

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

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## Abstract

We explore firms' commitment to Corporate Social Responsibility (CSR). Using a unique dataset of about 9,000 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 CSR scores for each firm, using 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 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.

*Keywords:* corporate social responsibility, scoring, France.

*JEL codes:* M14, C38.

## 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. 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 would be less often but more sincerely committed to CSR. To what extent is this assertion verified? How different

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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)).

Indeed, the existing literature shows that size definitely matters for CSR involvement (Spence (1999), Russo and Tencati (2009), Baumann-Pauly et al. (2013)) but most articles adopt a restricted viewpoint or treat the different population segments in a different way from the beginning. 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. As a basis for this description, we propose an original CSR scaling method, which allows us to obtain quantitative indicators for the firms' CSR practices.

One may argue that the difference with large firms originates both in the ability of small and medium enterprises (SME) to implement responsible strategies and in their unequal knowledge of the concept and its implications. Knowledge of CSR itself would require that the concept be clearly defined but, despite numerous studies, CSR remains a puzzling concept, mainly because there is no focused and commonly accepted definition. Whereas the Green Paper of the European Union (EC (2001), p.6) defined Corporate Social Responsibility "as a concept whereby companies integrate social and environmental concerns in their business operations and in their interaction with their stakeholders on a voluntary basis", Baron (2001) argued that "corporate social responsibility is an ill- and incompletely defined concept." The World Business Council for Sustainable Development (WBCSD (2004)) proposed a broader definition of CSR as "the commitment of a business to contribute to sustainable economic development, working with employees, their families, the local community and society at large to improve their quality of life." The European Commission eventually enlarged the concept by putting forward a simpler definition of CSR as "the responsibility of enterprises for their impact on society" (EC (2011)). The vagueness of its definition contributes to account for the very different shapes CSR may have across firms and different countries. Institutional dissimilarities have been as well emphasized by Matten and Moon (2008) 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. But they also underline the ongoing convergence between firms of both origin, CSR becoming increasingly explicit for European firms as well.

In a similar way, the vagueness of the concept is interpreted as one of the possible reasons why firms of different sizes may adopt different forms of 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. According Russo and Tencati (2009), large corporations implement formal CSR, whilst SME run informal CSR. 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)). 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 there are closely connected to their environment or communities in which they often act as benefactors or strongly committed agent (Spence (1999)), the values of their manager or owner constitute 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 constitute an informal CSR.

Our primary research questions is related to this hypothesis: do we observe a difference between CSR forms depending on the corporations size that could be interpreted as the evidence of formal CSR in French large corporations and informal CSR in French SME? To answer this question, we first elaborate an appropriate scale to measure CSR. Indeed, most of the analysis conducted in the literature until now rely on scales using social ratings (Chatterji et al. (2009), Chatterji et al. (2016), Carroll et al. (2016)) or measuring corporate social performance, as the result of CSR practices, (Rahman and Post (2012)).

Our work offers original features, which allow us to obtain a very precise and detailed picture of the CSR behaviours of French firms. The first one is due to the sample used in this paper, which is the largest one ever gathered for France, including micro, small and medium enterprises as well as large firms, whereas 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 CSR engagement externally, whereas Vo et al. (2015) use a sample of 155 firms (drawn from a panel of about 1200 French SMEs) to compare the roles of economic, social, and environmental motives in driving SMEs to integrate CSR into their business strategy. In other countries, 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 behaviour of a large sample composed of 3626 Italian companies of all sizes. Moreover, our data are composed of first-hand raw data, free from any potentially biased exploitation and interpretation, unlike data drawn from rating agencies, like KLD index or CDP index (etc.) used in other papers. The only exceptions up-to-date are Russo and Tencati (2009) or 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. And because these data are freely

disclosed by firms to the French statistical institute, for statistical use only and under confidentiality rules, they are very unlikely to be strategically biased, in order to be awarded a good score to be used by investors for example. In addition, the dataset is exhaustive concerning firms with more than 500 employees and the rest of the sample relies on the best sampling practices to date. One of the advantage of this extensive survey is thus that it allows a rigorous comparison across firms, who have to answer the same questions, unlike Baumann-Pauly et al. (2013), who define a priori different indicators for SME or for multinational companies, and focus on 12 so-called "data-rich" case studies (biased toward CSR champions).

