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THE EFFECT OF INTERNAL CORPORATE GOVERNANCE CONTROL MEASURE ON FIRMS´ FINANCIAL DISTRESS LIKELIHOOD.

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RESUMEN

El objetivo de este trabajo de investigación consiste en el análisis del impacto de diversos mecanismos de gobierno corporativo (estructura de propiedad y consejo de administración) en los modelos de predicción de fracaso financiero en el contexto español. Usando una muestra de 70 empresas cotizadas durante los años del 2007 al 2012, se ha realizado un estudio empírico con datos panel y una metodología estadística de sección transversal, aplicando así efectos fijos y aleatorios y una regresión logística binaria. Los resultados aportan evidencia empírica sobre la incidencia de la estructura de propiedad y las características del consejo de administración en la probabilidad de fracaso empresarial, destacando la importancia de considerar ambos factores a los efectos de anticipar y prevenir actuaciones oportunistas que puedan derivar en la desaparición de la empresa.

Palabras clave: Estructura de propiedad, Gobierno corporativo, Fracaso Financiero, Datos Panel, Consejo de Administración

Indicadores JEL: G34, G33.

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ABSTRACT

The purpose of this paper is to analyze the impact of different measures of corporate governance (ownership and board of directors) on the accuracy level of financial distress' prediction models in the Spanish market. Using a sample of 70 listed companies during the years 2007 to 2012, we conducted an empirical study with panel data and applied cross sectional statistical methodology such a fixed and random effects and binary logistic regression.

This research provides evidence about the importance of considering the characteristic of ownership structure and board of directors in probability of financial distress. This highlights the importance of considering the effects of above aspects to anticipate and prevent opportunistic actions that may result in the disappearance of the company.

Keywords: Ownership structure, Corporate Governance, Financial Distress, Panel Data, Board of Directors.

JEL-codes: G34, G33.

1. INTRODUCTION

A retrospective analysis of the economic and financial crisis during 2007-2013 period highlights the important consequences of businesses' financial distress on stakeholders (i.e. financial creditors, managers, shareholders, investors, employees, government regulators and society in general). So, more than ever, the revision of financial distress prediction models and the development of models adapted to particular characteristics of countries have an important role in order to prevent and manage these situations.

Among other, the crisis has highlighted two important issues: a) the inability of the agencies credit ratings, governments and financial creditors to anticipate and prevent firms' financial distress situations; and, b) the importance of effectiveness of corporate governance in crisis contexts. In this sense, the questions answered by this research are: Is the ownership concentration affecting the likelihood of financial distress in Spain? Which of the corporate governance characteristics affect the financial distress likelihood in the Spanish market?

The development of robust and stable models of financial distress prediction is far from a new issue. In fact, from 1960s the numerous financial distress or bankruptcy prediction models developed are an extension to seminal works of Beaver (1966; 1968), Altman (1968; 1982) or Ohlson (1980), among others. The empirical debate about financial distress has focused on explanation power of financial and accounting information (Altman, 1968; Altman, 1982; Beaver, 1966; Beaver, 1968; Ohlson, 1980; Zmijewski, 1984), applying diverse statistical methods (linear discriminant analysis, logistic analysis, probit analysis). However, several researchers argue that economic and financial data alone do not provide sufficient predictive power of future insolvency, being therefore necessary to include variables representative of ownership and/or corporate governance characteristics (Chang, 2009; Chen, 2008; Deng and Wang, 2006; Fich and Slezak, 2008; Lee and Yeh, 2004; Simpson and Gleason, 1999; Wang and Deng, 2006) in order to improve the predictive power of models. Under these circumstances, the development of corporate financial distress' explanation and forecast models, based on ownership, corporate governance and accounting variables, would make a significant contribution to financial and corporate governance literature. This is explained, according to the postulates of Agency Theory, by the fact that conflict of

interest on the relationship between management and other stakeholders, by delegating roles, is more severe in crisis because managers will choose a short-term strategy that results in higher private benefits, at the prospect of losing their jobs (Donker et al., 2009). So, from 1980s there is a large body of literature that highlights the importance of corporate governance and its influence on the likelihood of financial distress or bankruptcy (Chaganti et al., 1985; Chang, 2009; Daily and Dalton, 1994a; Daily and Dalton, 1994b; Deng and Wang, 2006; Donker et al., 2009; Fich and Slezak, 2008; Lajili and Zéghal, 2010). Despite this extension, previous literature has been limited to certain context (U.S., Taiwan and China) and on bankruptcy or legal processes of financial distress (ex-post models). So, the extension of analysis to other geographic context and to other financial distress situations different to bankruptcy would contribute to complement the existing literature.

