

Impact of the ownership structure on the diversification strategy



Marouan Kouki *

Faculty of Computing and IT, Northern Border University, Arar, Saudi Arabia

ARTICLE INFO

Article history:

Received 16 June 2020

Received in revised form

4 September 2021

Accepted 20 August 2021

Keywords:

Ownership structure

Blockholders

Diversification

Logit

Herfindahl

Entropy

ABSTRACT

This study examines the ownership characteristics that influence the decision to diversify. The Logit model was used to show that ownership structure influences the probability of diversification. Empirical tests show that the presence of the first large shareholder increases the probability of diversification during the financial crisis period. This behavior is observed for the coalition of second and third shareholders only for periods during and after the crisis. The average level of probability for firms to be diversified is between 20% and 50%. Furthermore, results show that industrial firms and more willing to be diversified than firms in the financial sector.

© 2021 The Authors. Published by IASE. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>).

1. Introduction

The research concerning the relationship between ownership structure and diversification leads to a certain opposition between the various fields of researches for its theoretical and empirical levels (Amihud and Lev, 1999; Lane et al., 1999). Generally, the investigation following agency theory identifies a negative effect of the existence of large-block shareholders on the level of diversification (Amihud and Lev, 1981; Berger and Ofek, 1995; Denis et al., 1997). As a consequence, diversification is advantageous for the managers, but it's not the case for the shareholders, where it reduces the value of the firm (Berger and Ofek, 1996). According to the strategic approach, studies show an absence of a link between Controlling shareholders and diversification (Lane et al., 1998; 1999). For the stewardship theory of management, managers try to maximize the company performance, strengthen its growth perspectives by diversifying the activities (Fox and Hamilton, 1994). Finally, there are other studies that suggest in different national contexts, which forms of business ownership affect the level of corporate diversification (Anderson and Reeb, 2003; Collin and Bengtsson, 2000; Ramaswamy et al., 2002; Davis et al., 1997). These arguments emphasize the importance to study the relationship between ownership structure and diversification from a

theoretical and empirical point of view (Denis et al., 1999).

Diversification is an important strategic orientation that companies use to maintain their competitiveness and improve their profitability. Firms look for strategic choice in order to increase their value creation, more economy of scale, and better market power (Barney, 1991; Bettis, 1981; Montgomery, 1985; Prahalad and Hamel, 1990). On the other hand, diversification strategy can also enhance more costs related to the difficulties of coordination, to the asymmetry of information, and to the possibility of disagreement between administrators (Denis et al., 2002; Harris et al., 1982).

From another point of view, as regards the nature of the link between the diversification and ownership structure, many studies investigated in developed markets, suppose that large shareholder favors the alignment of the interests, and associated negatively with the level of the diversification of companies (Chen and Ho, 2000; Delios et al., 2008b; Denis et al., 1997; Goranova et al., 2007). However, this relationship is not the same, when we consider the emerging market context as proved by (Claessens et al., 2000).

2. Literature review

Besides, previous studies produced a variety of conclusions concerning the relationship between the diversification strategy, the structure of a property, and the performance (Berger and Ofek, 1995; Chen and Ho, 2000; Delios and Beamish, 1999; Delios et al., 2008a; Khanna and Palepu, 2000; Michel and Shaked, 1984). An explanation of these divergent

* Corresponding Author.

Email Address: marouan.kouki@nbu.edu.sa

<https://doi.org/10.21833/ijaas.2021.10.015>

Corresponding author's ORCID profile:

<https://orcid.org/0000-0001-5699-0910>

2313-626X/© 2021 The Authors. Published by IASE.

This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>)

results is based on the nature of the companies considered in the empirical investigation. First of all, as indicated above, the link between diversification strategies and certain variables is due to the country context as a developed or emerging market. Another explanation of this divergence is associated with firm diversification behavior; companies can increase their level of diversification for one year but decrease it in the next year.

Considering the hypothesis that diversification is a strategy of maximizing the firm performance and reducing its risk, in particular, diversification is not related (Berger and Ofek, 1995; Denis et al., 1997; Rumelt, 1974), the concentration of the property can actually force the managers to pursue diversification strategy for the best of the shareholders. Based on the agency theory, Perrow (1986) shows that in the presence of concentrated ownership, the managers-owners have fewer reasons for looking for diversification, because they could support (bear) higher costs through this orientation. As a consequence, the interests of the owners-administrators of family type are better aligned with shareholders' minority and may pursue less diversification. This suggests a negative relation between ownership and diversification (Denis et al., 1997; Goranova et al., 2007; May, 1995).

Comment and Jarrell (1995) indicated that managers who invest a higher percentage of their personal wealth in their companies have strong motivations to reduce their personal risk by diversification. Besides, Shleifer and Vishny (1997), suggested that when companies are effectively controlled by the big shareholders, can tend to expropriate the minority shareholders. For example, the owners-administrators can oversee the transfer of profits to an affiliated company which they control. They also can reach the goals better reputation by increasing their estimate on the market of employment, (Davis et al., 1997). On the other hand, the owners-managers have no support of the higher costs associated with diversification strategies because they can control the company without the holding of a majority of the shares.

According to the theory of the agency applied to the context of emerging markets, a higher level of concentration will allow improving the alignment of the interests of the owners-leaders with that of the minority shareholders, thus we wait for us for a negative relation between ownership structure and the company diversification strategy. However, when the owners-managers hold participation that exceeds the critical value, they can look for a higher level of diversification which allows them to obtain more private profits of control. So, the relationship between property and the level of diversification is not linear.

Chen and Hsu (2009) indicated a low relation between concentration and the choice of companies to diversify. Shleifer and Vishny (1986) showed that big shareholders are incited to control the management of the company and that their presence improves the strategic decisions. Thomsen and

Pedersen (2000) found a positive relationship between the concentration and the diversification of companies. However, the relation is not linear which means the effect of concentration on the level of diversification is not the same for all ranges of ownership. Cho (1998) did not detect a significant link between the shares held by the majority shareholders and the diversification. Other studies developed in the international context (Minguez-Vera and Martin-Ugedo, 2007) found insignificant relations between the concentrated and diversification.

