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**JEL Codes: M14, Q59, L29, C38.**

**Keywords: corporate social responsibility, corporate environmental responsibility, non-parametric Item Response Theory, scoring, stakeholders, SME, France.**

# Informal versus Formal Corporate Social Responsibility: a Tale of Hidden Green Attitude\*

Olivier Beaumais<sup>†</sup> and Mireille Chiroleu-Assouline<sup>‡</sup>

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## Abstract

We explore firms' commitment to Corporate Social Responsibility (CSR). Using a unique dataset of 8,857 French firms collected through a survey conducted at the end of 2011 by the French National Institute of Statistics and Economic Studies (INSEE), we first construct 3 CSR pillar scores for each firm, based on a non-parametric Item Response Theory model known as Mokken Scale Analysis. CSR scores, along with responses to specific items of the 2011 INSEE survey, allow us to characterize firms implementing formal *versus* informal CSR. We then estimate simple probit models and count data models to show that, with regards to CSR commitment, size definitely matters, and that a significant share of firms stating that they are not actively committed to CSR, actually engage significantly in CSR, with no monotonic size effect. Cooperation with external actors such as NGOs mitigates the size effect in the likelihood of carrying out informal CSR, whereas the pressure of NGO campaigns against large companies mainly spurs the environmental score of smaller firms in the same sector.

*Keywords:* corporate social responsibility, corporate environmental responsibility, non-parametric Item Response Theory, scoring, stakeholders, SME, France.

*JEL codes:* M14, Q59, L29, C38.

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## 1 Introduction

Walking the walk or talking the talk? Corporate social responsibility (CSR) is the ultimate field in which talking the talk without walking the walk is commonly deemed as a specific form of greenwashing (Lyon and Montgomery (2015), Gatti et al. (2019)). The big companies are often accused of allowing such a gap between their acts and their speech, because they would be more willing to use CSR as a communication tool, whereas small and medium enterprises (SMEs) would be less often but more sincerely committed to CSR. To what extent is this assertion verified? How different are small and large firms in their CSR practices? In the CSR field, this is one of the topics that deserves thorough analysis (Kitzmueller and Shimshack (2012), Schmitz and Schrader (2015), Aguinis and Glavas (2012), Croson and Treich (2014), Crifo and Forget (2015)). This is all the more important since in most OECD countries small and medium-sized enterprises account for an overwhelming majority of businesses (99%) and more than half of GDP (OECD (2019)). Because of this weight and their role in innovation, they are key actors in the move towards sustainability.

Indeed, the existing literature shows that size definitely matters for CSR involvement (Spence (1999), Russo and Tencati (2009), Baumann-Pauly et al. (2013)). Among the possible explanations is a lack of understanding of the concept of CSR itself due to its vagueness. Baron (2001) stated that “*corporate social responsibility is a poorly and incompletely defined concept*”. The notion itself has its origins in the efforts of companies to rebuild their legitimacy following the economic crisis of the 1930s. The inclusion of an environmental dimension is more recent (Vatn (2018)). Among the many successive definitions of CSR, the one given by the European Union’s Green Paper (EC (2001), p. 6) presented it as a voluntary approach by companies to integrate social and environmental concerns into their strategy and in their interactions with their stakeholders. The World Business Council for Sustainable Development (WBCSD (2004)) broadened the definition to include a company’s commitment to contribute to sustainable economic development, working with all its stakeholders. And in 2011, for the European Commission, the concept has become both simpler and more vague, omitting the voluntary aspect, with CSR becoming “*the responsibility of companies for their impact on society*” (EC (2011)). The vagueness of this definition helps to account for the very different forms CSR can take in different companies and countries.<sup>1</sup>

CSR, and particularly its environmental dimension, is commonly seen as the implementation of Freeman’s stakeholder theory, which sets as a guideline for companies to go beyond simply maximizing shareholder value and take into account the interests of their stakeholders - agents or groups that can influence or are

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<sup>1</sup>Matten and Moon (2008) also emphasize institutional dissimilarities to explain why US and European companies differ in their degree of explicit acknowledgement of CSR in their strategy: American corporations are characterized by explicit CSR whilst European corporations implement implicit CSR. They underline, however, the ongoing convergence between firms of both origin, with CSR becoming increasingly explicit for European firms as well.

affected by the achievement of the firm's objectives (Freeman (1984), Delmas and Toffel (2004), Delmas and Toffel (2011), Russo and Perrini (2010), Perrini et al. (2007)). According to Russo and Tencati (2009), large corporations implement formal CSR strategies (notably by implementing formal management systems devoted to CSR), whilst SMEs run informal CSR strategies. Different other explanations have been offered for this unequal commitment to CSR, among which scarcity of resources and organizational costs (Perrini et al. (2007), Jenkins (2009)), or endogenous organizational characteristics promoting the internal implementation of CSR-related practices in core business functions (Baumann-Pauly et al. (2013)).<sup>2</sup> On the basis of four in-depth case studies, Murillo and Lozano (2006) confirm that SMEs specific involvement may take a different form than for large firms because they are closely connected to their environment or communities in which they often act as benefactors or strongly committed agents (Spence (1999)), the values of their manager or owner constituting one major driver (Spence et al. (2003)). As a result, SMEs are especially interested in social capital, as predicted by Spence et al. (2003), but do not appear to communicate their social practices, which constitutes an informal CSR. Murillo and Lozano (2006) argue that the very concept of CSR in SMEs is confused with the account of specific practices carried out, and does not make SMEs' managers or employees feel comfortable; they consider CSR as being a metalanguage used to describe specific actions or practices more than an operative or management language. Similarly Russo and Perrini (2010) note that SMEs hardly ever use the language of CSR to describe their actions.

Our research questions are related to this set of theoretical assertions and first findings: do we observe a gap between CSR forms depending on the corporations' size that could be interpreted as the evidence of formal CSR in large corporations and informal CSR in SMEs? Is this gap differentiated according to the CSR pillars? How is it caused or affected by stakeholders' pressure?

The empirical literature on this issue is scarce and scattered. The main difficulty lies in the fact that there is no common assessment of the degree of CSR for all companies, and therefore not for small and medium-sized enterprises. The best known of the existing ratings, the scores assigned by the KLD MSCI company, concerns only 8500 companies worldwide.<sup>3</sup> Therefore most articles adopt a restricted viewpoint or treat the different population segments in a different way from the beginning. In the same way as Murillo and Lozano (2006), the existing papers rely until now on small samples or qualitative case studies. Kühn et al. (2014), for example, conduct a qualitative content analysis based on the Global Reporting Initiative (GRI) guidelines to address how transparent French listed companies of the CAC 40 communicate their

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<sup>2</sup>Magill, Quinzii and Rochet (2015) argue that it would be not optimal for small competitive firms to have the same level of CSR than large firms with significant market power. This is due to their specific definition of CSR in their theoretical framework: a responsible firm cares about social welfare, by weighing stakeholders' welfare instead of only shareholders'.

<sup>3</sup>MSCI KLD Research & Analytics <https://www.msci.com/esg-ratings>.

CSR engagement externally, whereas Vo et al. (2015) use a sample of 155 firms (drawn from a panel of about 1,200 French SMEs) to compare the roles of economic, social, and environmental motives in driving SMEs to integrate CSR into their business strategy. Some studies are limited to intra-sectoral differences (Torugsa et al. (2012), O'Connor et al. (2017)). Very few papers use large datasets representative of the size diversity of the business sector: one of them is Russo and Tencati (2009), who study the behavior of a large sample composed of 3,626 Italian companies of all sizes. The only current exceptions is Turker (2009) who constructs a scale of CSR for Turkish firms by asking 280 respondents to give binary answers (yes/no) to 42 statements about their firm's practices.

By contrast, our paper aims to shed light on the potentially very different ways that companies can consider CSR by drawing a comprehensive and detailed picture of the differentiated spreading of the CSR concept and practices among firms. The data set used in this paper, which is the largest ever gathered for France (8,857 firms), includes small and medium enterprises as well as large firms, allowing us to take into account industry differences. Moreover, our data set is composed of first-hand raw data, free from any potentially biased exploitation and interpretation. And because the data we used was disclosed by firms to the French statistical institute for statistical use only and under confidentiality rules, it is very unlikely to be strategically biased, in order to be awarded a good score to be used by investors for example. In addition, the data set is comprehensive concerning firms with more than 500 employees and the rest of the sample relies on the best sampling practices to date. One of the advantages of this extensive survey is that it allows a rigorous comparison across firms, that have to answer the same questions, unlike Baumann-Pauly et al. (2013), who define a priori different indicators for SMEs or for multinational companies, and focus on 12 so-called "data-rich" case studies (biased toward CSR champions). To our knowledge, this survey is the only one ever conducted that provides information on informal versus formal CSR.