The special characteristics of corporate governance in Spain (ownership concentration, unitary board system and voluntary good governance practices) make likely to engender serious agency conflict in financial distress situations. In this sense the analysis of relationship between corporate governance and companies' financial distress for Spain can provide evidence for this type of contexts. So, the aim of this study is to validate the relationship between ownership and board characteristics on likelihood of financial distress for Spanish listed companies where overall analysis of this issue is still lacking. To this end, we use data from Spanish listed companies between 2007 and 2012, and apply panel data statistical methodology in order to respond to previously raised questions. Following to Pindado et al. (2008, 997), we consider a company as "distressed" when meets some of the following conditions: a) its earnings before interest and taxes depreciation and amortization (EBITDA) are lower than its financial expenses for two consecutive years; and/or, b) a fall in its market value occurs between two consecutive periods.

Our results confirm that directors' ownership and separation of Chairman and CEO power reduce the financial distress likelihood. These results are consistent with other studies about this issue.

In our view, this study corroborates that corporate governance characteristics have impact on financial distress likelihood. Concretely, in ownership concentration

context with important participation of independent on board and medium size board, the more important characteristics to control are board ownership and CEO duality.

The paper proceeds as follows. Section 2 presents a review of previous literature about the research issue and describe our hypotheses. Section 3 describes the methodology, while section 4 shows the empirical analysis. Finally section 5 summarizes and concludes the paper.

2. CORPORATE GOVERNANCE AND FINANCIAL DISTRESS. LITERATURE REVIEW AND HYPOTHESES DEVELOPMENT

The relationship between corporate governance and financial distress is a matter of interest to different stakeholders. Proof of this is the intense literature that has been developed on this subject and we refer below.

2.1. Ownership

The conflict of interests between management and other shareholders is more severe in financial distress situations. Management could make decisions aimed to obtain short-term personal benefits rather than to overcoming the financial distress, due to the insecurity of their jobs (Donker et al., 2009). Under these circumstances, the level of ownership of large shareholders and/or directors could contribute to reduce the management-shareholders conflict of interests.

The problems associated to ownership concentration (free ride and expropriation) have been widely discussed in previous literature (Claessens et al., 2002; La Porta et al., 2000; Shleifer and Vishny, 1986). However, the situation is different when we analyze the effect of ownership concentration on corporate failure. In this situation, large shareholders could suffer great losses due to their participation in a financial distressed company. In this sense, they are expected to exercise an important monitoring function on opportunistic management behavior. In other words, large shareholders have sufficient incentives to maximize firm value by reducing information asymmetries and helping to overcome the agency problems and, ultimately, to the company recovery (Claessens et al., 2002). Consistent with this monitoring hypothesis

and with the results of previous studies it would expect that greater ownership concentration reduces the likelihood of financial distress (Donker et al., 2009; Elloumi and Gueyie, 2001; Parker et al., 2002). This discussion gives rise to the following hypothesis:

H1. *High level of ownership concentration reduces the likelihood of financial distress.*

Furthermore, following the arguments of convergence theory the participation of the board of directors in shareholding is also a powerful incentive to achieve the alignment of their interests with those of other shareholders (Shleifer and Vishny, 1997) that is, maximizing the value of shares. In this regard, Jensen (1993) argues that many business problems occur because the members of the board typically don't have large holdings of shares in the company where they work. This situation causes directors does not have incentives enough to try to maximize the value of shares which negatively affect the creation of business value. This argument is corroborated by the study of Fich and Slezak (2008) whose results show a lower probability of incurring in a business failure situation for firms in which a substantial proportion of shares is held by the board. In the same line, Wang and Deng (2006) and Liu et al. (2012) obtained in their studies, based in Chinese companies, that management holding shares struggle to generate long-term value, so they do not untie of firm and fight for the survival of the company in difficult situations. So we test the following hypothesis:

