

How do managerial entrenchment and expropriation affect control mechanisms?

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Abstract

This paper proposes a new empirical approach that allows us to appropriately control for the non-linearities of ownership with respect to firm value when analysing how managerial entrenchment and expropriation affect the relations among control mechanisms. Unlike findings in previous US-based studies, which in general point to substitutability among mechanisms, our results show that control mechanisms (especially insider ownership, debt and dividends) are used in a complementary way by Spanish firms. In addition, this complementarity is only observed when the interests of managers and owners converge, but not when there are controlling owners – insiders or outsiders – whose interests need not coincide with those of minority shareholders. Therefore, managerial entrenchment and expropriation effects do influence the relationship among agency-cost control mechanisms.

1. Introduction

The existence of both informational asymmetries and conflicts of interests among agents – which have been traditionally considered as the most important sources of inefficiencies in the decision making-process – has given rise to extensive empirical research on signalling and aligning-of-interests devices. In this context, financial literature widely supports the role played by ownership structure, debt and dividends as agency-cost control mechanisms. First, financial literature points out the benefits of insider ownership and ownership concentration (Jensen and Meckling, 1976; Shleifer and Vishny, 1986), debt (Grossman and Hart, 1982; Jensen, 1986) and dividends (Rozeff, 1982; Lang and Litzenberger, 1989) in solving the conflict of interest that exists between owners and managers in the firm. Second, arguments can also be found that point to ownership structure (Leland and Pyle, 1977), debt (Ross, 1977; Harris and Raviv, 1990) and dividends (Lintner, 1956; Bhattacharya, 1979) as effective ways of mitigating asymmetries of information between firms and potential investors.

In summary, ownership structure, debt and dividends all have an influence on the extent and consequences of the agency problem, which suggests that these mechanisms are not independent. Previous evidence seems to agree that these mechanisms are somehow related, but there is no unanimity about the way in which they are related. On the one hand, the substitution hypothesis states that firms jointly choose their levels of insider ownership, ownership concentration, debt and dividends by searching for a trade-off between their costs and benefits. Jensen, Solberg and Zorn (1992), Moh'd, Perry and Rimbey (1995), and Chen and Steiner (1999), among others, support the existence of substitution relationships among control mechanisms. On the other hand, the alternative hypothesis, which proposes the complementary use of several

mechanisms as the most effective solution to the agency problem, is supported by, for instance, Eckbo and Verma (1984), Jensen (1989) and Agrawal and Knoeber (1996).

In addition to this lack of consensus, another caveat can be found in previous literature concerning the interrelations among agency-cost control mechanisms. It has been widely supported by financial literature that both insider ownership – as a consequence of the convergence of interest and entrenchment effects – and ownership concentration – as a result of the monitoring and expropriation effects – have a non-linear influence on the scope of the firm's agency costs, and are thus non-linearly related to firm value (see, for example, Morck, Shleifer and Vishny, 1988; McConnell and Servaes, 1990; Gedajlovic and Shapiro, 1998). Although there are several previous attempts to integrate these non-linearities into the analysis of the relationships among control mechanisms (Grier and Zychowicz, 1994; Schooley and Barney, 1994; Crutchley, Jensen, Jahera and Raymond, 1999), none of them offer definite conclusions.

With this motivation, this paper addresses exactly how exactly managerial entrenchment and expropriation effects influence the relationships among insider ownership, ownership concentration, debt, and dividends. Our study is thus an important step forward in the literature on corporate governance, since it offers a complete analysis of the relationships among the above-mentioned mechanisms and it also integrates the non-linearities of ownership structure with respect to firm value. Previous studies, in which non-linearities are captured by adding the square of insider ownership and ownership concentration variables to debt and dividends models, can be questioned, given their lack of theoretical support. In fact, these studies assume non-linearities of ownership structure with respect to debt and dividends, but financial literature only supports a non-linear relationship between ownership variables and firm value. To solve this problem, we propose an original empirical approach that

appropriately controls for the convergence of interests and entrenchment effects, as well as for the monitoring and expropriation effects. Specifically, we use the breakpoints found in the value-ownership relation in order to build dummy variables, which are then entered into our models. In this way, the empirical approach we propose here allows us to learn whether firms complement the mechanisms or make substitutions among insider ownership, ownership concentration, debt, and dividends and, more important, whether managerial entrenchment and expropriation effects influence the relationships among the above-mentioned mechanisms.

Unlike findings in previous US-based studies, which support the substitutability of mechanisms, our results show control mechanisms (especially insider ownership, debt and dividends) are used in a complementary way by Spanish firms. This difference in behaviour of Spanish firms adds further motivation to our paper; in fact, the Spanish corporate governance system is quite different from that of the US, which could explain our empirical evidence. In addition, our findings tell us that this complementarity is only observed when there is a convergence of interests between insiders and outsiders. In other words, managerial entrenchment and expropriation effects do influence the relationship among agency-cost control mechanisms.

