

Table 11: Influence of Subfields on Cumulative Abnormal Return (CAR)

Variable	<i>SCAR</i> [-2, -1]	<i>SCAR</i> [0, 2]	<i>SCAR</i> [-2, 2]
Adj. R <sup>2</sup>	0.57	0.49	0.49
F test	36.***	28.***	28.***
CG1 +	0.002	0.051**	0.051**
	0.88	0.01	0.02
CG1 -	-0.02	0.022	-0.00
	0.16	0.32	0.99
CG4 +	0.012	-0.03**	-0.02
	0.11	0.02	0.32
CG4 -	-0.02*	-0.01	-0.03
	0.07	0.56	0.29
CIN2 +	0.019	-0.03	0.009
	0.11	0.11	0.68
CIN2 -	0.007	-0.05***	-0.02
	0.52	0.01	0.27
ENV1 +	-0.01	0.015	0.011
	0.62	0.58	0.71
ENV1 -	1.1E-4	0.072**	0.06*
	0.99	0.01	0.06
ENV2 +	3.0E-5	0.006	0.006
	1.00	0.85	0.87
ENV2 -	0.037*	-0.01	0.027
	0.05	0.82	0.43
ENV3 +	0.005	-0.05*	-0.04
	0.69	0.06	0.13
ENV3 -	-0.01	0.009	0.007
	0.69	0.75	0.83
HR3 +	-0.01	-0.06**	-0.06**
	0.47	0.01	0.02
HR3 -	-0.00	-0.05	-0.05
	0.82	0.15	0.17
HRTS2 +	0.007	0.107***	0.1**
	0.70	0.01	0.02
HRTS2 -	0.007	0.028	0.029
	0.72	0.45	0.46
Abnormal Volume (#)	0.001	0.012***	0.008*
	0.66	0.00	0.09
Date ≥ 07-2007	0.204**	0.609***	0.563***
	0.02	0.00	0.00
Sector Return	1.721***	1.365***	1.58***
	0.00	0.00	0.00

This table gives the influence of the subfields on the CAR.

Report to table 9 for full legend and to table 14 for the meaning of the subfields.

In this table even if all subfields are included in the regression, we only report subfields of which one of the components is significant at least at a 10% level.

Table 12: Influence of Items on Cumulative Abnormal Return (CAR)

Variable	<i>SCAR</i> [-2, -1]	<i>SCAR</i> [0, 2]	<i>SCAR</i> [-2, 2]
Adj. R <sup>2</sup>	0.57	0.49	0.49
F test	25.***	19.***	19.***
BB1-1 +	0.004	0.042*	0.043
	0.81	0.08	0.12
BB1-1 -	-0.01	0.032	0.004
	0.66	0.26	0.87
BB2-4 +	-0.00	-0.06	-0.06
	0.89	0.13	0.14
BB2-4 -	0.038**	-0.01	0.027
	0.03	0.75	0.50
CG1 +	0.001	0.047**	0.047**
	0.90	0.02	0.05
CG1 -	-0.02	0.032	0.008
	0.20	0.18	0.74
CG4 +	0.012	-0.03*	-0.01
	0.10	0.05	0.51
CG4 -	-0.02*	-0.01	-0.02
	0.05	0.83	0.43
ENV2-2 +	0.005	-0.03	-0.02
	0.70	0.39	0.54
ENV2-2 -	0.027**	-0.02	0.026
	0.04	0.41	0.26
ENV2-5 +	-0.01	-0.03	-0.03
	0.52	0.47	0.39
ENV2-5 -	-0.00	-0.03	-0.05*
	0.80	0.34	0.08
ENV2-7 +	0.006	0.067**	0.06*
	0.71	0.01	0.05
ENV2-7 -	0.009	0.03	0.024
	0.51	0.20	0.36
ENV3 +	0.004	-0.05*	-0.05
	0.75	0.06	0.11
ENV3 -	-0.02	0.015	0.001
	0.34	0.66	0.97
HRTS2-4 +	-0.01	0.05*	0.036
	0.61	0.08	0.25
HRTS2-4 -	0.006	0.035	0.031
	0.73	0.28	0.37
Abnormal Volume (#)	0.002	0.011***	0.008
	0.57	0.00	0.12
Date ≥ 07-2007	0.181**	0.556***	0.542***
	0.03	0.00	0.00
Sector Return	1.747***	1.456***	1.596***
	0.00	0.00	0.00

This table gives the influence of the items on the CAR.

