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Industry-specificities and Size of Corporations:
Determinants of Ownership Structures

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Abstract

This paper analyses ownership concentration in six European countries and empirically studies the rent-seeking theory. This theory states that ownership concentration not only depends on the level of investor protection but also on company-specific and industry-specific parameters. This study analyses the sector specific ownership patterns of listed corporations. The results only partially confirm the influence of industry-specific characteristics. Different industries are characterised by different shareholder concentration patterns. Hence and in light of the rent-seeking theory it is plausible that company's specific characteristics, like the identity of the largest shareholder, the risk of the firm, etc. influence rent-seeking behavior.

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I. Introduction

This paper empirically assesses the rent-protection theory of corporate ownership structures. This theory argues that there is a connection between ownership structures and private benefits. The size of these benefits drives ownership patterns. When private benefits are large, shareholders will try to capture these benefits. A controlling shareholder may have more opportunities to grab these benefits whereas minority shareholders may lose their grip to the incumbent management. Hence, the founders that take a corporation public will maintain the control over the corporation if large benefits could be captured. In companies with dispersed ownership, shareholders will seek to wrest control and capture the benefits. However, one question still puzzles researchers: when are large private benefits grabbed? La Porta, Lopez-de-Silanes, Shleifer and Vishny (1997) (LLSV) argue that the strength of legal rules protecting investors limits the size of the private benefits. Bebchuk (1999) adds to this theory that not only the corporate law system but also company-specific and industry-specific parameters predict the size of private benefits.

In this study it will be hypothesized that large companies have a more dispersed ownership structure. Further, if the theory of industry-specific private benefits stands up to scrutiny, a one way analysis of variance indicates significant differences between the means of the voting block of the largest shareholder for industry grouped companies. The results only partially confirm the influence of industry-specific characteristics. Thirdly, as these industry-specific classes are generated for six countries, ownership patterns of

industries in different countries will be compared. In different countries, different shareholder concentration patterns characterize different industries. A multiple regression analysis confirms these results. From this study and Bebchuk's theory it can be hypothesized that the company's specific characteristics are important drivers of the ownership structure. Therefore legal rules that limit private benefits of control should be differentiated along company specific ownership structures.

The remainder of this paper is structured as follows. Section II presents some descriptive statistics on ownership structures in the Western world and discusses the theories that have been developed to explain ownership structures. Section III describes the data construction and methodology. Section IV presents the results. Section V concludes.

II. Disclosure of ownership and theories of ownership structures

Corporate ownership structures have received considerable attention in recent history. The literature goes back to Berle and Means (1932). In their "Modern Corporation and Private Property" they documented the division of ownership from control in 200 large US corporations. The ultimate control appeared to be in hands of management in 44% of the corporations, only 11% were majority controlled.

Outside the U.S. little was known about ownership and control of (listed) corporations until the '90. New disclosure provisions allow the analysis of voting power of

shareholders of listed corporations in European member States and in other parts of the world.

The European Corporate Governance Network (ECGN) (Barca and Becht, 2001) studied the disclosed data in several European countries. They found that within Europe, the level of concentration of voting power is not uniform. In the U.K. the median voting block of the largest shareholder is less than 10% while in Germany, Austria and Italy it exceeds 50%.

Some, mostly American, scholars have developed theoretical models to explain the major differences in ownership structures. In these studies, the ownership structure is treated as an endogenous variable. Table 1 classifies the different studies along the explanatory variables of ownership concentration and sketches the results of the analysis.

A number of studies explain the different ownership patterns between different countries. From a legal perspective, LLSV (1997) and La Porta, Lopez-de-Silanes and Shleifer (1999) argue that the strength of investor protection rights and enforcement of these rights determine ownership concentration patterns. Roe's political analysis (2003) suggests that in social democracies the government is forcing companies to stabilize employment and social welfare in general, rather than to allow companies to maximize profits for one particular class, id est the shareholders of the corporation. Further mechanisms to align the interests of managers and shareholders, like option schemes and disclosure and accountability, are harder to implement in European social democracies. This policy creates higher agency costs. To minimize these costs only large shareholders have sufficient power to supervise managers effectively and efficiently. Finally, Franks,

Mayer and Rossi (2003) assessed that the financing of acquisitions urged UK companies to open their ownership structure. The latter study sheds some doubt on the one year LLSV analysis.

