



Factors influencing the assurance of sustainability reports in the context of the economic crisis in Portugal

Factors
influencing SRA

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Abstract

Purpose – The paper aims to analyse the engagement in sustainability reporting assurance (SRA) by a sample of Portuguese firms between 2008 and 2011.

Design/methodology/approach – Bivariate and multivariate non-parametric statistics is used to analyse some factors that influence the decision to have sustainability reports assured.

Findings – Results indicate that size, leverage, profitability, listing status and industrial affiliation are determinants of SRA, whereas type of ownership is not. A downward trend in sustainability reporting and its assurance was also detected.

Research limitations/implications – The sample is small.

Originality/value – It adds to the scarce research on SRA by providing new empirical data in a context of crisis and extends prior research by analysing the effects of listing status and type of ownership.

Keywords Portugal, Sustainability reporting, Assurance

Paper type Research paper

1. Introduction

Sustainability reporting and the assurance thereof has evidenced a remarkable development over the last few decades. In a recent study, Dhaliwal *et al.* (2012) used a sample consisting of 7,108 stand-alone sustainability reports from 31 countries for 1994-2007 published by 1,297 companies. They report an increase of the number of reports from less than 100 in the middle of the 1990s to over 1,000 in 2007. They have also reported that only in Hong Kong, India and Italy more than 50 percent of the sustainability reports were assured. In the case of Portugal, 35 percent of the 40 reports found were assured.

The majority of extant studies on sustainability reporting assurance (SRA) has examined the content of assurance statements to analyse issues such as the relationship between the assurer and assured, the objectives, scope, timing and coverage of SRA engagements and the reporting criteria employed in SRA processes (Ball *et al.*, 2000;



JEL classification – M420

O'Dwyer and Owen, 2005, 2007; Deegan *et al.*, 2006a, b). Among more recent lines of research is the one focusing on the factors influencing the decision to engage in SRA (Simnett *et al.*, 2009; Kolk and Perego, 2010; García-Benau *et al.*, 2012; Sierra *et al.*, 2013; Zorio *et al.*, 2013). This study falls within this latter strand of literature.

A statement of assurance for a sustainability reports serves as a communication mechanism, albeit a faulty one nowadays (Deegan *et al.*, 2006b). As the purchase of assurance for sustainability reports involves both costs and benefits, a company will have an incentive to engage in such practice when the benefits to be derived from it are perceived to outweigh the associated costs (Simnett *et al.*, 2009). Stakeholder confidence in the quality of the sustainability information provided and/or higher stakeholder trust in the level of commitment to sustainability agendas are noteworthy examples of said benefits (Simnett *et al.*, 2009). It can thus be argued that companies which want to have the credibility of their reports enhanced and build their corporate reputation are more likely to engage in sustainability reports assurance (Simnett *et al.*, 2009).

The main purpose of this study is to understand the factors influencing the assurance of sustainability reports in Portugal. We analyse the decision to assure sustainability reports by Portuguese firms for the period 2008-2011. We investigate whether size, industrial affiliation, profitability, leverage, type of ownership and listing status are factors influencing the decision to have sustainability reports assured. Only the first four characteristics have been analysed in previous studies, which tended to focus on listed companies. As far as we are aware this is the first study analysing listed and unlisted companies and whether being a state-owned firm and being a listed firm are factors influencing the decision to assure sustainability reports.

Empirical evidence from Portugal is examined in part because research on sustainability reports assurance in Portugal is extremely scarce. Although there are several studies on sustainability reporting practices of Portuguese companies, the authors are aware of only one descriptive study on the assurance of Portuguese companies' sustainability reports offered to an international audience (Gomes *et al.*, 2013). More importantly, by analysing the Portuguese case for the period 2008-2011 we are able to obtain some insights on the evolution of SRA in a context of severe economic crisis.

The interest of the Portuguese case is also related to the relatively high level of development of sustainability reporting in Portugal. In an evaluation of the quality of communications and the level of process maturity by KPMG (2011), Portugal is placed in the "leading the pack" quadrant, with many other European countries that have addressed corporate sustainability and reporting for over a decade. García-Benau *et al.* (2013) report that Portugal is among the few European countries regarding which more than half of the sustainability reports sent by companies to the Global Reporting Initiative (GRI) are assured (with Spain, which is clearly leading, Ireland, Austria, Italy, among a few others).