The remainder of this paper is organized as follows. Section II summarizes previous literature on the interaction among insider ownership, ownership concentration, debt and dividends. Section III describes our empirical approach and presents the models. In Section IV we describe the data set and the estimation method. The results are discussed in Section V, and the last section presents the conclusions.

2. Ownership structure, debt and dividends: theory and previous empirical results

Literature on corporate governance pointing out the benefits and costs associated with the use of control mechanisms in the firm suggests that ownership structure, debt and dividends are closely related, and that agency problems arising from conflicts of interests are solved by jointly choosing the appropriate levels of insider ownership, ownership concentration, leverage and retained earnings in the firm.

Although previous research seems to agree there is actually a relation among these mechanisms, it is not as evident whether they are considered as substitutes in their control role or, on the contrary, each one necessarily acts as a complement to the others. On the one hand, the search for a trade-off between costs and benefits leads to a substitution hypothesis based on the minimization of agency conflicts without duplicating efforts (Easterbrook, 1984; John and Senbet, 1998). In other words, this hypothesis holds that when one mechanism is strong, the remaining will be less valuable. On the other hand, the alternative hypothesis points to the complementary use of the different mechanisms as the most effective solution to the firm's inefficiencies, because none of them can be a satisfactory solution by itself without generating additional costs (Jensen, 1989).

The most common premise of empirical literature on the interaction among ownership structure, debt and dividends is the analysis of the relations between only two of these agency-cost control mechanisms. In this context, the relationship between debt and dividend policies has aroused great interest since Rozeff (1982) and Jensen (1986) proposed the existence of a substitution effect, since both mechanisms lessen the agency costs of equity; particularly, the costs deriving from the conflict of interests between managers and owners with respect to free cash flows¹. Subsequent empirical

¹ However, Jensen (1986) points out that debt is much more effective than dividends, because interest and principal payments are a contractual duty, while dividends are a residual condition.

evidence on the substitutability of debt and dividends as cash flow commitments can be found in Moh'd, Perry and Rimbey (1995, 1998) and, for the Spanish case, in Lozano, Miguel and Pindado (2002). However, the results in Eckbo and Verma (1994) show a positive and significant relationship between these two mechanisms and, more recently, Zwiebel (1996) and Douglas (2001) confirm that firm value is optimized only when debt and dividends are simultaneously used.

Concerning the relationship between ownership structure and dividend decisions, the evidence is mixed, too. On the one hand, Rozeff (1982) specifies a model explaining the payout ratio that minimizes the sum of agency and transaction costs, and presents evidence on the proposition that dividend payments are negatively influenced by both insider ownership and ownership concentration. This substitution hypothesis is empirically confirmed in Lloyd, Jahera and Page (1985), Moh'd, Perry and Rimbey (1995) and Holder, Langrehr and Hexter (1998), whose results indicate that firms with a higher percentage of stock held by insiders and with higher ownership concentration will have lower agency costs and lower dividend payments. On the other hand, Shleifer and Vishny (1986) justify the existence of a positive relation between ownership concentration and dividends according to tax concerns, since large shareholders are usually other companies for which the received dividends are tax deductible and, consequently, they prefer cash distributions.

In accordance with this argument, Eckbo and Verma (1984) and Gadhoun (1999, 2000) show evidence on a positive and significant effect of ownership concentration on dividends. However, as Gadhoun (1999) suggests, the higher cash distributions required by large shareholders is a way of controlling managerial discretion rather than a consequence of taxation and, therefore, dividends and ownership concentration should be considered as complementary control mechanisms. For the Spanish case, Lozano,

Miguel and Pindado (2002) show that while insider ownership clearly substitutes for dividends, the complementary use of dividends and ownership concentration is necessary in order to ameliorate the conflict of interests between owners and managers in Spanish firms.

There is also theoretical and empirical work on the existence of both complementary and substitution relationships between ownership structure and debt. Jensen and Meckling (1976) point to debt as a solution to the conflict of interests between owners and managers since the issue of debt, instead of capital, enables managers to own a higher fraction of their firm's shares, and thus strengthens the convergence of interest effect. This argument suggests that debt increases may lead to higher levels of insider ownership. Jensen (1989) provides empirical evidence supporting this argument, and shows that debt and insider ownership must be simultaneously used in order to solve the overinvestment problem in the firm. Similar conclusions are reached by Kim and Sorensen (1986), Agrawal and Mandelker (1987), Garvey (1992) and Agrawal and Knoeber (1996), who find that there is a positive relation between these two variables and, consequently, that insider ownership and leverage are complementary control mechanisms. Additionally, where there is monitoring by large shareholders, managers may not be able to adjust leverage to their own interests, and the debt ratio is expected to be higher than where ownership is disperse. Accordingly, Friend and Lang (1988) and, for the Spanish case, Crespi (1998) confirm that ownership concentration encourages debt financing and, therefore, that these two mechanisms are also complementary.