Report to table 9 for full legend and to table 15 for the meaning of the items.

In this table even if all filled items are included in the regression, we only report items of which one of the components is significant at least at a 10% level.



react to *CG* at the summary level (field), but only on subfields and items. This point emphasizes the specificity of *CG* field shown in data analysis (see subsection 3.1.1). A confounding effect or the use by investors of specialized *CG* information (for instance broker reports, corporate governance ratings...) can explain the irrelevance of summary information. *BB* is weakly significant and not on subfields. A detailed scoring on items is not relevant for *CIN* and *HR*.

The sign of the component' score, whether it is positive (an investment, a strength) or negative (a divestment, a concern), is a crucial dimension of CSR rating to analyze market reaction.

A more precise analysis of tables 10 to 12 allows us to emphasize our results and compare them with the literature. We validate some previous results but also find new and contrasted results. These differences are related to main features of our research: we focus on short term market reaction; we analyze scores at the different level of aggregation (including items); we use scores with positive or negative values and not strength and concern<sup>30</sup>. We find significant effects of all fields, taking into account signs, in contrast with Galema et al. (2008) who only obtain a significant effect for employee relations. This event study analysis allowed by Vigeo dissemination process seems to reduce confounding effects. Market reactions are different according to the fields.

The market views only one field *HRTS* as beneficial due to the positive influence of good score, and especially *HRTS 2* (Respect for human rights in the workplace). This result confirm findings of Galema et al. (2008) on diversity.

Two fields corresponds to detrimental activities: *ENV* and *HR*. For *ENV* a bad score has a positive influence, suggesting that the market rewards firms with bad environmental practices. A low investment in *ENV* can be viewed by investors as a cost minimization. Only an investment in *ENV2 – 7* (Management of environment impacts from transportation) is beneficial and significant at 1%. This is the only item that confirm the significant positive impact (at 10%) of *ENV* strength found by Scholtens and Zhou (2008). This difference with growing empirical literature showing a positive relation between environmental performance and firm value (Renneboog et al., 2008a) could be explained by the fact that we study short term effects or by the period. A good *HR* score seems to be perceived mainly as a cost since it induces a negative reaction after the announcement. The effect is driven by *HR3* (Quality of working conditions). Our results confirm the one of Scholtens and Zhou (2008) and Mănescu (2010) on the recent period but differ from those of Galema et al. (2008).

For *CG* and *CIN* the relationship is mixed. A good score on *CG1* (Independence and efficiency of board of directors) and a bad one on *CG4* (Transparency on executive remuneration) induce positive AR. Community involvement (*CIN*) is also interpreted as mixed. The market reacts negatively to bad and good *CIN* scores. Thus, to avoid a negative market reaction, firms have to make investment in *CIN* according to the norm of the sector (neither less nor more). This illustrates the two facets of risk: non-sustainability and sustainability. The beneficial part seems to be driven by *CIN2* (Responsible societal behavior). So we do not verify the positive effect documented by Mănescu (2010).

We validate hypothesis 3. The results show differences of market reaction to the CSR rating announcement

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<sup>30</sup>We work on numerical scores whereas analyses based on KLD use counts of positive CSR firms' realizations (strength) and counts of negative CSR firms' realizations (concern). Interested reader can refer to Mănescu (2010) who details the methodological concerns using KLD measures.

between the fields, within a given topic according to the aggregation level (fields, subfields or items) and at last according to the sign of the elements' score (strength vs concern). So, we bring to the fore the complexity of the relationship between CSR and financial performance, and emphasize his non-linearity (Bowman and Haire, 1975).