This high level of development of sustainability reporting and its assurance and the high crisis severity lead us to believe that Portugal may be paving the way in terms of the impact of the crisis in these corporate practices. Hence, there may be some lessons to be learned with the Portuguese case, at least by other European countries in which sustainability reporting is equally or more developed.

Our findings suggest that size, listing status, industrial affiliation, profitability and leverage influence the decision to engage in SRA, whereas type of ownership does not. Size and profitability present a positive relationship with the decision to have the

sustainability report assured, whereas leverage shows a negative relationship. Unlisted companies are more likely to have their sustainability reports assured than listed companies. In addition, we have also find a downward trend in the publication of sustainability reports and in SRA.

In the following section, a review of the literature on SRA is presented. Thereafter follow sections on the theoretical framework used and hypotheses development, methodology, results and discussion. The final section offers some conclusive remarks.

2. Background and relevant literature

Increased sustainability reporting by corporations is a fundamental condition to establish the link between corporate sustainability performance and financial performance (Matthews and Rusinko, 2010). There are, however, other related conditions which are indispensable to establish the said link. Among such conditions, are the development of widely accepted standards for sustainability reporting and the development of sustainability auditing/assurance standards are paramount (Matthews and Rusinko, 2010).

In recent years, the GRI's (2011) *Sustainability Reporting Guidelines* have established themselves as an important driver in improving the quality of sustainability reports (Kolk and Perego, 2010; Perego and Kolk, 2012). These guidelines include some recommendations regarding external assurance of sustainability reports (Kolk and Perego, 2010; Perego and Kolk, 2012). Among the standards used to inform the work of assurance of sustainability reports, the International Auditing and Assurance Standards Board's International Standard on Assurance Engagement (ISAE) 3000 and the AccountAbility's AA1000 Assurance Standard (AA1000AS) are prominent (Manetti and Becatti, 2009; Manetti and Toccafondi, 2012; Martinov-Bennie *et al.*, 2012; Simnett, 2012). ISAE 3000 is primarily used by accounting firms, whereas the AA1000AS is mainly used by assurers who are not accountants (Simnett, 2012).

Recent experimental work provides empirical evidence that voluntary assurance of corporate sustainability information enhances significantly its credibility and reliability (Hodge *et al.*, 2009; Pflugrath *et al.*, 2011). Based on an experimental questionnaire, Hodge *et al.* (2009) provide evidence suggesting that assurance of sustainability reporting improves its perceived reliability. They found that users of sustainability reports place more confidence in sustainability reports when the level of assurance provided is reasonable, and when such assurance is provided by a top tier accountancy firm, compared to when the assurance is provided by a specialist consultant. Using a behavioural experiment, Pflugrath *et al.* (2011) studied the impact of sustainability report assurance on investors' decision-making, and found that the perceived credibility of sustainability information by financial analysts is affected by independent assurance, the assurer's affiliation, as well as contextual factors including industry type and the analysts' nationality.

The majority of the existing studies on SRA suggest that assurance is necessary to enhance the credibility of the information disclosed through sustainability reports (Ackers, 2009; Adams and Evans, 2004; Beets and Souther, 1999; Deegan *et al.*, 2006b; O'Dwyer and Owen, 2005, 2007) and is driven by the desire to improve said credibility (Kolk and Perego, 2010; Simnett *et al.*, 2009). Nonetheless, numerous authors raise some suspicions of managerial and professional capture of SR assurance practices, presenting also some evidence of these realities (Ball *et al.*, 2000; Fonseca, 2010; Manetti and Toccafondi, 2012; O'Dwyer and Owen, 2005; Smith *et al.*, 2011).

Studies on the factors influencing a firms' decision to engage in the assurance of its sustainability report are relatively scarce. The two most influential studies related to this topic are those of Kolk and Perego (2010) and Simnett *et al.* (2009). Both studies focused on the country-level and institutional determinants of sustainability assurance. García-Benau *et al.* (2012) analysed factors influencing the decision to have the sustainability report assured in the European setting. Other studies include Zorio *et al.* (2013) and Sierra *et al.* (2013), who analysed, among other aspects, the factors influencing the decision to have sustainability reports assured in the Spanish setting.