Second this paper is the first one to construct CSR scores based on a Mokken scale analysis, and thus to draw a very detailed picture of the features of CSR in French firms. This method is much more promising than the simple factor analysis conducted by Russo and Tencati (2009) and Turker (2009) to characterize the CSR behaviours, while being less computationally intensive than the Bayesian ITR method emphasized 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 further research.

We show actually in this paper that the first difference between SME and large firms lies in the understanding and simple knowledge of the CSR concept. But we also note that, among firms who 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 behaviours are analyzed in detail.

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

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). About 9,000 French firms were required to fill-up 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. In the following, we follow the same definition of micro, small, medium-sized, and large firms based on the definition established by the EU (European Commission, 2003) than Russo and Tencati (2009): micro firms are firms with less than 10 employees; small firms are firms with less than 50 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 exhaustive for the 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, and to be able to also draw some conclusions about the differences among micro, 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 latter 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. A prominent feature of this survey is its first question: "Did you ever hear about Corporate Social Responsibility?" In case of negative answer, the respondent was required to go directly to the next parts, 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 and their motivations to do so, 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, NGO, 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 discriminations linked to 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

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

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

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

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?"

## 2.1 Some descriptive statistics

About 60% of the firms state that they have never heard about CSR. This percentage varies by sector of activity (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.

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

About 52% percent of the firms know about CSR and are currently taking actions related to CSR; 12%, despite having heard about CSR, states that they do not take any action related to CSR. Notice 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 existing literature

As 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 have in common to 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, which 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 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. 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 introduce 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 which 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 measure 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



Table 3: CSR scores by sector

	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

for each of the CSR pillars.

### 3.3 Pillar scores

In order to get a precise picture of the firms' behaviour, we first construct 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 ( $H^S = 0.38$ ). The corresponding score ranges from 0 to 8, with a rather low median (median score =2).

Regarding the social part of the survey, 21 binary questions were asked to the respondents. 18 were found to form a medium scale ( $H^S = 0.48$ ). The social score ranges from 0 to 18, with a median of 5.

Finally the environmental pillar was assessed through 8 items, which were all found to form a strong scale ( $H^S = 0.53$ ). The environmental score ranges from 0 to 8, with a median of 2.

Beyond the Loevinger scalability coefficients, the internal consistency of the scales can be assessed by computing the associated Cronbach's  $\alpha$ . Again, the standards for what make 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 each of the scale 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.

Assessing the external consistency of scales, including CSR scales, is 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 behaviours). For example, when presenting their revised

Table 4: Pillar scores - difference in means

	Mean score, Do not know CSR	Mean score, know CSR	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

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 behaviours, 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.

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) behaviour 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' behaviour. 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. However, we prefer leaving it to future work, and concentrate on the material provided by the 2011 INSEE survey.

Indeed, and fortunately, the first question of the 2011 INSEE survey asked the respondents whether they "did ever hear about Corporate Social Responsibility?". Therefore, 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).

Actually, the scores do not only differ in mean, but also in their distributions. For example, Figure 1