However, the substitution hypothesis has also been supported in financial literature. Stulz (1988) points out that increments in the debt-to-capital ratio beyond a certain point lead managers to reduce their shareholdings, because of the higher probability of default

and the higher non-diversifiable risk they would bear. Moreover, and consistent with the substitution hypothesis, Stulz (1988) concludes that, for control reasons, firms choose their levels of debt and insider ownership following a substitutive pattern. The results in Friend and Hasbrouk (1987), Friend and Lang (1988) and Agrawal and Nagarajan (1990) show that when insider ownership assures the convergence of interests, less debt is needed in order to control for managerial discretion. Additionally, Moh'd, Perry and Rimbey (1998), Denis and Sarin (1999) and Holderness, Kroszner and Sheehan (1999, 2000) confirm that those firms that are more leveraged are characterized by lower levels of insider ownership. On the other hand, as shown by Grier and Zychowicz (1994), there is also a substitution effect between ownership concentration and debt, since the monitoring exerted by concentrated ownership substitutes for the disciplinary role of debt.

The relationship between ownership concentration and insider ownership levels in the firm has been studied by Mehran (1995), who explains how the existence of large shareholders in the firm facilitates the control of managerial discretion, and thus lessens the need for equity-based compensation for managers in order to achieve a convergence between their interests and those of outside owners. Contrary to this substitution effect, the evidence in Chen and Steiner (1999) shows the existence of a positive and significant relationship between ownership concentration and insider ownership and, consequently, the complementary use of these two control mechanisms.

The above surveyed evidence is conflicting. However, there seems to be greater agreement in the empirical work based on the interactions among three of the control mechanisms. Specifically, previous evidence points to substitutability of insider ownership, debt and dividends as the most usual practice among firms. For example, Crutchley and Hansen (1989) analyse whether firms choose the mixed policy of

manager stock ownership, leverage and dividends by taking into account a set of common determinants, in such a way that certain agency cost characteristics lead firms to substitute some mechanisms for the others. Their results shed light on how managers jointly make these three financial decisions and make substitutions among them, taking advantage of their respective benefits without incurring in excessive costs. Despite the drawbacks of the study, based on reduced-form equations, this evidence has been afterwards confirmed by several structural equation analyses, in which a firm's debt, dividend and insider ownership levels are related not only to common firm characteristics, but also directly to each other. Following this approach, Jensen, Solberg and Zorn (1992) find evidence on the interdependence that exists between ownership structure and financial decisions, after controlling for firm characteristics. Specifically, their results support the substitution hypothesis by showing that the level of insider ownership has a negative and significant influence on a firm's debt and dividend levels, and that these two financial policies are inversely related to each other, too. However, no effect of debt and dividends on insider ownership seems to exist, a result that can also be found in Bathala, Moon and Rao (1994). In contrast, Crutchley, Jensen, Jahera and Raymond (1999) find that debt and dividends affect the choice of insider ownership negatively, but that insider ownership does not affect the choice of debt and dividends. The evidence in Bathala, Bowling and Rao (1995) and Chen and Steiner (1999) lend further support to the substitutability of debt, insider ownership and dividend payments, showing that firms not only substitute insider ownership for debt and dividend payments in lowering their agency costs, but also vice versa.

3. Econometric specification under managerial entrenchment and expropriation effects

The empirical analysis we present here is a step forward in the strand of literature we have revised in the previous section. Our paper provides advances in at least two directions. First, we offer a more complete analysis of the interactions among control mechanisms in which insider ownership, ownership concentration, debt and dividends are considered in order to find whether a complementary or a substitution relationship exists among them. Second, we integrate the non-linearity of insider ownership (i.e., the convergence of interests and entrenchment effects) and of ownership concentration (i.e., the monitoring and expropriation effects) into the analysis since it may cause a shift in the aforementioned relationships. In fact, in most of the previous studies, ownership structure has been assumed to linearly influence the scope of the firm's agency costs. Despite this assumption, the non-linearity of the value-ownership relation has been widely supported in financial literature. For example, Morck, Shleifer and Vishny (1988), Cho (1998) and, for the Spanish case, Miguel, Pindado and de la Torre (2001) find that insider ownership is related to performance in a non-linear way because of the managerial entrenchment that, contrary to the convergence of interests effect, leads to market valuation being negatively affected by some range of high ownership stakes². Similarly, the expropriation phenomenon that is likely to dominate the monitoring effect at high levels of ownership concentration³ explains why a highly concentrated ownership negatively influences corporate value, as shown in, for instance, Gedajlovic and Shapiro (1998) and Miguel, Pindado and de la Torre (2001).

² Fama and Jensen (1983) argue that when a manager owns a substantial fraction of the firm shares, which confers on him enough voting power or influence, he may satisfy his non-value maximizing objectives without endangering his employment and salary.

³ As Shleifer and Vishny (1997) point out, large shareholdings are costly because majority owners can redistribute wealth – in both efficient and inefficient ways – from other minority shareholders at the expense of firm performance.