Using a sample of multinational corporations included in the *Fortune Global* 250 list, Kolk and Perego (2010) analysed the adoption of SRA in reports published in the years 1999, 2002 and 2005. They found that approximately one-third of the reports were accompanied by a third-party assurance statement. They have also detected a slightly declining role of accounting firms in this area, due to the increased number of engagements through alternative assurance providers. Regarding the determinants of SRA, Kolk and Perego's (2010) findings suggest that firms operating in countries that are stakeholder oriented, have a weaker governance enforcement regime, or have a high level awareness of sustainability, are more likely to have their sustainability reports assured.

Simnett *et al.* (2009) analysed a sample of 2,113 companies from 31 countries that produced sustainability reports for the period 2002-2004. They found that only 31 percent of the 2,113 sustainability reports contained independent assurance reports, of which only about 42 percent the assurance provider was a member of the accounting profession. On the issue of the determinants of SRA, similar to Kolk and Perego (2010), Simnett *et al.* (2009) found that companies operating in stakeholder-oriented countries are more likely to have their sustainability reports assured. In addition, they found that large firms were significantly more likely to have their sustainability reports assured.

Zorio *et al.* (2013) and Sierra *et al.* (2013) analysed, among other issues, the factors influencing the decision to have sustainability reports assured by companies listed in the Spanish capital market from the Bolsa de Madrid during the period 2005-2010. Zorio *et al.* (2013) used a sample including all listed companies and found that whereas inclusion in the IBEX-35 (the benchmark stock market index of the Spanish capital markets), size and industry are significant in explaining SRA, leverage and profitability are not. Sierra *et al.* (2013) focused on the IBEX 35 companies and found that whilst assurance of sustainability reports depends on the size, leverage, and profitability of the company, it has no significant relationship with industry or with audit firm.

García-Benau *et al.* (2012) analysed 2,685 sustainability reports of European companies sent to the GRI during the period 2005-2009, and detected a clear growth in the number of sustainability reports sent during this period. They also detected a clear growth in the percentage of companies having the sustainability report assured (from 8 percent in 2005 to 46 percent in 2009). Their findings suggest that the decision to have the sustainability report assured is influenced by company size (with the medium sized companies presenting a higher percentage of reports assured), industry, year and country of origin.

Another relevant study is that of García-Benau *et al.* (2013), who analysed the effect of the current financial crisis on sustainability reporting and assurance in the setting of the Spanish stock market, by dividing the time horizon into two periods, 2005-2007

and 2008-2010. Their results show that although the number of sustainability reports increased significantly after the crisis, the economic crisis has not affected significantly the SRA strategy of companies (in spite of an increase in the absolute number of reports assured).

3. Hypotheses development

We view corporate sustainability reporting as aiming at establishing a favourable reputation with the various stakeholders of the firm (Hooghiemstra, 2000; Melo and Garrido-Morgado, 2012). The capacity of a firm's sustainability report to contribute to the creation of a favourable reputation is dependent on the confidence placed by its stakeholders on the information disclosed. As independent assurance of sustainability reports involves costs, firms for which the benefits are greater are more likely to have a report assured (Kolk and Perego, 2010; Simnett *et al.*, 2009). These benefits include reduced agency costs and increased user confidence in the accuracy of the information disclosed (Kolk and Perego, 2010; Simnett *et al.*, 2009).

This section develops the hypotheses of the study by focusing mainly on those corporate characteristics that are expected to affect the decision to have the sustainability report assured. We do not attempt to model all possible relationships. We focus instead on the relationships that we consider to be the most relevant to a discussion of SRA, including those that have been found to be related to the decision to have the sustainability report assured in previous literature and for which we were able to find information, as well as listing status and type of ownership.

Simnett *et al.* (2009) hypothesized that a company's need to enhance credibility through assurance and choice of assurance provider is a function of company, industry and country-related factors. They analysed the influence of a number of corporate characteristics, including corporate size, industrial background, leverage, profitability. The influence of these characteristics has also been analysed by García-Benau *et al.* (2012), Sierra *et al.* (2013) and Zorio *et al.* (2013).

In this study, listing status is introduced in the analysis because, unlike most of the previous studies, our sample includes unlisted companies, as well as listed ones. Although listed companies are not subject to more extensive disclosure requirements with respect to activities promoting sustainable development than their unlisted counterparts, they tend to receive more attention from the general public and are subject to more extensive media coverage (Archel, 2003).