Focusing on the relevance of detailed components of ratings, we find that only 6 subfields out of 17 are significant at 5%, and very few items (4 out of 37). Having more details induces higher noise due to missing information. Nevertheless, some of detailed elements give the needed information; the desired level of precision depends on the topic.

Subfields allow to offset the confounding effect: That is the right level for *CG* since two subfields are relevant *CG1* (Board of directors) and *CG4* (Executive remuneration); subfields are also significant on *CIN2* (Responsible societal behavior) and *HRTS2* (Respect for human rights in the workplace).

Items may be the right information level on the most important topics for investors at a time, like environment for instance. Items *HRTS2.4* (Non-discrimination) and *BB2.4* (Integration of social factors in supply chain management) are also relevant. Our findings are in line with those of Ertugrul and Hegde (2009).

The results validate hypothesis 4: A reduced number of detailed components of CSR ratings is taken into account by investors.

#### 4.5. Robustness Checks

To check for a selection bias, we use the Heckman selection model with:

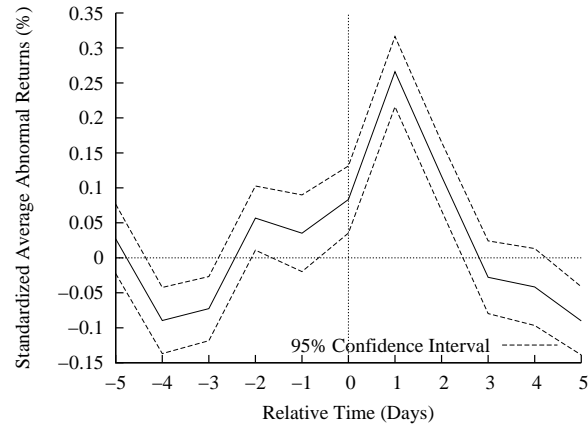
$$selection = f(Book\ to\ Market, Market\ Capitalization)$$

This model underlines that the sample we study is more focused on bigger firm than the population of the rated firms. However, in the latter steps (regression 3 and 5) the inverse Mills ratio is not significant. Thus, the selection does not influence the results we obtain and we do not include this additional step into the analysis.

To ensure that results of the event study are not driven by the methodological choices we made, we try other lengths of estimation windows for instance  $[-260, -10]$  and  $[-72, -10] \cup [10, 72]$ , we use other indexes (the emblematic index of each country for instance the CAC 40 in France, the FTSE 100 in Great Britain, or the DAX 30 in Germany...) and obtain almost identical results. To check for an influence of the Fama French model we also compute the SAAR using the constant mean model and obtain figure (4). As one can see comparing figure 4 and 2, the AR patterns and significance remain.

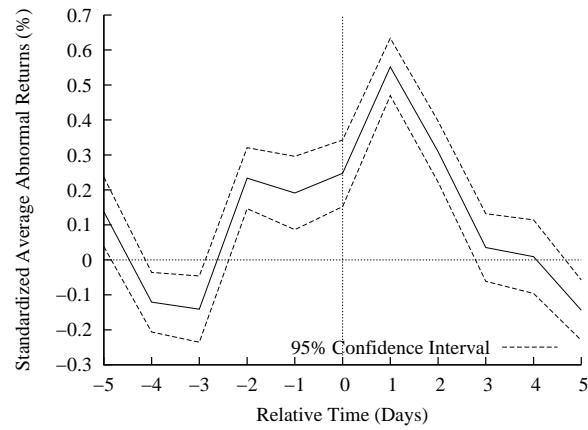
Since Vigeo broadcast it's rating on the last business day of the month, the results could be due to an end of month or a day of the week effect. To confirm the robustness of our results, we first compute the average volatility (squared return) according to the day of the month (ordinal position of the day within the month  $\sigma_d$ ), we then standardize the raw return:  $R_{Adj,t} = R_{Raw,t} \div \sigma_d$  where  $d$  is the ordinal position of day  $t$  within the month. Lastly, we use the adjusted return to perform the event study. Figure 5 gives the SAAR obtained adjusting day of the month (analogous to figure 2 on the raw returns). As one can see, even if there is some modifications (for instance the AR on day 0 is lower), the