Overall, these non-linearities suggest that higher levels of insider ownership and ownership concentration may not always reflect greater incentives to maximize value and monitor managers, but may be associated with greater managerial entrenchment and rent expropriation. Although there are several previous attempts to examine how the non-linearity of ownership structure is likely to influence its relationship with debt or dividends, no definite conclusions are reached. Crutchley, Jensen, Jahera and Raymond (1999) find evidence of a substitution between debt and insider ownership when the interests of managers and owners converge, and of a complementary relationship when managers get entrenched. However, the results in Grier and Zychowicz (1994) show exactly the opposite, thus confirming that entrenched managers attempt to free themselves from the disciplinary role of debt, as suggested by Zwiebel (1996) and Douglas (2002). Schooley and Barney (1994) also find a significant non-linear relation between insider ownership and dividends. Particularly, they point out that until managers get entrenched, higher levels of insider ownership result in lower levels of dividends, but beyond that point, dividend payments begin to increase with further insider ownership.

An important caveat, however, can be found in the above-mentioned studies, since they account for the non-linearity of insider ownership by including its square as a right-hand side variable in their debt and dividends models. In other words, assuming that initial increases in insider ownership result in a convergence of interest, while higher levels of insider ownership result in managerial entrenchment, a quadratic relation between debt or dividends and insider ownership is proposed. There is no theory sustaining these specifications, however. Since it is the trend followed by firm value that suggests the existence of convergence of interests or managerial entrenchment, this kind of reasoning only holds when a value model is specified.

Therefore, the inclusion of squared insider ownership in debt and dividend models does not allow us to correctly examine the effect of managerial entrenchment on the relationships among control mechanisms. And, for the same reasons, the expropriation effect can not be captured by adding the square of ownership concentration to debt and dividend models.

To overcome this problem, we have first considered the non-linearity of insider ownership and ownership concentration with respect to firm value in order to appropriately measure the convergence of interest and entrenchment effects, as well as the monitoring and expropriation effects. More precisely, we have estimated two value models by entering the following into the model: insider ownership, its square and its cube (see Morck, Shleifer and Vishny, 1988), and ownership concentration and its square (see Gedajlovic and Shapiro, 1998), respectively. We have then differentiated firm value with respect to insider ownership and ownership concentration in order to derive the optimal breakpoints in both models. The two breakpoints found in the insider ownership-value model tell us that Spanish insiders get entrenched when their ownership ranges from 35 to 70 percent. On the other hand, only one breakpoint is obtained in the ownership concentration-value model, which shows that expropriation of Spanish minority shareholders exists when the level of ownership concentration increases beyond 87 percent⁴.

Therefore, according to the breakpoints found in the value-ownership relation we have defined two dummy variables that allow us to control for non-linearities. Specifically, the insider ownership dummy (IOD) takes value one when there is a convergence of interests between managers and shareholders, and value zero when managers get entrenched. The ownership concentration dummy (OCD) equals one when

⁴ We do not offer more details on this procedure, since we follow Miguel, Pindado and de la Torre (2001) using the same Spanish firms sample.

there is monitoring by large shareholders, and zero when controlling owners manage to expropriate the wealth of minority owners. This way, the following system of equations is proposed in order to investigate exactly how managerial entrenchment and expropriation effects influence the relationships among control mechanisms:

$$D_{it} = \phi_0 + \phi_1 DIV_{it} + (\phi_2 + \phi_3 IOD_{it}) IO_{it} + (\phi_4 + \phi_5 OCD_{it}) OC_{it} + \phi_6 CFI_{it} + \phi_7 FCF_{it} + \phi_8 Q_{it} + \phi_9 SI_{it} + d_t + \eta_i + v_{it} \quad (1)$$

$$DIV_{it} = \mu_0 + \mu_1 D_{it} + (\mu_2 + \mu_3 IOD_{it}) IO_{it} + (\mu_4 + \mu_5 OCD_{it}) OC_{it} + \mu_6 NI_{it} + \mu_7 FCF_{it} + \mu_8 Q_{it} + \mu_9 SI_{it} + d_t + \eta_i + v_{it} \quad (2)$$

$$IO_{it} = \lambda_0 + \lambda_1 D_{it} + \lambda_2 DIV_{it} + (\lambda_3 + \lambda_4 OCD_{it}) OC_{it} + \lambda_5 FCF_{it} + \lambda_6 Q_{it} + \lambda_7 SI_{it} + d_t + \eta_i + v_{it} \quad (3)$$

$$OC_{it} = \omega_0 + \omega_1 D_{it} + \omega_2 DIV_{it} + (\omega_3 + \omega_4 IOD_{it}) IO_{it} + \omega_5 FCF_{it} + \omega_6 Q_{it} + \omega_7 SI_{it} + d_t + \eta_i + v_{it} \quad (4)$$

where D_{it} , DIV_{it} , IO_{it} and OC_{it} denote debt ratio, dividends, insider ownership and ownership concentration, respectively⁵. The interaction of the right-hand side ownership variables with their respective dummies allows us to control for non-linearities in the value-ownership relation. For example, in Model (1) the coefficient on the insider ownership variable is $\hat{\phi}_3$ under entrenchment, since IOD_{it} takes value zero, and it is $(\hat{\phi}_2 + \hat{\phi}_3)$ under convergence of interests, since IOD_{it} takes value one. In these cases, whenever the dummy variable takes value one, the statistical significance of the

⁵ The subscript i refers to the company and t refers to the time period. d_t is a time-specific effect, η_i is a firm-specific effect, and v_{it} is the random disturbance. An exact definition of all variables can be found in the Appendix.

coefficient must be checked by performing a linear restriction test. In this example, the null hypothesis tested is $H_0: \hat{\phi}_2 + \hat{\phi}_3 = 0$.

