
Can board diversity and choice of auditor enhance profitability?

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Abstract: The research examines how board diversity and choice of auditing firm, as mechanisms of corporate governance, affect the profitability of Iberian companies. Using information from an adjusted sample of 93 non-financial companies listed on the Iberian stock exchanges, a theoretical model was regressed. Profit margin (PM) and return on equity (ROE), as two of the more frequently used profitability measures, capture, at a moderately acceptable level, the impact derived from board diversity and choice of auditing firm among Iberian companies. Most variables cited are not equally distributed across Iberia, in line with Hofstede's cultural dimensions model. The evidence, while inconclusive, provides valuable insight into how governance mechanisms affect performance. In addition, the research provides value to the literature by introducing new proxies on board characteristics, and its impact on dynamic profitability.

Keywords: board diversity; auditing firms; profitability; assets turnover; Iberia; Portugal; Spain.

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1 Introduction and research objective

The research around corporate governance (CG) has developed over the last decades, largely by adopting two basic assumptions: first, that the orientation of companies is managed towards performance, efficiency, growth, with efficient structures built on transparent relations with stakeholders; and second, that management is focused on rules and regulations that influence corporate activity (Shleifer and Vishny, 1997; Coles et al., 2001; Dahya and McConnell, 2007; Vintila and Gherghina, 2012; Shank et al., 2013; Yaacob and Basiuni, 2014; Mishra and Mohanty, 2014; Mouselli et al., 2014; BIS, 2010, 2014; Klettner et al., 2014; OECD, 2015). As a driver of performance and profitability (Sachdeva, 2014; Mizutani and Nakamura, 2012), CG relates to how risk between ownership, management, and control, can be mitigated (Fama and Jensen, 1983; Ahrens and Khalifa, 2013). Good corporate governance practices can curb failure due to fraudulent activity, collusion, and mismanagement (Yaacob and Basiuni, 2014) as well as driving sustainability (Lattemann, 2014).

Broadly, CG is the framework within which companies conduct their business and by which they are controlled. It encompasses guidelines for best practice (Cadbury, 1992; Higgs, 2003), which sets out the relationship between management, the board, shareholders, and stakeholders; specifically, the rights, roles, and responsibilities of all personnel to establish how authority and responsibility are allocated and how decisions are taken (BIS, 2015; OECD, 2015). More precisely, corporate governance assures stakeholders in a company return on investment (ROI) (Klettner et al., 2014; Mishra and

Mohanty, 2014; Mouselli et al., 2014). This framework, separating ownership and management, usually means that investors benefit from good corporate governance mechanisms. Company stockholders elect directors, and they have the power to appoint and supervise management (FRC, 2011; Pierce, 2012). Sometimes conflict between management and shareholders arises due to contradictory personal financial interests, which can affect company performance. This, the result of an asymmetry of information, is usually due to managers having access to more information than shareholders (Gjesdal, 2007), although Almazan et al. (2005) suggest that independent investment advisors and managers of investment companies that are in a position to monitor management are at an advantage. Fama and Jensen (1983) refer to this as agency costs, when the performance of a company is hindered by internal conflicts between the principal and the agent. Other research in this field has shown a stronger relationship between financial performance and board governance. Most of the research on elements of the board, i.e. independence, composition, frequency of meetings and board size, and gender and ethnic diversity, has focused on US companies (Fama and Jensen, 1983; Shleifer and Vishny, 1997; Hillman and Dalziel, 2003; Nicholson and Kiel, 2007; Carter et al., 2010; Boulouta, 2013). Carter et al. (2010) argue that there is no significant relationship between the financial performance of major US companies, and ethnic and gender diversity on boards. Erhardt et al. (2003) measured diversity by the percentage of minorities (e.g. women) on the boards of 127 US companies and concluded that board diversity positively correlates with company performance indicators. On the other hand, empirical evidence from India demonstrates that a large number of independent directors have a negative impact on company performance, in contrast to board size, which positively correlates with performance (Chugh et al., 2011). Corporate governance is also instrumental in the way a company sets out its objectives, the mechanisms for maintenance of those objectives, and how it supervises performance (OECD, 2015).

Empirical research demonstrates that companies with inefficient CG tend to deliver inferior returns to shareholders (Von Nandelstadh and Rosenberg, 2003). Bhagat and Black (2008) advocate that boards can improve performance by increasing sensitivity to risk and embedding risk-aversion into organisational processes (Yaacob and Basiuni, 2014). Effective CG deals not only with assuring ROI for investors (Shleifer and Vishny 1997; Lopes and Ferraz, 2016), but also creates a system that directs and controls companies (Sheikh et al., 2013).

