Controlling vs. Minority Shareholders: Is There Expropriation? An Empirical Analysis of the Stock Price Performance of European Companies*

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Many European corporations feature a dominant shareholder with a degree of control over management well in excess of his cash-flow rights. The principal issue raised by such a regime is not the traditional agency conflict between entrenched managers and dispersed shareholders studied by academics for decades, but rather the conflict between controlling shareholder and outside shareholders. The conflict arises because the controlling shareholder enjoys private benefits of control that are unavailable to outside shareholders. The consumption of private benefits is of concern to outsiders if it reduces the value of their equity stake in the firm, as when it entails the misappropriation of corporate resources or when it leads the firm to pursue inefficient operating and investment policies. When that occurs, the market value of shares held by outside investors is adversely affected.

We use a sample of European corporations to investigate empirically how the consumption of private benefits of control by the firm's largest shareholder impacts on corporate valuation. We posit that the market value of a company's shares ought to reflect at least two effects: the incentive held by the firm's dominant shareholder to consume private benefits at the expense of his fellow shareholders – i.e., an incentive effect – and his ability to do so – an entrenchment effect. The empirical estimation of these two effects, however, raises a number of econometric challenges. First, one needs to find a variable that measures accurately the degree of entrenchment of the firm's dominant shareholder. Second, since the incentive effect ought to be active only for firms with entrenched owners, some criteria has to be employed to identify which firms meet such requirement.

We propose a methodological approach that deals with these two econometric issues. Regarding our choice of proxy for the entrenchment effect, we work with the Shapley Value (SV) of the proportion of votes controlled by the dominant shareholder rather than the proportion of votes itself, as is typical in the literature. Such measure takes into consideration the non-linear relationship that exists between the real power wielded by the dominant shareholder and his control over voting rights, and accounts for the distribution of votes across remaining shareholders as well. For illustration, consider the following two firms. Firm A has two large shareholders – one with 40 percent and another with 35 percent of votes – and many small shareholders holding 1 percent of votes each. Firm B has only one large shareholder with 30 percent of votes and many small shareholders with 1 percent of votes each. A power measure based on the proportion of votes alone would lead us to conclude that the main shareholder of firm A is more powerful than that of firm B. That is, however, an erroneous conclusion since the large stake held by the second-largest shareholder of firm A contributes to keep in check the power of the main shareholder (the SV of the main shareholder of firm A is equal to 0.365 whereas that of firm B is 0.423). The SV is also a better measure of control because it recognizes that any voting stake greater than 50 percent confers absolute control, so assigning it a power index equal to one.

Furthermore, we devise an estimation procedure that gets around the need of using an arbitrary rule

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indicating which firms in the sample have entrenched owners and which don't. We hypothesize that the main shareholder of a firm becomes entrenched when the SV of his vote stake crosses an unobservable threshold. The threshold is jointly estimated with the other parameters of the model using every firm in the sample, including those whose main shareholder holds a low percentage of voting rights.

We illustrate the application of the approach on a sample of European firms. For this sample the estimated threshold in the SV of the voting rights of the main shareholder is equal to 0.34. At the estimated threshold the relationship between the firm value and the proportion of cash flow rights not held by the main shareholder (CFR) undergoes a structural shift, giving rise to two distinct regimes. In the high-SV regime we document a negative effect of the CFR variable on firm value, that is both statistically and economically significant; in the low-SV regime we find no evidence of such an effect. The large majority of sample firms from the UK have a main shareholder with a SV below the estimated threshold. In contrast, about half of continental firms feature a main shareholder whose power index is above the estimated threshold.

An econometric model of expropriation activities by controlling shareholders

Our main hypothesis is that the occurrence of expropriating activities by the main shareholder depends critically on whether he or she has enough power, within the set of all shareholders, to dictate his or her own objectives to the management of the firm. Where that happens – the entrenchment effect is said to be "switched on" – expropriation of minority shareholders occurs and is negatively related to the ownership of cash-flow rights of the main shareholder (i.e., the incentive effect). In contrast, where the main shareholder enjoys only a modest level of power – i.e., the entrenchment effect is said to be "switched off" – his grip on control is either too weak or non-existent and thus his incentive to expropriate is irrelevant. Our empirical model has the reduced form:

$$\begin{cases} V_i = \beta_0+\beta_1 X_{i1}+\ldots+\beta_K X_{iK} + [a_0+b_0*CFR_i] & \text{if } SV_i<SV^* \\ V_i = \beta_0+\beta_1 X_{i1}+\ldots+\beta_K X_{iK} + [a_1+b_1*CFR_i] & \text{if } SV_i>SV^* \end{cases}$$