H2. *High level of board of directors' ownership reduces the likelihood of financial distress.*

2.2. Board of Directors (composition and structure)

The ability of the board to act efficiently has been regarded as a determinant of businesses' financial distress. So, weak or poor corporate governance increase the probability to opportunistic behavior of management or controlling shareholders to act in their own interest, extracting wealth from other shareholders (La Porta et al., 2000; Johnson et al, 2000) and increasing the likelihood of financial distress. Consequently, the role of board composition and structure (CEO duality, board independence, board size) on business financial distress should be examined.

CEO Duality

In the previous literature, there is no unanimity of opinion about whether or not CEO duality. Thus, some researches argue that the separation of the roles of the Chairman and the Chief Executive Officer is required to ensure the independence and effectiveness of the board (Baysinger and Hoskisson, 1990; Jensen, 1993) and consequently to increase the board monitoring effectiveness. Contrarily, others researches defend duality or accumulation of powers of two figures in a single person in post to achieve strong leadership and control unit, facilitating the transmission of information, reduces coordination costs and avoids the emergence of potential conflict of interests between the two positions (Davis et al., 1997; Donaldson and Davis, 1991).

Regarding the relationship between duality and processes business failure, the results of empirical studies developed about are also diverse. Daily and Dalton (1994b) and Simpson and Gleason (1999) obtained a positive relationship between the dual power and the probability of bankruptcy, and Wang and Deng (2006) find a positive relationship only in the case of public administration-controlled companies. By contrast, the results of Simpson and Gleason (1999) show a negative relationship between the accumulation of the figures of Chairman and CEO and the likelihood of incurring a situation of business failure. For its part, Chaganti et al., (1985) found no relationship between these two factors. According to previous arguments, we suggest two different hypotheses:

H3. *CEO duality increases the likelihood of financial distress.*

H4. *CEO duality reduces the likelihood of financial distress.*

Board Independence

Agency theory advocates the independence of the Board as a measure to ensure an adequate control over the management. Thus, the work of outside directors will be to monitor and control potential opportunism and avoid selfish behaviors of management so that their decisions are consistent with the interests of shareholders (Fama and Jensen, 1983; Jensen, 1993; Jensen and Meckling, 1976). Also, the presence of outside

directors reduces the possible existence of information asymmetries and agency costs between shareholders and management (Chang, 2009; Daily, 1995; Fich and Slezak, 2008). Thus, empirical evidence (Brickley et al., 1994; Weisbach, 1988) shows that outside directors represent better the interests of the shareholders that inside directors. On the contrary, some authors argue that outside directors do not have the knowledge about the company and the sector, or do not have enough experience to perform their jobs well (Baysinger and Hoskisson, 1990; Estes, 1980).

Regarding the relationship between the presence of outside directors on the board and business failure, Elloumi and Gueyie (2001) and Wang and Deng (2006) conclude that firms with higher proportion of outside directors are less likely to failure due that they are more efficient in imposing the necessary measures to help overcome a possible failure situation (Fich and Slezak, 2008). Chang (2009) also indicates that the presence of outside directors on the board, in the long term, generate the development of efficient activities that will detect and monitor the possible emergence of opportunistic behavior by the management in order to avoid business failure. Meanwhile, Chaganti et al. (1985), Simpson and Gleason (1999) and Lajili and Zeghal (2010) find no relationship between the proportion of outside directors on the board and business failure. According to the Agency Theory, we hypothesize that the board independence (proportion of independent directors) is negatively related to financial distress.

H5. *High proportion of independent directors on the Board reduces the likelihood of financial distress.*

Board Size

In this regard in the previous literature, there are two different perspectives. On the one hand, the Resource Dependence Theory argues that larger boards offer various advantages associated with the company's ability to access the resources and information held by the directors and that might be needed to achieve the business objectives (Pearce and Zahra, 1992; Pfeffer, 1972). From this perspective, the size of the board would be negatively associated with the likelihood of business failure.