Our contribution is twofold. First, on the methodological level, we propose an original way of constructing quantitative scores for the CSR practices of firms, along the three traditional dimensions (economic and societal, social, environmental). Our work is the first one to construct CSR scores based on the non-parametric Mokken scale analysis, and thus to draw a very detailed picture of the features of CSR in French firms. This method represents a clear progress compared to factorial analysis used in previous papers (Russo and Tencati (2009), Turker (2009)), while being less intensive in terms of calculation than the Bayesian IRT method put forward by Carroll et al. (2016). The scale for CSR that we obtain constitutes the most important contribution of our work. This scale can be used to test a large range of hypothesis about the drivers and outcomes of CSR in the French firms. We propose some first results in this paper that pave the

way for fruitful future research.

Second, on the empirical level, in terms of understanding the mechanisms of CSR, our estimates make it possible to grasp the importance of size effects, motivations for CSR and the pressure exerted by NGOs on the existence of a significant proportion of informal CSR. We show that the first difference between SMEs and large firms lies in the understanding and simple knowledge of the CSR concept. But we also note that, among firms that know it, a significant share of them assert that they do not engage in any CSR related activity. Perhaps the most striking point is that many of them keep walking the walk without talking the talk... as they assert that they are not actively committed to CSR whereas they disclose significant CSR activities. These specific behaviors are analyzed in detail. We find that the size effect in the likelihood of conducting informal CSR is mitigated when companies cooperate with external actors, such as associations or NGOs. We also assess the impact on CSR scores of the organizational structure of companies and the influence of pressure from NGO campaigns against large companies in the same industry, due to the threat of being attacked as well or the increased salience of environmental issues (Baron (2016), Baron and Diermeier (2007)).

The remainder of the paper is structured as follows. Section 2 presents the survey and the data. Section 3 is devoted to a discussion of the CSR scores used in the literature and to the implementation in our case of the Mokken scale analysis allowing us to construct an original scale for CSR, which disentangles pillar scores. Section 4 examines some features of CSR knowledge and implementation across French firms. Section 5 offers conclusions.

## 2 Data

### 2.1 The survey

The data used in this paper was collected through a survey conducted at the end of 2011 by the French National Institute of Statistics and Economic Studies (INSEE). 8,857 French firms were required to fill-in a mandatory questionnaire of about 60 questions regarding their knowledge and implementation of corporate social responsibility (CSR). The sample was carefully weighted in order to represent the size composition of the business sector in France, excluding only micro-enterprises (less than 10 employees). In the remainder of the paper, we follow the same definition of small, medium-sized, and large firms as Russo and Tencati (2009) based on the definition established by the EU (EC (2003)): small firms are firms with less than 50 employees (including sub-category between 10 and 19 employees); medium-sized firms are firms with less

than 250 employees; firms with a greater number of employees are considered large. In addition, the sample is comprehensive for firms with more than 500 employees.

Contrary to Ernst and Honoré-Rougé (2012), who restricted their descriptive analysis of the survey's results to firms with more than 50 employees, we exploit the whole sample in order to fully take stock of its diversity in a common framework (as deemed necessary by Blombäck and Wigren (2009)), and to be able to also draw some conclusions about the differences among small and medium-sized firms.

The survey instrument was carefully designed by a committee of experts, hosted by the INSEE. The committee included statisticians from the INSEE, researchers in the field of environmental economics and numerous meetings were necessary to achieve the final version of the questionnaire. The questionnaire is composed of four main parts, the first one focused on general assertions about the firm's knowledge of CSR and governance issues and three parts focused on the three traditional "pillars" of CSR, namely the economic and societal pillar, the social pillar, and the environmental pillar.<sup>4</sup> A prominent feature of this survey is its first question: "Have you ever heard of Corporate Social responsibility?" In case of negative answer, the respondent was required to go directly to the following sections, which did not take for granted any preliminary knowledge about CSR. In case of positive answer, the next questions explored the meaning of the concept for the firms, their feeling to behave as a responsible firm, their motivations to do so and their internal organization to implement this corporate social responsibility.

The economic and societal pillar relates to how the firm manages its relationships with its customers, its suppliers and the society at large. Examples of questions within the economic pillar part of the questionnaire are the following: "Do you ask some of your suppliers to commit themselves to respecting specifications, some of which are CSR-related clauses?", or "Does your group cooperate with other companies or organizations for CSR actions? With which ones (firms, administrations, NGOs, banks)?"

The social pillar covers actions taken by firms to promote diversity and inclusion, to improve employee health and well-being, and human resources management. Examples of questions within the social pillar part of the questionnaire include: "Do you implement specific policies against discrimination based on gender? ethnic origin? age? disabled persons?"

The environmental pillar relates to the management of the firm's impact on the environment. Examples of questions within the environmental pillar section of the questionnaire are the following: "Does your firm develop eco-friendly products?", "Are some of your products eco-labelled?" or more thematically "Did your firm commit to improving its energy efficiency or to reducing its carbon emissions?"

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<sup>4</sup>The full text of the questionnaire is presented in the online Appendix.



## 2.2 Some descriptive statistics

About 60% of the firms state that they have never heard about CSR. This percentage varies by industry (see Table 1) and also by size (Table 2): in the “Other service activities” sector, the percentage rises to about 67%, while it is only 23.7% in the “Electricity, Gas, Steam” sector.

Table 1: Having heard about CSR (No/Yes) - Frequency and percentage by industry

Sector	Frequency	No	Yes
Mining and Quarrying	534	65.09	34.91
Manufacturing	31,366	58.05	41.95
Electricity, Gas, Steam	160	23.70	76.30
Water supply, sewerage, waste management	1,317	40.57	59.43
Construction	25,929	66.65	33.35
Wholesale and retail trade	35,672	64.65	35.35
Transportation and storage	9,206	59.40	40.60
Accommodation and food service activities	11,573	63.47	36.53
Information and communication	5,919	51.47	46.53
Real estate activities	2,721	58.26	41.74
Professional, scientific and technical activities	13,717	48.31	51.69
Administration and support activities	10,244	58.34	41.66
Other service activities	2,022	66.96	33.04

Likewise, 40% of medium-sized firms (between 50 and 249 employees) claim not to have ever heard about CSR, whereas the percentage falls to only 10% for very large firms (more than 500 employees).

Table 2: Having heard about CSR (No/Yes) - Frequency and percentage by size

Size	Frequency	No	Yes
10-19	78,724	69.06	30.94
20-49	47,509	58.61	41.39
50-249	19,826	40.30	59.70
250-499	2,415	20.54	79.46
500+	1,906	9.24	90.76
Total	150,380	60.43	39.57

About 52% percent of the firms know about CSR and are currently taking actions related to CSR; 12%, despite having heard about CSR, state that they do not take any action related to CSR. Note that the design of the questionnaire allowed firms which stated not to have ever heard about CSR to answer all the questions under the three CSR pillars’ headings.

### 3 In search of a CSR score

#### 3.1 The state of the art

As with defining CSR, measuring CSR is also challenging. Most of the empirical works related to CSR rely on the use of ratings, such as the Kinder, Lydenberg, and Domini (KLD) index (see Chatterji et al. (2016)). Raters actually employ proprietary methodologies to evaluate firms' environmental, social and governance performance. Even if these methodologies are not known in detail, they each proceed by gathering raw data from numerous sources, like official government data, firms' disclosures (e.g., press reports) and, sometimes, specific interviews. These raw data are then turned into scores, of which the structure can be more or less detailed. For example, the KLD score which serves as the basis of the analysis done by Carroll et al. (2016) is constructed from more than 80 binary indicators, each of them capturing whether or not a given firm meets a given objective related to CSR. When necessary, subscores can be extracted from the full list of indicators, as in Lioui and Sharma (2012) and Chatterji et al. (2009) who use only the 14 KLD's environmental "strengths" and "concerns" indicators which form the KLD's environmental subscore.

That these ratings actually and accurately measure CSR remains an open question. As a matter of fact, the evaluation of six of the leading raters by Chatterji et al. (2016) concludes on a negative note regarding the validity of the most prominent CSR targeted scores (which, as Berg et al. (2020) show, can differ significantly between rating agencies, mainly due to differences in scope and measurement). Ratings, however, are not the only means of measuring CSR. Appropriately designed scales, at the individual or organizational level, can also provide reliable information to construct CSR scores (Turker (2009)). Compared to ratings, the scale approach operates by collecting information regarding CSR practices directly from the firms, through the administration of a questionnaire made of CSR-related items, whereas raters actually do mainly content analysis.

Indeed, questionnaires are commonly designed to assess single latent traits (e.g., psychological trait, state of health, specific abilities, green attitudes). Constructing a unidimensional measure of a latent trait from responses to a set of binary (yes/no) and/or ordinal-polytomous questions is at the core of item response theory (IRT).