The cash flow variable, CF_{it} , has been introduced in Model (1) in order to test the pecking order theory by Myers (1984) and Myers and Majluf (1984). Following Lintner (1956), the variable of net income, NI_{it} , has been included in Model (2). FCF_{it} and Q_{it} denote free cash flow and investment opportunities, respectively, and enter all models in order to check the role of the four mechanisms in controlling the overinvestment problem and in signalling the market. We also control for firm size as measured by the logarithm of the replacement value of total assets, SI_{it} , in all models.

4. Data and methodology

For our investigation, we have used the database from the CNMV (Spanish Security Exchange Commission) as our principal source of information. Specifically, balance sheet and ownership data have been collected in the form of “Interim Financial Reports for all quoted companies” and “Significant shares for all quoted companies”, respectively. Data on the market value of the company shares have been extracted from the Daily Bulletin of the MSE (Madrid Stock Exchange).

We have constructed an unbalanced panel data of 135 non-financial quoted Spanish firms from 1990 to 1999. The information for all these firms is available for at least six consecutive years between 1990 and 1999, a necessary condition in order to test for second-order serial correlation, as Arellano and Bond (1991) point out. The structure of the panel, by number of annual observations per company, is given in Table I. Although we have 1,233 observations, the models have been estimated for only 1,098 of them because we lost one-year data in the construction of some variables (see Appendix). Table II shows the companies in the sample allocated to ten sub-sectors according to

their main product. Summary statistics (mean, standard deviation, minimum and maximum) of the variables used in the estimation are given in Table III.

Unlike cross-sectional and time-series analyses, panel data allow us to control for unobservable heterogeneity through an individual effect, η_i , and to eliminate the risk of obtaining biased results because of such heterogeneity (Moulton, 1986, 1987). We took first differences of the variables in order to eliminate the individual effect specified in the models, and we then estimated the models thus obtained.

In addition to unobservable heterogeneity, the endogeneity problem, if ignored, will lead to spurious correlations between variables. Therefore, we have estimated our models by using the generalized method of moments (GMM), which, unlike within-groups or generalized least squares estimators, accounts for endogeneity by using instruments⁶. Although the endogeneity problem can also be controlled by using a simultaneous equation estimator, such as maximum likelihood and two- or three-stage least squares estimators⁷, our choice is based on consistency concerns. In other words, the above-mentioned estimators are more efficient than GMM, but they are not consistent since they do not eliminate unobservable heterogeneity. In contrast, our GMM estimation implies less efficiency, but it is consistent because it eliminates unobservable heterogeneity. It is an important matter for our study to eliminate unobservable heterogeneity because firms are heterogeneous and, as a consequence, there are always characteristics that are difficult to measure or hard to obtain that lead to biased results. As Greene (1999) points out, efficiency must be considered a secondary criterion that helps us to choose the best estimator among the consistent ones. In this way, our GMM estimation based on Arellano and Bond (1991) is not only consistent,

⁶ Following Arellano and Bond (1991), we have used all the right-hand side variables in the models lagged twice or more as instruments.

⁷ See, for instance, Jensen, Solberg and Zorn (1992), Bathala, Moon and Rao (1994), Bathala, Bowling and Rao (1995), Agrawal and Knoeber (1996), Chen and Steiner (1999), Mak and Li (2001).

but more efficient than other consistent estimators, such as the one proposed by Anderson and Hsiao (1981).

The estimation was carried out using DPD98 for GAUSS written by Arellano and Bond (1998). To check for potential misspecification of the models we use the m_2 statistic, which tests for lack of second-order serial correlation in the first-difference residuals. As shown in Table IV, this hypothesis of second-order serial correlation is always rejected for all our models. Furthermore, Sargan's statistic of over-identifying restrictions rejects the existence of correlation between the instruments and the error term in all models. Finally, Table IV provides two Wald tests, z_1 and z_2 , of the joint significance of the reported coefficients and of the time dummies, respectively.