where V_i is a metric for the market performance of the shares of firm i, $X_{i1},..,X_{iK}$ are control variables, CFRi is the proportion of cash-flow rights *not held* by the largest shareholder of firm i, SVi is the Shapley Value of the main shareholder of firm i and SV* is the (unknown) critical threshold in Shapley Value that switches "on" and "off" the entrenchment effect. Running the data on the reduced form model yields estimates of the coefficients $\beta_0, \beta_1,...,\beta_K$, a_0, b_0, a_1,b_1 plus an estimate of the critical threshold SV*. The key testable hypotheses are stated as SV*>0, $b_1<0$ and $b_0=0$.

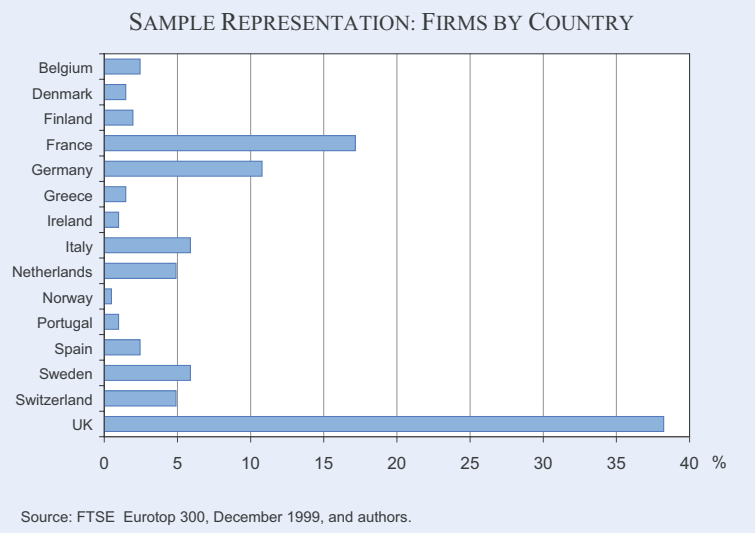
Under our approach the researcher doesn't need to make a judgment call, for each sample firm, regarding whether its largest shareholder is or is not entrenched. Extant studies restrict their samples to firms for which it is reasonable to presume that their main shareholders hold tight control over management. That is achieved by a sampling procedure that excludes firms featuring main shareholders whose fraction of voting rights is below a given threshold. Rather than relying on an arbitrary threshold, we choose instead to use all available firms and estimate the threshold jointly with the other parameters of the model. Our underlying hypothesis is that the SV of the voting rights held by the main shareholder is the driving variable determining whether he has enough power to run the company according to his own interests. Hence our threshold is defined in terms of the SV of the votes and not in terms of the proportion of votes, as in previous studies. We thus obtain a market-based estimate of the critical level in SV at which the main shareholder becomes entrenched. We also have a chance to empirically evaluate the impact of the incentive effect above and below the endogenously estimated SV threshold, and verify whether the estimated impacts are in accordance with the testable hypotheses of the empirical model.

Sample selection and data

Sample selection

Our point of departure was the population of firms comprising the pan-European market index FTSE Eurotop 300 in December 1999. We removed from the sample financial corporations (i.e., firms with SIC codes between 6000 and 6999) and corporations for which we could not get information either about the cash-flow rights, the voting rights of the largest

Figure 1



shareholder or, yet, the distribution of vote stakes across shareholders with at least 5 percent of votes. The final sample comprised 204 firms.

Fig. 1 shows the distribution of sample firms by country. More than one-third of the sample are UK firms, evidencing the prominent role played by the UK in European stock markets.

The industries represented in the sample are fairly balanced, although there is a slight dominance of firms affiliated with telecommunication and chemical&allied products. Fig. 2 shows a detailed break down of sample firms by industry.