In addition to these variables, we consider type of ownership, which has hitherto not been analysed as a possible determinant of the decision to engage in SRA. More specifically, we focus on the difference in the decision to have sustainability reports assured between state-owned and privately owned companies. This is seldom considered in research into sustainability reporting, probably because such research is mostly conducted in an Anglo-American context, in which state-ownership of corporations is not common (Tagesson *et al.*, 2009). However, in other settings, such as the Swedish (Tagesson *et al.*, 2009) or the Italian (Secchi, 2006), state-ownership has been found to be an important factor influencing sustainability reporting. We suspect the same happens in the Portuguese case.

Larger, more profitable and listed firms tend to have their activities subject to higher public scrutiny than their counterparts, and this leads to a higher willingness to engage in activities contributing to sustainable development and the reporting thereof to cover the increased social and environmental risks associated to the occurrence

of events with negative social and environmental impacts (Artiach *et al.*, 2010; Haniffa and Cooke, 2005). Larger and more profitable are also more likely to have the financial resources needed to engage in activities promoting sustainable development and the reporting thereof (Artiach *et al.*, 2010). Fixed costs related to the engagement in activities contributing to sustainable development and the reporting thereof are less important for larger companies (Artiach *et al.*, 2010). On the other hand, firms which are more dependent on debt financing are more prone to privilege addressing the concerns of debtholders, instead of those of other stakeholders with less power (Artiach *et al.*, 2010).

The following hypotheses follow from the above:

- H1. Larger firms are expected to be more inclined to engage in SRA.
- H2. Firms with higher profitability are expected to be more likely to engage in SRA.
- H3. Firms with higher leverage are expected to be less inclined to engage in SRA.
- H4. Listed firms are expected to be more likely to engage in SRA.

Given that firms belonging to industries with greater environmental or social impacts are more exposed to environmental or social risks, their need to manage these risks by having the sustainability report assured to increase user confidence in the credibility of the information contained in it will be higher (Simnett *et al.*, 2009). Kolk and Perego (2010) refer to oil, gas and chemicals, utilities and manufacturing companies as tending to be more exposed to environmental and social risks. In view of the increased demand for accountability and credible information by stakeholders groups in the financial sector, this sector needs to be considered at par with the sectors referred above (Kolk and Perego, 2010). García-Benau *et al.* (2012), Sierra *et al.* (2013) and Zorio *et al.* (2013) also deem worthy of mention the technology and telecommunications sector. Therefore, we expect companies in these sectors to be more inclined to have a sustainability report assured:

- H5. There is an association between industry affiliation of a company and the decision to have its sustainability report assured.

State ownership implies accountability to a larger number of stakeholders, all interested in how state-owned enterprises meet society's general objectives (Cormier and Gordon, 2001). As state-owned companies rely more heavily upon social and political support than privately owned firms they must be more attentive in informing stakeholders due to reasons of accountability and visibility (Cormier and Gordon, 2001):

- H6. State-owned companies are expected to be more prone to engage in SRA.

4. Methodology

4.1 Sample

The initial sample includes sustainability reports produced by Portuguese firms during the three-year period 2008-2011. The larger part of the reports were obtained from the following data sources: the archive of sustainability reports in the web site of BCSD Portugal (as available on July 2013), which is an association affiliated with the World Business Council for Sustainable Development; the Centre for Research in

Management for Sustainability (CIGS) of the Polytechnic Institute of Leiria; and the database of the GRI. To ensure the inclusion of the reports of the most relevant companies operating in Portugal, if reports from the 100 largest Portuguese firms plus the PSI20 (the index representing the major firms in the Portuguese stock market) were not available from the data sources mentioned above, corporate web pages were consulted to obtain them. All this allowed us to obtain 286 reports from 86 companies.

We included in the sample all the reports from companies regarding which we were able to obtain additional information necessary for the empirical study. We used annual reports and the SABI database from the Bureau van Dijk to collect these additional data. The final sample includes 237 sustainability reports, published by a set of 69 companies.

Table I shows the industrial sector of the companies in the sample. It also shows the number of reports by sector in each of the four years considered. Financials, with 32 reports, is worthy of notice. Utilities is also noteworthy, with 26 reports.