Figure 4: Standardized Average Abnormal Returns (SAAR) using the Mean Model



This figure gives the SAAR in the event window using a constant mean model. 95% confidence interval is build using a reversed t-test.

Figure 5: Standardized Average Abnormal Returns (SAAR) Adjusted Day of the Month



This figure gives the SAAR in the event window. 95% confidence interval is build using a reversed t-test.

main results (positive influence of the announcement) remains almost unchanged.

On the regression part, we also run robustness checks. Rather than using the sector's return to control for historical and sector effect, we use a panel regression with a fixed effect (according to the Hausman's test) for the production date. The result, remains similar (even slightly better). However, with such approach, the interpretation of the fixed effect is quite difficult thus we prefer to present the linear regression model with the sector return.

The specification we present in tables 9 through 12 uses a transformation of the initial score splitting the variable in two components according to the sign of the residual. One can ask whether others transformations lead to the same results. We test alternative specifications, a non parametric transform<sup>31</sup> of the initial score, a dummy transformation (that is to say  $ACSR + = 1$  if the score is positive and 0 and conversely for  $ACSR -$ ) and others splitting scheme according to the rating<sup>32</sup>. We obtain qualitatively similar results however, significance is lower since it does not account for the magnitude of the rating (dummy) or it cut away the impact of the rating "=" which represents 40% of the sample.

At last, we also check for others phenomena by including relevant variables into the regressions (3) and (5). In equation (3) we tried the growth of the sector, the firm financial leverage or the specific risk of the firm. In equation (5) we check whether the results are similar for continental Europe and UK. These analysis reveal that our results are robust to these phenomena. Since these variables are not significant we do not include them in the estimated models.

## 5. Conclusion

With the aim of emphasizing the links between CSR and financial performance, we document the short term market reaction to CSR rating announcements. Using an event study, we determine AR associated with CSR ratings. We analyze the market reaction to the announcement and also to the informational content of aggregated and decomposed (at different degrees) CSR rating.

First, event study succeed in showing that CSR impacts the market. We find that the announcement of CSR rating induces a positive reaction of the stock market, whatever the rating. This result confirms that the CSR rating information is incorporated in stock prices. In addition to financial information, **CSR!** (**CSR!**) information is taken into account by markets, modifying investors' beliefs and firms' valuations.

Second, we show that market does not react to overall CSR. Investors need more detailed information to take decisions.

Third, we document that some CSR components, depending on their score signs (strength vs concern), have a positive influence on stock returns (e.g. Human rights) whereas others have a negative one (e.g. Environment, Human resources). Market's reaction is quite discriminating since the reaction can be univocal but not necessarily. There are

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<sup>31</sup>For details refers to base SAS documentation: proc rank statement, blom option.

<sup>32</sup>For instance, with this transform  $ACSR + = ACSR$  if the rating is either ++ or + and conversely.

elements (e.g. Community involvement) where being in the norm is rewarded whereas having a good or a bad score are both penalized.

Fourth, we show that the market reaction is mainly determined by a reduced number of elements and that more detailed scores are often needed to overcome ambiguity of the overall figure or ambiguity of the corporate governance field. Field Corporate governance has no influence whereas subfield Independence and efficiency of board of directors (Transparency on executive remuneration) is valued (penalized).