For the management of family firms compared with non-family firms, they are much more motivated for the research for the minimization of the strategic risk or the maximization of the level of diversification. This result is infirmed by Anderson and Reeb (2003) who demonstrated the negative effect of the family property on the diversification strategy. According to Gomez-Mejia et al. (2010), diversification amplifies the problem of the reduction in socio-emotional values. In this case, the willpower to protect the family interests leaves this type of investor reluctant to increase debt level which can explain the negative effect of family ownership on firm diversification strategy.

Bennedsen and Wolfenzon (2000) showed that in the presence of several major shareholders, the control group is the result of a coalition formation game. At the end of the game, two effects can appear. The first is the alignment effect which supposes that more coalition has rights to the cash flows, the more it bears the consequences of its decisions and less has discretionary spending. The second is the coalition effect which considers the coalition that has a small right on cash flow and has the control right among all strong coalitions is the one whose members bear the most expropriation consequences. For Gomes (2005), the presence of several controlling shareholders constitutes, in certain cases, an effective mechanism for the protection of minority shareholders. In their model, the probability of sharing control is effective increases with three characteristics of the firm: Overinvestment, free-cash-flow and financial slacks.

The expropriation of the minority shareholders is pronounced when dominant shareholders hold voting rights superior to cash-flow rights. The empirical investigations made in this context enumerate several mechanisms allowing discrepancy in the power in the company from ownership. It is mainly about the use of pyramid structures, about cross-holdings, about shares with multiple voting rights, and about non-voting share issues (Burkart et al., 1998).

3. Data and methodology

3.1. Description of the sample

The sample of the study includes 30 Tunisian companies listed on the Stock Exchange of Securities Tunis (TSE), observed over a period of 15 years

(1997-2011) allowing us to constitute a cylinder of panel data of 450 companies/year observations. We choose the date 1997 because it marked the continuation of the process of consolidation and regulation of the Tunisian financial market. Moreover, the choice of listed companies is justified by the nature of the data and their availability. Indeed, these companies are obliged to prepare periodic financial statements in accordance with the rules and standards of the Tunisian accounting system. Data were manually collected from the following sources of information: (i) The information documents on each firm, the bond issue prospectus, the prospectus of the share issue, and reports of the business activities of the firm available at the Financial Market Council (CMF). (ii) Financial statements published on the website of each listed firm.

3.2. Choice and measure of the variables

3.2.1. The dependent variable: Diversification and the probability to diversify

To assess the degree of diversification of a firm among its various activities, previous research has suggested two possible approaches: (i) according to Rumelt's (1974) typology. (ii) as a measure based on indices such as the Herfindahl index or entropy index. According to Khanna and Palepu (1999), the use of an index to measure strategic diversification must verify four axioms: (i) the index must be between 0 and 1, (ii) this index is 0 for a specialization activity (iii), and 1 if there is a perfect diversification, (iv) the pre-order relationship where it is possible to check if $x_i < y_i$ implies $I_i < I_j$ (where x_i market shares and I_i is investment level). To ensure the consistency of the analysis we retain the second approach based on index measures as proposed by Ramaswamy et al. (2002) and Delios and Wu (2005) After Batsch (1993). According to Batsch (1993), both measures are frequently significant in analyzing the diversification or refocusing strategy of the industrial group.

(i) Diversification Herfindahl (DivHerf): This measure uses the Herfindahl concentration index to measure diversification.

$$DivHerf = 1 - H \quad (1)$$

where $H = \sum_{i=1}^n P_i^2$ and P_i measures the proportion of the turnover of the business (x_i) to income ratio in the industry. $P_i = x_i/X$, n is the number of the company's activities. Herfindahl diversification appears to be the complement of the concentration of the company's operations, meaning by this measure that the total of diversification and concentration must be equal to unity. Several authors have used this method, we can refer to the studies done by Denis et al (1997).

$$DivHerf = 1 - \sum_{i=1}^n (x_i/X)^2 \quad (2)$$

(ii) Diversification entropy (Entropy): this measure is proposed by several authors: Jacquemin and Berry (1975).

$$Entropie = \sum_{i=1}^n P_i \log \frac{1}{P_i} \quad (3)$$

where P_i represents the share in the company's turnover in the i th industry. This index is zero when the company operates in one industry and takes $\log n$ value when the total income is returned in a fair manner between n industries in which it operates. The advantage of such a measure is its decomposition property of the value of the index types of components corresponding to different levels of activity.

We use two qualitative variables bound to both measures of the diversification to know DumDivHerf and DumEntropy. They are defined as follows:

$$DumDivHerf = 1 \text{ if } DivHerf_{it} > \frac{\sum_{i=1}^{30} \sum_{t=1}^{15} DivHerf_{it}}{450} \\ = 0 \text{ if not} \quad (4)$$

Also for the variable entropy:

$$DumEntropy = 1 \text{ if } Entropy_{it} > \frac{\sum_{i=1}^{30} \sum_{t=1}^{15} Entropy_{it}}{450} \\ = 0 \text{ if not} \quad (5)$$

These two variables when they are equal to the unity, indicate a higher level of diversification compared to the average level of the sector (measured by the average of all the observations). In this case the variable equal to zero which means that diversification has a low level.

3.2.2. The exogenous variables

- Ownership Concentration (MAJ): Measured by the percentage of the capital held by the three main shareholders. A majority shareholder can invest in the control of the management behavior of the firm because he held the most important proportion of the distributed cash flow (cash flow rights), then he has the possibility of exercising his voting right to approve or refuse any decision which comes from management (voting rights). So, according to Shleifer and Vishny (1989) and Denis et al. (1997), the more the capital is concentrated, the more managers are controlled by limiting their private discretionary profits. The previous empirical results for the last two decades on the concentration of ownership show a positive effect of majority shareholders on the strategic choice of firms (Shleifer and Vishny, 1986; Kaserer and Moldenhauer, 2008). On the other hand, according to Demsetz and Villalonga (2001), the diversification of a firm is conditioned not by the concentration of the capital, but rather by the characteristics of its environment, its market. These results are infirmed by Mtanios and Paquerot (1999) who find no significant relationship between these two variables.