The aim of the current research is to identify whether board diversity and the type of auditing firm the company chooses can be used as predictors of company performance. It looks at whether CG indicators, i.e. board size and composition, the number of women, proportion of non-executive members, and members participating in other internal and external committees, differ between Portugal and Spain.

2 Literature review

2.1 Governance and diversity on boards

The board of directors (BoD) usually has a dual function of monitoring/controlling and takes a consultative role within management (Jensen, 1993). Various theories support each of the board's functions: Daily et al. (2003) show how the monitoring/controlling role is accentuated by agency theory, while the consultative role is emphasised by

resource dependence theory (Zahra and Pearce, 1989; Johnson et al., 1996; Daily et al., 2003). Both theories suggest that certain board characteristics can affect the monitoring and advisory role of it (Rodriguez-Fernandez et al., 2013; Bianco et al., 2015), and hence affect performance. Agency theory stresses how the segregation of management from ownership leads to self-centred behaviour by managers and information asymmetry (Gjesdal, 2007), increasing agency costs as well as conflicts within the company. Research has found that in order to reduce agency costs and assure effective control and monitoring, board members are chosen as an internal ruling body (Park and Shin, 2004) to define the objectives of the company and monitor its performance (BIS, 2015), although monitoring is not restricted to financial measures (Galbreath, 2012). Consequently, the board is responsible for applying effective corporate governance practices and is liable for the functioning, financial performance, and effective allocation of authority and responsibility within the company (BIS, 2015). In addition, international portfolio investments incentivise good corporate governance practices worldwide (Aggarwal et al., 2011), with institutional investors playing a role in monitoring management (Almazan et al., 2005), although action to apply efficacious practices may depend on board characteristics (Bozec, 2005). Diversity on boards is defined by a number of characteristics (Lopes and Ferraz, 2016); the requirement to disclose non-financial information (European Parliament and the Council, 2014; OECD, 2015) includes reporting on board diversity and policy. In the current research, analyses of facets of the board include gender diversity, size, proportion of non-nationals, background of its members, and interlocking directors. In order to test the relationship between board diversity and company performance the following hypotheses have been formulated:

- **Gender diversity:** previous studies that considered gender and ethnic diversity to have the same impact on company performance have merged the two characteristics into the same variable. Here, the suggestion of Carter et al. (2010), who find significant differences between ethnic-minority directors and women directors, based on human capital theory, is followed, and the gender difference of the board indicates the proportion of women out of the total number of directors. Gender studies worldwide link women with qualities such as empathy, affection, and promotion of community values (Eagly et al., 1995; Boulouta, 2013), hence they suggest that women can indirectly improve company performance. Consistent with this logic, several studies pose that female board members boost company returns (Erhardt et al., 2003; Francoeur et al., 2008; Adams and Ferreira, 2009). Other research finds that gender diversity negatively affects performance (Shrader and Blackburn, 1997); and some report no impact at all or show inconclusive results (Daily et al., 1999; Carter et al., 2003; Adams et al., 2009).
- **Board size:** here, this represents the number of directors on the board. According to Limpton and Jay (1992), limiting board size to seven or eight members results in better co-ordination, communication, and compliance in decision-making, hence increasing board performance. Taking a similar line, Jensen (1993) states that smaller boards can boost company performance, because there is likely to be wider participation by all members in the monitoring and evaluation process of management. However, other studies based on resource dependence theory argue that larger boards have greater collective information in their possession, leading to better performance (Zahra and Pearce, 1989; Guest, 2009). Another advantage of

larger board size is seen in greater support to management through better counselling, as the larger the board the more likely it is to have members from diverse industry sectors and backgrounds to offer expertise (Dalton et al., 1998).