Our results underline both the growing role of CSR and the cleverness of the market since the reaction really discriminates among the fields, subfields and items and varies according to the investment in (or divestment from) the CSR activities.

Our conclusions are of course relative to the sample and period studied. The relationships we evidenced should evolve in the future as the knowledge and importance of CSR is growing. We use CSR ratings considering that they are good proxies of firms' CSR behavior and performance. Such assertion could be questioned. We focus on short term market reaction, according to market efficiency the expectation of long term impact. However, the effects we observed could be influenced by short term (transitory) market dynamics. Future research about the stocks liquidity around the event should enable us to distinguish between a value creation (linked to permanent informational content of the announcement) or to a transitory buy pressure (linked to portfolio re-balancing).

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## Appendix

Table 13: Vigeo Fields

Field	Content
<i>BB</i>	Business Behavior Consideration of the rights and interests of clients, integration of social and environmental standards in the selection of suppliers and on the entire supply chain, effective prevention of corruption and respect for competitive practices
<i>CG</i>	Corporate Governance Effectiveness and integrity, guarantee of independence and efficiency of the Board of Directors, effectiveness and efficiency of auditing and control mechanisms, in particular the inclusion of social responsibility risks, respect for the rights of shareholders, particularly minority shareholders, transparency and rationale for the remuneration of directors
<i>CIN</i>	Community Involvement Effectiveness, managerial commitment to community involvement, contribution to the economic and social development of territories / societies within which the company operates, positive commitment to manage the social impacts linked to products or services and overt contribution and participation in causes of public or general interest
<i>ENV</i>	Environment Protection, safeguarding, prevention of damage to the environment, implementation of an adequate management strategy, eco-design, protection of biodiversity and co-ordinated management of environmental impacts on the entire life-cycle of products or services
<i>HR</i>	Human Resources Continuous improvement of professional relations, labor relations and working conditions
<i>HRTS</i>	Human Rights Respect for freedom of association, the right to collective bargaining, non-discrimination and promotion of equality, elimination of illegal working practices such as child or forced labor, prevention of inhumane or degrading treatment such as sexual harassment, protection of privacy and personal data

Following the Vigeo website <http://www.vigeo.com>, this table gives the meaning of the fields.

Table 14: Vigeo Subfields

Subfield	#	Content
BB1	1250	Customers
BB2	1243	Suppliers and contractors
BB3	1461	Business integrity
CG1	1588	Board of directors
CG2	1588	Audit and internal controls
CG3	1588	Shareholders
CG4	1588	Executive remuneration
CIN1	776	Impact on local communities
CIN2	1200	Responsible societal behavior
ENV1	1588	Integration of environmental issues into corporate strategy
ENV2	1585	Incorporation of environmental issues into the manufacturing and distribution of products
ENV3	645	Environmental consideration in the use and disposal of products/services
HR1	1553	Continuous improvement of industrial relations
HR2	1573	Career development
HR3	1490	Quality of working conditions
HRTS1	790	Respect for human rights
HRTS2	1588	Respect for human rights in the workplace

This table provides the meaning of the Vigeo subfields and the number of filled subfields within the studied sample (1588 events).