Moreover, in contrast to above theory, previous studies (Chaganti et al., 1985; Goodstein et al., 1994; Judge and Zeithaml, 1992; Yemarck, 1996) have revealed some problems related to the size of the board. In this sense, larger board may have problems

with balance, resulting in greater discretion of its members to meet their particular interests to the detriment of the general interest of the company (Chaganti et al, 1985), involvement in issues business strategy of its members, something that would adversely affect business performance (Judge and Zeithaml, 1992; Yemarck, 1996), or lack of effectiveness when turbulent economic environments requires a change in strategic direction (Goodstein et al., 1994). From this point of view, smaller boards and larger percentage of independent or outside directors are more effective in the implementation of mechanisms for corporate control (Jensen, 1993), thereby decreasing the chances of the company to achieve unstable economic and financial situations (Fich and Slezak, 2008).

So, we test the following hypotheses:

H6. *Larger board size increases the likelihood of financial distress.*

H7. *Larger board size reduces the likelihood of financial distress.*

3. METHODOLOGY

3.1. Sample selection and data

In order to test the hypothesis proposed, we collected data from 70 Spanish listed companies excluded financial companies, due to the different features that these businesses have in relation to the regulatory standards, financial reporting standards and compliance (Manzaneque et al., 2011a; Manzaneque et al., 2011b; Merino et al., 2012), from 2007 to 2012. Sample is representative of population because collects a wide range of Spanish listed companies (see table 1). Also, we have estimated the maximum allowable error for a finite population test. The maximum error is small ($e = 8.6\%$, $\alpha = 95\%$) leading to the consideration that sample is representative of the population.

The corporate governance system in Spain is especial for three reasons: (1) is an example of ownership concentration and thus serves as a reference for analyzing the power of large shareholders in situations of financial distress (Claessens et al., 2002; Donker et al., 2009); (2) follows a "unitary board system" where both executive and non-executive directors are included, so it is important the level of independence to

ensure the effectiveness of Board; and, (3) corporate governance practices are based on voluntary codes of conduct. Furthermore, it is an important context due to the increasing political pressure to encourage the level of corporate governance system efficiency and to be adjusted to the requirements and recommendations of the European Union.

TABLE 1: Composition of the Population and Sample Firms According to the Industry Type

	Listed Companies on the Spanish Computerized Trading System		Sample	
	N	**%**	**N**	**%**
Oil and energy	23	14,47	9	12,86
Basic materials, manufacturing and construction	47	29,56	23	32,86
Consumer goods	47	29,56	20	28,57
Consumer services	29	18,24	12	17,14
Technology and telecommunications	13	8,18	6	8,57
Total	**159**	**100**	**70**	**100**

Source: Spanish computerized trading system (SIBE) or Continuous Market. Retrieved from http://www.bolsamadrid.es

The information about financial data has been taken from the Annual Accounts and the corporate governance information (ownership and board composition and structure) from the Corporate Governance Annual Report. This information is available on the National Stock Exchange Commission (CNMV, Spain) web page.

Financial distress is defined as the lack of company's capacity to satisfy its financial obligations (Grice and Dugan, 2001; Grice and Ingram, 2001; Pindado et al., 2008). Thus, as Pindado et al. (2008, 997), we consider as financial distress companies those that meet some of the following conditions: *(1) its earnings before interest and taxes depreciation and amortization (EBITDA) are lower that its financial expenses for two consecutive years; and/or (2) a fall in its market value occurs between two consecutive periods.* Under this approach, we have constructed a binary dependent variable that takes the value 1 if the company meets one of the above criteria and 0 otherwise. Following this approach, we obtain different financial distress rates for each year (31%, 2007; 49%, 2008; 35%, 2009; 30%, 2010; 50%, 2011; 37%, 2012).

As independent variables, and following the previously exposed theoretical and empirical approaches, we use five independent variables related to ownership and board composition and structure: ownership concentration (OWNERSIG), Board ownership (OWNERD), CEO Duality (CEOD), Board independence (BO) and Board size (BS).