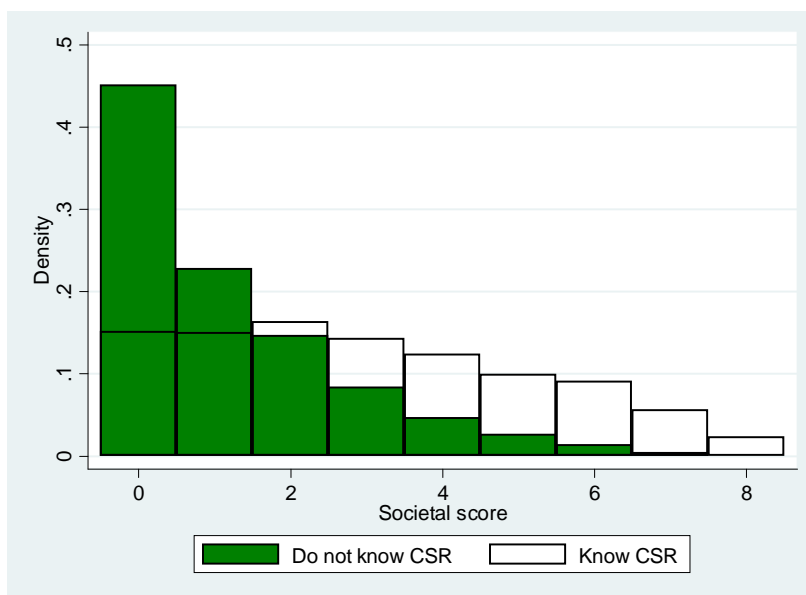


Figure 1: Societal pillar score

depicts the societal pillar score 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 the societal 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>1</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. 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.

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"

<sup>1</sup>The 95% confidence intervals are based on Fisher's transformation.

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

Table 6: Pillar scores - Binary indicators

	Know CSR		Do not know CSR
	Do not implement CSR	Implement CSR	
Binary indicator - Societal score (0)	66.30	37.62	69.21
Binary indicator - Societal score (1)	33.70	62.38	30.79
Binary indicator - Social score (0)	63.65	39.60	75.82
Binary indicator - Social score (1)	36.35	60.40	24.18
Binary indicator - Environmental score (0)	78.87	41.59	73.71
Binary indicator - Environmental score (1)	26.13	58.41	26.29

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 runs parallel.

### 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 in 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 who answered that they did not ever heard about CSR and firms who 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. Therefore, we define three binary

Table 7: Firms knowing CSR and implementing (No/Yes) CSR - Frequency and percentage by sector of activity

Sector	Frequency	No	Yes
Mining and Quarrying	186	6.08	93.92
Manufacturing	13,159	27.63	72.37
Electricity, Gas, Steam	122	5.11	94.89
Water supply, sewerage, waste management	783	18.79	81.21
Construction	8,647	28.84	71.16
Wholesale and retail trade	12,610	31.34	68.66
Transportation and storage	3,738	25.21	74.79
Accommodation and food service activities	4,228	23.36	76.64
Information and communication	2,872	38.01	61.99
Real estate activities	1,136	38.02	61.98
Professional, scientific and technical activities	7,090	32.91	67.09
Administration and support activities	4,267	22.32	77.68
Other service activities	668	30.67	69.33

indicators (one for each pillar score) that take on the value of 1 when the firm scores above the mean, and 0 otherwise. As can be seen from Table 6 firms who 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 not implementing CSR strategies, a significant percentage scores above the mean (respectively, 34%, 36% and 26%). Note that the percentages (under the mean, above the mean) for firms stated that they implement CSR strategies are reversed, as could be expected.

According 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 simple probit models, to characterize the probability to implement informal versus formal CSR. The results are given in Table 9, and the associated marginal effect are reported in Table 10. Keeping in mind that the reference sector is "Electricity, Gas, Steam", whereas the reference size is "10 - 19 employees", the marginal effects show some interesting results. For most of the sectors, the probability to implement informal CSR is higher, compared to the reference sector. The most important effect on the probability to implement informal CSR versus formal CSR is found for the "Mining and Quarrying" and "Other service activities" sectors.

The size effect is found to be very clear: from Table 10 the probability to implement informal CSR decreases monotonically with the firms' size. For example, for firms with more than 500 employees, the probability to implement informal CSR actions related to the social pillar is 0.53 probability points lower than for firm with 10 to 19 employees. Note that we did not find any significant interaction effects between

Table 8: Firms knowing CSR and implementing (No/Yes) CSR - Frequency and percentage by size

Size	Frequency	No	Yes
10-19	24,357	38.79	61.21
20-49	19,664	24.72	75.28
50-249	11,386	21.16	78.84
250-499	1,919	13.03	86.97
500+	1,730	7.26	92.74
Total	59,506	28.89	71.11

size and sector.