Carroll et al. (2016) recently introduced IRT with the goal of improving measurement in strategic management research. More precisely they adopt a Bayesian approach to estimating the parameters of a Rasch (1960) like model including elements of dynamics, constructing, from KLD data covering 22 years, what they call D-SOCIAL-KLD scores. They convincingly argue that the latter scores enrich the measurement of CSR, when compared to simple additive scores derived from the binary KLD indicators. The picture obtained

from the D-SOCIAL-KLD score appears much more nuanced, especially when it comes to the assessment of firms' involvement in CSR over time. Carroll et al. (2016) however acknowledge that obtaining such a nuanced picture of firms' latent CSR trait comes at a cost: the Bayesian approach is computationally intensive, and thus may not pay off sufficiently in the case of single period data. Still, they call for further use of IRT models by researchers to advance measurement in strategic management research, notably in CSR.

Actually, IRT provides various models to construct a score that gives a unidimensional measure of the latent trait under study, from which the units (individuals, firms) of interest can be ordered. Some are parametric, like the Rasch (1960) model, initially developed for dichotomous items - questions, or one-parameter logistic model, and later extended to polytomous items (see Embretson and Reise, 2000), or the partial credit model (Zheng and Rabe-Hesketh (2007)).

### 3.2 A Mokken scale analysis of CSR practices

We retain here a non parametric approach: the Mokken scale analysis (MSA, Mokken, 1971). Indeed, the MSA is less demanding in terms of underlying assumptions than parametric models, and allows keeping more items to form the scale. Thus, the precision of the score constructed from the scale, simply by summing up the positive responses to the items forming the scale, is higher (Hardouin et al. (2011)). Note that both the Rasch model and the Mokken scale analysis can be seen as successors of the Guttman scaling technique (van Schuur (2003)). A set of binary items is said to form a perfect Guttman scale if a respondent who gives a positive response to a more difficult (i.e., with a high proportion of negative responses) item will also give a positive response to all items that are less difficult. In terms of CSR construct, this means that a firm that claims to be involved in the less popular CSR-related activity, should also claim to be involved in all the other CSR-related (more popular) activities. Of course, empirical data sets show model (perfect Guttman scale) violations: a respondent who gives a positive response to a difficult item can give a negative response to an easier item. Such a violation is called a Guttman error. In short, MSA proceeds by assessing model violations through the comparison of actual Guttman errors and theoretical Guttman errors obtained under the assumption of independence between the responses to two different items. On the basis of this comparison, Loevinger coefficients are calculated, notably the Loevinger coefficient of scalability ( $H^S$ ) which measures whether a set of items actually forms a scale, here denoted  $S$ . The following rule of thumb (Mokken (1971); van Schuur (2003)) applies: when  $H^S < 0.3$ , the scale is poor, when  $0.3 \leq H^S < 0.4$ , the scale is weak, when  $0.4 \leq H^S < 0.5$ , the scale is medium, and finally when  $0.5 \leq H^S$ , the scale is strong. MSA

has been widely used in human resources management literature, for example to measure high-involvement work practices (Zatzick and Iverson (2006)). Applying MSA to the 2011 survey data allows us to derive CSR scores for each of the CSR pillars.

### 3.3 Pillar scores

The economic and societal pillar part of the survey comprises 15 binary questions, out of which 8 were found to form a weak scale ( $H^S = 0.38$ ). Regarding the social part of the survey, 21 binary questions were asked to the respondents. 18 were found to form a medium scale ( $H^S = 0.48$ ). Finally the environmental pillar was assessed through 8 items, which all form a strong scale ( $H^S = 0.53$ ).<sup>5</sup> The economic and societal score and the environmental score range both from 0 to 8, with the same median of 2, rather low, whereas the social score ranges from 0 to 18, with a median of 5.

Table 3: CSR scores by industry

	Societal score			Social score			Environmental score		
	Mean	Std	Min/Max	Mean	Std	Min/Max	Mean	Std	Min/Max
Mining and Quarrying	1.88	1.82	0/8	5.56	4.05	0/16	3.56	1.80	1/8
Manufacturing	1.60	1.73	0/8	4.36	3.91	0/18	2.35	2.05	0/8
Electricity, Gas, Steam	3.34	1.89	0/8	8.21	4.26	1/18	4.44	1.69	1/8
Water supply, sewerage, waste management	2.49	2.13	0/8	6.98	4.67	0/18	3.74	2.01	0/8
Construction	2.00	1.74	0/8	3.78	3.44	0/18	1.79	1.80	0/8
Wholesale and retail trade	1.34	1.63	0/8	4.25	3.85	0/18	2.01	2.01	0/8
Transportation and storage	1.15	1.48	0/8	5.06	4.10	0/18	2.06	1.88	0/8
Accommodation and food service activities	1.61	1.73	0/8	4.65	4.07	0/18	2.50	2.26	0/8
Information and communication	0.91	1.44	0/8	4.51	4.24	0/18	1.09	1.47	0/8
Real estate activities	1.54	1.70	0/8	4.36	4.54	0/18	1.80	2.12	0/8
Professional, scientific and technical activities	1.18	1.72	0/8	4.21	4.22	0/18	1.40	1.89	0/8
Administration and support activities	1.68	1.88	0/8	4.99	4.33	0/18	1.99	2.12	0/8
Other service activities	1.32	1.56	0/7	3.92	3.61	0/18	1.51	1.85	0/7

Table 3 presents the mean scores by industry and their intra-industry distribution. The same sectors “Electricity, Gas, Steam” and “Water supply, sewerage, waste management”, commonly identified as having significant impacts on the environment, have the highest average scores not only for the environmental pillar but also for the other two. Across industries, the environmental score is the more unequally distributed with a standard error equal to 50% of its industry average (38% for the economic and social score, and 26% for the social score).

Beyond the Loevinger scalability coefficients, the internal consistency of scales can be assessed by computing the associated Cronbach’s  $\alpha$ . Again, the standards for what makes a good Cronbach’s  $\alpha$  are not set in stone, but a value between 0.65 and 0.8 (or higher) is generally considered acceptable. The result for

<sup>5</sup>The detail of the questions that form each score is given in the full questionnaire available in the Appendix.

each of the scales is respectively 0.76 for the economic and societal scale, 0.89 for the social scale and 0.79 for the environmental scale. Therefore, we can be confident in the internal consistency of the three scales, meaning that the related scores actually reflect the latent CSR traits underlying firms' involvement in the three pillars related activities.

We assess the external consistency of our scales by using the first question of the 2011 INSEE survey, which asked the respondents whether they “have ever heard about Corporate Social responsibility?”. This question was not involved in the construction of any of the three scores. Indeed, we expect that firms claiming not to have ever heard about CSR score lower than the others. Table 4 shows clear evidence in support of our expectation, thus in support of external validity of the scores: for each of the three pillar scores, the difference in mean scores between firms claiming to have heard about CSR and firms claiming the opposite is significant and positive. If we take the mean score of the “do not know CSR” firms as a reference, the difference in percentage ranges from 76% (environmental score), to 88% (economic and societal, social scores).

Table 4: Pillar scores - difference in means

	Do not know CSR Mean score	Know CSR Mean score	Difference
Economic and societal score	1.13	2.12	0.99 [0.97 ; 1.00]
Social score	3.23	6.09	2.86 [2.82 ; 2.89]
Environmental score	1.54	2.71	1.17 [1.14 ; 1.18]

95% confidence interval into brackets

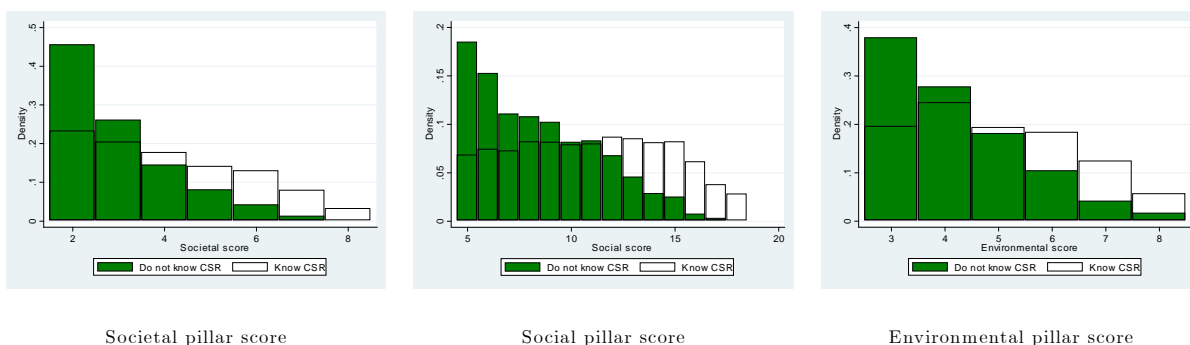


Figure 1: CSR pillar scores distributions

Actually, the scores do not only differ in mean, but also in their distributions. For example, Figure 1 depicts the three pillar scores for firms that “do not know CSR” (meaning firms claiming not to have ever

heard about CSR) and for those that “know CSR”. Clearly, the distribution of each of these score for the latter group of firms shifts to the right, showing evidence in favor to the external validity of the score.

While acknowledging that a rigorous assessment of the three scores would require appropriate in-depth analysis, we consider to have collected sufficient evidence to be reasonably confident in their external validity.