The proxy for firm value

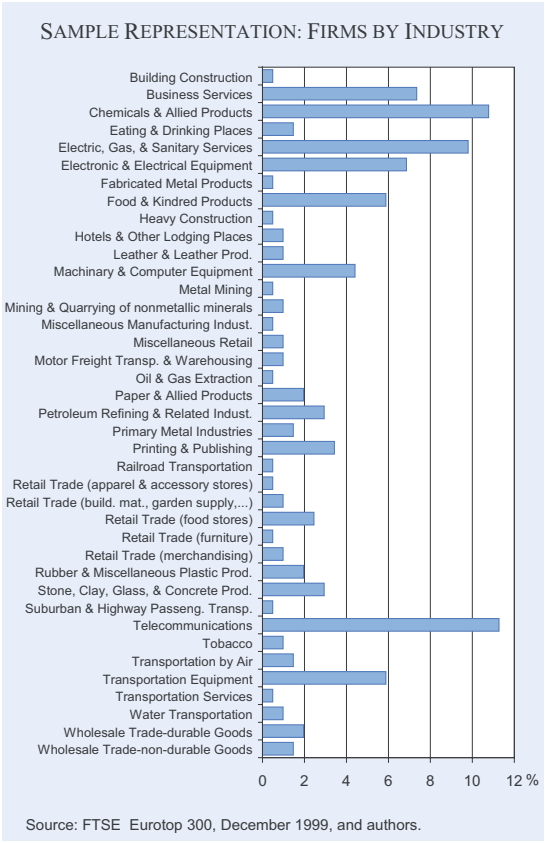
Extant research evaluating the influence of ownership and control variables on corporate valuation has used the market-to-book (MTB) ratio of assets as the primary measure of firm value. Likewise, we use the market-to-book value of assets as our proxy for firm value. The book value of assets and the book value of equity are obtained from annual reports whereas the market value of equity is computed, for each sample firm, by multiplying the number of outstanding shares by the share price prevailing at the close of its fiscal year.

Proxies for ownership and control

The power of any given player in a voting game depends on his probability of becoming pivotal in a winning coalition. Consider a corporation with majority voting and n shareholders, each holding his own voting stake. If we order shareholders randomly, each particular sequence of shareholders has a probability of occurrence equal to 1/n!. For each sequence, the pivot is the shareholder whose votes, once added to the votes already held by all the shareholders preceding him, yield the first coalition to cross the 50 percent vote threshold (simple majority game). The SV of shareholder i is the number of sequences in which shareholder i is a pivot (Pi) divided by the number of all possible sequences.

Annual reports were the primary source of information for ownership data. Most European countries require listed corporations to disclose all equity stakes exceeding 5 percent. For most firms in the sample therefore, annual reports allow us to identify all stakes greater than 5 percent. In computing vote stakes we considered the effects of equity structures featuring multiple classes of shares with differential voting rights. We also took into account the informa-

Figure 2



tion disclosed in annual reports regarding mechanisms of separation of ownership and control such as voting caps, programs assigning additional votes for shares held for more than a certain period of time and golden shares held by entities such governments and state-controlled companies. With respect to unidentified shareholders – i.e., shareholders with vote stakes below the 5 percent reporting threshold – we assumed them to be atomistic.

The median SV in the sample of 204 firms is 0.146 but the distribution is markedly bimodal: there is a large number of SVs equal to 1 and there is a large number of SVs clustered below 0.15 too. For 16 percent of sample firms the main shareholder enjoys complete control; conversely, for 38 percent of firms the main shareholder displays SVs of less than 0,1, thus wielding little – if any – power over fellow shareholders. The large proportion of firms with weak main shareholders is explained by the weight of British firms in the sample, which generally display a fragmented ownership structure.

We also assign countries to either a common law group or a civil law group, according to their legal origin. The common law group includes the UK and Ireland; all other countries fall into the civil law group. The median value for common law countries is almost one order of magnitude lower than the corresponding value for civil law countries, evidencing the wide gulf in ownership patterns separating UK firms from continental firms. A test of medians confirms the casual observation that the two medians are distinct from each other.

The remaining variable of interest in the empirical model is the proportion of cash-flow rights *not held* by the firm's largest shareholder (CFR_i). To compute this variable we identify the participation of the largest shareholder in all classes of equity securities conferring cash-flow rights. For firms with a single class of stock outstanding we assumed that the proportion of cash-flow rights held by the main shareholder is equal to the number of shares under his ownership divided by the total number of outstanding shares, unless stated otherwise in the annual report. For corporations with multiple classes of stock outstanding, we computed the cash-flow stake of the main shareholder by adding up all his cash-flow rights across all existing stock classes. The variable CFR_i is computed by subtracting the proportion of cash-flow rights held by the main shareholder from one.

The median value of the CFR variable in the sample is 0,89, indicating a high level of ownership concentration among European corporations. When we look at the effect of country's legal origin we find that the median value of the variable for civil law countries is significantly lower than the corresponding value for common law countries.