## 4 Main features of CSR behaviours

### 4.1 To state or not to state doing 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 do 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. Chatterji et al. (2009) also estimate count data models (Poisson and Negative Binomial) in their assessment of the KLD environmental rating. We introduce interaction variables between size and the binary indicator coding S-CSR firms (variable  $A401\_m$  in Table 11 and 12).

Table 12 reports 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. Also S-CSR firms score higher than NS-CSR firms. For example, the mean social score for S-CSR firms is about 1.73 points higher than the same score for NS-CSR-firms. All the 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 11 provide some subtle results. Indeed some of the interaction effects are found 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 behaviour appears more heterogeneous: these firms performs better for the societal related CSR activities, but do worst for the two other pillars related activities.

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

The 2011 INSEE survey allows us 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 discours 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 by size? Estimating Negative Binomial models with interactions effects with a variable coding the presence of a CSR department (variable *A901\_m* in Table 13 and 14), we find evidence that this is not the case.

The marginal effects in Table 14 still show nuanced sectoral effects and clear size effects. Most of the sectors have lower mean scores than the reference sector, but some do at the same level. For example, the marginal effect of the binary indicator of the "Water supply, sewerage" sector is not significant, which means that this sector actually has the same pillar scores as the reference sector.

Also, 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 that it could appear at first sight. Indeed, some interaction effects are found significant in Table 13. 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.

## 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 behaviours. 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 actually are committed to CSR, while stating that they are not.

We believe that the CSR scores derived from MSA are a reliable basis for future work. As argued by Chatterji et al. (2009), valid measures of CSR commitment are a necessary step in the exploration of CSR-related behaviours, 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, to name but a few.

## References

- Aguinis, H., and A. Glavas, 2012. What we know and don't know about corporate social responsibility: a review and research agenda. *Journal of management*, 38(4), 932-968.
- Baron D.P. (2001) Private politics, corporate social responsibility, and integrated strategy. *Journal of Economics and Management Strategy*, 10:7-45.
- Baumann-Pauly, D., Wickert, C., Spence, L. J., and A. G. Scherer, 2013. Organizing corporate social responsibility in small and large firms: Size matters. *Journal of Business Ethics*, 115(4), 693-705.
- Carroll, R. J., Primo, D. M., and B. K. Richter, 2016. Using item response theory to improve measurement in strategic management research: An application to corporate social responsibility. *Strategic Management Journal*, 37(1), 66-85.
- Chatterji, A. K., Levine, D. I., and M. W. Toffel, 2009. How well do social ratings actually measure corporate social responsibility?. *Journal of Economics & Management Strategy*, 18(1), 125-169.
- Chatterji, A. K., Durand, R., Levine, D. I., and S. Touboul (2016). Do ratings of firms converge? Implications for managers, investors and strategy researchers. *Strategic Management Journal*, 37: 1597-1614.
- Crifo, P., and V.D. Forget, 2015. The economics of corporate social responsibility: A firm-level perspective survey. *Journal of Economic Surveys*, 29(1), 112-130.