In addition, Table 5 reports the Spearman rank-correlation coefficients between the three scores, along with 95% confidence intervals<sup>6</sup>. Remember that the Spearman rank-correlation coefficients measure the statistical dependence between the ranking of two variables, here two ordinal variables, and assess the strength and direction of the monotonic relationship between these two variables.<sup>7</sup>

Table 5: Spearman rank-correlation coefficients

Do not know CSR			
	Economic and societal score	Social score	Environmental score
Economic and societal score	1		
	-		
Social score	0.296	1	
	[0.266 ; 0.327]	-	
Environmental score	0.439	0.409	1
	[0.411 ; 0.465]	[0.381 ; 0.437]	-
Know CSR			
Economic and societal score	1		
	-		
Social score	0.502	1	
	[0.481 ; 0.521]	-	
Environmental score	0.610	0.467	1
	[0.593 ; 0.627]	[0.445 ; 0.481]	-

95% confidence interval into brackets - Fisher’s transformation

Again, a striking result emerging from Table 5 is that not only the point estimates of the Spearman rank-correlation coefficients differ in magnitude, but also that the 95 % confidence intervals do not overlap between the two groups of firms. The Spearman rank-correlation coefficients between the three pillar scores are systematically and significantly higher for the “know CSR” group than for the “do not know CSR” group. In any case, the Spearman rank-correlation coefficients are always positive, indicating that when one score increases, the other scores also increase. In terms of CSR-related activities, this means that involvement in each of the three pillars related activities goes hand in hand.

<sup>6</sup>The 95% confidence intervals are based on Fisher’s transformation.

<sup>7</sup>Chatterji et al. (2016) also use Spearman rank-correlation coefficients in their effort to assess whether ratings provided by six well-known raters actually converge.

### 3.4 Informal and formal CSR

In our data, we identify firms performing *formal* CSR, as defined by Russo and Tencati (2009), as firms answering that they implement CSR strategies. The main part of them have high scores, in general and on individual details, but some of them also seem to score badly at least for one pillar.

Among the other firms, we can distinguish two categories: firms that answered that they have never heard about CSR and firms that know the concept, or at least the word, but assert that they are not implementing any CSR strategy. Within these two categories, we consider that firms scoring above a given mean pillar score as performing *informal* CSR for the corresponding pillar.<sup>8</sup> Therefore, in view of subsequent estimations, we define three binary indicators (one for each pillar score) that take on the value of 1 when the firm scores above the mean, and 0 otherwise.

Table 6: Pillar scores

		Know CSR		Do not know CSR
		Do not implement CSR	Implement CSR	
Societal score	Below the mean	66.30	37.62	69.21
	Above the mean	33.70	62.38	30.79
Social score	Below the mean	63.65	39.60	75.82
	Above the mean	36.35	60.40	24.18
Environmental score	Below the mean	73.87	41.59	73.71
	Above the mean	26.13	58.41	26.29

As can be seen from Table 6, firms that answered that they have not ever heard about CSR actually score under the mean, most of the time. But a significant percentage of them score above the mean: about 31% for the societal score, 24% for the social score and 26% for the environmental score. Likewise, among firms having heard about CSR, but stating they don't implement CSR strategies, a significant percentage scores above the mean (respectively, 34%, 36% and 26%). Note that the percentages (below the mean, above the mean) for firms which stated that they implement CSR strategies are reversed, as could be expected.

## 4 The drivers of informal vs formal CSR

### 4.1 Size effects

According to Russo and Tencati (2009), the difference between *formal* and *informal* CSR is mostly explained by the size of the firms. Our data allow us to test this assumption in detail. To do so, we estimate three

<sup>8</sup>Because our data were transmitted by the companies within the framework of a survey for statistical purposes only, with all the required guarantees of anonymity, we consider it unlikely that this reflects a strategic behavior of under-reporting, or brownwashing, as described by Kim and Lyon (2014) as well as by Lyon and Maxwell (2016).

simple probit models, to characterize the probability of implementing informal *versus* formal CSR. The results and the associated marginal effects are reported in Table 7.

Table 7: Probability of implementing informal CSR vs formal CSR

	Societal pillar		Social pillar		Env. pillar	
	Coefft	Marg. eff.	Coefft	Marg. eff.	Coefft	Marg. eff.
Mining and Quarrying	0.853*** (0.146)	0.309*** (0.053)	0.593*** (0.136)	0.224*** (0.051)	0.973*** (0.145)	0.355*** (0.053)
Manufacturing	0.764*** (0.126)	0.276*** (0.046)	0.453*** (0.116)	0.171*** (0.044)	0.758*** (0.128)	0.276*** (0.047)
Water Supply, Sewerage	0.568*** (0.133)	0.206*** (0.048)	0.296* (0.123)	0.112* (0.046)	0.655*** (0.134)	0.239*** (0.049)
Construction	1.039*** (0.126)	0.376*** (0.046)	0.436*** (0.116)	0.164*** (0.044)	0.633*** (0.129)	0.231*** (0.047)
Wholesale	0.796*** (0.126)	0.288*** (0.046)	0.655*** (0.116)	0.247*** (0.044)	0.828*** (0.129)	0.302*** (0.047)
Transportation	0.608*** (0.127)	0.220*** (0.046)	0.634*** (0.117)	0.239*** (0.044)	0.711*** (0.129)	0.259*** (0.047)
Accommodation	0.685*** (0.127)	0.248*** (0.046)	0.531*** (0.116)	0.200*** (0.044)	0.845*** (0.129)	0.308*** (0.047)
Information	0.228 (0.129)	0.083 (0.047)	0.395*** (0.118)	0.149*** (0.044)	-0.138 (0.133)	-0.050 (0.048)
Real estate	0.605*** (0.132)	0.219*** (0.048)	0.667*** (0.120)	0.252*** (0.045)	0.587*** (0.135)	0.214*** (0.049)
Professional, scientific	0.142 (0.127)	0.051 (0.046)	0.092 (0.116)	0.035 (0.044)	0.054 (0.129)	0.020 (0.047)
Administration	0.597*** (0.127)	0.216*** (0.046)	0.539*** (0.116)	0.203*** (0.044)	0.549*** (0.129)	0.200*** (0.047)
Other service	0.853*** (0.132)	0.309*** (0.048)	0.388** (0.125)	0.147** (0.047)	0.651*** (0.136)	0.237*** (0.049)
20 - 49	-0.359*** (0.011)	-0.130*** (0.004)	-0.178*** (0.011)	-0.067*** (0.004)	-0.242*** (0.011)	-0.088*** (0.004)
50 - 249	-0.713*** (0.014)	-0.258*** (0.005)	-0.114*** (0.013)	-0.043*** (0.005)	-0.498*** (0.014)	-0.182*** (0.005)
250 - 499	-1.141*** (0.036)	-0.413*** (0.013)	-0.473*** (0.029)	-0.179*** (0.011)	-0.901*** (0.034)	-0.328*** (0.012)
500+	-1.477*** (0.044)	-0.534*** (0.016)	-0.931*** (0.037)	-0.351*** (0.014)	-1.314*** (0.043)	-0.479*** (0.016)
Constant	-0.590*** (0.126)		-0.626*** (0.115)		-0.694*** (0.128)	
Observations	5869		6327		5899	

Standard errors in parentheses

\*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$

Keeping in mind that the reference industry is “Electricity, Gas, Steam”, whereas the reference size is “10 - 19 employees”, the marginal effects show some interesting results. For most of the industries, the probability of implementing informal CSR is higher, compared to the reference industry. The most important effect on the probability of implementing informal CSR versus formal CSR is found for the “Mining and Quarrying” sector for the environmental pillar, for the “Construction” sector for the economic and societal pillar and for the “Real estate” sectors. These three sectors are among those least well informed about CSR (Table 1), but this does not explain everything, since a significant effect on the likelihood of doing informal rather than formal CSR is demonstrated for the “Water supply” sector, which is nevertheless mostly informed, but



les than “Electricity, Gas, Steam”.

The size effect is found to be very clear: from Table 7, the probability of implementing informal CSR decreases monotonically with the firms’ size. This effect is more pronounced for the environmental pillar than for the social pillar, but less than for the economic and societal pillar, whatever the size category considered. There is a large difference between large firms and very small ones: for firms with more than 500 employees, the probability of implementing informal CSR actions related to the societal pillar is 0.53 probability points lower than for firms with 10 to 19 employees. The difference is of 0.35 probability points for the social pillar and 0.48 for the environmental pillar. But this difference already appears between small and medium size firms: 0.13 points for the societal pillar (0.07/0.09 for the social/environmental pillars) for firms with 20-49 employees. Note that we did not find any significant interaction effects between size and industry.

## 4.2 Stating or not stating to implement CSR

Baumann-Pauly et al. (2013) argue that “small firms possess several organizational characteristics that are favorable for promoting the internal implementation of CSR-related practices in core business functions, but constrain external communication and reporting about CSR. In contrast, large firms possess several characteristics that are favorable for promoting external communication and reporting about CSR, but at the same time constrain internal implementation”.