- The participation of institutional investors (INST): Measured by the percentage of the capital held by the financial institutions (banks, insurances, pension funds). The structure of the shareholding bases today essentially on the existence of institutional investors which have the highest percentage of the capital of listed companies. The hypotheses of conflicts of interests and the strategies of alignment suggest a negative relation between the institutional property and the diversification strategy of the company.

Seetharaman et al. (2001) suggested that institutional investors have a significant impact on the activities of management as well as in the resolution of the problems of agency costs. Pound (1988) suggested the idea that the institutional property serves as a signal for strategic decisions. Therefore, the more the institutional property is important, the more the diversification of the company is better. Table 1 shows measures and expected signs of ownership variables.

Table 1: Measures and expected signs of ownership variables

Variables	symbol	Measure	Expected sign
The concentration of the capital	MAJ	MAJ=the percentage of capital held by the top 3 shareholders	+
Part of institutional investors	INST	INST=The participation of the financial institutions in the capital	+
Family participation	FAM	FAM=1 if Family participates in the capital, 0 if not	+
Concentration of three big shareholders	CONC	CONC=1 if Maj>0.5, 0 if not	+
concentration property measured by Herfindahl index	HH	HH=MAJ1 ² +MAJ2 ² +MAJ3 ²	+
Participation first-largest shareholders	MAJ1	MAJ1=part of the 1st shareholder	-
Participation 2iem shareholder	MAJ2	MAJ2=part of the 2nd shareholder	-
Participation 3rd shareholder	MAJ3	MAJ3=part of the 3rd shareholder	-

3.2.3. Other explanatory variables (control variables)

By referring to the previous empirical works examining the relation between ownership structure and diversification, we adopted the following variables:

- The size of the company: SIZE=previous studies consider that firm size as a proxy for information asymmetry (Kang and Stulz, 1996). Grant et al. (1988) supposed that diversification is pursued to obtain more resource availability, more market shares, and gain a scale economy. Other findings show that firm size is positively related to the level of the firm diversification strategy (Denis et al., 1997; Fauver et al., 2003; Lins and Servaes, 1999). On the other hand, Aivazian et al. (2001) found a negative relationship between these two variables. Further, we use the book value of total assets to control any effect of firm size.
- The debts (DEBT): The second control variable is leverage, Grossman and Hart (1986) believed that debt can reduce agency costs of free cash flow. Thus leverage is considered in some way to influence firm diversification strategy. Some studies (Kochhar and Hitt, 1998) have concluded that diversification allows firms to have more debt in their capital structure. We measure this variable by the ratio of long-term debt to total assets. And according to agency theory a negative relationship between debt ratio and the level of firm diversification.
- The age of the company: AGE=this variable measures the degree of maturity of the company. Shumway (2001) asserted that the most significant economic measure of the age of companies is the number of years since its creation. The age affects

ownership structure, growth opportunities, increases the exposition in the media.

- The profitability (Prof): According to the optimal control theory applied to economics problems, profitable companies tend to raise more financing of resources internally than externs. Generally, it gives the priority to the use of the available internal resources. Campa and Kedia (2002) considered that firms with weak profitability are more likely to diversify their activities in order to have new opportunities. Ramanujam and Varadarajan (1989) and Montgomery (1994) showed that the relationship between profitability and diversification is positive for related diversification and negative for unrelated diversification

3.3. Description of the models to be estimated

In order to estimate the probability to diversify for firms, we consider diversification as a dummy variable:

$$\begin{aligned} \text{DumDiver} \\ = 1 \text{ for firms with high level of diversification} \\ = 0 \text{ for firms with small level of diversification} \end{aligned} \quad (6)$$

By basing itself on the previous empirical studies, we considered the following specification:

$$\text{DumDiversification}_{it} = \lambda_0 + \lambda_1 \text{Ownership Structure}_{it} + \lambda_2 \text{CV}_{it} + \varepsilon_{it} \quad (7)$$

By using qualitative models as developed, we can consider the problem of diversification as a choice that a firm makes to be diversified or not. Many methods can be used as the linear model of probability, models Logit, model Probit, model Tobit. The econometric modeling, in this case, consists in

putting in relation the decision of choice of the individual with the environment of choice; if we associate with this environment a stochastic utility function, the choice will be made according to the criterion of maximization of this one. This type of regression allows to determine the probability that a company is classified in the group of the diversified firms or not. We suppose that the dichotomous dependent variable which can take the value 0 if the company is classified weakly diversified, the value 1 in case firm is classified as strongly diversified, this model is proposed in the following way: We suppose that there is an unobserved latent variable Y_i^* that is linearly related to X :

$$y_i^* = x_i\beta_i + u_i \quad (8)$$

with Y^* variable is not directly observed, X_i is a vector with k dimension of exogenous variables β , is the vector of the coefficients to be estimated and U_i is the stochastic error term. In practice, the observed dependent variable is determined by whether Y_i^* exceeds a threshold value:

$$y_i = 1 \text{ if } y_i^* > 0 \\ = 0 \text{ if } y_i^* \leq 0 \quad (9)$$

then we have:

$$\Pr(y_i = 1) = \Pr(y_i^* > 0) = \Pr(x_i\beta + u_i > 0) = F(-x_i\beta) \quad (10)$$

where F is the cumulative distribution function of u . the Logit model is based upon the cumulative distribution function for the logistic distribution:

$$\Pr(y_i = 1) = 1 - \frac{e^{-x_i\beta}}{1+e^{-x_i\beta}} = \frac{e^{-x_i\beta}}{1+e^{-x_i\beta}} \quad (11)$$

So the functional form of the Logit model is:

$$\Pr(y_i = 1) = P_i = \frac{e^{y_i}}{1+e^{y_i}} \quad (12)$$

P_i being an increasing function of y_i , we shall have:

$$\log\left(\frac{P_i}{1-P_i}\right) = Y_i = x_i\beta + u_i \quad (13)$$

The category of logit models is beneficial, as it does not require the hypothesis of normality on predictors. Secondly, according to [Ohlson \(1980\)](#), Logit models give a probabilistic output and thus no score has to be transformed into a probabilistic measure, which might be an additional source of errors.