4.2 Variables

The dependent variable is a binary variable which assumes 1 if the firm has its sustainability report assured and 0 otherwise. To investigate the influence of corporate characteristics on SRA, two sets of independent variables are used. First, a set of continuous variables: size, leverage and profitability. The proxy for size used is the natural logarithm of total assets (Sierra *et al.*, 2013; Zorio *et al.*, 2013). Total debt to total assets ratio was used as the proxy for corporate leverage (Sierra *et al.*, 2013; Zorio *et al.*, 2013). Return on assets (ROA) is used as a measure for profitability (Simnett *et al.*, 2009; Sierra *et al.*, 2013; Zorio *et al.*, 2013). Second, a set of binary variables: listing status and type of ownership on the other hand. Based on prior research (Simnett *et al.*, 2009; Kolk and Perego, 2010; García-Benau *et al.*, 2012; Sierra *et al.*, 2013; Zorio *et al.*, 2013), we also considered five dummy variables to control for the effect of the firm’s industry: oil and basic materials, utilities, construction and materials; financials, and technology and telecommunications.

4.3 Research method

To test the hypotheses formulated in Section 3, we estimate the following logistic regression model:

$$AS_i = \beta_{0i} + \beta_{1i}Profit_i + \beta_{2i}Lev_i + \beta_{3i}S_i + \beta_{4i}Ind_i + \beta_{5i}LS_i + \beta_{6i}SO_i + \text{fixed year effects} + \text{error term}$$

Industry	No. of companies	Year				Total
		2008	2009	2010	2011	
Construction and materials	8	5	7	7	5	24
Financials	8	8	8	8	8	32
Oil and basic materials	6	6	6	5	2	19
Technology and telecommunications	7	4	5	5	6	20
Utilities	6	8	7	7	4	26
Other	34	31	32	28	25	116
Total	69	62	65	60	50	237

Table I.
Sample by sector and year

where, for company i :

AS_i (0, 1) is the dependent variable (having the sustainability report assured).

$Profit_i$ profitability.

Lev_i leverage.

S_i size.

Ind_i industry.

LS_i listing status.

SO_i state ownership.

Following Kolk and Perego (2010), given that we use panel data involving repeated observations on the same set of cross-sectional units, we run a pooled cross-sectional logistic regression model with fixed year effects. Fixed-effect regressions allow both to control for the unobserved year effects and to mitigate the problems of heteroscedasticity and autocorrelation (Kolk and Perego, 2010).

5. Results

5.1 Descriptive and bivariate analysis

Data in Table II shows clear differences in the average, maximum, minimum and standard deviation of size and profitability between companies deciding to have their sustainability reports assured and their counterparts. These data suggests that companies engaging in SRA are larger and more profitable. Regarding leverage, there is some evidence that companies depending less on debt financing are more prone to have their sustainability reports assured.

Panel A. Average of continuous independent variables

<i>Assurance</i>	<i>No.</i>	<i>Average of profitability</i>	<i>Average of leverage</i>	<i>Average of size</i>
No	129	0.0065	0.9943	3,348,622,983
Yes	108	0.0522	0.7248	15,245,902,199
Total	237	0.0273	0.8715	8,770,167,942

Panel B. Maximum of continuous independent variables

<i>Assurance</i>	<i>No.</i>	<i>Max. of profitability</i>	<i>Max. of leverage</i>	<i>Max. of size</i>
No	129	0.2393	6.3471	485,904,310.00
Yes	108	0.5397	0.9926	1,205,652,810.00
Total	237	0.5397	6.3471	1,205,652,810.00

Panel C. Minimum of continuous independent variables

<i>Assurance</i>	<i>No.</i>	<i>Min. of profitability</i>	<i>Min. of leverage</i>	<i>Min. of size</i>
No	129	-0.2598	0.0053	185,963.78
Yes	108	-0.0477	0.1833	77,288.31
Total	237	-0.2598	0.0053	77,288.31

Panel D. Standard deviation of continuous independent variables

<i>Assurance</i>	<i>No.</i>	<i>SD of profitability</i>	<i>SD of leverage</i>	<i>SD of size</i>
No	129	0.0726	0.9584	74,850,851.70
Yes	108	0.1055	0.2035	301,755,444.55
Total	237	0.0918	0.7315	218,742,937.42

Table II.
Size, profitability,
leverage and SRA

In order to test the first three hypotheses, the non-parametrical Mann-Whitney U test was used. Results are presented in Table III. Whilst there is a positive and statistically significant relationship between size and profitability and the decision to engage in SRA, the same is not the case with leverage.

The possible existence of multicollinearity was tested based on the correlation matrix incorporating all the continuous independent variables (Table IV). There significant bivariate correlations between leverage and size and between profitability and leverage. However, none of them was higher than 0.6[1].