Within countries different ownership concentration patterns can be found due to industry-related or company-specific characteristics. Demsetz and Lehn (1985) demonstrated that in the mid eighties ownership patterns depended on company size, the instability of the firm's operating environment, regulation of firms and some sector activities like sports and media. Further, the ownership structure is chosen so as to maximize performance (Demsetz and Villalonga, 2001). Bebchuk (1999) hypothesized that controlled corporations should be expected to be more common in countries in which private benefits of control are large and vice versa. In those countries a founder is unlikely to relinquish control after an IPO or a capital increase. Notwithstanding the fact that countries differ greatly in their incidences of controlled corporations and corporations with a dispersed ownership structure, in most countries some companies of each type can be found. Therefore, Bebchuk argues, even in countries with a high level of investor protection rights some shareholders will gain private benefits out of control because there are company-specific and industry-specific parameters.

These parameters could be driven by opportunities to engage in self-dealing transactions, to take corporate opportunities or to profit from non-pecuniary benefits. At the company specific level Lamba and Stapledon (2001) found a relationship between the level of related party transactions, a proxy for private benefits of control and the presence of a blockholder.

However, so far none of these studies have analysed the connection between industry specificities and ownership concentration patterns, another part of Bebchuk's rent protection theory of corporate ownership. This paper addresses this question.

[insert table 1 here]

(A) *III Data construction and methodology*

1. Data sources

This paper is based on a new database of ownership structures of listed companies in six European countries. In Belgium, Italy and Spain the stock exchange or supervisory authority officially discloses all data. In France, the supervisory authority publishes the acquisitions or disposals of the proportion of voting and capital rights of a major shareholder when it reaches, exceeds or falls below one of the reporting thresholds but an overview of all the stakes of all major shareholders in a particular company lacks.

Therefore, only if the annual report of the company deliberately discloses information on all major shareholder stakes, a detailed analysis of the ownership of the company is possible. In Germany, the Bundesanstalt für Finanzdienstleistungsaufsicht updates every 15 days the blockholders of corporations traded in the official market segments.

Hoppenstadt Aktienführer was used to refine the disclosed data and enlarge the German database with companies listed in other market segments. For the U.K., Hemscott

publishes all owners with at least 3 percent of the voting rights, as well as directors' ownership for all U.K. listed companies.

Only companies that have their seat and are listed in the same country have been selected. The data are collected at the end of 1999. Hemscott permanently updates their ownership database. For British companies the data are collected at the end of April 2001. Annex 1 reports the number of corporations and the different size classes.

Three parameters classify the corporations: country, size and industry specificity. For the latter, the FTSE global classification system was used. It determines economic groups, sectors and subsectors. In this study, all corporations were classified at a sector level.¹ A sector is added in the analysis only if it contains at least five companies of which ownership data are available. Due to this condition, the number of common sectors in all countries is limited to six. Annex 2 shows the number of companies in each size class.

2. Methodology

Section III starts with a descriptive analysis. First the distribution of the voting blocks of the largest shareholder is analysed. Second, the voting block of the largest shareholder and the Herfindahl index, defined as the sum of all identified squared stakes (in absolute values) are described. Within each country the average and median voting block of the

¹ Except utilities at an industry level and for the U.K., investment banks at a subsector level. In all countries, beverages and food producers, software and computer services and chemicals and pharmaceuticals (except for the U.K.) were grouped.

four size classes of corporations are calculated. At an industry specific level, the average and the median is compared.

Second the empirical part analyses whether there are significant differences between the mean of the different groups of companies within and between countries. A one way analysis of variance (anova) is used to test if any differences exist among the means for the groups of corporations of different size and different industry-specificity within a country. As a multiple range test, the Tukey method is used to detect the significant differences between the subsets.

As far as the assumptions for an anova analysis concerns, the independence is guaranteed as any particular stake of a shareholder, size or industry-specificity of the corporation is independent of the “scores” of all other subjects. However, the homogeneity of variances and normality assumptions might be violated. As anova is not sensitive to violations of the assumption of normality (Shavelson, 1988), we focus on the assumption of homogeneity. If the Levene test indicates the violation of the assumption of homogeneity the logarithm of the absolute stake was used. Differences between countries are tested for size of the corporation and industry-specificity in a factorial analysis of variances. Due to violation of the assumptions, the results have been omitted.