4. Estimations results

Our objective in this development is to analyze the effect of ownership structure on the probability of diversification of Tunisian companies. To be made we proceed in two stages:

- Estimate in first point the Logit model by using the above specification (Eq. 8) where Y_i a dummy variable (0 if the firm is weakly diversified, and 1 if it is strongly diversified). The level of diversification is calculated with regard to the average of the set of observations:

$$Y_i = \text{DumDiversification}_i = 1 \text{ si } \text{Diversification}_{it} > \frac{\sum_{i=1}^{30} \sum_{t=1}^{15} \text{Diversification}_{it}}{450} \\ = 0 \text{ if not} \quad (14)$$

- Calculate in a second stage the probability of diversification according to Eq. 12.

4.1. The results of the estimation Logit and the probability of diversification

We have considered 3 periods in our sample: 1997, 2002, 2007, on 2011. The results of the estimation of the first stage; considered in the models in [Table 2](#).

Table 2: Estimation of Logit model

variables	1997	2002	2007	2011
intercept	1.071 (0.09)	2.458 (0.15)	11.477 (1.1)	57.773 (1.37)
MAJ1	5.322 (1.29)	0.892 (0.18)	-0.693 (-0.22)	12.393 (1.65)
MAJ2	-3.310 (-0.56)	30.481 (0.71)	10.692 (0.85)	30.633 (1.62)
MAJ3	5.539 (0.82)	-26.67 (-1.15)	2.355 (0.34)	37.740 (0.132)
Size	-0.869 (-0.67)	-1.336 (-0.70)	-1.377 (-1.31)	-9.567 (-1.53)
DEBT	7.721 (1.75)	-0.071 (-0.01)	-5.790 (-1.37)	10.154 (1.04)
AGE	0.013 (0.49)	0.055 (1.57)	0.010 (0.47)	0.171 (1.68)
SOL	5.373 (1.43)	3.508 (1.08)	-4.581 (-1.26)	-5.796 (-0.85)
PROF	-18.572 (-0.95)	-14.186 (-0.98)	13.124 (1.41)	-12.68 (-0.92)
Log likelihood	-14.9314	-11.246	-15.715	-6.53018
McFadden R-squared	0.256550	0.353560	0.221635	0.685965
Akaike info criterion	1.650446	1.349760	1.647697	1.035345
Schwarz criterion	2.074779	1.770119	2.068056	1.455705
Hannan-Quinn criteria	1.783342	1.484237	1.782174	1.169822

Contrary to classic regression, the coefficients values of the binary model are not easy to interpret as the marginal effect of the dependent variable. For the Logit model, the marginal effect of x_i on the conditional probability is given by:

$$\frac{\partial E(y_i)}{\partial x_{ij}} = -f(-x_i\beta) \cdot \beta_j \quad (15)$$

where $f(x)=dF(x)/dx$ is the density function corresponding to F . the direction of the effect of a change in x_i depends only on the sign of the β_i coefficient. Positive value of β_i imply that increasing x_i will increase the probability of the response, negative values imply the opposite.

For periods prior to the 2007 financial crisis, the three major shareholders are not universally agreed on the increase or decrease in the level of diversification of the firm. The first largest shareholder is clear in its behavior: It is for a High level of diversification during periods of crisis and a narrowing in the crisis. The other two major shareholders are conflicts before the crisis and are positively coalition during and after the crisis. These results are in part confirming the earlier studies. Furthermore, that the common sense between large shareholders and diversification is explained as follows: for blockholders as insiders some authors find a negative association between these two variables (Denis et al., 1997). In addition, inside blockholders are also usually present on the board of directors. That means that they are legally liable for failure to represent shareholder interests. Blockholders who are also managing the company are very alert not to reduce firm value. Over diversification is one of the ways which can reduce the value of the firm. In comparison with inside blockholders, outside blockholders are large shareholders who have no links with the company but have a financial interest in its operating performance. They are only getting their part of the profit, but they do not participate in company management. The relationship between outside blockholders and other shareholders of the company is similar to the agent-principal problem. Since outside blockholders do not have any link with the firm, they cannot oversee the real situation of how it is being managed and that is why they are being very alert of what top management is doing. Thus, when shareholders have a substantial ownership position in a firm as blockholders do, they are willing to exercise their authority. That's why they are willing to actively monitor strategy formulation, preventing over-diversification.

For the other control variables, old firms are more willing to increase the level of diversification than younger firms. However, firm size decreases the probability to be more diversified. The effects of debt, solvency, and profitability are not having the same sign during all periods. Before years of the financial crisis, the likelihood of diversification is higher when firms contact more debt, have more

solvency for years before the crisis, this sign is opposite for the period after crisis.

The probability of diversification and the determination of the score Y is not important in itself. Indeed, to be able to distinguish companies strongly diversified from those weakly diversified, it is important to calculate the probability to belong to this family of diversified companies. This probability is reckoned in the following way:

$$P = p \left[\frac{(Y = 1)}{X} \right] = \frac{1}{1 + e^{-Y}} \quad (16)$$

To classify companies with higher and lower probability of diversification, the rule of decision consists in comparing the probability P of the equation with regard to a critical value. The value criticizes so much $P^*=0,5$.

- A company is considered as strongly diversified if the value of the probability P is superior to P^* ;
- It is considered weakly diversified if this probability is lower in P^* .