- Auditor: auditing provides a control and bonding mechanism to minimise the agency costs provoked by asymmetric information between parties (Jensen and Meckling, 1976; Watts and Zimmerman, 1983). Here, the company's choice of auditing firm has been considered as a board characteristic; more specifically, whether the board has contracted one of the Big 4 to act as auditor. Based on the Taiwanese market, Lee and Lee (2013) showed that equity book value and earnings audited by one of the Big 4 firms tended to justify more comprehensively the variations in stock returns than other firms of auditors. Lee and Lee's results fall in favour of the Big 4 due to their financial reporting, which allows the value of the company to be ascertained and, therefore, more accurately project the future value of the company.
- Board composition: here, board composition refers to the diversity of nationalities on the board, hence the number of *non-nationals* sitting on it. Other researchers have analysed the impact of foreign directors on boards in relation to company performance. Oxelheim et al. (2003), in accordance with resource dependence theory, confirm that participation of foreign directors on boards improves company performance. This is due not only to their experience in foreign markets but also enhanced cultural knowledge, particularly as *non-nationals* on boards is shown to increase the networking capacity and the international exposure of the company. Contrary evidence from Switzerland shows that a high number of diverse nationalities on boards can complicate integration and impede communication among board members, and that this leads to conflict, which can affect the decision-making processes of the board and its performance (Ruigrok et al., 2007). In general, empirical studies show a positive relationship between company performance and 'non-national' directors. Evidence from the Korean market also confirms that international diversity among board members positively affects performance (Choi et al., 2007).
- Interlocking directorate: is a common phenomenon that arises when one or more board members sit on the board of another company (Mizruchi, 1996); here, measured as the ratio of board members who sit on external boards. It has been reported that publicly traded companies disclosed relevant enhancement in operating performance when at least three outside directors were appointed to the board (Dahya and McConnell, 2007). Brickley and James (1987) noted that a relevant number of external directors tended towards better control and lowered management benefits and perks. Conversely, a US-focused study showed a negative relationship between company performance and outside directors (Agrawal and Knoeber, 1996). In addition, it has been observed that a high number of outside directors on the board negatively influence company performance in terms of the price-earnings ratio, the return on assets (Ehikioya, 2009) and added market value (Coles et al., 2001). Nevertheless, many other studies report inconclusive results of the link between company performance and the number of outside directors (Mehran, 1995; Hermalin and Weisbach, 2003; Bhagat and Black, 2008). Evidence from the South Korean market also found no correlation between the aforementioned variables (Black et al., 2006).

Overall, the literature supports the connection between good corporate governance mechanisms and positive company performance and profitability (Klettner et al., 2014; Shank et al., 2013; Mishra and Mohanty, 2014; Mouselli et al., 2014). Investors usually prefer to deal with companies with better governance practices, which can raise funds for investment at lower cost, and thereby strengthen financial performance and profitability. On the other hand, governance practices also have a significant impact on regulatory bodies in their efforts to enhance the quality of corporate reporting.

2.2 National cultural dimensions

Differences between countries are usually based on Hofstede's cultural model (Hofstede et al., 2010). Here it is argued that these differences have four dimensions: 'power distance', avoidance of uncertainty, individualism versus collectivism, and masculinity versus femininity, adding subsequently two further dimensions: long-term versus short-term orientation and indulgence. Power distance expresses the extent to which less powerful members of an organisation accept that power is unequally distributed, while avoidance of uncertainty embodies the extent to which people feel threatened by ambiguous situations and create beliefs and institutions in an attempt to avoid them. The fundamental issue is how society deals with the fact that the future cannot be known. Individualism embodies the degree to which individuals are integrated into groups. Masculinity, on the other hand, refers to the distribution of emotional attributes between the genders, which is another fundamental issue for any society where a range of solutions are sought; and long-term orientation promotes pragmatic virtues oriented towards future rewards, in particular thrift, persistence, and adapting to change. Finally, indulgence distinguishes a society that allows relatively free gratification of basic and natural human drives related to leisure. Restraint indicates a society that suppresses the gratification of need, and regulates it, by means of strict social norms. Portugal and Spain are characterised by strong uncertainty avoidance and power distance. However, differences among the dimensions can be observed, specifically in terms of individualism, masculinity, long-term orientation, and indulgence (Hofstede et al., 2010). These four dimensions are stronger in Spain than they are in Portugal, probably also reflecting the scale effects. Thus, complementary to the research of Rodriguez-Fernandez et al. (2013), the objective of the current approach is to identify and underline the convergent and divergent issues that mark the contrast between Portugal and Spain in relation to both board diversity and choice of auditing firm, and the impact of these on company performance and profitability.

3 Methodology

3.1 Data and sample selection

The data on which the current paper is based has been extracted from publicly listed companies on the Portuguese and Spanish stock markets (180 companies). Companies operating in the financial industry were excluded from the data set, because they undergo different governance regulations compared to other companies (Klein, 1998). Furthermore, this research does not include companies with different taxation periods (reference: civil year) or companies with missing values. Data relevant to the attributes of

the independent variables were taken from the 2013 annual corporate governance reports of selected companies, while the data relating to company profitability measures were extracted from DataStream for the financial year 2014. After excluding these companies, a sample of 97 companies (including potential outliers) was fixed in the preliminary empirical step.