According to the data presented in Table V, the percentage of sustainability reports of state-owned firms that are assured (38 percent) is smaller than the percentage of sustainability reports of privately-owned firms subject to SRA (49 percent). On the other hand, the difference in the percentages of sustainability reports of listed companies (44 percent) and of unlisted companies (53 percent) is worthy of notice. This is not in accordance with our initial expectation.

χ^2 -test was used to analyse the relationships between having the sustainability report assured and industry, listing status and type of ownership, given that these are all nominal variables. Results in Table VI suggest that listing status and type of ownership are not important in influencing SRA, whereas industry is.

In Table VII we can see that utilities is the sector in which a higher percentage of firms engage in SRA (85 percent). Financials (78 percent) and technology and telecommunications (75 percent) also present high percentages of companies engaging

	Mann-Whitney U	Asymp. sig. ^a
<i>Mann-Whitney U test</i>		
Size	4,997.000	0.000
Profitability	5,611.000	0.010
Leverage	6,214.000	0.153

Note: ^aTwo-tailed

Table III.
Relation between SRA and continuous independent variables

Independent variable	Size	Leverage	Profitability
Size	1.000	0.242*	-0.095
Leverage	0.242*	1.000	-0.590*
Profitability	-0.095	-0.590*	1.000

Note: Significant at: * $p < 0.01$

Table IV.
Correlation matrix for the continuous independent variables (Spearman's ρ)

Type of ownership	No.	% of total	No. of assured	%
State	74	31	28	38
Private	163	69	80	49
Listed	72	30	32	44
Unlisted	91	38	48	53
Total	237	100	108	46

Table V.
Type of ownership, listing status and SRA

in SRA. This results are consistent with our expectations. However, contrary to our expectations, construction and materials presents a relatively small percentage of firms engaging in SRA (13 percent).

Data presented in Table VIII shows us a steady decrease in the publication of sustainability reports in Portugal between 2009 and 2011. We can also see (in Panel A) that in the case of state-owned companies the number of sustainability reports has decreased between 2008 and 2009, with the major decrease being from 2010 to 2011. The decrease in the number of assured reports has been less pronounced (from 26 to 24) than that of the reports which are not assured (from 36 to 26). State-owned companies have been the major contributors to the decrease of both sustainability reports and assured sustainability reports. Panel B in Table VIII shows that both in the cases of

Table VI.
 χ^2 -test

	χ^2	<i>p</i> -value
Industry	66.199	0.000
Listing status	2.593	0.107
Type of ownership	0.053	0.818

Table VII.
Industry and SRA

Industry	No. of reports	No. of assured	%
Construction and materials	24	3	13
Financials	32	25	78
Oil and basic materials	19	12	63
Technology and telecommunications	20	15	75
Utilities	26	22	85
Other	116	31	27
Total	237	108	46

Table VIII.
SRA over time

	Year				Total
	2008	2009	2010	2011	
<i>Panel A. Private versus state-owned companies</i>					
Private	41	45	41	36	163
Not assured	23	24	19	17	83
Assured	18	21	22	19	80
State	21	20	19	14	74
Not assured	13	11	13	9	46
Assured	8	9	6	5	28
Total	62	65	60	50	237
<i>Panel B. Listed versus unlisted companies</i>					
Unlisted	44	46	43	32	165
Not assured	26	24	24	15	89
Assured	18	22	19	17	76
Listed	18	19	17	18	72
Not assured	10	11	8	11	40
Assured	8	8	9	7	32
Total	62	65	60	50	237

listed and unlisted companies the number of sustainability reports has decreased between 2008 and 2009. However, the decrease is only significant in the case of unlisted companies, regarding which the major decrease has been from 2010 to 2011.

5.2 Multivariate analysis

Results of the logistic regression are presented in Table IX. With a χ^2 of 98.416 which is significant at 0 percent, the model has reasonable explanatory power. The classification accuracy rate is 69.2 percent. The logistical regression model provides 45.4 percent predictive power using the Nagelkerke R^2 approximation. These results suggest the model is significant and suitable for further examination.

Further examination of the regression results indicates that the coefficients of all independent variables are not in the hypothesized direction. Whereas the coefficients pertaining to size, leverage and profitability are in the hypothesized direction, the signs of the coefficients pertaining to state-ownership and listing status are different than expected. Only the relation between SRA and type of ownership is not statistically significant. All the other are statistically significant.