We test this hypothesis by studying further the size impact on commitment to CSR, now focusing on firms stating that they have heard about CSR. These firms were asked whether they are implementing CSR strategies (implementing CSR-related actions). Of course, we expect that firms stating that they implement CSR (hereafter S-CSR firms, for stating CSR firms) score higher than the others (NS-CSR firms, for not stating CSR). Given our previous results, we also expect that scores increase with size. What is not clear, however, is whether the size effect is similar for S-CSR firms and NS-CSR firms. To explore this question, we estimate Negative Binomial models, as our dependent variables (the pillar scores) can be considered as count data variables.<sup>9</sup> We introduce interaction variables between size and the binary indicator coding S-CSR firms (variable  $S - CSR$  in Table 8 that reports also the associated marginal effects).

As above, the size effect is clear: the effect of the size on the score is significantly positive, and increases with size. Moreover S-CSR firms score higher than NS-CSR firms. For example, the mean social score for S-CSR firms is about 1.74 points higher than the same score for NS-CSR-firms and the relative effect is much more significant for the environmental score (1.36 compared to a median value equal to 2). All the

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<sup>9</sup>Chatterji et al. (2009) also estimate count data models (Poisson and Negative Binomial) in their assessment of the KLD environmental rating.

Table 8: CSR knowledge, action and size effect - Accounting for interaction effects

	Societal score		Social score		Env. score	
	Coefft	Marg. eff.	Coefft	Marg. eff.	Coefft	Marg. eff.
Mining and Quarrying	-0.122 (0.088)	-0.259 (0.187)	-0.336*** (0.076)	-2.048*** (0.466)	-0.194** (0.072)	-0.526** (0.195)
Manufacturing	-0.361*** (0.068)	-0.769*** (0.145)	-0.299*** (0.059)	-1.822*** (0.361)	-0.361*** (0.056)	-0.980*** (0.151)
Water Supply, Sewerage	-0.108 (0.073)	-0.229 (0.156)	-0.018 (0.063)	-0.108 (0.386)	-0.231*** (0.060)	-0.626*** (0.163)
Construction	-0.049 (0.068)	-0.105 (0.145)	-0.186** (0.059)	-1.132** (0.362)	-0.483*** (0.056)	-1.309*** (0.152)
Wholesale	-0.411*** (0.068)	-0.876*** (0.145)	-0.206*** (0.059)	-1.258*** (0.361)	-0.481*** (0.056)	-1.305*** (0.151)
Transportation	-0.660*** (0.069)	-1.404*** (0.148)	-0.129* (0.060)	-0.785* (0.365)	-0.528*** (0.057)	-1.434*** (0.154)
Accommodation	-0.131 (0.069)	-0.278 (0.147)	0.014 (0.060)	0.085 (0.364)	-0.246*** (0.056)	-0.669*** (0.153)
Information	-0.688*** (0.070)	-1.464*** (0.150)	-0.174** (0.060)	-1.062** (0.367)	-0.997*** (0.058)	-2.704*** (0.157)
Real estate	-0.304*** (0.072)	-0.646*** (0.154)	-0.436*** (0.062)	-2.659*** (0.381)	-0.577*** (0.060)	-1.565*** (0.162)
Professional, scientific	-0.517*** (0.069)	-1.100*** (0.146)	-0.208*** (0.059)	-1.267*** (0.362)	-0.782*** (0.056)	-2.121*** (0.153)
Administration	-0.254*** (0.069)	-0.540*** (0.147)	-0.097 (0.060)	-0.594 (0.364)	-0.522*** (0.056)	-1.416*** (0.153)
Other service	-0.871*** (0.079)	-1.855*** (0.169)	-0.290*** (0.065)	-1.771*** (0.396)	-0.940*** (0.065)	-2.552*** (0.177)
20 - 49	-0.107*** (0.019)	0.242*** (0.017)	0.141*** (0.013)	1.023*** (0.035)	0.154*** (0.016)	0.492*** (0.018)
50 - 249	0.229*** (0.023)	0.776*** (0.023)	0.749*** (0.015)	4.079*** (0.057)	0.526*** (0.018)	1.063*** (0.024)
250 - 499	0.455*** (0.059)	1.374*** (0.058)	0.948*** (0.041)	6.285*** (0.165)	0.639*** (0.048)	1.656*** (0.061)
500+	0.529*** (0.081)	2.061*** (0.074)	1.095*** (0.056)	7.813*** (0.222)	0.630*** (0.068)	2.043*** (0.074)
S-CSR	0.528*** (0.013)	1.194*** (0.015)	0.336*** (0.010)	1.737*** (0.040)	0.612*** (0.012)	1.366*** (0.017)
20 - 49 × S-CSR	0.284*** (0.022)		0.080*** (0.015)		0.057** (0.018)	
50 - 249 × S-CSR	0.164*** (0.025)		-0.138*** (0.018)		-0.164*** (0.021)	
250 - 499 × S-CSR	0.147* (0.062)		-0.099* (0.044)		-0.096 (0.050)	
500+ × S-CSR	0.294*** (0.083)		-0.119* (0.059)		0.031 (0.070)	
Constant	0.502*** (0.069)		1.450*** (0.059)		0.808*** (0.056)	
$\ln(\alpha)$	-1.334*** (0.019)		-1.228*** (0.010)		-1.796*** (0.022)	
Observations	5345		5345		5345	

Standard errors in parentheses

\*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$

sectors perform less than the reference sector “Electricity, Gas, Steam” with some sectoral differences, and also some differences by pillar. For the societal and environmental pillar, the worst performance is found for the “Information” sector, whereas the “bad” sector is “Real estate” for the social pillar. Regarding the interaction effects, Table 8 provide some contrasted results. Indeed some of the interaction effects are found to be significant, sometimes with opposite signs for different size categories. Compared with NS-CSR firms with 20 to 49 employees, S-CSR firms with 20 to 49 employees score higher for each pillar, exhibiting actual higher involvement in each of the pillar related CSR activities. For S-CSR firms with 50 to 249 employees, the behavior appears more heterogeneous: these firms perform better for the societal related CSR activities, but do worse for the two other pillars related activities.

### 4.3 To have or not to have a CSR department

The 2011 INSEE survey enables to test whether some organizational features of the firms have an impact on their CSR scores. For example, Murillo and Lozano (2006) argue that large companies are much closer to the generic discourse of CSR, given that CSR is the responsibility of a department that gives shape and contents to the concept through the creation of routines and procedures. Notably, S-CSR firms were asked whether or not they have a CSR department. Again, we expect that S-CSR firms having a CSR department score higher than S-CSR firms not having a CSR department. However, does the effect of having a CSR department on scores vary with size? Estimating Negative Binomial models with interactions effects with a variable coding the presence of a CSR department (variable *CSR\_Dept* in Table 9), we find evidence that this is the case.

Industry fixed effects are omitted from the table but they show that no sector has higher scores than the reference sector<sup>10</sup>.

The marginal effects in Table 9 still show clear size effects. Having a CSR department is associated with a higher pillar score, ranging from 1.77 points to 2.84 points, depending on the pillar. However, the effect of having a CSR department is more subtle than it could appear at first sight. Indeed, some interaction effects are found to be significant in Table 9. The effect of having a CSR department is actually greater for firms with 20 to 49 employees (positive and significant interaction effect, except for the social score), than for firms with more than 500+ (negative and significant interaction effect). Thus, the return of creating a CSR department is always positive, but seems to be even more important for small size firms.

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<sup>10</sup>Complete results are available from the authors.

Table 9: CSR department and size effect - Accounting for interaction effects

	Societal score		Social score		Env. score	
	Coefft	Marg. eff.	Coefft	Marg. eff.	Coefft	Marg. Eff.
20 - 49	0.127*** (0.010)	0.400*** (0.022)	0.199*** (0.008)	1.180*** (0.044)	0.188*** (0.008)	0.586*** (0.023)
50 - 249	0.323*** (0.011)	0.767*** (0.027)	0.603*** (0.009)	3.827*** (0.061)	0.313*** (0.009)	0.915*** (0.027)
250 - 499	0.480*** (0.022)	1.240*** (0.060)	0.838*** (0.017)	6.069*** (0.162)	0.476*** (0.018)	1.479*** (0.061)
500+	0.686*** (0.023)	1.926*** (0.076)	0.977*** (0.019)	7.611*** (0.203)	0.593*** (0.019)	1.928*** (0.073)
CSR Dept	0.524*** (0.022)	1.785*** (0.040)	0.456*** (0.018)	2.841*** (0.080)	0.490*** (0.018)	1.773*** (0.039)
20 - 49 × CSR Dept	0.220*** (0.028)		0.047 (0.024)		0.060** (0.023)	
50 - 249 × CSR Dept	-0.050 (0.028)		-0.244*** (0.024)		-0.083*** (0.023)	
250 - 499 × CSR Dept	-0.068 (0.041)		-0.315*** (0.035)		-0.174*** (0.033)	
500+ × CSR Dept	-0.166*** (0.038)		-0.380*** (0.033)		-0.257*** (0.032)	
Constant	0.900*** (0.062)		1.673*** (0.054)		1.243*** (0.049)	
$\ln(\alpha)$	-1.831*** (0.028)		-1.568*** (0.013)		-2.730*** (0.046)	
Observations	4410		4410		4410	

Standard errors in parentheses

\*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$

#### 4.4 Pressure from NGOs and CSR scores

We now explore the effect of pressure exerted by non-governmental organizations (NGOs) attacks on CSR scores. In particular, we would like to test the hypothesis that NGOs' attacks, which target large companies, could have both a direct effect on large firms and a crowding-in effect on smaller firms in the same industry. For this purpose we have matched the data from our main database with data from the Sigwatch database, that lists for the period 2010-2015, all campaigns by NGOs in 103 different countries, against multinational firms (Koenig (2017), Hatte and Koenig (2018)). We extract from Sigwatch data the number of NGOs' attacks of French companies by industry for the years 2010 and 2011: 138 attacks in two years mostly focused on environmental issues (96%). We then measure the intensity of attacks by industry as the ratio between the number of attacks and the number of large companies (more than 500 employees) of each industry. The corresponding ratio (variable *attack\_intens*) ranges from 0 to 5 (see Table 10), as one firm may be the target of several attacks.