The board gives us the results of calculations of this probability for every company during the periods of study and the probability averages of all the companies. According to the obtained results, we notice that:

- The least diversified companies are the ones observed during 2002 (during the crisis on September 11th, 2001) or the crisis 2007 what means that during these events companies are more and more shower at the risk in the development of their activities on an international scale.
- The probability of average diversification did not exceed 50% what means that on average companies do not begin strategies of maximal diversification. In other words, the made expansions that are by product or by market are made in a slow or progressive way to adapt themselves to the unforeseen of the new economic and financial environment.
- The branch of industry is more inclined to diversify (64%) their activities compared with the financial sector (33%). This result (profit) means that industrial companies find more grounds and opportunities for investments (compared to established financiers) than national or international in the scale (ladder) to increase their turnovers or increase their market shares. Table 3 shows the estimation of the probability of diversification by means of the model LOGIT.

The problem of classification in priori according to the model LOGIT; from this critical value ($P^*=0.5$), it is possible to estimate the robustness of the specification Logit in the distinction between strongly diversified and begun weakly diversified companies and to compare its relevance with regard to (compared with) the discriminating analysis. The

performance is arrested (dreaded) through the degree of concordance enter the classification in

priori and the classification supplied by the model.

Table 3: Estimation of the probability of diversification by means of the model LOGIT

Enterprises	1997		2002		2007		2011	
	Yi	Pi	Yi	Pi	Yi	Pi	Yi	Pi
			-					
	2.99807889		1.210010914		-			
	0.245534144		2.859918382		0.115215749		12.56361248	
	1.16827889		-		0.067721901		2.453973683	
	0.904302935		5.821310914		-		-	
	0.685734144		-		1.250015749		3.698047728	
	-		1.433036895		-		-	
	0.070023362		-		0.122882216		3.943957772	
E1	-0.68852766	0.952487262	2.359918382	0.22969912	0.508582266	0.471227884	5.397045664	0.999996503
E2	0.63525966	0.561076998	-	0.054170882	1.507051456	0.516924007	-	0.920851553
E3	1.562550984	0.762833776	2.192828581	0.00295496	0.958237702	0.222697413	1.362225877	0.02417303
E4	-	0.711832954	0.069214919	0.192625942	-	0.469318044	6.665739663	0.019003275
E5	0.439043016	0.665017295	-	0.086280629	1.251686766	0.375525934	0.072201663	0.995490484
E6	0.229157629	0.482501309	0.887573195	0.100396336	0.114965199	0.818623822	1.423129495	0.203878777
E7	-	0.334360683	-3.63055482	0.517296825	-	0.722768825	-	0.998727806
E8	0.098822799	0.653681116	-2.62835482	0.291610889	4.819262785	0.222408288	3.760337158	0.518042578
E9	2.351789597	0.826719098	1.052036907	0.025817281	0.363735678	0.528709685	2.2878608	0.805828554
E10	2.097995502	0.391969023	-	0.067335697	-	0.008008089	1.625113453	0.022746448
E11	0.967127516	0.557040012	1.323228592	0.741165849	0.883562063	0.589944435	2.061057002	0.907866673
E12	-	0.475314387	1.972546951	0.210281641	1.632305673	0.292440176	-	0.164500869
E13	2.019116954	0.913076369	-2.69340753	0.877884418	0.268428295	0.836485248	5.547684055	0.887060108
E14	0.340839188	0.890708199	-	0.063363485	0.214123326	0.566707013	0.275938653	0.003881347
E15	1.191550311	0.724546581	0.894415432	0.290199478	-	0.553327238	0.568550251	0.003881347
E16	2.126426934	0.117210331	-4.53813824	0.01058016	1.400271963	0.197772959	0.224450407	0.003881347
E17	-	0.584394357	1.770320612	0.854497538	-	0.359960459	1.239917154	0.862492464
E18	1.403274692	0.767018221	0.579628011	0.640981807	0.575535769	0.550018458	1.836147685	0.978477808
E19	-	0.893445328	-	0.386140774	0.200745275	0.200386978	3.816913505	0.685509671
E20	3.703570701	0.197296981	0.463563627	0.035198311	-1.3838775	0.00279681	0.779209279	0.99999259
E21	-	0.024043092	-	0.224851805	-	0.01626566	11.81265545	0.97819828
E22	1.816672662	0.139833606	3.310924485	0.005940207	5.876475072	0.309512025	3.803723509	1.44765E-07
E23	-	0.236500998	-	0.003995626	-	0.442640989	-	3.061E-09
E24	1.171959388	0.064141287	1.237612687	0.001148906	4.102299737	0.008328204	15.74815601	0.013194232
E25	-	0.667751658	-5.12005346	0.622937892	-	0.854850868	-	0.999967978
E26	2.680376256	0.473479463	-	0.326682422	0.802401612	0.769398722	19.60452439	0.999886531
E27	0.698033629	0.034304937	5.518551493	0.002793945	-	0.268474938	4.314693468	0.02766552
E28	-	0.096419395	-	0.288008574	0.230450543	0.525139056	10.34904253	0.160842196
E29	0.106181799	0.274652893	6.767795755	0.164732557	-	0.383161534	9.083866783	4.36219E-06
E30	-	0.352355761	0.502036907	0.075805496	4.779744413	0.125929351	-	5.17074E-08
	3.337558839	-	-	-	1.773165319	-	3.559512983	-
	-	-	0.723228592	-	1.20491918	-	-	-
	2.237657951	-	-	-	-	-	1.651975042	-
	-	-	5.877502898	-	1.002373913	-	-	-
	0.971142216	-	-0.90507562	-	0.100641085	-	12.34253228	-
	-	-	-	-	-	-	-16.7776641	-
	0.608700183	-	1.623428675	-	0.476150525	-	-	-
	-	-	-	-	-1.93744016	-	-	-
	-	-	2.500751757	-	-	-	-	-
% of firms with Higher degree of diversification	15/30 >50% 50%		6/30 >50% 20%		12/30 >50% 40%		16/30 >50% 53%	
Pi Average	0.494200446		0.246512648		0.40699177		0.499042683	
Pi financial sector	0.338739796		0.153774882		0.308595333		0.317581148	
Pi Industrial sector	0.649661095		0.339250415		0.505388208		0.680504218	

The calculation of a rate of correct classification allows judging the robustness of the model. This rate of classification is calculated in the following way:

$$\Psi = \frac{\text{Total Correct Classification}}{\text{Total Classification in Priori}}$$

This rate is a weighted average rate between the classification of the strongly diversified companies and those weakly diversified. In another term, this rate spells as follows:

$$\Psi = \frac{\Psi_{\text{strongly diversified}} \cdot N_{\text{strongly diversified}} + \Psi_{\text{weakly diversified}} \cdot N_{\text{weakly diversified}}}{N_{\text{strongly diversified}} + N_{\text{weakly diversified}}}$$

The results show that the percentage of correct classification oscillates between 67% and 90%, which means that the model possesses a predictive

power mattering enough during these years. Table 4 shows classification according to model LOGIT.