We measure ***ownership concentration*** (OWNERSIG) as the percentage of shares owned by large shareholders (large shareholders are those that owns five percent or more of shares). ***Board ownership*** (OWNERD) is measure as percentage of shares owns by members of the board of directors. Regarding to the board composition and structure, ***CEO duality*** occurs when the CEO is also the chair of the board of directors, reason why we construct a dummy variable which take value 1 when there is duality and 0 in other case. ***Board independence*** (BO) is the proportion of independent director on the total number of directors. As independent we consider the directors who are in a position to perform their duties without being influenced by any connection within the company, its shareholders or its management (Merino et al., 2012).We also include ***board size*** (BS) as the total number of members of the Board of Directors.

We also control for additional firm characteristics that affect the likelihood of financial distress. First, since big companies are able to weather an extended poor performance period (Levinthal, 1991; Donker et al., 2009), we include the ***firm size*** as control variable (LOGTA). We expect a negative relationship with financial distress likelihood. Second, we control for ***industry*** (INDUSTRY). The evidence suggests that some industries have more financial distress likelihood (Altman, 1984; Platt and Platt, 1990; Peel and Peel, 1987). To capture the effect of economic and financial situation of the firm, we also include some variables from Pindado et al. (2008) model: (1) Profitability ($EBIT_{it}/RTA_{it-1}$); (2) financial expenses (FE_{it}/RTA_{it-1}); and, (3) retained earnings (RE_{it}/RTA_{it-1}) (See table 2).

TABLE 2: Variable name and expected signs

DEPENDIENT VARIABLE	**Abbreviation**	
Financial distress (Dummy; 1= financial distress and 0= not financial distress)	FRAC	
INDEPENDIENT VARIABLES	**Abbreviation**	**Expected signs**
Economic and financial variables		
Profitability	PROF	-
Financial expenses	FE	+
Retained earnings	RE	-
Corporate Governance variables		
Ownership variables		
Ownership concentration	OWNERSIG	-
Board ownership	OWNERD	-
Board composition variables		
CEO duality (Dummy; 1= duality and 0=not duality)	CEOD	+/-
Board independence	BO	-
Board size	BS	+/-
Control variables		
Firm size	LOGTA	-
Industry	INDUSTRY	

Source: Authors' own.

3.2. Test specification

To test the proposed hypotheses we used the following regression model:

$$FDLCG = \beta_0 + \beta_1 PROF_{it} + \beta_2 FE_{it} + \beta_3 RE_{it} + OWNERSIG_{it} + OWNERD_{it} + CEOD_{it} + BO_{it} + BS_{it} + CV_{it} + dt + \eta_{it} + u_{it} \quad (1)$$

where the logistic regression is expressed in terms of the odds ratio. As panel data formulation, i represent cross sectional unit (company, i=1,…,N), t the time period (year, t=1,…,T), d_t is the time effect, η_i represent the individual effect, and u_{it} is the random disturbance. FE is financial expenses, RE is retained earnings, PROF is profitability, OWNERSIG denotes the ownership concentration, OWNERD is the percentage of shares owns by members of the board of directors, CEOD represent the CEO duality, BO denotes board independence, BS is board size and CV represents the control variables (LOGTA and INDUSTRY) (see table 2).

We use panel data to estimate the financial distress likelihood (Pindado et al., 2008). Following this methodology, a data sample of 420 (70 firms x 6 years) was developed, which is a short (T=6), lineal and strongly balanced panel. This methodology generates models robust to unobservable heterogeneity. To evaluate the validity of the models, the application of fixed and random effects methodologies is checked using Hausman test (1978).

4. RESULTS

4.1. Descriptive analysis and univariate test

Table 3 presents the statistics summary for variables. The sample presents the following characteristics: (1) 69% of sample are non-distressed companies and 31% are distressed companies; (2) the average percentage of shares owned by large shareholders is 44%, result which approximates to 41.4% of the Wang y Deng (2006) study for China; (3) on average, the board of directors owns 22% of the shares; (4) CEO duality occurs in the 61% of the companies looked at, result higher than that obtained by previous studies in other geographical contexts as Canada (53%) (Lajili and Zéghal, 2010) or China (13.4%) (Deng and Wang, 2006); (5) the proportion of independence

directors on the board is high, around 35%, that exceeds the results of other studies as Lajili and Zéghal (2010) with 7.26%, and Simpson and Gleason (1999) with 17.6% of independent directors on the board for Canadian market; (6) the size of the board is high, around 12 members, above the results of Wang and Deng (2006) study for China (around 10 members).