As mentioned, this research aims to analyse the effect of board diversity and choice of auditor on company profitability. Thus, while other research has used several accounting-based measures in order to analyse the same impact (i.e. profit margin, asset turnover, return on assets (ROA), return on equity (ROE), earnings per share (EPS), price earnings ratio (P-E), pay-out ratio, among others (Zahra and Pearce, 1989; Shleifer and Vishny, 1997; Von Nandelstadh and Rosenberg, 2003; Bhagat and Black, 2008; Guest, 2009; Sachdeva, 2014; Mizutani and Nakamura, 2012; Rodriguez-Fernandez et al., 2013; Klettner et al., 2014; Mishra and Mohanty, 2014; Mouselli et al., 2014; Bianco et al., 2015; Lopes and Ferraz, 2016), the current research selects only three of them (profit margin, return on equity, and asset turnover) as suggested by Weygandt et al. (2012). Independent variables were identified and selected from the relevant literature (Jensen and Meckling, 1976; Watts and Zimmerman, 1983; Limpton and Jay, 1992; Eagle et al., 1995; Shrader and Blackburn, 1997; Coles et al., 2001; Jensen, 1993; Oxelheim et al., 2003; Bozec, 2005; Carter et al., 2010; Boulouta, 2013; Lee and Lee, 2013; Lopes and Ferraz, 2016). The variable size (measured as the logarithm of total assets) and leverage (measured as total debts to total assets) of the selected firms were entered into the model as control variables. A positive signal is expected for the variable size while a negative signal is predicted for the variable LEV. Hence, the theoretical construct is based on the variables identified in Table 1.

Table 1 Description and framework of variables

<i>Variable typology</i>	<i>Var.</i>	<i>Description</i>
Dependent (Y_{it})	PM_{it}	Profit margin (net income/net sales): measures net income generated by each currency unit of sales.
	$ATUR_{it}$	Asset turnover (net sales/average assets): measures how efficiently assets are used to generate sales.
	ROA_{it}	Return on equity (net income/average ordinary equity): measures profitability of shareholders' investment.
Independent (X_{it})	$BDSIZE_{it}$	Number of members sitting on the BoD.
	$BDWOM_{it}$	Proportion of women on the BoD.
	$BDIND_{it}$	Proportion of independent members on the BoD.
	$BDNON-NAT_{it}$	Proportion of foreigners (non-nationals) on the BoD.
	$BDAGE_{it}$	Average age of board members.
	$BDEXT_{it}$	Proportion of members sitting on external boards.
	$BDEXEC_{it}$	Proportion of executive members on the BoD.
	AUD_{it}	Auditing company hired (1 if audited by one of the Big 4 firms, 0 otherwise).
Control (X_{it})	$COUNT_{it}$	Company listed on the Portuguese or Spanish stock exchange (1 if a Portuguese company, 0 if a Spanish company).
	$SIZE_{it}$	Logarithm of total assets.
	LEV_{it}	Total book debts to total assets ratio.

Based on the variables identified, it is expected that board characteristics, the type of auditing firm chosen, leverage, and size of the firm can all act as good indicators of a firm's profitability. Thus, the general theoretical equation can be structured as follows:

$$\begin{aligned}
 Y_{it} = & \beta_0 + \beta_1 BDSIZE_{it} + \beta_2 BDWOM_{it} + \beta_3 BDIND_{it} + \beta_4 BDNON - NAT_{it} \\
 & + \beta_5 BDAGE_{it} + \beta_6 BDEXT_{it} + \beta_7 BDEXEC_{it} + \beta_8 AUD_{it} + \beta_9 COUNT_{it} \\
 & + \beta_{10} SIZE_{it} + \beta_{11} LEV_{it} + \varepsilon_{it} \\
 & (i = 1, \dots, n; t = 1, \dots, m)
 \end{aligned}$$

Before conducting the empirical analysis, it was necessary to ensure that the available sample was eligible for application of a multiple regression (Cohen et al., 2003). The Durbin-Watson statistic assured the independence of observations, evidencing that no correlation exists in the research sample. It was confirmed that the residuals are normally distributed and that they fit the normal distribution line. The data has also been tested for homoscedasticity to ensure that the variances remain similar when moving along the line of residuals. In addition, further checks were made, to ensure that the independent variables are not highly correlated with each other, and this is verifiable by observing the variance inflation factor (VIF) values. Being that the independent variables have a VIF value of between 1.069 and 2.903 (not close to 10) we can conclude that there is no multicollinearity. Finally, three other tools were used to eliminate significant outliers, high leverage and influential points, which could otherwise reduce the significance and the predictive accuracy of the model. The respective measures were set as follows: Mahalanobis distance < 16.919; centred leverage value < 0.295; Cook's distance < 1. After eliminating all of the outliers and running the necessary tests, a final adjusted sample of 93 companies (Portugal 35; Spain 58) was available for the empirical model.