Table 4: Classification according to model LOGIT

	Origin Group	well classified	Poorly classified	Total				
1997	Diversified 15	10 (67%)	5 (33%)	15 (100%)				
	Not diversified 15	10 (67%)	5 (33%)	15 (100%)				
2002	Diversified 8	4 (50%)	4 (50%)	8 (100%)				
	Not diversified 22	20 (90%)	2 (10%)	22 (100%)				
2007	Diversified 12	6 (50%)	6 (50%)	12 (100%)				
	Not diversified 18	12 (66%)	6 (34%)	18 (100%)				
2011	Diversified 15	14 (93%)	1 (7%)	15 (100%)				
	Not diversified 15	13 (87%)	2 (13%)	15 (100%)				
	% Correct classification	% erreur of classification						
LOGIT results:	1997	2002	2007	2011	1997	2002	2007	2011
	67%	80%	60%	90%	33%	20%	40%	10%

5. Conclusion

A major motivation for this research was to integrate existing literature on blockholder ownership and diversification and explore the relationship between them. I initiated the research question: "What is the relationship between blockholders and the likelihood of firm diversification?" The findings show that the first largest shareholder is clear in its behavior: It is for a High level of diversification during periods of crisis and a narrowing in the crisis. The other two major shareholders are conflicts before the crisis and are positively coalition during and after the crisis. Several implications can be made from the aforementioned hypotheses and results of the analysis. The finding that the firm's probability level of diversification is negatively influenced by the presence of outside blockholders is in line with other authors who argue that the relationship between outside blockholders and other shareholders of the company is similar to the agent-principal problem. Because outside blockholders are not involved in firm management, they are worried about managers and other shareholders over-diversify the firm, and since they have significant authority in a firm, they are willing to use it in order to influence the firm's value. Firm characteristics increase the probability of a firm to diversify, however, it is being observed only in business diversification. However, firm size decreases the probability to be more diversified. The effects of debt, solvency, and profitability are not having the same sign during all periods. Before years of the financial crisis, the likelihood of diversification is higher when firms contact more debt, have more solvency for years before the crisis, this sign is opposite for the period after crisis.

Compliance with ethical standards

Conflict of interest

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

References

- Aivazian V, Booth L, and Cleary S (2001). Do firms in emerging markets follow different dividend policies from those in the US: Evidence from firms in eight emerging countries. *Journal of Financial Research*, 26(3): 175-188. <https://doi.org/10.1111/1475-6803.00064>
- Amihud Y and Lev B (1981). Risk reduction as a managerial motive for conglomerate mergers. *The Bell Journal of Economics*, 12: 605-617. <https://doi.org/10.2307/3003575>
- Amihud Y and Lev B (1999). Does corporate ownership structure affect its strategy towards diversification? *Strategic Management Journal*, 20(11): 1063-1069. [https://doi.org/10.1002/\(SICI\)1097-0266\(199911\)20:11<1063::AID-SMJ69>3.0.CO;2-S](https://doi.org/10.1002/(SICI)1097-0266(199911)20:11<1063::AID-SMJ69>3.0.CO;2-S)
- Anderson RC and Reeb DM (2003). Founding-family ownership and firm performance: Evidence from the S&P 500. *The Journal of Finance*, 58(3): 1301-1328. <https://doi.org/10.1111/1540-6261.00567>
- Barney J (1991). Firm resources and sustained competitive advantage. *Journal of Management*, 17(1): 99-120. <https://doi.org/10.1177/014920639101700108>
- Batsch L (1993). La diversité des activités des groupes industriels- Une approche empirique du recentrage. *Revue d'économie Industrielle*, 66(1): 33-50. <https://doi.org/10.3406/rei.1993.1495>
- Bennedsen M and Wolfenzon D (2000). The balance of power in closely held corporations. *Journal of Financial Economics*, 58(1-2): 113-139. [https://doi.org/10.1016/S0304-405X\(00\)00068-4](https://doi.org/10.1016/S0304-405X(00)00068-4)
- Berger PG and Ofek E (1995). Diversification's effect on firm value. *Journal of Financial Economics*, 37(1): 39-65. [https://doi.org/10.1016/0304-405X\(94\)00798-6](https://doi.org/10.1016/0304-405X(94)00798-6)
- Berger PG and Ofek E (1996). Bustup takeovers of value-destroying diversified firms. *The Journal of Finance*, 51(4): 1175-1200. <https://doi.org/10.1111/j.1540-6261.1996.tb04066.x>
- Berry CH (1975). Corporate growth and diversification. Princeton University Press, Princeton, USA. <https://doi.org/10.1515/9781400872961>
- Bettis RA (1981). Performance differences in related and unrelated diversified firms. *Strategic Management Journal*, 2(4): 379-393. <https://doi.org/10.1002/smj.4250020406>
- Burkart M, Gromb D, and Panunzi F (1998). Why higher takeover premia protect minority shareholders. *Journal of Political Economy*, 106(1): 172-204. <https://doi.org/10.1086/250006>