This ratio is interacted with firms size; the idea here is to analyze possible crowding-in effects. Table 11 shows how the size effect is modulated by the intensity of the attacks. As earlier, the dependent variable is each pillar score, and Negative Binomial models are estimated.

Table 10: NGOs attack intensity by sector

	NGOs actions (number of attacks)	500+ (number of firms)	Attack intensity
Mining and Quarrying	2	5	0.4000
Manufacturing	52	656	0.0793
Electricity, Gas, Steam	55	11	5.0000
Water Supply, Sewerage	3	36	0.0833
Construction	7	145	0.0483
Wholesale	5	362	0.0138
Transportation	6	140	0.0429
Accommodation	4	61	0.0656
Information	4	129	0.0310
Real estate	0	34	0.0000
Professional, scientific	0	136	0.0000
Administration	0	182	0.0000
Other service	32	10	3.2000

Table 11: CSR and NGOs attack intensity by sector

	Societal score		Social score		Env. score	
	Coefft	Marg. Eff.	Coefft	Marg. Eff.	Coefft	Marg. Eff.
20 - 49	0.212*** (0.007)	0.314*** (0.010)	0.341*** (0.005)	1.482*** (0.022)	0.296*** (0.006)	0.606*** (0.013)
50 - 249	0.525*** (0.009)	0.796*** (0.014)	0.875*** (0.007)	3.807*** (0.031)	0.590*** (0.008)	1.192*** (0.017)
250 - 499	0.900*** (0.021)	1.363*** (0.032)	1.207*** (0.016)	5.258*** (0.071)	0.895*** (0.019)	1.793*** (0.039)
500+	1.225*** (0.022)	1.857*** (0.035)	1.384*** (0.018)	6.015*** (0.079)	1.082*** (0.021)	2.166*** (0.043)
attack_intens		-0.063*** (0.013)		-0.100** (0.032)		0.052** (0.017)
20 - 49 × attack_intens	-0.074*** (0.018)		-0.026* (0.013)		0.067*** (0.016)	
50 - 249 × attack_intens	-0.057* (0.026)		-0.044* (0.019)		0.030 (0.024)	
250 - 499 × attack_intens	-0.101* (0.049)		-0.041 (0.039)		-0.029 (0.047)	
500+ × attack_intens	-0.130** (0.050)		-0.082* (0.041)		-0.059 (0.048)	
Constant	1.109*** (0.087)		1.774*** (0.069)		1.134*** (0.080)	
$\ln(\alpha)$	-0.500*** (0.009)		-0.760*** (0.006)		-0.580*** (0.009)	
Observations	8757		8757		8757	

Standard errors in parentheses

\*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$

As can be seen from Table 11, the direct size effect on scores is always positive (relative to size category 10-19). For the social and societal pillars, the size effect is, in most cases, significantly moderated by the intensity of NGOs' attacks. On the other hand, the size effect is significantly accentuated for the environmental pillar score, but only for the size category 20-49. The effect is very significant. There would therefore be a crowding-in effect, for firms in the 20-49 category, in relation to the intensity of attacks targeting large firms (as suggested by Lyon and Maxwell (2008)).

The total effect of the intensity of the attacks on the three scores is significant and slightly negative for the social and societal scores, significant and slightly positive for the environmental score. As a result, NGOs attacks, generally focused on large firms and on environmental issues, may tend to focus firms' CSR on actions that fall under the environmental pillar, to the detriment of actions under the other pillars. In short, there would be a crowding-out effect related to the intensity of NGOs' attacks on social and societal scores. It can be assumed that the resources devoted to CSR actions are being redeployed in favour of the environmental pillar, under pressure from NGOs.

#### 4.5 Cooperation with other firms and associations as a path towards formal CSR

To further illustrate the impact of cooperation with different stakeholders, Table 12 presents additional interaction effects showing how the size effect on the probability of implementing informal versus formal CSR is reinforced when firms cooperate with other firms, association and/or non-governmental organizations in the implementation of CSR related actions.

Table 12: Probability of implementing informal CSR vs formal CSR - Interaction effects with cooperation or NGOs' attack

	Societal score	Social score	Env. score		Societal score	Social score	Env. score
Cooperation with other firms = Yes				Commitment to various actions and cooperation with NGOs = Yes			
20 - 49 × Yes	-0.343*** (0.031)	-0.370*** (0.037)	-0.382*** (0.036)	20 - 49 × Yes	-0.947*** (0.078)	-0.419*** (0.081)	-0.904*** (0.073)
50 - 249 × Yes	-0.269*** (0.036)	-0.627*** (0.040)	-0.346*** (0.040)	50 - 249 × Yes	-1.531*** (0.117)	-1.304*** (0.107)	-1.643*** (0.103)
250 - 499 × Yes	-0.175* (0.081)	-0.515*** (0.078)	-0.257** (0.085)	250 - 499 × Yes	-0.825*** (0.174)	-0.922*** (0.175)	-1.221*** (0.172)
500+ × Yes	-0.499*** (0.099)	-0.704*** (0.095)	-0.435*** (0.103)	500+ × Yes	-1.373*** (0.271)	-1.176*** (0.235)	-1.698*** (0.272)
Cooperation with associations = Yes				NGOs' attack intensity = Yes			
20 - 49 × Yes	-0.362*** (0.059)	0.854*** (0.120)	-1.224*** (0.078)	20 - 49 × attack_intens	-0.202*** (0.028)	-0.023 (0.029)	-0.044 (0.028)
50 - 249 × Yes	-0.406*** (0.066)	0.607*** (0.122)	-0.772*** (0.072)	50 - 249 × attack_intens	-0.351*** (0.058)	-0.157*** (0.042)	-0.245*** (0.055)
250 - 499 × Yes	-0.384** (0.124)	0.558*** (0.161)	-0.731*** (0.135)	250 - 499 × attack_intens	-0.530 (0.359)	0.010 (0.073)	-0.056 (0.101)
500+ × Yes	-0.658*** (0.142)	0.462** (0.171)	-0.823*** (0.148)	500+ × attack_intens	-0.158 (0.164)	0.006 (0.094)	0.086 (0.094)

Standard errors in parentheses  
 \*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$

As found earlier, the probability of implementing informal CSR decreases with size. Firms were asked: "Do you cooperate with other firms or organizations for CSR actions?"; if yes, firms were asked "With

associations? (yes/no)”. Also, a specific question is whether firms cooperate with NGOs in carrying out CSR-related actions. All the interaction effects between size and binaries coding the three types of cooperation are found highly significant and negative, meaning that cooperation acts as a lever for formal CSR, with the noticeable exception of the size/cooperation with associations for the social pillar. Firms probably cooperate with associations in the field of human resources management, which is at the core of the social pillar of CSR, as handled by the questionnaire (see the questionnaire in Appendix). The stronger negative interaction effect on the probability of implementing informal CSR is found for cooperation with NGOs, keeping in mind that the percentage of firms which actually cooperate with NGOs is low, ranging from 1.69% for 10-19 size category to 8.76% for 500+ size category.

#### 4.6 Motives for pro-environmental actions and informal CSR

Concerning the environmental pillar of CSR, firms were asked about the pro-environmental actions they were implementing. For example (see the questionnaire, in Appendix), firms were asked whether they were “engaged in an environmental management approach”, whether they had “an energy efficiency or emission reduction plan” or “a waste reduction and recycling plan”. This series of questions ends with a question worded as follows: “What is the main determinant of your commitment to the above approach(s)?” Five items were proposed in response: 1. To develop new products, 2. To enhance the firm’s image, 3. Ethical approach to environmental protection, 4. To motivate employees, 5. Cost cutting. In order to explore how these motives could influence the effect of firm size on the probability of implementing informal CSR, we estimated probit models that include interaction terms between size and motives variables. Since these two categorical variables are discretized, we focus here on the marginal effects of the motives (relative to the reference motive, “To develop new products”) for each size category (see Table 13).