4 Results and interpretation

4.1 Descriptive and correlation measures

Companies used for the purposes of this study operated in nine different business sectors. The *industrials* sector represents 25.3% of the total sample, including transportation, electronic, aerospace and defence, construction and materials, electronics and electrical equipment. *Consumer goods* represents 19.8% of the sample, including food and beverage producers, leisure goods, tobacco, home construction, and automobiles. With regard to the AUD variable, 84.9% of companies contracted one of the Big 4 auditing firms, with only 14 (15.1%) audited by a non-Big 4 firm. The descriptive statistics are shown in Table 2.

Based on several bivariate measures (χ^2 ; V-Cramer; Pearson's coefficient, etc.) between board characteristics, type of auditing firm, and independent variables, we found no significant association ($p > 0$). The results provide preliminary evidence that board diversity and choice of auditing firm do not affect, at any statistically significant level, company profitability. This result does not corroborate most of the outcomes provided, namely in Zahra and Pearce (1989), Choi et al. (2007), Guest (2009), Oxelheim and Randoy (2003), Rodriguez-Fernandez (2013), Shank et al. (2013), Klettner et al. (2014), Mishra and Mohanty (2014), Mouselli et al. (2014), and Bianco et al. (2015). However, the preliminary insights of the research do align with evidence provided by Black et al.

(2006) and Carter et al. (2010). Thus, for Iberian firms, there is no significant relationship between profitability and board diversity. However, our results do align with the literature in relation to control variables. SIZE and LEV are statistically significant and observe the expected predictive signals. Based on Pearson's correlation matrix (Table 3) we underline the negative association between some board characteristics: BDSIZE and BDEXEC ($r = -0.208$; $p = 0.045$); BDWOM and BDAGE ($r = -0.219$; $p = 0.035$); BDIND and BDEXT ($r = -0.370$; $p = 0.000$); and BDIND and BDEXEC ($r = -0.410$; $p = 0.000$).

Table 2 Descriptive measures

<i>Variable</i>	<i>N</i>	<i>Minimum</i>	<i>Maximum</i>	<i>Mean</i>	<i>Std. deviation</i>	<i>Skewness</i>	<i>Kurtosis</i>
PM	93	-1.588	0.570	0.023	0.212	-4.816	36.776
ATUR	93	0.089	2.724	0.740	0.455	1.650	4.837
ROE	93	-0.706	0.223	0.010	0.109	-3.872	22.586
BDSIZE	93	5	23	11.323	3.930	0.740	0.309
BDWOM	93	0.000	0.364	0.114	0.106	0.639	-0.563
BDIND	93	0.000	0.889	0.368	0.193	0.228	-0.144
BDNON-NAT	93	0.000	1.000	0.179	0.230	1.460	1.720
BDAGE	93	47.313	66.286	58.116	4.130	-0.182	0.058
BDEXT	93	0.222	1.000	0.708	0.167	-0.085	-0.234
BDEXEC	93	0.000	0.875	0.274	0.170	1.058	1.504
LEV	93	0.000	1.076	0.356	0.196	0.461	1.248
SIZE	93	10.055	18.564	14.392	1.961	-0.014	-0.584

4.2 The regression model

A hierarchical ordinary least square regression has been conducted to study the impact of independent variables on company profitability. As mentioned, several accounting-based measures have been considered as dependent variables (profit margin, ROE, and asset turnover), but only the model using profit margin and ROE could be globally validated. In relation to the dependent variable ATUR, the current research does not seem to fit well with the model, because when regressed with measures of board diversity and type of auditing firm contracted, the latter failed to explain any variance in performance (adj. $R^2 = 0.099$; $F = 1.817$; $p = 0.067$). Table 4, below, presents the results of the regression model conducted, which can only be applied to predict company profit margin and return on equity. In relation to ROE, we found an Adjusted R square value of 27.4% ($F = 4.152$; $p = 0.000$), confirming that board characteristics and the type of auditing firm are not predictors of the likely profitability of Iberian firms. The results achieved by using PM as a dependent variable do align with previous evidence (adj. $R^2 = 0.120$; $F = 2.137$; $p = 0.026$). However, the evidence does not corroborate with the conclusions stated in other research, for example in Zahra and Pearce (1989), Choi et al. (2007), Guest (2009), Oxelheim et al. (2003), Rodriguez-Fernandez (2013), Shank et al. (2013), Klettner et al. (2014), Mishra and Mohanty (2014), Mouselli et al. (2014) and Bianco et al. (2015). These insights can probably be explained by cultural differences (Hofstede et al., 2010) and scale effects between both countries under analysis.