Control Variables

To isolate the impact of ownership and control on corporate performance one ought to control for other potential effects. Our controls are: firm size (i.e., log of the book value of assets), leverage, industry dummies to account for possible industry-specific differences in corporate valuations and a dummy associated with a country's legal origin (i.e., common law versus civil law) to control for the legal protection granted to minority shareholders.

The impact on firm value resulting from the separation of ownership and control by large shareholders

In addition to the coefficients associated with the controls, the empirical model estimates five parameters: the two linear coefficients associated with the impact of the CFR variable on MTB ratios in the low-SV regime; the two linear coefficients associated with the impact of the CFR variable on MTB ratios in the high-SV regime; and finally, the SV threshold determining the regime switch.

The results of the estimation are reported in the Table. The estimated SV threshold is equal to 0.34, which splits the sample into 135 firms with SVs below and 69 firms with SVs above the threshold.[1] Additionally, the estimated CFR coefficient in the high-SV regime is negative and statistically significant, as predicted. The coefficient is also economically significant: a one standard deviation increase in CFR produces a reduction of 1.34 in the MTB ratio, a drop of about 45.6 percent relative to the sample's average MTB ratio. In contrast, the CFR coefficient in the low-SV regime is statistically insignificant.

[1] There are many distributions of voting rights that yield a Shapley Value of 0.34. For example, the main shareholder will display a SV of 0.34 if he controls 25 percent of votes and every other shareholder is atomistic.
A SV of 0.34 will also be obtained if the main shareholder controls 26 percent of votes, a second shareholder controls 10 percent and every other shareholder is atomistic. Yet another case of SV=0.34 occurs when the main shareholder controls 40 percent, a second shareholder controls 36 percent and every other shareholder is atomistic.

Threshold Model with Shapley Value (SV)

	α	β	a_0	$a_1 - a_0$	b_0	b_1
Coef.	–0.5885	–1.6156	20.4919	3.5115	–0.8815	–6.8826
t-Stat.	(–1.11)	(–6.98)***	(4.80)***	(0.89)	(–0.22)	(–2.96)***
Log LF	–476.5623					
R^2	0.53					
Adj. R^2	0.40					

N = 204; (*) Significance level = 0.1; (**) Significance level = 0.05; (***) Significance level = 0.01

$MTB_i = \beta_0(\text{industry dummies}) + \alpha\, D_{(\text{Country legal Origin})i} + \beta \ln(\text{Book Value of Assets}_i) + a_0 + (a_1 - a_0)D_{SVi} + [b_0(1 - D_{SVi}) + b_1 D_{SVi}] \times CFR_i + w_i$

where $D_{SVi} = 1$ if $SV_i > SV^*$ and zero otherwise, and $D_{(\text{Country legal Origin})i} = 1$ if legal origin is common law and zero otherwise.

The highest Log LF is obtained when $SV^* = 0.34$.

The estimated threshold is an interesting piece of evidence in itself because it is an estimate of what market participants believe is the critical level of power that gives the main shareholder entrenched control over the firm's management. With the threshold at 0.34, there are 60 (48 percent) firms from civil law countries above the threshold but only 9 (11 percent) from common law countries. The entrenchment of dominant shareholders appears thus to be much more pervasive in continental Europe than in the UK.

The threshold model assumes an abrupt transition between the two regimes governing the relationship between the CFR variable and MTB ratios. We further considered an extension of the empirical model that allows for the speed of transition in entrenchment regime – i.e., the transition from the "off" position to the "on" position and vice-versa – to be estimated from the data. The results for the extended model show that the transition of regime is abrupt and centered around point SV=0.35, which is very close to the breakpoint estimated for the threshold model (SV=0.34).

Conclusions

We have put forward a novel methodological approach to estimate the effect of separation of ownership and control by dominant shareholders on firm value. The approach uses the SV of the voting rights of the dominant shareholder rather than the proportion of votes under his control as a measure of his power of control within the firm. We argue that the main shareholder becomes entrenched when the SV of his voting rights crosses an unknown threshold that is estimated from the data jointly with the other model parameters.

We apply this method to a sample of European firms and estimate a threshold equal to 0.34. Most firms from the UK have a main shareholder with a SV below the estimated threshold; in contrast, about half of the continental firms in the sample feature main shareholders whose power index is above the estimated threshold. We document a negative relationship between the incentive to expropriate and corporate valuation above the threshold, that is both statistically and economically significant; below the threshold, we find no such relationship.

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