Statistical findings reveal that as company size and profitability increase, companies are more likely to engage in SRA, whereas the reverse happens in the case of leverage. They also reveal that listed companies are less likely to have their sustainability reports assured. When compared to companies from other sectors not considered in Table IX, companies from construction and materials are less likely to engage in SRA, whereas companies from utilities, financials and technology and telecommunications are more likely to have their sustainability reports assured. Findings thus show strong support for *H1-H3* and *H5*, and no support for *H4* and *H6*.

6. Discussion and concluding remarks

In this paper, we have examined the factors influencing the decision to have sustainability reports assured by a sample of Portuguese firms. Contrary to previous

	<i>B</i>	Sig.
Oil and basic materials	0.968	0.108
Utilities	2.682	0.000
Construction and materials	-1.385	0.045
Financials	1.573	0.006
Technology and telecommunications	1.725	0.018
Size	0.329	0.004
Profitability	6.448	0.043
Leverage	-1.281	0.057
Listed	-0.728	0.098
State owned	-0.404	0.378
2009	0.293	0.515
2010	0.209	0.656
2011	0.389	0.423
Constant	-6.717	0.004
Model χ^2 ($p = 0.000$)		98.416
% correctly classified		77.6
Nagelkerke R^2		0.454

Table IX.
Results of logistic
regression

studies, our sample included both listed and non-listed firms, as well as both private firms and state-owned firms. We analysed the post economic crisis period 2008-2011.

We detected a decrease both in sustainability reporting and in its assurance. These findings are not consistent with the results of the majority of previous studies analysing similar periods of time (Junior *et al.*, 2013; García-Benau *et al.*, 2012, 2013; Sierra *et al.*, 2013; Zorio *et al.*, 2013), which report an increasing trend in sustainability reporting and an increase or stagnation in SRA. However, contrary to our study, the majority of them did not analyse non-listed companies. It is more likely that non-listed companies are more severely affected by the economic crisis, in view of the impact of the crisis in the financial sector and the predominantly bank-oriented financing policies of these companies. The exception is García-Benau *et al.* (2012), whose sample included both listed and unlisted companies.

Reporting data on the *Global Fortune* 250 companies for the period 1999-2010, Junior *et al.* (2013) found that although the percentage of companies publishing a sustainability report has increased from 2008 to 2010, the percentage of companies having their sustainability reports assured decreased. Although the authors did not address the issue of the crisis, we consider that this decrease in SRA may be a result of the economic crisis. We expect that in the case of samples including companies of very different sizes and also state-owned companies, one is likely to find different trends than in the case of samples including only very large and listed companies (García-Benau *et al.*, 2012; Sierra *et al.*, 2013; Zorio *et al.*, 2013). We have contributed to this sort of analysis.

García-Benau *et al.* (2013) is particularly relevant for us. Comparing evidence on Spanish listed companies for the periods 2005-2007 and 2008-2010, they found a significant increase in the publication of sustainability reports and a stagnation in SRA. Our results may be interpreted in the context of the crisis and against the backdrop of García-Benau *et al.*'s (2013) findings. First, the fact that the major decrease in Portugal occurred in 2011 is worthy of notice in view of García-Benau *et al.*'s period of analysis not including 2011. On the other hand, our sample includes unlisted companies, and it has been in the case of these companies that the reduction in sustainability reports has primarily occurred.

We believe that it is unlikely that the decrease in sustainability reporting and in the decision to assure sustainability reports that we have found are not associated with the effects of the economic crisis. Portugal has been especially affected by this crisis. Portugal has followed Greece and Ireland in requiring a bailout, which occurred in 2011. As the crisis unfolds and a real recovery is difficult to envisage, the effects of the economic crisis on sustainability reporting are likely to be felt in other countries less affected by the crisis. Our results partially support Simnett *et al.*'s (2009) conclusion that firms which want to have the credibility of their reports enhanced and build their corporate reputation are more likely to engage in sustainability reports assurance. This lack of support in some respects may related to the context of economic crisis.

Congruous with our expectations, size and profitability are observed to have a positive relationship with the decision to have sustainability reports assured. Findings on company size are consistent with all the relevant previous studies (Simnett *et al.*, 2009; García-Benau *et al.*, 2013; Sierra *et al.*, 2013; Zorio *et al.*, 2013), except Kolk and Perego (2010), who analysed a sample of the largest companies in the world (212 *Fortune Global* 250 companies) regarding which size is less likely to be an influencing factor. The findings on leverage are consistent with those of the Sierra *et al.* (2013) and Zorio *et al.* (2013), who also found a negative relation in the case of Spanish listed companies.