Table 3 Matrix of Person's coefficients

<i>V</i> / <i>R</i>	<i>PM</i>	<i>ATUR</i>	<i>ROE</i>	<i>BDSIZE</i>	<i>BDWOM</i>	<i>BDIND</i>	<i>BDNON-NAT</i>	<i>BDAGE</i>	<i>BDEXT</i>	<i>BDEXEC</i>	<i>AUD</i>	<i>COUNT</i>	<i>SIZE</i>	<i>LEV</i>
<i>PM</i>	1													
<i>ATUR</i>	-0.068	1												
	0.518													
<i>ROE</i>	0.911***	0.101	1											
	0.000	0.337												
<i>BDSIZE</i>	-0.023	-0.160	-0.026	1										
	0.830	0.125	0.801											
<i>BDWOM</i>	0.064	-0.093	0.058	0.043	1									
	0.541	0.374	0.582	0.683										
<i>BDIND</i>	0.032	-0.015	0.048	-0.012	0.043	1								
	0.760	0.886	0.650	0.912	0.682									
<i>BDNON-NAT</i>	0.054	-0.024	0.065	-0.027	0.012	0.017	1							
	0.606	0.820	0.533	0.800	0.906	0.869								
<i>BDAGE</i>	0.062	-0.063	0.056	0.116	-0.219**	0.148	0.038	1						
	0.552	0.546	0.594	0.268	0.035	0.158	0.718							
<i>BDEXT</i>	0.049	0.065	0.084	-0.078	0.153	-0.370***	0.158	-0.077	1					
	0.639	0.536	0.423	0.456	0.143	0.000	0.130	0.463						
<i>BDEXEC</i>	-0.003	0.044	0.000	-0.208**	-0.036	-0.410***	-0.127	-0.103	0.367***	1				
	0.979	0.676	0.996	0.045	0.731	0.000	0.223	0.326	0.000					
<i>AUD</i>	0.034	0.063	0.008	0.127	0.009	0.117	0.004	0.261**	-0.205**	-0.057	1			
	0.745	0.548	0.940	0.225	0.931	0.262	0.973	0.012	0.049	0.591				
<i>COUNT</i>	0.011	-0.011	-0.005	-0.093	-0.142	-0.295***	0.034	-0.169	0.364***	0.609***	-0.294***	1		
	0.920	0.914	0.960	0.378	0.174	0.004	0.747	0.105	0.000	0.000	0.004			
<i>SIZE</i>	0.115	-0.246**	0.118	0.672***	0.140	0.275***	0.211**	0.210**	-0.213**	0.328***	-0.205**	-0.294***	1	
	0.271	0.017	0.262	0.000	0.181	0.008	0.042	0.043	0.041	0.001	0.049	0.004		
<i>LEV</i>	-0.390***	-0.342***	0.528***	0.135	0.047	-0.139	-0.098	-0.087	-0.045	0.042	-0.004	0.088	0.122	1
	0.000	0.001	0.000	0.198	0.652	0.184	0.351	0.408	0.667	0.692	0.967	0.402	0.245	

Notes: ****p* < 0.01; ***p* < 0.05

Table 4 Regression model equations (PM and ROE)

	ROE				PM			
	β	t	Sig.	VIF	β	t	Sig.	VIF
Intercept	-0.146	-0.872	0.386		-0.327	-0.911	0.365	
BDSIZE	-0.007	-1.778	0.079*	2.277	-0.013	-1.616	0.110	2.277
BDWOM	0.047	0.468	0.641	1.212	0.134	0.622	0.536	1.212
BDIND	-0.062	-1.004	0.318	1.508	-0.129	-0.980	0.330	1.508
BDNON-NAT	-0.052	-1.095	0.277	1.288	-0.091	-0.886	0.378	1.288
BDAGE	-0.001	-0.081	0.936	1.225	0.001	0.158	0.875	1.225
BDEXT	0.047	0.666	0.507	1.484	0.039	0.262	0.794	1.484
BDEXEC	-0.032	-0.148	0.696	2.091	-0.093	-0.527	0.599	2.091
AUD	-0.004	-0.392	0.889	1.240	0.026	0.400	0.690	1.240
COUNT	0.031	0.141	0.287	2.055	0.074	1.217	0.227	2.055
LEV	-0.326	-6.251	0.000***	1.105	-0.482	-4.314	0.000***	1.105
SIZE	0.024	2.924	0.004***	2.784	0.043	2.408	0.018**	2.784
			$R^2 =$	0.361			$R^2 =$	0.225
			Adj. $R^2 =$	0.274			Adj. $R^2 =$	0.120
			$F =$	4.152			$F =$	2.137
			Sig.	0.000***			Sig.	0.026**
			DW	1.965			DW	2.016

Notes: *** $p < 0.01$; ** $p < 0.05$; * $p < 0.1$

Broadly, board diversity and the type of auditing firm contracted do not influence the profitability indicators of non-financial Iberian companies (although a statistical global adherence of both models, p value of all variables is above the accepted level, except for control variables (leverage and size).