- Campa JM and Kedia S (2002). Explaining the diversification discount. *The Journal of Finance*, 57(4): 1731-1762. <https://doi.org/10.1111/1540-6261.00476>
- Chen HL and Hsu WT (2009). Family ownership, board independence, and R&D investment. *Family Business Review*, 22(4): 347-362. <https://doi.org/10.1177/0894486509341062>
- Chen SS and Ho KW (2000). Corporate diversification, ownership structure, and firm value: The Singapore evidence. *International Review of Financial Analysis*, 9(3): 315-326. [https://doi.org/10.1016/S1057-5219\(00\)00032-6](https://doi.org/10.1016/S1057-5219(00)00032-6)
- Cho MH (1998). Ownership structure, investment, and the corporate value: An empirical analysis. *Journal of Financial Economics*, 47(1): 103-121. [https://doi.org/10.1016/S0304-405X\(97\)00039-1](https://doi.org/10.1016/S0304-405X(97)00039-1)
- Claessens S, Djankov S, and Lang LH (2000). The separation of ownership and control in East Asian corporations. *Journal of Financial Economics*, 58(1-2): 81-112. <https://doi.org/10.1596/0-8213-4631-8>
- Collin SO and Bengtsson L (2000). Corporate governance and strategy: A test of the association between governance structures and diversification on Swedish data. *Corporate Governance: An International Review*, 8(2): 154-165. <https://doi.org/10.1111/1467-8683.00192>
- Comment R and Jarrell GA (1995). Corporate focus and stock returns. *Journal of Financial Economics*, 37(1): 67-87. [https://doi.org/10.1016/0304-405X\(94\)00777-X](https://doi.org/10.1016/0304-405X(94)00777-X)
- Davis JA, Hampton MM, and Lansberg I (1997). *Generation to generation: Life cycles of the family business*. Harvard Business Press, Boston, USA.
- Delios A and Beamish PW (1999). Geographic scope, product diversification, and the corporate performance of Japanese firms. *Strategic Management Journal*, 20(8): 711-727. [https://doi.org/10.1002/\(SICI\)1097-0266\(199908\)20:8<711::AID-SMJ41>3.0.CO;2-8](https://doi.org/10.1002/(SICI)1097-0266(199908)20:8<711::AID-SMJ41>3.0.CO;2-8)
- Delios A and Wu ZJ (2005). Legal person ownership, diversification strategy and firm profitability in China. *Journal of Management and Governance*, 9(2): 151-169. <https://doi.org/10.1007/s10997-005-4034-9>
- Delios A, Xu D, and Beamish PW (2008a). Within-country product diversification and foreign subsidiary performance. *Journal of International Business Studies*, 39(4): 706-724. <https://doi.org/10.1057/palgrave.jibs.8400378>
- Delios A, Zhou N, and Xu WW (2008b). Ownership structure and the diversification and performance of publicly-listed companies in China. *Business Horizons*, 51(6): 473-483. <https://doi.org/10.1016/j.bushor.2008.06.004>
- Demsetz H and Villalonga B (2001). Ownership structure and corporate performance. *Journal of Corporate Finance*, 7(3): 209-233. [https://doi.org/10.1016/S0929-1199\(01\)00020-7](https://doi.org/10.1016/S0929-1199(01)00020-7)
- Denis DJ, Denis DK, and Sarin A (1997). Agency problems, equity ownership, and corporate diversification. *The Journal of Finance*, 52(1): 135-160. <https://doi.org/10.1111/j.1540-6261.1997.tb03811.x>
- Denis DJ, Denis DK, and Sarin A (1999). Agency theory and the influence of equity ownership structure on corporate diversification strategies. *Strategic Management Journal*, 20(11): 1071-1076. [https://doi.org/10.1002/\(SICI\)1097-0266\(199911\)20:11<1071::AID-SMJ70>3.0.CO;2-G](https://doi.org/10.1002/(SICI)1097-0266(199911)20:11<1071::AID-SMJ70>3.0.CO;2-G)
- Denis DJ, Denis DK, and Yost K (2002). Global diversification, industrial diversification, and firm value. *The Journal of Finance*, 57(5): 1951-1979. <https://doi.org/10.1111/0022-1082.00485>
- Fauver L, Houston J, and Naranjo A (2003). Capital market development, international integration, legal systems, and the value of corporate diversification: A cross-country analysis. *Journal of Financial and Quantitative Analysis*, 38: 135-157. <https://doi.org/10.2307/4126767>
- Gomes FJ (2005). Portfolio choice and trading volume with loss-averse investors. *The Journal of Business*, 78(2): 675-706. <https://doi.org/10.1086/427643>
- Gomez-Mejia LR, Makri M, and Kintana ML (2010). Diversification decisions in family-controlled firms. *Journal of Management Studies*, 47(2): 223-252. <https://doi.org/10.1111/j.1467-6486.2009.00889.x>
- Goranova M, Alessandri TM, Brandes P, and Dharwadkar R (2007). Managerial ownership and corporate diversification: A longitudinal view. *Strategic Management Journal*, 28(3): 211-225. <https://doi.org/10.1002/smj.570>
- Grant RM, Jammine AP, and Thomas H (1988). Diversity, diversification, and profitability among British manufacturing companies, 1972-1984. *Academy of Management Journal*, 31(4): 771-801. <https://doi.org/10.5465/256338>
- Grossman SJ and Hart OD (1986). The costs and benefits of ownership: A theory of vertical and lateral integration. *Journal of Political Economy*, 94(4): 691-719. <https://doi.org/10.1086/261404>
- Harris M, Kriebel CH, and Raviv A (1982). Asymmetric information, incentives and intrafirm resource allocation. *Management Science*, 28(6): 604-620. <https://doi.org/10.1287/mnsc.28.6.604>
- Kang JK and Stulz RM (1996). How different is Japanese corporate finance? An investigation of the information content of new security issues. *The Review of Financial Studies*, 9(1): 109-139. <https://doi.org/10.1093/rfs/9.1.109>
- Kaserer C and Moldenhauer B (2008). Insider ownership and corporate performance: Evidence from Germany. *Review of Managerial Science*, 2(1): 1-35. <https://doi.org/10.1007/s11846-007-0009-3>
- Khanna T and Palepu K (1999). Emerging market business groups, foreign investors, and corporate governance. National Bureau of Economic Research Working Paper #6955. <https://doi.org/10.3386/w6955>
- Khanna T and Palepu K (2000). Is group affiliation profitable in emerging markets? An analysis of diversified Indian business groups. *The Journal of Finance*, 55(2): 867-891. <https://doi.org/10.1111/0022-1082.00229>
- Kochhar R and Hitt MA (1998). Linking corporate strategy to capital structure: Diversification strategy, type and source of financing. *Strategic Management Journal*, 19(6): 601-610. [https://doi.org/10.1002/\(SICI\)1097-0266\(199806\)19:6<601::AID-SMJ961>3.0.CO;2-M](https://doi.org/10.1002/(SICI)1097-0266(199806)19:6<601::AID-SMJ961>3.0.CO;2-M)
- Lane PJ, Cannella AA, and Lubatkin MH (1998). Agency problems as antecedents to unrelated mergers and diversification: Amihud and Lev reconsidered. *Strategic Management Journal*, 19(6): 555-578. [https://doi.org/10.1002/\(SICI\)1097-0266\(199806\)19:6<555::AID-SMJ955>3.0.CO;2-Y](https://doi.org/10.1002/(SICI)1097-0266(199806)19:6<555::AID-SMJ955>3.0.CO;2-Y)
- Lane PJ, Cannella AA, and Lubatkin MH (1999). Ownership structure and corporate strategy: One question viewed from two different worlds. *Strategic Management Journal*, 20(11): 1077-1086. [https://doi.org/10.1002/\(SICI\)1097-0266\(199911\)20:11<1077::AID-SMJ68>3.0.CO;2-O](https://doi.org/10.1002/(SICI)1097-0266(199911)20:11<1077::AID-SMJ68>3.0.CO;2-O)
- Lins K and Servaes H (1999). International evidence on the value of corporate diversification. *The Journal of Finance*, 54(6): 2215-2239. <https://doi.org/10.1111/0022-1082.00186>
- May DO (1995). Do managerial motives influence firm risk reduction strategies? *The Journal of Finance*, 50(4): 1291-1308. <https://doi.org/10.1111/j.1540-6261.1995.tb04059.x>
- Michel A and Shaked I (1984). Does business diversification affect performance? *Financial Management*, 13: 18-25. <https://doi.org/10.2307/3665297>