The effect of size on the probability of implementing informal CSR remains the same as in previous models: the probability of implementing informal CSR decreases with size. Table 17 shows that the motive/size interaction effects are differentiated by motive and size category. Thus motive 2 “To enhance the firm’s image”, increases the probability of doing informal CSR for firms with 10 to 19 employees, decreases this same probability for firms with 20 to 49 employees, and has no effect for the other size categories. This suggests that small firms (10-19 employees) actually invest in pro-environmental actions for reasons that are more related to an expected return in terms of image than to a formal commitment to CSR.

On the other hand, motive 3 “Ethical approach to Environmental Protection” can be understood as the expression of an intrinsic motivation for CSR. Here the marginal effects are all significant and negative,

Table 13: Informal CSR vs formal CSR and motives for commitment in various CSR related actions

Marginal effects of motives for each size category

Size	Societal score	Social score	Env. score	Size	Societal score	Social score	Env. score
Reference category: motive=1, "To develop new products"							
motive=2, "To enhance the firm's image"				motive=4, "To motivate employees"			
10 - 19	0.453*** (0.009)	0.140*** (0.010)	0.087*** (0.010)	10 - 19	-0.089*** (0.011)	-0.019 (0.013)	-0.023 (0.012)
20 - 49	-0.097*** (0.010)	-0.016 (0.010)	-0.067*** (0.010)	20 - 49	-0.112*** (0.014)	0.050** (0.014)	-0.117*** (0.014)
50 - 249	0.020 (0.013)	0.001 (0.013)	-0.010 (0.013)	50 - 249	-0.031 (0.019)	-0.035 (0.019)	-0.075*** (0.020)
250 - 499	-0.036 (0.028)	-0.003 (0.031)	0.012 (0.030)	250 - 499	-0.010 (0.048)	-0.060 (0.047)	-0.101* (0.041)
500+	0.032 (0.024)	0.052 (0.028)	0.023 (0.025)	500+	0.021 (0.045)	-0.054 (0.038)	-0.021 (0.039)
motive=3, "Ethical approach to environmental protection"				motive=5, "Cost cutting"			
10 - 19	-0.133*** (0.008)	-0.123*** (0.010)	-0.031*** (0.009)	10 - 19	0.070*** (0.009)	0.151*** (0.011)	0.182*** (0.009)
20 - 49	-0.141*** (0.009)	-0.095*** (0.009)	-0.142*** (0.008)	20 - 49	-0.024* (0.010)	0.081*** (0.011)	-0.039*** (0.010)
50 - 249	-0.143*** (0.010)	-0.126*** (0.010)	-0.130*** (0.011)	50 - 249	0.030* (0.013)	0.108*** (0.012)	0.088*** (0.013)
250 - 499	-0.080*** (0.022)	-0.107*** (0.024)	-0.088*** (0.022)	250 - 499	0.020 (0.028)	0.068* (0.030)	0.047 (0.029)
500+	-0.021 (0.015)	-0.046* (0.018)	-0.032* (0.016)	500+	0.074** (0.027)	0.095** (0.029)	0.091** (0.028)

Standard errors in parentheses

 \*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$ 

showing that this is a motive that is more associated with a formal practice of CSR. When firms report taking pro-environmental actions to motivate their employees, the marginal effect obtained is generally not significant; however, for category 20-49 employees this motivation is associated with a higher involvement in formal CSR for the societal and environmental pillar, and a lower involvement for the social pillar (which is the pillar specifically concerning human resources management, see the questionnaire in Appendix).

Finally, motive 5 "Cost cutting" generally moderates the size effect on the probability of implementing informal CSR and is therefore associated, particularly for small firms (for which marginal effects are most important) with an increased practice of informal CSR.

## 5 Conclusions

In this article, we have shown, using first-hand raw data from a large-scale survey on French firms' commitment to CSR, the usefulness of Item Response Theory, namely Mokken Scale Analysis, for the construction of appropriate scores to assess actual CSR-related behaviors. We provide some convincing evidence regarding not only the internal validity, but also the external validity of these scores. Using simple, but robust, econometric techniques, we draw a detailed picture of size effects on firms' commitment to CSR. Beyond



that, informal and formal CSR are characterized, with the finding that a significant share of the firms are in truth committed to CSR, while stating that they are not. Our work offers original features, which allow us to obtain a very precise and detailed picture of the CSR behaviors of French firms, along the three pillars: economic and societal, social, environmental.

In this article, we used one question of the survey to assess the external consistency of the scores based on other questions. However, assessing the external consistency of scales, including CSR scales, may be more challenging. Usually, when researchers create a new scale, the external validity is tested by comparing scores across groups of units (firms, individuals) with known properties (or behaviors).<sup>11</sup> As regards CSR ratings, Carroll et al. (2016) stress the fact that an entire literature has emerged, with the purpose of assessing their validity. As an illustration, Chatterji et al. (2009) focus on the environmental rating provided by KLD (14 binary indicators coding environmental “strengths” and “concerns”). In order to assess how this environmental rating performs in providing transparent information about firms’ responsible (or irresponsible) behavior to stakeholders, they collect data on firms’ environmental performance from external sources (notably from the US Environmental Protection Agency) and use econometric techniques (mainly Poisson and Negative Binomial models) to explore the statistical association between the rating and the actual firms’ behavior. Their results cast some doubts on the external validity of the KLD rating. Such an approach could be applied to the three scores that we have constructed. We leave this assessment and comparison to future work.

We believe that CSR scores derived from MSA are a reliable basis for future work and might provide useful improvements compared to existing CSR scales. As argued by Chatterji et al. (2009), valid measures of CSR commitment are a necessary step in the exploration of CSR-related behaviors, as well as a necessary step in the derivation of well-founded academic conclusions regarding the relationship between, e.g., CSR performance and innovation in green products, CSR performance and financial performance (Blasi et al. 2018), to name but a few.

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<sup>11</sup>For example, when presenting their revised version of the New Ecological Paradigm (NEP) scale, Dunlap et al. (2000) recall that the external validity of the previous version of the NEP scale was confirmed by numerous studies targeting interest groups such as environmental organizations. Remembering that the NEP scale aims at measuring pro-environmental behaviors, environmentalists were found to score higher on the NEP scale than the general public. Also, Dunlap et al. (2000) report that numerous studies have found significant relationships between NEP scale scores and self-reported or observed pro-environmental attitudes.

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## Appendix

### A - “Transversal” and “corporate governance” pillar

The place of CSR in the company’s strategy

- A1** Have you ever heard of Corporate Social Responsibility (CSR\*) YES  NO   
If **NO**, go to **B1**
- A2** Have you ever heard of the Global Reporting Initiative (GRI\*) or ISO 26000? YES  NO
- A3** For you, CSR is above all (tick only one box):  
 an opportunity  a conviction  a constraint  a communication axis
- A4** Do you think you are taking action in a CSR perspective?  
 YES  NO
- A4a** If **YES**, what are the expected results?  
 (2 answers maximum)
- Reduction of production costs   
 Development of new products   
 Risk Management   
 Membership, employee motivation   
 Improvement of the company’s external image   
 Respect for people and the environment
- A4b** If **NO**, what are the reasons why you  
 do not take action in a CSR perspective?  
 (several possible answers)
- No benefit to be expected or too much   
 economic risk   
 Lack of time to devote to it   
 Lack of information and public support
- switch to **A5** switch to **B1**
- A5** Does your company have practices that report on its CSR performance  
 (report, SRI questionnaire\*, brochures, etc.)? YES  NO   
DOES NOT KNOW
- A6** To assess your company’s CSR performance, have you:
- A6a** used an external organization? YES  NO
- A6b** set up an internal audit or self-assessment procedure? YES  NO

Corporate governance / internal organization

- A7** Have there been any consultations for the implementation of actions in a CSR perspective with:  
**A7a** employee representatives? YES  NO   
**A7b** external stakeholders\*? YES  NO
- A8** Have you set up an information and/or management system? YES  NO
- A9** Does your company have department(s) fully dedicated to  
 sustainable development or CSR? YES  NO   
If **NO**, go to **A11**
- A10** Is this service attached to one of the following directorates?  
 Technical departments: health and safety, environment, purchasing, etc.   
 Human Resources Department   
 Communication, marketing or sales department   
 Strategy Department   
 Other, specify:
- A10** Does your company have practices that report on its CSR performance  
 (report, SRI questionnaire\*, brochures, etc.)? YES  NO   
DOES NOT KNOW
- A6** Has your company implemented, from a CSR perspective, any of the following
- A11a** a charter, a code of good conduct or a specification? YES  NO
- A11b** a roadmap? YES  NO
- A11c** awareness programs for its employees (training, exhibitions, conferences, etc.)? YES  NO