- Croson, R., and N. Treich, 2014. Behavioral environmental economics: promises and challenges. *Environmental and Resource Economics*, 58(3), 335-351.
- Dunlap, R. E., Van Liere, K. D., Mertig, A. G., and Jones, R. E. (2000). Measuring endorsement of the New Ecological Paradigm: A revised NEP scale. *Journal of Social Issues*, 56(3), 425-442.
- Embretson, S., and S. Reise, 2000. *Item Response Theory for Psychologists*. Mahwah, NJ: Erlbaum.
- European Commission, 2001. *Green Paper - Promoting a European framework for Corporate Social Responsibility*. COM/2001/366. Brussels.
- European Commission, 2003. *SMEs in Europe 2003*. Enterprise Publications. Luxembourg.
- European Commission, 2011. *A renewed EU strategy 2011-14 for Corporate Social Responsibility*. Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions. COM/2011/0681.
- Ernst, E., and Honoré-Rougé Y., 2012. La responsabilité sociétale des entreprises : une démarche déjà répandue. *INSEE Première*, 1421.
- Hardouin, J.-B. , Bonnaud-Antignac, A. and V. Sébille, 2011. Nonparametric Item Response Theory using Stata. *The Stata Journal*, 11(1), 30-51.
- Jenkins, H., 2009. A ‘business opportunity’ model of corporate social responsibility for small- and medium-sized enterprises. *Business ethics: a European review*, 18(1), 21-36.
- Kitzmueller, M., and J. Shimshack, 2012. Economic perspectives on corporate social responsibility. *Journal of Economic Literature*, 50(1), 51-84.
- Kühn, A. L., Stiglbauer, M., and J. Heel, 2014. Does mandatory CSR reporting lead to higher CSR transparency? The case of France. *Corporate Ownership and Control*, 11(2), 29-45.
- Matten, D., and J. Moon, 2008. “Implicit” and “explicit” CSR: A conceptual framework for a comparative understanding of corporate social responsibility. *Academy of Management Review*, 33(2), 404-424.
- Mokken, R. J., 1971. *A theory and procedure of scale analysis*. De Gruyter.
- Murillo, D., and J.M. Lozano, 2006. SMEs and CSR: An approach to CSR in their own words. *Journal of Business Ethics*, 67(3), 227-240.

- Perrini, F., Russo, A., and A. Tencati, 2007. CSR strategies of SMEs and large firms. Evidence from Italy. *Journal of business ethics*, 74(3), 285-300.
- Rahman, N., and C. Post, 2012. Measurement issues in environmental corporate social responsibility (ECSR): Toward a transparent, reliable, and construct valid instrument. *Journal of Business Ethics*, 105(3), 307-319.
- Rasch, G., 1960. *Probabilistic Models for Some Intelligence and Attainment Tests*. Copenhagen: Danmarks Pædagogiske Institut.
- Russo, A., and A. Tencati, 2009. Formal vs. informal CSR strategies: Evidence from Italian micro, small, medium-sized, and large firms. *Journal of Business Ethics*, 85, 339-353.
- Spence, L. J., 1999. Does size matter? The state of the art in small business ethics. *Business ethics: a European review*, 8(3), 163-174.
- Spence, L. J., Schmidpeter R., and A. Habisch. 2003, Assessing Social Capital: Small and Medium Sized Enterprises in Germany and the UK, *Journal of Business Ethics*, 47(1), 17-29.
- Schmitz, J., and Schrader, J. 2015. Corporate social responsibility: A microeconomic review of the literature. *Journal of Economic Surveys*, 29(1), 27-45.
- Turker, D., 2009. Measuring corporate social responsibility: A scale development study. *Journal of Business Ethics*, 85(4), 411-427.
- van Schuur, W. H., 2003. Mokken scale analysis: Between the Guttman scale and parametric item response theory. *Political Analysis*, 11(2), 139-163.
- Vo, L. C., Delchet-Cochet, K., and H. Akeb, 2015. Motives Behind The Integration Of CSR Into Business Strategy: A Comparative Study In French SMEs. *Journal of Applied Business Research*, 31(5), 1975.
- World Business Council for Sustainable Development (WBCSD), 2004. Cross-cutting themes—Corporate responsibility. <http://www.wbcd.org/>
- Zatzick, Christopher D., and Roderick D. Iverson. (2006). High-Involvement Management and Workforce Reduction: Competitive Advantage or Disadvantage?. *Academy of Management Journal*, 49(5), 999–1015.
- Zheng, X., and S. Rabe-Hesketh, 2007. Estimating parameters of dichotomous and ordinal item response models with gllamm. *The Stata Journal* 7(3): 313-333.