5. Results

Table IV presents the results of our GMM estimation. As shown in the first column of the table, where the results of Model (1) are provided, dividends positively influence corporate debt. Contrary to the substitution hypothesis proposed by Rozeff (1982) and Jensen (1986), this result shows that in addition to higher dividend payments higher leverage is required, in order to prevent the firm from overinvesting. The positive coefficient on the insider ownership variable when there is a convergence of interests ($\hat{\phi}_2 + \hat{\phi}_3 = 0.05855$, which is statistically significant, see t_1 in Table IV) also points to a complementary relationship between insider ownership and debt. As suggested by Agrawal and Knoeber (1996), higher levels of insider ownership are far from being a satisfactory solution, and simultaneous debt increments are needed in order to control for agency costs. In contrast, when managers get entrenched, insider ownership increases seem to be associated with debt decreases in Spanish firms. The negative sign of $\hat{\phi}_2$ is thus consistent with Grier and Zychowicz (1994), Berger, Ofek and Yermack

(1997) and De Jong and Veld (2000), who find that entrenched managers are likely to reduce their firms' debt because of its disciplinary role. The negative coefficient of the ownership concentration variable under the monitoring effect ($\hat{\phi}_4 + \hat{\phi}_5 = -0.05409$, which is statistically significant, see t_2) suggests that ownership concentration can substitute for debt. However, the risk-based argument in Demsetz and Lehn (1985) seems to be a more plausible explanation in this case, even more so if we take into account that this negative relationship remains once the expropriation of minority owners is feasible.

Concerning the control variables, we find that firm's debt is negatively affected by its cash flow, which confirms the pecking order theory by Myers (1984) and Myers and Majluf (1984). Also as expected, debt is positively related to free cash flow and investment opportunities. These results are consistent with leverage being both a disciplinary (Jensen, 1986) and a signalling (Ross, 1977) device. Furthermore, the positive relation between debt and Tobin's q may be due to the fact that future opportunities are actually materializing in present investment, which requires more debt financing. Finally, the positive coefficient on size suggests that larger firms bear lower probability and direct costs of default (Warner, 1977), are more diversified (Titman and Wessels, 1988) and enjoy better access to debt financing at lower interest rates (Ferri and Jones, 1979).

The results for Model (2) are provided in the second column of Table IV. The positive coefficient on debt confirms that debt and dividends are complementary control mechanisms. In other words, a new issue of debt requires a higher dividend payment in order to limit managerial discretion over the new funds and, consequently, avoid overinvestment in the firm. The effect of insider ownership on dividend payments is also positive when both convergence of interests and entrenchment exist ($\hat{\mu}_2 + \hat{\mu}_3 =$

$\hat{\mu}_2 = 0.01074$, $\hat{\mu}_3$ not significantly different from zero). Consistent with Fenn and Liang (2001), we interpret these results as evidence of a complementary relationship between these two mechanisms when the interests of managers and owners are aligned. However, the observed positive relation when managers get entrenched is explained by signalling arguments, since an entrenched manager may increase dividends under the assumption that the market will positively interpret his decision, facilitating future equity issues. Concerning ownership concentration ($\hat{\mu}_4 + \hat{\mu}_5 = \hat{\mu}_5 = 0.00634$, $\hat{\mu}_4$ not significantly different from zero), our evidence shows a complementary relation between ownership concentration and dividends under monitoring (Gadhoun, 1999). Additionally, this result also confirms those in Eckbo and Verma (1994), Gadhoun (1999, 2000) and Lozano, Miguel and Pindado (2002) revealing significant shareholders' preference for dividends because of tax concerns⁸. On the other hand, the lack of significance of the coefficient on the concentration variable under the expropriation effect suggests that majority owners show indifference to choosing between retaining resources to expropriate them and paying them out. This result is explained by the high level of ownership concentration characterizing Spanish firms.

The signs of the coefficients on the control variables were as expected. In agreement with Lintner (1956), dividends are an increasing function of net income. As suggested by Jensen (1986) and Bhattacharya (1979), dividends are an efficient control and signalling mechanism, as shown by the positive coefficients on free cash flow and investment opportunities, respectively. Finally, although the negative coefficient on size is contrary to what may be expected, the construction of the variables explains this result. In fact, an increment in size, as measured by the logarithm of the replacement

⁸ In fact, the arguments in Shleifer and Vishny (1986) are valid for the Spanish case, since large shareholders in Spanish firms are usually other companies.

value of total assets, means a decrease in the dividend variable, which is scaled by this replacement value.

The third column of Table IV provides the results for model (3). We find that firm's debt negatively affects the level of insider ownership. Following Moh'd, Perry and Rimbey (1998), Denis and Sarin (1999) and Holderness, Kroszner and Sheehan (1999, 2000), we interpret this result as evidence of the risk aversion that characterizes managers, and that makes them reduce their holdings when the probability of default is high, rather than it being evidence of the substitutability of debt and insider ownership. The positive coefficient on dividends indicates that insider ownership complements dividends in their control role, and thus confirms the existence of a complementary relationship between these two mechanisms. The effect of ownership concentration on insider ownership is positive when there is both monitoring ($\hat{\lambda}_3 + \hat{\lambda}_4 = 0.46476$, statistically significant, see t_1) and expropriation ($\hat{\lambda}_3 = 0.31985$). As in Chen and Steiner (1999), these results suggest that concentrated ownership requires high levels of insider ownership in order to assure value maximization.