Similar to Simnett *et al.* (2009) but contrary to Sierra *et al.* (2013) we found a negative relationship between the decision to have the sustainability report assured and ROA. Sierra *et al.* (2013) also found a positive and significant relationship between ROE and SRA. They ascribe their conflicting results to the small size of the sample. It is worthy of notice that Zorio *et al.* (2013) analysed a larger sample of Spanish listed companies and found a positive relationship between ROA and SRA, albeit non-significant.

We consider that these associations between leverage and profitability and the decision to assure sustainability reports are also more important in times of crisis, and the significant results found in the Portuguese case may be related to the severity of the crisis in Portugal. Engagement in activities promoting sustainable development and the reporting thereof are obviously dependent on the availability of financial resources within a company (Brammer and Pavelin, 2008). Profitability and leverage are variables that allow us to capture such financial resources availability (Brammer and Pavelin, 2008). It is obviously in times of crisis that the existence of the financial resources needed to engage in sustainability reporting and its assurance, as well as the freedom to address the concerns of other stakeholder besides debtholders, are more acutely felt by companies (García-Benau *et al.*, 2013).

Contrary to Sierra *et al.* (2013), who did not find any association between the industry and SRA (probably due to the small sample used), but similar to most of the previous studies, in particular with those of Simnett *et al.* (2009) and Zorio *et al.* (2013), industry clearly determines the decision to have the sustainability report assured. In this study, in accordance with the expectation derived from the literature review, we present strong evidence that companies from utilities, financials and technology and telecommunications are more likely to engage in SRA. Albeit less strong, there is also evidence that oil and basic materials are also among the sectors in which companies present a higher level of engagement in SRA. This is consistent with international evidence (KPMG, 2011; García-Benau *et al.*, 2012). Also contrary to our initial expectation, construction and materials is lagging behind the other sectors in terms of SRA. However, this seems to be in line with international evidence on sustainability reporting. KPMG (2011) has evaluated this sector as “lagging behind” in terms of quality of communications and level of process maturity. It is among the sectors that “are restrictively using assurance to drive systems improvements” (KPMG, 2011, p. 5).

We found that state-owned companies seem to be less prone to have their sustainability reports assured, although type of ownership does not seem to influence significantly the decision of having the sustainability report assured. Moreover, these companies have been the major contributors to the decrease of both sustainability reports and assured sustainability reports. This is likely to be related to the public debt crisis, which is especially severe in Portugal (this country has borrowed money from other European countries and the International Monetary Fund) and its consequences on state-owned companies. But this may also be related to the socio-cultural context. The scarce evidence on this matter suggests that in Sweden, where there is a long tradition of transparency in the public sector, state-owned corporations seem to disclose more social information than their private counterparts (Tagesson *et al.*, 2009), whereas in Italy the reverse is the case (Secchi, 2006). The Portuguese socio-cultural context is closer to the Italian one. We also found that listed companies are less likely to have their sustainability reports assured than non-listed companies. However, listed

companies have shown higher stability in sustainability reporting and assurance. They seem to have been less affected by the crisis.

Among the implications of this study, we would like to stress the awareness it raises regarding the state of sustainability reporting and assurance in state owned companies and the effect of the economic crisis in it. There is seems to be relative lack of transparency on the part of these companies regarding aspects related to their contribution to sustainable development when compared to their private counterparts. We consider that state-owned companies “ought to serve as good examples” (Tagesson *et al.*, 2009).

An especially interesting avenue for further research pertains to the comparison of the evolution of sustainability reporting and assurance between countries more and less severely affected by the crisis. Further research on whether the effects of the crisis in the various sector are different should also be conducted. There may be some worth in investigating whether the sign and significant of the relationship between type of ownership and sustainability reporting and assurance is related to the public debt crisis and its consequences on state-owned companies. A possible extension of this study is the comparison with other countries in which state-owned firms still have some importance in economic terms but its influence possesses different characteristics, such as the case of Malaysia and China (Chu *et al.*, 2013).

Note

1. As a rule-of-thumb, multicollinearity in regression analysis is considered harmful only when it exceeds 0.8 (Gujarati, 2004, p. 359).

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