## Appendix

Table 9: Probability to implement informal CSR vs formal CSR

	(1)	(2)	(3)
	inf_st	inf_so	inf_env
Mining and Quarrying	0.853*** (0.146)	0.593*** (0.136)	0.973*** (0.145)
Manufacturing	0.764*** (0.126)	0.453*** (0.116)	0.758*** (0.128)
Water Supply, Sewerage	0.568*** (0.133)	0.296* (0.123)	0.655*** (0.134)
Construction	1.039*** (0.126)	0.436*** (0.116)	0.633*** (0.129)
Wholesale	0.796*** (0.126)	0.655*** (0.116)	0.828*** (0.128)
Transportation	0.608*** (0.127)	0.634*** (0.117)	0.711*** (0.129)
Accommodation	0.685*** (0.127)	0.531*** (0.116)	0.845*** (0.129)
Information	0.228 (0.129)	0.395*** (0.118)	-0.138 (0.133)
Real estate	0.605*** (0.132)	0.667*** (0.120)	0.587*** (0.135)
Professional, scientific	0.142 (0.127)	0.092 (0.116)	0.054 (0.129)
Administration	0.597*** (0.127)	0.539*** (0.116)	0.549*** (0.129)
Other service	0.853*** (0.132)	0.388** (0.125)	0.651*** (0.136)
20 - 49	-0.359*** (0.011)	-0.178*** (0.011)	-0.242*** (0.011)
50 - 249	-0.713*** (0.014)	-0.114*** (0.013)	-0.498*** (0.014)
250 - 499	-1.141*** (0.036)	-0.473*** (0.029)	-0.901*** (0.034)
500+	-1.477*** (0.044)	-0.931*** (0.037)	-1.314*** (0.043)
Constant	-0.590*** (0.126)	-0.626*** (0.115)	-0.694*** (0.128)
Observations	5869	6327	5899

Standard errors in parentheses

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

Table 10: Probability to implement informal CSR vs formal CSR - Marginal effects

	(1)	(2)	(3)
Mining and Quarrying	0.309*** (0.053)	0.224*** (0.051)	0.355*** (0.053)
Manufacturing	0.276*** (0.046)	0.171*** (0.044)	0.276*** (0.047)
Water Supply, Sewerage	0.206*** (0.048)	0.112* (0.046)	0.239*** (0.049)
Construction	0.376*** (0.046)	0.164*** (0.044)	0.231*** (0.047)
Wholesale	0.288*** (0.046)	0.247*** (0.044)	0.302*** (0.047)
Transportation	0.220*** (0.046)	0.239*** (0.044)	0.259*** (0.047)
Accommodation	0.248*** (0.046)	0.200*** (0.044)	0.308*** (0.047)
Information	0.083 (0.047)	0.149*** (0.044)	-0.050 (0.048)
Real estate	0.219*** (0.048)	0.252*** (0.045)	0.214*** (0.049)
Professional, scientific	0.051 (0.046)	0.035 (0.044)	0.020 (0.047)
Administration	0.216*** (0.046)	0.203*** (0.044)	0.200*** (0.047)
Other service	0.309*** (0.048)	0.147** (0.047)	0.237*** (0.049)
20 - 49	-0.130*** (0.004)	-0.067*** (0.004)	-0.088*** (0.004)
50 - 249	-0.258*** (0.005)	-0.043*** (0.005)	-0.182*** (0.005)
250 - 499	-0.413*** (0.013)	-0.179*** (0.011)	-0.328*** (0.012)
500+	-0.534*** (0.016)	-0.351*** (0.014)	-0.479*** (0.016)
Observations	5869	6327	5899

Standard errors in parentheses

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

Table 11: CSR knowledge, action and size effect - Accounting for interaction effects