Table 15: Vigeo Items

Items	#	Content
BB1.1	727	Product safety
BB1.2	643	Information to customers
BB1.3	557	Responsible Contractual Agreement
BB2.2	280	Sustainable Relationship with suppliers
BB2.3	1001	Integration of environmental factors in the supply chain
BB2.4	825	Integration of social factors in the supply chain
BB3.1	1202	Prevention of corruption
BB3.2	814	Prevention of anti-competitive practices
CG1.1	Subfield	Board of directors
CG2.1	Subfield	Audit and Internal Controls
CG3.1	Subfield	Shareholders' Rights
CG4.1	Subfield	Executive Remuneration
CIN1.1	Subfield	Promotion of social and economic development
CIN2.1	838	Social impacts of company's products and services
CIN2.2	520	Contribution to general interest causes
ENV1.1	1588	Environmental strategy and eco-design
ENV1.2	463	Pollution prevention and control
ENV1.3	425	Development of "Green" products and services
ENV1.4	511	Protection of biodiversity
ENV2.1	530	Protection of water resources
ENV2.2	1513	Minimizing environmental impacts from energy use
ENV2.4	641	Management of atmospheric emissions
ENV2.5	1010	Waste management
ENV2.6	175	Management of environmental nuisances: dust, odor, noise
ENV2.7	1099	Management of environmental impacts from transportation
ENV3.1	Subfield	Management of environmental impacts from the use and disposal of products
HR1.1	1531	Promotion of labor relations
HR1.2	269	Encouraging employee participation
HR2.3	691	Responsible management of restructurings
HR2.4	1219	Career management and promotion of employability
HR3.1	188	Quality of remuneration systems
HR3.2	1381	Improvement of health and safety conditions
HR3.3	420	Respect and management of working hours
HRTS1.1	Subfield	Respect For Human Rights and prevent of violations
HRTS2.1	1454	Respect for freedom of association and the right to collective bargaining
HRTS2.4	1588	Non-discrimination
HRTS2.5	26	Elimination of child labor and forced labor

This tables details the items included in the Vigeo ratings and the number of filled items within the studied sample (1588 events).

"Subfield" designates an item that is identical to the corresponding subfield (there only one item within the subfield).

In the analysis, we use only items with enough data (at least 33% or 529 observations). Thus we exclude: BB2.2 CIN2.2 ENV1.2 ENV1.3 ENV1.4 ENV2.1 ENV2.6 HR1.2 HR3.1 HR3.3 HRTS2.5.



Table 16: Sectors and Geographic Coverage

Sector	Total	Countries																
		Austria	Belgium	Denmark	Finland	France	Germany	Greece	Ireland	Italy	Luxembourg	Netherlands	Norway	Portugal	Spain	Sweden	Switzerland	United Kingdom
Oil and Gas	54	3	0	3	0	8	1	0	0	6	0	4	6	0	6	1	0	16
Basic Materials	104	2	6	0	10	12	17	0	0	0	2	8	6	0	3	5	12	21
Industrials	305	5	4	11	10	46	30	4	11	11	0	11	0	7	18	24	27	86
Consumer Goods	210	0	4	8	2	55	33	4	3	11	0	16	4	0	2	9	12	47
Healthcare	82	0	4	14	1	7	12	0	4	0	0	1	0	0	2	4	18	15
Consumer Services	279	1	8	0	6	66	16	4	7	12	3	12	1	2	9	7	1	124
Telecommunications	69	4	4	2	4	4	4	3	0	4	0	4	4	4	4	8	4	12
Utilities	83	2	0	0	3	6	9	4	0	11	0	0	0	4	16	0	0	28
Financials	332	5	13	9	5	37	20	16	11	31	0	12	5	8	29	29	25	77
Technology	70	0	0	0	2	28	7	0	0	0	0	5	2	0	3	3	4	16
$\Sigma$	1588	22	43	47	43	269	149	35	36	86	5	73	28	25	92	90	103	442

This table provides the number of announcements according to the firm's sector (first level of ICB classification) and firm's country. The first column (Total) gives the total number of firms by sector while the last line ( $\Sigma$ ) sums up firms by countries.

**AAR** Average Abnormal Return

**AR** Abnormal Return

**CAR** Cumulative Abnormal Return

**CAAR** Cumulative Average Abnormal Return

**CSP** Corporate Social Performance

**CSR** Corporate Social Responsibility

**ESG** Environmental, Social and Governance

**SRI** Socially Responsible Investment

**SAR** Standardized Abnormal Return

**SAAR** Standardized Average Abnormal Returns

**SCAR** Standardized Cumulative Abnormal Return

**SCAAR** Standardized Cumulative Average Abnormal Returns