TABLE 3: Statistics summary and mean comparison test for distressed and health companies

	Sample distribution by year													
	2007		**2008**		**2009**		**2010**		**2011**		**2012**		**Total**	
	N	%	N	%	N	%	N	%	N	%	N	%	N	%
Health companies	48	69	36	51	46	65	49	70	35	50	44	63	258	69
Distressed companies	22	31	34	49	24	35	21	30	35	50	26	37	162	31
	70	**100**	**70**	**100**	**70**	**100**	**70**	**100**	**70**	**100**	**70**	**100**	**420**	**100**

Variable	**Mean**	**S. Dev.**	**Min.**	**Max.**	**Distressed companies**	**Non distressed companies**	**t-sta.**	**U-Mann Whitney**
Dependent variable								
FRAC	0.55	0.49	0	1				
Independent variables								
Economic and financial variables								
PROF	0.05	0.11	-0.50	0.59	0.034	0.075	**3.807*** **	**4.742*** **
FE	0.02	0.02	-0.001	0.33	0.023	0.017	**-2.584***	**-2.163** **
RE	0.36	0.40	-1.27	2.04	0.346	0.378	0.816	1.119
Corporate governance variables								
OWNERSIG	0.44	0.28	0	1.35	0.474	0.418	**-1.783** **	-1.412
OWNERD	0.22	0.24	0	0.95	0.207	0.242	**1.530***	**1.382***
CEOD	0.61	0.45	0	1	0.603	0.627	**0.505***	**0.506***
BO	0.35	0.17	0	0.89	0.011	0.0138	1.570	0.726
BS	11.62	3.59	5	24	11.586	11.680	0.268	0.125
Control variables								
LOGTA	20.71	1.70	17.37	25.26	20.624	20.889	0.5883	**1.958** **
INDUSTRY	3.028	1.38	1	5	3.099	2.941	-1.160	-1.255

*Significant at the 10 percent level; ** significant at the 5 percent level; *** significant at the 1 percent level.

Source: Authors' own.

Regarding the differences between distressed and non-distressed firm, we found significant differences in ownership with higher large shareholders ownership and less board ownership for distressed companies. Also, CEO duality is greater in the non-distressed companies. Finally, profitability is lower in distressed companies and contrary to expectations, financial expenses are greater for this type of companies.

The correlation matrix shows correlation coefficients lower than 0.8 (See table 4); therefore, this analysis allows us to rule out the possible existence of multicollinearity between the variables in the studied model.

TABLE 4: Correlation matrix

	FRAC	PROF	FE	RE	OWNERSIG	OWNERD	CEOD	BO	BS	LOGTA
PROF	**-0.18*** **									
FE	**0.12***	-0.04								
RE	-0.03	**0.15*** **	-0.01							
OWNERSIG	**0.08 ****	**0.09***	0.04	0.03						
OWNERD	-0.07	-0.03	0.03	**-0.13****	**-0.24*** **					
CEOD	-0.02	0.14	-0.15	0.25	-0.19	0.04				
BO	-0.07	-0.04	**-0.09***	0.07	**-0.10***	**-0.17****	**0.16***			
BS	-0.01	0.03	0.10	0.02	0.11	-0.15	0.11	**-0.12***		
LOGTA	-0.07	0.01	**0.12***	-0.02	**0.28*** **	**-0.14****	**0.11***	**0.12***	**0.65*** **	
INDUSTRY	0.05	0.02	0.01	**-0.17 ****	**-0.05 ****	**-0.03 ***	-0.03	0.03	0.03	**-0.14****

*Significant at the 10 percent level; ** significant at the 5 percent level; *** significant at the 1 percent level.
Source: Authors' own.

4.2. Logistic analysis results

Table 5 shows the results obtained after the application of the fixed and random effects models. Both models show the explanatory power of the variables using measures of goodness of the Wald Test for the random effects, and the likelihood ratio for the fixed effects. However, the results produced after the application of the Hausman Test indicate acceptance of the null hypothesis, i.e., that random effects methodology are more useful for contrasting models.