BDSIZE is negatively statistically correlated with ROE, however, at a 10% significance ($r = -0.007$; $p = 0.079$). This evidence aligns with Jensen (1993), however, obtained at a low significance level. In relation to the participation of women on boards, there is no evidence to support the hypothesis that the relation between the proportion of women (BDWOM) on the board, and company profitability, is statistically significant (ROE: $t = 0.408$; $p = 0.684$; PM: $r = 0.622$; $p = 0.536$). These results suggest a positive impact (ROE: $r = 0.047$; PM: $r = 0.134$), which corroborates the economic signals evidenced in Eagly et al. (1995), Erhardt et al. (2003) and Boulouta (2013). The positive impact supports the idea that women embody qualities as stated (empathy, affection, and promotion of community values) and that this has a positive impact on company profitability and performance. Other insights that corroborate with this positive effect can be found in Francoeur et al. (2008) and in Adams and Ferreira (2009). These authors emphasize that the higher proportion of women on boards boosts company profitability. Broadly, our results are consistent with those of Carter et al. (2003) and Adams et al. (2009), who reported inconclusive or not even statistically significant results.

In the current research, we have also put forward the hypothesis that company profitability is affected by the type of auditing firm the company selects for certification of the accounts. This assumption is not supported by our theoretical model, however,

which evidences a mixed effect that is not statistically significant: AUD is negatively correlated with ROE ($r = -0.004$; $t = -0.392$; $p = 0.89$) and positively correlated with PM ($r = 0.026$; $t = 0.400$; $p = 0.690$). Contrary to the results achieved by Lee and Lee (2013), showing equity book value and earnings audited by the Big 4 firms justify the variations in stock returns more than those by other auditing firms, the results of the current research appear to be inconclusive.

Focusing on the participation of foreign board members, this research has found that greater participation of *non-national* directors negatively correlates with profitability (ROE: $r = -0.052$; $p = 0.277$; PM: $r = -0.091$; $p = 0.378$). This evidence does not corroborate the study of Choi et al. (2007), based on the Korean market, which confirmed that diversity of nationality on boards positively affects profitability and performance. However, these findings do align with one piece of research carried out among Swiss companies, where there is evidence that a greater national diversity on boards can create conflict and affect the decision-making process, hence negatively affecting profitability (Ruigrok et al., 2007).

With regard to interlocking directorates, the current study has tested whether the expertise of outside directors to the board positively affects profitability. This assumption is partially confirmed, because the relationship between outside directors (BDEXT), ROE, and PM is positive, although not statistically significant (ROE: $r = 0.047$; $t = 0.666$; $p = 0.507$ /PM: $r = 0.039$; $t = 0.262$; $p = 0.794$). These results do not confirm the findings of Dahya and McConnell (2007) and Brickley and James (1987), both of which point out that a relevant number of external directors tends to increase profitability overall. Nonetheless, much of the other research in this area reports similar inconclusive results concerning the link between company profitability and the ratio of external directors (Mehran, 1995; Hermalin and Weisbach, 2003; Bhagat and Black, 2008). Surprisingly, the number of executive members is negatively correlated with profitability, although not statistically significant (ROE: $r = -0.032$; $t = -0.148$; $p = 0.696$ /PM: $r = -0.093$; $t = -0.527$; $p = 0.599$). As expected, the control variables (SIZE and LEV) are statistically significant in both models.

With respect to the robustness of the models, we ran the multicollinearity diagnosis, the residual analysis, and the heteroscedasticity tests. We found that none of the independent variables of the current research has a VIF value close to 10, concluding that the analysis does not observe a severe problem of multicollinearity. In analysis of the independence of residuals, we used the Durbin-Watson (DW) test. Based on these statistics, we noted that a null hypothesis is not rejected, meaning that residuals describe a normal distribution, and confirming that those errors are not auto-correlated. In relation to heteroscedasticity, we used the white test in not rejecting the null hypothesis ($p > 0.05$). Thus, the evidence provided by the current econometric model can serve as an important contribution to both theory and practice.

4.3 *Comparison between Portugal and Spain*

The current study has analysed the differences between Portugal and Spain in terms of whether the distribution of variances and means of the dependent and independent variables are the same for companies in both Iberian countries. As shown in Table 5, below, two tests were performed, Levene's test for equality of variances and the T-Test for equality of means. In this analysis, the null hypothesis states that the variance and the mean of the variables are equally distributed across both countries.