The lack of significance of the coefficient on the free cash flow variable suggests that Spanish firms do not solve their overinvestment by higher levels of insider ownership. In contrast, the coefficient on investment opportunities points to insider ownership as a good signalling device, as well as a control mechanism of the managerial discretion associated with a high level of intangibles in the firm (Himmelberg, Hubbard and Palia, 1999). In contrast to the expected negative coefficient on size (Demsetz and Lehn, 1985), our results show that larger firms are characterized by higher levels of insider ownership. A potential explanation may be that in larger firms, where there is usually great difficulty in monitoring managers, a higher insider ownership is needed in order to align their interests with those of owners.

Finally, the results for Model (4) are shown in the fourth column of Table IV. The risk-based argument is supported once again by our results, which point out that significant shareholders limit the risk they bear by reducing their holdings in view of higher debt. The positive coefficient on dividends suggests that a higher payout encourages the possession of higher stakes in the firm, as shown in Allen, Bernardo and Welch (2000). The influence of insider ownership on ownership concentration is positive, too, which confirms the complementary relationship between these two mechanisms not only when interests converge ($\hat{\omega}_3 + \hat{\omega}_4 = 0.0808$, statistically significant, see t_1), but also when managerial entrenchment exists ($\hat{\omega}_3 = 0.15854$).

The results with respect to the control variables are generally inconsistent with what may be expected. Specifically, the negative coefficients on free cash flow and investment opportunities reveal that concentrated ownership does not prevent Spanish firms from overinvesting, nor is it an efficient signalling device. Both results are logical to some extent. First, outside owners do not usually know the amount of their firms' free cash flow, and they may not be able to control for its alternative uses. Second, following Zeckhauser and Pound (1990), monitoring by concentrated ownership is less effective in firms with valuable investment opportunities, given the difficulties in observing and controlling these intangible assets. Concerning firm size, the negative sign of its coefficient supports the evidence in Demsetz and Lehn (1985) and, for the Spanish case, in Crespi (1998).

Overall, the results of our analysis are quite different from findings in earlier research, pointing to a substitutability of ownership structure, debt and dividends, such as in Crutchley and Hansen (1989), Jensen, Solberg and Zorn (1992), Bathala, Bowling and Rao (1995) and Chen and Steiner (1999). In fact, we observe that a complementary use of these mechanisms – particularly insider ownership, debt and dividends – is the

more appropriate answer to the agency problems faced by Spanish firms. However, the general interest in maximizing firm value through the complementary use of control mechanisms does not seem to exist under managerial entrenchment and expropriation. According to our results, entrenched managers and controlling outside owners encourage debt decreases in order to avoid its discipline and to reduce risks, despite the negative consequences this decision may have. This evidence points out that the observed complementarity does not exist in the presence of controlling owners – insiders or outsiders – who tend to misuse their dominant position in order to make decisions that bring private benefits, but may destroy value.

6. Conclusions

Managerial entrenchment and expropriation effects have not been appropriately integrated into previous research on the relationships among agency-cost control mechanisms. This paper proposes a new empirical approach which allows us to take into account non-linearities of ownership structure with respect to firm value when analysing exactly how managerial entrenchment and expropriation effects influence the relationships among insider ownership, ownership concentration, debt, and dividends.

Our results support the existence of a complementary use of control mechanisms – especially insider ownership, debt and dividends – by Spanish firms. The evidence shown by our study is quite different from findings in previous US-based studies, which point to substitutability among the above-mentioned mechanisms. This discrepancy may be a consequence of the characteristics of the Spanish corporate governance system that significantly differentiates it from that of the US. Specifically, the poor performance, and even the lack, of alternative corporate governance mechanisms – such as legal investors' protection, capital markets, market for corporate control and boards of

directors – may explain why Spanish firms do not control for their agency problems by choosing one mechanism that substitutes for the others, but by a combination of them.

However, this complementary use of insider ownership, debt and dividends is only observed when a convergence of interests is promoted. In contrast, when there are controlling owners – insiders or outsiders – whose interests are far from value maximization, this complementarity hypothesis does not hold. We can thus conclude that managerial entrenchment and expropriation effects do influence the relationships among agency-cost control mechanisms.

Appendix

In this appendix we present the definition and calculations, when necessary, of all the variables used in our analysis. All book values are extracted from a database composed of the Interim Financial Reports for all quoted companies, published by the CNMV.

Insider ownership: IO_{it} is the percentage of common shares held by insiders.