TABLE 5: Fixed and random effects

TABLE 5: Fixed and random effects

	FDLCG	
Variables	**Random effects**	**Fixed effects**
PROF	-4.533 **(1.271)*** **	-4.2018 **(1.818)** **
FE	18.251 **(7.387)***	11.1727 (10.1866)
RE	-0.3228 0.3689	-1.0940 **(0.6326)***
OWNERSIG	0.6170 (0.5082)	1.026 (1.400)
OWNERD	-1.1463 **(0.6588)** **	1.440 (1.977)
CEOD	0.45272 **(0.3185)***	-0.7517 (0.6011)
BO	-1.195 (0.8885)	-2.599 **(1.556)***
BS	0.0183 (0.0562)	0.0369 (0.1410)
LOGTA	-0.2774 **(0.1344)** **	-1.681 **(0.6257)*** **
INDUSTRY	(dummies)	(dummies)
Constant	5.871924 **(2.449)** **	-
Wald X^2	46.42 (19) (0.0004)	-
LR X^2	-	57.82 (14) (0.000)
Número of firms	70	64
Numbers of observations	420	384
Hausman test	15.23 (0.3628)	
Test	46.42 (0.0004)	

The variables are described in table 2. i) Heteroskedasticity consistent asymptotic standard error in parentheses; ii) * significant at the 10 percent level, ** significant at the 5 percent level and *** significant at the 1 percent level; iii) time is a Wald test of the joint significance
Source: Authors' own.

The estimation of the coefficients obtained in the FDLCG model shows that economic and financial variables have the expected signs, resulting as significant variable, profitability (PROF) for both fixed and random effects. However, retained earnings (RE) are only significant for the fixed effects and financial expenses (FE) are significant for random effects.

Regarding corporate governance variables we find that the ownership concentration is not significant (OWNERSIG) and the percentage of shares held by directors (OWNERD) shows a significant negative relationship with the possibility of incurring in a business failure situation. Therefore, ownership of shares by board members could be an appropriate measure of corporate governance in order to control

the actions and interests thereof. In turn, the agency theory provides that stock ownership by directors encourage the alignment of their interests with those of shareholders.

The variable indicating the number of independent outside directors (BO) has a negative and significant effect to the determination of business failure. This result is consistent with the study by Hui and Jing-Jing (2008) for a sample of Chinese firms, thus indicating that the presence of outside directors on the board of directors is good to control on management decisions, especially those affecting to the company survival.

However, the duality of chairman and chief executive (CEOD) shows a positive and significant relationship with financial distress likelihood. The importance of separating the figures of chairman and CEO as preventive measure of failure is one of recommendations that Spanish Code of Good Governance contains (Manzaneque et al., 2011b).

Despite fixed and random effect panel data providing robust estimates of the parameters, these panel data model do not manage directly estimate the models, because they do not consider the individual effects. To solve this problem, it is necessary to estimate logistic regression models (Pindado et al., 2008).

4.3. Robustness checks

We perform a logistic regression model and other additional analyses to check the robustness of our results (See table 6). As in the panel data regression model, the results of logistic regression indicate that the percentage of shares held by directors (OWNERD) has a negative and significant relationship with the financial distress likelihood. This result confirms compliance with H2, revealing that companies with participation of directors in shareholding are less likely to incur in a distressed financial situation. The aforementioned result is also coincident with the obtained by Deng and Wang (2006) for the Chinese market.

Also, the duality of Chairman and Chief Executive Officer (CEOD) variable shows a significant and positive relationship with financial distress likelihood, which verifies compliance with hypothesis H3. These results are consistent with the Daily and Dalton (1994a) and Hui and Jing-Jing (2008) studies.