### B - “Societal” pillar

**Warning:** For those who answered NO to question A1: in the following questions, the term CSR (Corporate Social Responsibility) will be used by convention to represent companies’ initiatives to take into account

*the social, societal and environmental impacts of their activity through, for example, vocational training, the fight against discrimination, employee well-being, environmental prevention, etc.*

The place of CSR in the company's strategy

- B1** Who are your company's main customers? (several possible answers) YES  NO   
 Companies  public administrations  mainly individuals
- B2** Do you give advice to your clients to make them aware of the impacts of their choices of goods or services on the environment and their well-being? YES  NO   
 Not concerned
- B3** Do some of your customers require the satisfaction of specifications, some of which are CSR-related? YES  NO   
 Not concerned
- B4** Are you taking measures, beyond regulatory requirements, to limit the use of products that are hazardous to health in the development of your products? YES  NO   
 Not concerned
- B5** Does your company take steps to ensure that it does not sell goods or services to entities that do not respect human rights? YES  NO   
 Not concerned

Relations with suppliers (including subcontractors)

- B6** Do you ask some of your suppliers to commit to comply with specification some of which are CSR-related? YES  NO   
 Not concerned   
 If **NO** or **Not concerned**, go to **B8**
- B6a** What criteria do you ask them to meet (several possible answers)?
- Respect for workers' rights (standard SA 8000\*,...)
  - Occupational health and safety (OHSAS 18001\*, ILO-OSH 2001\*,...)
  - Environmental performance (EMAS regulation\*,
  - ISO 14001 standard\*, labelled products...)
- B7** Do you take the following steps to assess your suppliers' social and/or environmental commitments?
- B7a** sending a questionnaire YES  NO
- B7b** controls, inspections or third-party evaluation, social audits YES  NO
- B8** Has your company changed its purchasing management by:
- B8a** setting up longer-term contracts with its suppliers YES  NO
- B8b** valuing CSR criteria in the selection of tenders and contracts YES  NO
- B9** Do you help your suppliers to set up at least one sustainable development approach (training, support, advice, self-diagnosis assistance, etc.)? YES  NO
- B10** Do you have suppliers in protected and adapted sectors, or integration through economic activity? YES  NO   
 If **NO**, go to **B11**
- B10a** What is the share of purchases from these sectors in your total purchases?  
 less than 0.1%  between 0.1% and 1%  between 1% and 10%  more than 10% of the total
- B11** For equal services, do you favour relations with local suppliers YES  NO

Relations with civil society

- B12** Does your company cooperate with other companies or organisations for CSR actions? YES  NO   
 If **NO** go to **B13**
- B12a** With whom? (several possible answers)
- National or international administrations, local authorities, associated bodies
  - Associations, NGOs,... (including international)
  - Companies (outside your group/network) or professional federations
  - Banks or insurance companies in the context of socially responsible actions eligible for SRI\*
- B13** Do you have the following relationships with civil society?
- B13a** Long-term partnership with an association YES  NO
- B13b** Participation in projects for the professional reintegration of people in difficulty YES  NO
- B13c** Long-term partnership with educational institutions YES  NO
- B13d** Sponsorship or patronage YES  NO

**C - “Social” pillar**

**Fight against discrimination in the company**

- C1** Have you put in place arrangements to collect and process any complaints in the event of discrimination? YES  NO
- C2** Did you  
**C2a** adopt the “Diversity Charter \*” YES or in progress  NO   
**C2b** obtain the “diversity\*” label issued by AFNOR certification? YES or in progress  NO
- C3** Do you have specific policies to combat discrimination related to  
**C3a** gender YES  NO   
**C3b** age concerning seniors YES  NO   
**C3c** age concerning young people YES  NO   
**C3d** disability YES  NO
- C4** Has a document comparing the situation of men and women in the company been developed or updated over the last 12 months? YES  NO
- C5** Does your company have specific measures in place for the employment of older employees? YES  NO   
 If **NO** go to **C6**
- C5a** In which area(s) of action? (several possible answers)
- |  |                          |
|--|--------------------------|
| Recruitment                                | <input type="checkbox"/> |
| Training                                   | <input type="checkbox"/> |
| Evolution or change of function internally | <input type="checkbox"/> |
| Adaptation of workstations                 | <input type="checkbox"/> |
- C6** During 2010, did you employ employees on apprenticeship contracts or professionalization contracts? YES  NO
- C7** Have you set up training to raise awareness of discrimination? YES  NO

**Fight against discrimination in the company**

- C8** Does your company establish, in addition to an inventory of occupational risks, preventive measures to mitigate these risks? YES  NO
- C9** Does your company have an action plan to prevent psychosocial risks (stress, harassment, harassment, workplace discomfort, etc.)? YES  NO
- C10** In the last two years, has your company conducted information campaigns for its employees on addictions (tobacco, alcohol, drugs, food)? YES  NO
- C11** Does your company have a charter to protect employees’ personal data and privacy? YES  NO
- C12** To better reconcile their professional and personal lives, does your company offer its employees  
**C12a** to organize their working time according to their family constraints? YES  NO   
**C12b** other measures besides those carried out by the works council (crèches, travel plan, maternity/parental leave return system, workplace services, etc.) YES  NO

**Job management, training, SRI funds\***

- C13** Does your company assess its future needs for qualifications and skills?  
 NO  YES, but not regularly  Yes, regularly
- C14** Over the past three years, has your company implemented employment and skills planning measures (GPEC\*)? YES  NO   
 If **NO**, go to **C15**  
**C14a** Were these measures negotiated? YES  NO
- C15** In 2010, did your company establish an annual training plan? YES  NO
- C16** In 2010, what is approximately the percentage of expenses for actual vocational training actions (VT\*) in relation to your company’s payroll?  
 Less than 1,5%  From 1.5% to less than 2%  From 2% to less than 4%  More than 4%
- C17** If you have a profit-sharing, incentive and/or employee savings plan (pension and/or company), do these plans invest in SRI funds\*?  
 YES, in full  YES, in part  NO  No plan

## D - “Environmental” pillar

### General approach to the environment

- D1** Which of the following issues does your company have the most negative impact on? (only 1 answer)
- climate change (greenhouse gas emissions)
  - biodiversity loss (loss of species, natural spaces and ecosystem degradation)
  - air pollution
  - water pollution
  - soil pollution
  - waste generation
  - the use or generation of toxic or hazardous substances
- D2** Is your company committed to an environmental management approach\*? YES  NO
- D3** Do you develop eco-products\*, i.e. goods or services that are more environmentally friendly? YES  NO  Not concerned
- D4** Do you have eco-labelled products\* (European Ecolabel, NF, NF Environnement, Blaue Engel, Nordic Swan,...)? YES  NO  Not concerned

### Thematic approach to the environment

#### (a) the fight against climate change and an energy-saving approach

- D5** Is your company committed to improving energy efficiency and/or reducing greenhouse gas emissions? YES  NO   
If NO go to **D8**
- D6** Do you have the following instruments to implement this commitment?
- D6a** a plan to improve energy efficiency or reduce emissions YES  NO
  - D6b** a follow-up over time of greenhouse gas emissions (carbon footprint type,...) YES  NO
  - D6c** a company travel plan (staff travel) YES  NO
  - D6d** a plan to reduce freight transport YES  NO
- D7** Are most of your company’s facilities involved\* in the commitment? YES  NO   
Single establishment

#### (b) economical management of resources and waste recycling

- D8** Is your company involved in:
- D8a** a logic of economical management of resources (raw material, water) YES  NO
  - D8b** a waste prevention or recycling process YES  NO
  - D8c** an eco-design\* logic for products YES  NO
- If NO to these 3 questions, go to **D11**
- D9** Do you have the following instruments to implement this commitment?
- D9a** a material balance followed over time for your productions and your operating modes YES  NO
  - D9b** a plan to reduce material consumption YES  NO
  - D9c** a waste reduction and recycling plan YES  NO
- D10** Are most of your company’s facilities involved\* in the commitment? YES  NO   
Single establishment

#### (c) biodiversity

- D11** Is your company involved in the preservation of biodiversity (species, natural spaces and ecosystems)? YES  NO   
If NO go to \*\*
- D12** What type of instrument do you have to implement this commitment?
- D12a** a biodiversity impact assessment monitored over time YES  NO
  - D12b** a production system integrating biodiversity conservation YES  NO
  - D12c** a patronage policy in favour of biodiversity YES  NO

\*\* If you have answered **NO** to **D2**, **D3**, **D5**, **D7**, **D11** and all the terms and conditions of **D8**, skip to the last question.



**D13** What is the main determinant of your commitment to the above approach(s)?

- develop new products and/or respond to customer requests
- enhance your company's image
- be part of an ethical approach to environmental protection
- motivate your employees
- reduce your costs

**D14** With which partner(s) did you develop these approaches?

- another company, including a private consulting firm
- an environmental NGO
- other (local authority, public body, CCI,...)
- internally only

How long did it take you to complete this questionnaire?..... \_ \_ \_ \_ \_ min