	(1)	(2)	(3)
	score_st	score_so	score_env
Mining and Quarrying	-0.122 (0.088)	-0.336*** (0.076)	-0.194** (0.072)
Manufacturing	-0.361*** (0.068)	-0.299*** (0.059)	-0.361*** (0.056)
Water Supply, Sewerage	-0.108 (0.073)	-0.018 (0.063)	-0.231*** (0.060)
Construction	-0.049 (0.068)	-0.186** (0.059)	-0.483*** (0.056)
Wholesale	-0.411*** (0.068)	-0.206*** (0.059)	-0.481*** (0.056)
Transportation	-0.660*** (0.069)	-0.129* (0.060)	-0.528*** (0.057)
Accommodation	-0.131 (0.069)	0.014 (0.060)	-0.246*** (0.056)
Information	-0.688*** (0.070)	-0.174** (0.060)	-0.997*** (0.058)
Real estate	-0.304*** (0.072)	-0.436*** (0.062)	-0.577*** (0.060)
Professional, scientific	-0.517*** (0.069)	-0.208*** (0.059)	-0.782*** (0.056)
Administration	-0.254*** (0.069)	-0.097 (0.060)	-0.522*** (0.056)
Other service	-0.871*** (0.079)	-0.290*** (0.065)	-0.940*** (0.065)
20 - 49	-0.107*** (0.019)	0.141*** (0.013)	0.154*** (0.016)
50 - 249	0.229*** (0.023)	0.749*** (0.015)	0.526*** (0.018)
250 - 499	0.455*** (0.059)	0.948*** (0.041)	0.639*** (0.048)
500+	0.529*** (0.081)	1.095*** (0.056)	0.630*** (0.068)
A401_m=1	0.528*** (0.013)	0.336*** (0.010)	0.612*** (0.012)
20 - 49 × A401_m=1	0.284*** (0.022)	0.080*** (0.015)	0.057** (0.018)
50 - 249 × A401_m=1	0.164*** (0.025)	-0.138*** (0.018)	-0.164*** (0.021)
250 - 499 × A401_m=1	0.147* (0.062)	-0.099* (0.044)	-0.096 (0.050)
500+ × A401_m=1	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)
Alpha	-1.334*** (0.019)	-1.228*** (0.010)	-1.796*** (0.022)
Observations	5345	5345	5345

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

Table 12: CSR knowledge, action and size effect - Marginal effects on scores

	(1)	(2)	(3)
Mining and Quarrying	-0.259 (0.187)	-2.048*** (0.466)	-0.526** (0.195)
Manufacturing	-0.769*** (0.145)	-1.822*** (0.361)	-0.980*** (0.151)
Water Supply, Sewerage	-0.229 (0.156)	-0.108 (0.386)	-0.626*** (0.163)
Construction	-0.105 (0.145)	-1.132** (0.362)	-1.309*** (0.152)
Wholesale	-0.876*** (0.145)	-1.258*** (0.361)	-1.305*** (0.151)
Transportation	-1.404*** (0.148)	-0.785* (0.365)	-1.434*** (0.154)
Accommodation	-0.278 (0.147)	0.085 (0.364)	-0.669*** (0.153)
Information	-1.464*** (0.150)	-1.062** (0.367)	-2.704*** (0.157)
Real estate	-0.646*** (0.154)	-2.659*** (0.381)	-1.565*** (0.162)
Professional, scientific	-1.100*** (0.146)	-1.267*** (0.362)	-2.121*** (0.153)
Administration	-0.540*** (0.147)	-0.594 (0.364)	-1.416*** (0.153)
Other service	-1.855*** (0.169)	-1.771*** (0.396)	-2.552*** (0.177)
20 - 49	0.242*** (0.017)	1.023*** (0.035)	0.492*** (0.018)
50 - 249	0.776*** (0.023)	4.079*** (0.057)	1.063*** (0.024)
250 - 499	1.374*** (0.058)	6.285*** (0.165)	1.656*** (0.061)
500+	2.061*** (0.074)	7.813*** (0.222)	2.043*** (0.074)
A401_m=1	1.194*** (0.015)	1.737*** (0.040)	1.366*** (0.017)
Observations	5345	5345	5345