Ownership concentration: OC_{it} is the percentage of common shares held by significant shareholders.

$$\text{Debt ratio: } D_{it} = \frac{MVLTD_{it}}{MVLTD_{it} + V_{it}}$$

where $MVLTD_{it}$ is the market value of the long term debt, calculated as in Miguel and Pindado (2001), and V_{it} is the market value of equity, extracted from the Daily Bulletin of the MSE (Madrid Stock Exchange).

$$\text{Replacement value of total assets: } K_{it} = RF_{it} + RI_{it} + (TA_{it} - BF_{it} - BI_{it})$$

where RF_{it} is the replacement value of tangible fixed assets, RI_{it} is the replacement value of inventories, TA_{it} is the book value of total assets, BF_{it} is the book value of tangible fixed assets and BI_{it} is the book value of inventories. The last three terms have been obtained

from the firm's balance sheet, while the first two have been calculated following the formulas described in Miguel and Pindado (2001).

$$\text{Dividends: } DIV_{it} = \frac{\text{dividends}_{it}}{K_{it}}$$

where dividends_{it} denotes the total amount of dividends based on the current year's net income.

$$\text{Cash flow: } CF_{it} = \frac{EBIT_{it} + DEP_{it} + PR_{it}}{K_{it}}$$

where $EBIT_{it}$ denotes earnings before interests and taxes, DEP_{it} is the book depreciation expense and PR_{it} are the different provisions reported in the profit and loss account.

$$\text{Tobin's } q: Q_{it} = \frac{V_{it} + MVLTD_{it} + BVSTD_{it}}{K_{it}}$$

where $BVSTD_{it}$ is the book value of short term debt.

$$\text{Free cash flow: } FCF_{it} = CF_{it} \left(\frac{1}{Q_{it}} \right). \text{ (Details about its interpretation can be found in}$$

Miguel and Pindado, 2001).

$$\text{Size: } SI_{it} = Ln(K_{it})$$

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Table I
Structure of the sample

Number of annual observations per Company	Number of Companies	Number of observations
10	76	760
9	22	198
8	24	192
7	5	35
6	8	48
Total	135	1233

Table II
Sample distribution by sub-sector classification

Sub-sector	No of Companies	% Companies
Energy	14	10.37
Extractive Industry	3	2.22
Transport Industry	14	10.37
Textile Industry	3	2.22
Building	22	16.30
Trade and Services	35	25.93
Food Industry	21	15.56
Metal Industry	8	5.93
Chemical Industry	9	6.67
Paper Industry	6	4.44

Table III
Summary statistic

	Mean	Standard deviation	Minimum	Maximum
IO_{it}	.17664	.23821	.0000	1.0000
OC_{it}	.64311	.24155	.00011	1.0000
D_{it}	.20056	.21741	.0000	.98392
$(DIV/K)_{it}$	.01281	.02066	.0000	.21516
$(CF/K)_{it}$	.04650	.07034	-.43725	.61352
$(NI/K)_{it}$	.02325	.10628	-1.6530	2.1319
Q_{it}	1.1468	.85053	.20672	13.774
FCF_{it}	.04332	.07844	-.68449	.84867
SI_{it}	10.582	1.6005	6.3724	15.933

Table IV
Estimation
Number of firms: 135; Number of observations: 1098

Dependent variable/ Explanatory variable	D _{it}	DIV _{it}	IO _{it}	OC _{it}
Constant	.04757* (.00478)	-.00525* (.00058)	.01511* (.00553)	.03694* (.00426)
D _{it}		.01555* (.00152)	-.04539* (.00435)	-.10540* (.00643)
DIV _{it}	1.18380* (.10575)		1.71354* (.08091)	.28129* (.02457)
IO _{it}	-.02618* (.01079)	.01074* (.00185)		.15854* (.00546)
IO _{it} IOD _{it}	.08473* (.01807)	-.00085 (.00195)		-.07774* (.00578)
OC _{it}	-.09452* (.01536)	.00331 (.00228)	.31985* (.00710)	
OC _{it} OCD _{it}	.04043* (.01052)	.00634* (.00090)	.14491* (.00382)	
CF _{it}	-.51904* (.04291)			
NI _{it}		.00295* (.00120)		
FCF _{it}	.26758* (.03524)	.02379* (.00260)	-.01255 (.00731)	-.15476* (.01162)
Q _{it}	.01502* (.00198)	.00199* (.00014)	.01683* (.00075)	-.00640* (.00073)
SI _{it}	.17839* (.00375)	-.00903* (.00053)	.03507* (.00226)	-.00931* (.00223)
t ₁	3.98		47.22	12.84
t ₂	-3.06			
z ₁	5287.822 (9)	1130.171 (9)	6905.995 (7)	2355.269 (7)
z ₂	3016.031 (8)	986.568 (8)	10704.64 (8)	8260.157 (8)
m ₁	-2.837	-2.311	-1.945	-2.705
m ₂	-1.537	-.813	-2.464	-1.051
Sargan	118.483 (153)	114.310 (153)	115.180 (119)	121.726 (119)

Notes:

i) Heteroskedasticity consistent asymptotic standard error in parentheses.

ii) * indicates significance at the 1% level.

iii) t₁ and t₂ are t-statistics for the linear restriction test under the null hypothesis of no significance.

iv) z₁ is a Wald test of the joint significance of the reported coefficients, asymptotically distributed as χ^2 under the null of no relationship; z₂ is a Wald test of the joint significance of the time dummies; degrees of freedom in parentheses.

v) m_i is a serial correlation test of order i using residuals in first differences, asymptotically distributed as N(0,1) under the null of no serial correlation.

vi) Sargan is a test of the over-identifying restrictions, asymptotically distributed as χ^2 under the null, degrees of freedom in parentheses.