TABLE 6: Binary logistic regression model

	FDLCG		
Variables	**Beta**	**Sig.**	**Odds Ratio**
PROF	-4.241	**0.000**	0.014
FE	16.665	**0.008**	2.407
RE	-0.239	0.439	0.787
OWNERSIG	0.5812	0.148	1.788
OWNERD	-1.120	**0.030**	0.325
CEOD	0.494	**0.057**	1.639
BO	-1.081	0.136	0.339
BS	0.141	0.751	1.014
LOGTA	-0.247	**0.020**	0.7803
INDUSTRY (dummies)	-	-	-
Constant	4.49	0.017	-
-2 log likelihood	-255.454		
McFadden R squared adjusted	0.048		
R cuadrado de Nagelkerke	0.197		
Percent correct prediction (Noted: No-Predicted: No) Specificity	60.11%		
Percent correct prediction (Noted: Yes. Predicted) Sensitivity	78.45%		
Overall percentage prediction	70.24%		
ROC curve	0.7305		

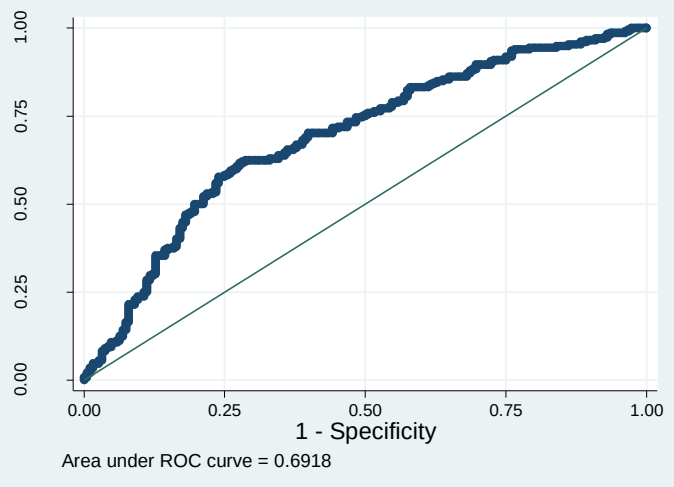
Source: Authors' own.

The variable that provides the proportion of outside directors on the board (BO) shows a negative beta coefficient as it was expected. However, we cannot claim compliance with the H5, because this variable (BO) is not significant in the model. Also, board size (BS) is not significant and the Hypotheses 6 (H6) and 7 (H7) are rejected. To this respect, Fich and Slezak (2008) obtained the same result.

In addition, we have tested the goodness of fit of the model, trough different measures whose results are also shown in Table 6. The square of R and McFadden Nalgerkerke indicate an acceptable overall fit. Also, both percentage of correct prediction, the specificity of the model, that is the probability of correctly determining a stable financial position (60.11%), and the sensitivity, that is the percentage of incurring in an unstable financial position (78.45%), are high. Moreover, the graphic representation of the ROC curve (Receiver Operating Characteristic curve) corroborates the classification capability of the model (see figure 1). That is, when the area under the

ROC curve is greater (in our model, 69.18%), the classification capability of the model is better (Bradley, 1997).

Figure 1: Roc curve logistic regression model



Source: Authors' own.

5. CONCLUSIONS

The relevance of corporate governance mechanisms and their impact on financial distress likelihood are critical question in this moment, especially because Spain, as other countries, is immersed in a process to implement new legislation in this regard. To this respect, there is a large body of literature that highlights the importance of corporate governance and its influence on the likelihood of financial distress or bankruptcy for specific geographic context (Canada, U.S., China, UK). The characteristics of Spanish corporate governance system (ownership concentration, large directors' ownership, CEO duality in more than half of the cases, large number of independent directors, medium size board) make more probable the agency problems. Furthermore, overall analysis of this issue is still lacking in this context. Therefore, we provide evidence about the relationship between corporate governance and financial distress likelihood. The study was carried out of 70 Spanish listed companies during the period 2007-2012, using a methodology based on fixed and random effects and binary logistic regression on panel data.

Our results indicate that corporate governance characteristics affect to the financial distress likelihood. Concretely, our findings show that companies with CEO

duality have high probability of financial distress. By contrast, companies with more directors´ ownership have less likelihood of financial distress. Finally, in the context of this study, ownership concentration, board independence and board size have not significant impact on financial distress likelihood. In this sense, our results are in accordance with other international studies.

To sum up, the results of this study suggest that the regulator efforts should focus on promoting the participation of directors in shareholding and the separation of powers of the CEO and the Chairman to align the interests of managers and shareholders, especially in business failure situations.

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