- Minguez-Vera A and Martin-Ugedo JF (2007). Does ownership structure affect value? A panel data analysis for the Spanish market. *International Review of Financial Analysis*, 16(1): 81-98. <https://doi.org/10.1016/j.irfa.2005.10.004>
- Montgomery CA (1985). Product-market diversification and market power. *Academy of Management Journal*, 28(4): 789-798. <https://doi.org/10.2307/256237>
- Montgomery CA (1994). Corporate diversification. *Journal of Economic Perspectives*, 8(3): 163-178. <https://doi.org/10.1257/jep.8.3.163>
- Mtanos R and Paquerot M (1999). Structure de propriété et sous-performance des firmes: Une étude empirique sur le marché au comptant, le règlement mensuel et le second marché. *Finance Contrôle Stratégie*, 2(4): 157-179.
- Ohlson JA (1980). Financial ratios and the probabilistic prediction of bankruptcy. *Journal of Accounting Research*, 18(1): 109-131. <https://doi.org/10.2307/2490395>
- Perrow C (1986). *Complex organizations: A critical essay*. McGraw-Hill, New York, USA.
- Pound J (1988). Proxy contests and the efficiency of shareholder oversight. *Journal of Financial Economics*, 20: 237-265. [https://doi.org/10.1016/0304-405X\(88\)90046-3](https://doi.org/10.1016/0304-405X(88)90046-3)
- Prahalad CH and Hamel G (1990). The core competence of the corporation. *Harvard Business Review*, 68(3): 295-336.
- Ramanujam V and Varadarajan P (1989). Research on corporate diversification: A synthesis. *Strategic Management Journal*, 10(6): 523-551. <https://doi.org/10.1002/smj.4250100603>
- Ramaswamy K, Li M, and Veliyath R (2002). Variations in ownership behavior and propensity to diversify: A study of the Indian corporate context. *Strategic Management Journal*, 23(4): 345-358. <https://doi.org/10.1002/smj.227>
- Rumelt R (1974). *Strategy, structure and economic performance*. Harvard University Press, Cambridge, USA.
- Seetharaman A, Swanson ZL, and Srinidhi B (2001). Analytical and empirical evidence of the impact of tax rates on the trade-off between debt and managerial ownership. *Journal of Accounting, Auditing & Finance*, 16(3): 249-272. <https://doi.org/10.1177/0148558X0101600306>
- Shleifer A and Vishny RW (1986). Large shareholders and corporate control. *Journal of Political Economy*, 94(3, Part 1): 461-488. <https://doi.org/10.1086/261385>
- Shleifer A and Vishny RW (1989). Management entrenchment: The case of manager-specific investments. *Journal of Financial Economics*, 25(1): 123-139. [https://doi.org/10.1016/0304-405X\(89\)90099-8](https://doi.org/10.1016/0304-405X(89)90099-8)
- Shleifer A and Vishny RW (1997). A survey of corporate governance. *The Journal of Finance*, 52(2): 737-783. <https://doi.org/10.1111/j.1540-6261.1997.tb04820.x>
- Shumway T (2001). Forecasting bankruptcy more accurately: A simple hazard model. *The Journal of Business*, 74(1): 101-124. <https://doi.org/10.1086/209665>
- Thomsen S and Pedersen T (2000). Effects of international diversity and product diversity on the performance of multinational firms. *Strategic Management Journal*, 21(6): 689-705. [https://doi.org/10.1002/\(SICI\)1097-0266\(200006\)21:6<689::AID-SMJ115>3.0.CO;2-Y](https://doi.org/10.1002/(SICI)1097-0266(200006)21:6<689::AID-SMJ115>3.0.CO;2-Y)