Table 5 Comparison between Iberian countries

<i>Variable</i>	<i>Equality of variances (F)</i>	<i>Sig.</i>	<i>Equality of means (t)</i>	<i>df</i>	<i>Sig.</i>	<i>Mean dif.</i>	<i>Null hypothesis</i>
ROE _{it}	2.473	0.119	0.050	91	0.960	0.00118	<i>Not rejected</i>
PM _{it}	1.712	0.194	-0.100	91	0.920	-0.00458	<i>Not rejected</i>
ATUR _{it}	0.007	0.935	0.109	91	0.914	0.01065	<i>Not rejected</i>
BDSIZE _{it}	0.742	0.391	0.886	91	0.378	0.74630	<i>Not rejected</i>
BDWOM _{it}	1.286	0.260	1.370	91	0.174	0.03088	<i>Not rejected</i>
BDIND _{it}	0.090	0.765	2.950	91	0.004	0.11723	<i>Rejected***</i>
BDNON-NAT _{it}	0.436	0.511	-0.324	91	0.747	-0.01603	<i>Not rejected</i>
BDAGE _{it}	0.001	0.982	1.639	91	0.105	1.43540	<i>Not rejected</i>
BDEXT _{it}	4.291	0.041	-3.730	91	0.000	-0.12535	<i>Rejected***</i>
BDEXEC _{it}	3.105	0.081	-7.329	91	0.000	-0.21237	<i>Rejected***</i>
AUD _{it}	38.103	0.000	2.930	91	0.004	0.21700	<i>Rejected***</i>
SIZE _{it}	0.472	0.494	2.931	91	0.004	1.18291	<i>Rejected***</i>
LEV _{it}	0.214	0.645	-0.842	91	0.402	-0.03529	<i>Not rejected</i>

Note: *** $p < 0.01$

The null hypothesis is rejected only for BDIND, BDEXT, BDEXEC, AUD, and SIZE, to show that board characteristics differ across the two countries. The explanation behind these differences could be supported by the different corporate governance frameworks that apply in Portugal and Spain, as well as by cultural differences (Hofstede et al., 2010). As mentioned above in the theoretical framework, despite the convergence between Portugal and Spain in relation to avoidance of uncertainty and power distance in terms of individualism, masculinity, long-term orientation, and indulgence, there are real differences between the countries. That these four dimensions are stronger in Spain than in Portugal is probably a reflection of the scale effects, which is also supported by the control variable SIZE. Nevertheless, the null hypothesis cannot be rejected for BDSIZE, BDWOM, BDNON-NAT, BDAGE, and LEV, meaning that these board characteristics are similar between the two countries. This might be explained by the cultural similarities between the countries, but also by the fact that companies in both countries are obliged to comply with rules similar to those of the financial markets that are regulated by European laws and procedures.

5 Conclusions and final remarks

The efficacy of corporate governance frameworks has received substantial attention by researchers, academics, and governmental institutions. Companies should comply with corporate governance frameworks, as these introduce a set of internal and external mechanisms that can affect the overall profitability of the company either positively or negatively depending on how they are implemented.

The current research analyses the relationship between board characteristics and profitability of the company, measured by the profit margin (PM) and return on equity (ROE) of 93 non-financial companies listed on the Portuguese and Spanish stock

exchanges. Other profitability measures have been used, including return on assets (ROA), return on sales (ROS), asset turnover, net income, and earnings per share (Weygandt et al., 2012). Taking a broad view, board characteristics, and choice of auditing firm are not reliable predictors of the profitability of Iberian firms, as the research did not provide significant results according to the level of variance explained (adj. R-square) and F-test ($p > 0.1$). The mixed results provided by the literature concerning statistical significant impacts and signals, induce us to report inconclusive results; however, the results obtained can be plausibly explained by both cultural and scale differences between the countries under analysis. When comparing Portugal and Spain, significant differences were found relating to the proportion of independent members, external members, and executive members on the board. These differences can be supported by scale effects, and can be measured through the control variable 'firm size'. We underline, like other researchers, some practical limitations that could be addressed in the future: first, the current research has focused on Iberian-listed non-financial companies; second, the data used for analysis covers a single year, despite the stable variance in board characteristics and auditing firms over time. Therefore, we suggest that future research extends the timeline, the range of companies, and the number of countries, and employs other profitability measures and applies other statistical models, in order to achieve a more comprehensive view of the corporate governance phenomenon. By a process of elimination such as the current research provides a snapshot of both the stable and emerging nature of the phenomenon is achieved. This research helps verify which elements of corporate governance have a direct effect on company profitability and sustainability, which when tracked, may yield statistically relevant results in the future.

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