Standard errors in parentheses

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

Table 13: CSR department and size effect - Accounting for interaction effects

	(1)	(2)	(3)
	score_st	score_so	score_env
Mining and Quarrying	-0.288*** (0.081)	-0.370*** (0.070)	-0.243*** (0.063)
Manufacturing	-0.268*** (0.063)	-0.206*** (0.054)	-0.230*** (0.049)
Water Supply, Sewerage	-0.082 (0.068)	-0.035 (0.058)	-0.083 (0.053)
Construction	-0.009 (0.063)	-0.120* (0.054)	-0.325*** (0.049)
Wholesale	-0.276*** (0.063)	-0.148** (0.054)	-0.315*** (0.049)
Transportation	-0.548*** (0.064)	-0.072 (0.055)	-0.465*** (0.050)
Accommodation	-0.175** (0.063)	-0.000 (0.055)	-0.189*** (0.050)
Information	-0.567*** (0.065)	-0.021 (0.055)	-0.813*** (0.052)
Real estate	-0.243*** (0.068)	-0.320*** (0.058)	-0.302*** (0.053)
Professional, scientific	-0.398*** (0.063)	-0.062 (0.054)	-0.608*** (0.049)
Administration	-0.165** (0.063)	-0.073 (0.055)	-0.458*** (0.050)
Other service	-0.671*** (0.075)	-0.036 (0.060)	-0.768*** (0.060)
20 - 49	0.127*** (0.010)	0.199*** (0.008)	0.188*** (0.008)
50 - 249	0.323*** (0.011)	0.603*** (0.009)	0.313*** (0.009)
250 - 499	0.480*** (0.022)	0.838*** (0.017)	0.476*** (0.018)
500+	0.686*** (0.023)	0.977*** (0.019)	0.593*** (0.019)
A901_m=1	0.524*** (0.022)	0.456*** (0.018)	0.490*** (0.018)
20 - 49 × A901_m=1	0.220*** (0.028)	0.047 (0.024)	0.060** (0.023)
50 - 249 × A901_m=1	-0.050 (0.028)	-0.244*** (0.024)	-0.083*** (0.023)
250 - 499 × A901_m=1	-0.068 (0.041)	-0.315*** (0.035)	-0.174*** (0.033)
500+ × A901_m=1	-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)
Alpha	-1.831*** (0.028)	-1.568*** (0.013)	-2.730*** (0.046)
Observations	4410	4410	4410

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

Table 14: CSR department and size effect - Accounting for interaction effects

	(1)	(2)	(3)
Mining and Quarrying	-0.722*** (0.203)	-2.521*** (0.479)	-0.769*** (0.201)
Manufacturing	-0.671*** (0.157)	-1.405*** (0.367)	-0.728*** (0.155)
Water Supply, Sewerage	-0.205 (0.170)	-0.235 (0.397)	-0.262 (0.168)
Construction	-0.022 (0.157)	-0.817* (0.369)	-1.030*** (0.156)
Wholesale	-0.692*** (0.157)	-1.008** (0.367)	-0.999*** (0.155)
Transportation	-1.374*** (0.160)	-0.487 (0.373)	-1.475*** (0.158)
Accommodation	-0.438** (0.159)	-0.002 (0.372)	-0.599*** (0.157)
Information	-1.421*** (0.163)	-0.141 (0.377)	-2.576*** (0.164)
Real estate	-0.609*** (0.170)	-2.178*** (0.397)	-0.957*** (0.169)
Professional, scientific	-0.998*** (0.158)	-0.425 (0.369)	-1.928*** (0.157)
Administration	-0.414** (0.159)	-0.500 (0.371)	-1.451*** (0.158)
Other service	-1.680*** (0.187)	-0.247 (0.412)	-2.435*** (0.190)
20 - 49	0.400*** (0.022)	1.180*** (0.044)	0.586*** (0.023)
50 - 249	0.767*** (0.027)	3.827*** (0.061)	0.915*** (0.027)
250 - 499	1.240*** (0.060)	6.069*** (0.162)	1.479*** (0.061)
500+	1.926*** (0.076)	7.611*** (0.203)	1.928*** (0.073)
A901_m=1	1.785*** (0.040)	2.841*** (0.080)	1.773*** (0.039)
Observations	4410	4410	4410

Standard errors in parentheses

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