To control the outcomes of anova and to study the impact of the sector activity on the ownership structure internationally, a multiple regression analysis is used. Regressions are estimated using generalized least squares (GLS).² The variable 1/logarithm of market capitalization is the independent variable to indicate the size of the corporation. For each

² The GLS estimators correct heteroscedasticity of the ordinary least squared model (OLS). The OLS residuals have been squared and logged and used as the dependent variable. The obtained fitted values are exponentiated and the initial model estimated by using the feasible GLS estimator (Wooldridge, 2000).

country at least six sector classes are introduced as dummy variables: banks, beverages, food producers & processors, chemicals and pharmaceuticals, construction and building materials, household goods & textiles and real estate. Next, the model is expanded to include national sector industries with more than 20 companies. The logarithm of the absolute value of the voting block of the largest shareholder is the dependent variable. It is used as a proxy for the ownership structure of the corporation. Using logarithm of the dependent variable allows percentage interpretation of the slope parameters. To avoid the dummy variable trap, the model is reiterated with exclusion of one dummy variable. Before starting the regression analysis it is assessed if the country sample in the regression analysis significantly differs from the total sample in the descriptive analysis.

(B) III. Results

1. Descriptive analysis

a) Distribution of voting blocks

In general, a widely distributed ownership structure is rather extraordinary in most continental European countries. From figure 1 it can be deducted that in Italy and in France more than 50% of the corporations in the database have a majority shareholder. The only continental European country included in this study where more than 10% of the corporations have shareholders that individually hold less than 10% of the votes is

Spain. In the U.K. almost one in four has no major shareholder. Even if a British corporation has a larger shareholder, in more than 50% of all corporations the shareholder has a voting block of only 10% to 25%. In Belgium, France, Germany and Italy, more than 70% of all corporations have one influential shareholder with a stake of more than 25%.

Figure 1 illustrates the importance shareholders attach to acquire specific voting blocks in different countries. In Germany a significant number of the largest shareholders pass three specific thresholds: 25%, 50% and 75% of the voting rights. These stakes allow shareholders to (dis)approve proposals to change the articles of association resp. to approve general business decisions.

Notwithstanding the comparable structure of Belgian company law regarding shareholder approval of proposals, the distribution of the size of the voting blocks of the largest shareholder differs from the German pattern. Most shareholders control the company with a voting block of 50% to 60% or have acquired a stake slightly above 30%. It is said that the latter situation emerged in the second half of the eighties. In this period discussions started to introduce a mandatory take over bid regulation. It was finalised in 1989 and the law forces shareholders who acquire control over a company at a price higher than the market price to launch a take over bid. Whether control is acquired the market supervisory authority decides, though it is common knowledge that the latter fixes control at the level of approximately 30%. Hence, immediately before the introduction of these rules, a number of shareholders acquired small additional stakes to control the

company and evade the application of the mandatory bid rules in the aftermath of 1989 (Van der Elst, 2001).

In France the most important threshold is $2/3$ of the voting rights, allowing to change the articles of association. As the French system relies heavily on the use of double voting rights, cash flow rights are significantly lower, enhancing liquidity.

Italian shareholders seem to prefer a small majority stake, the power to control the business of the company.

In the United Kingdom, it seems that the takeover rules, already introduced in the late sixties have forced shareholders who controlled more than 30% of the votes to delist the corporations. Less than 15% of the corporations have a shareholder with a voting block of more than 30%.

Finally, and contrary to the other countries, there is no clear pattern for the distribution of the voting blocks of the largest shareholder in Spain. The majority of the corporations have a influential though it seems not a controlling shareholder.

[insert figure 1 here]

b) Concentration of voting blocks

There is a significant difference between the voting blocks of the largest shareholder in continental European countries and the UK. In the latter the largest shareholder has on

average a voting block of 18.3%, while in the former countries the averages differ between 37.9% in Spain to 52% in France. In France and in Italy more than half of the corporations have one majority shareholder.

In Germany, Italy and Spain some corporations only issued non-voting stock. In these cases, some shareholders hold all the voting rights. The maximum stake in these countries is therefore 100% (table 2).

Further, as Bebchuk (1999) already indicated, in each country some corporations have a widely distributed ownership structure, without shareholders holding more than 5% of the votes. From the minimum in table 2 it is clear that in all countries for some corporations the stake of the largest shareholder does not pass the first threshold of 5% (or even less in Italy and the UK). However, there are differences as to the relative number of companies with a widely dispersed ownership structure. In Spain only 1,9% of the companies have no shareholders holding more than 5% of the voting rights. In France (2,5%), Belgium (2,8%) and Germany (2,9%) the number of this class of companies is limited. In Italy almost 5% (4,7%) of all companies have no shareholder holding more than 5% of the votes, whereas 6,4% of all UK companies belong to this class (see figure 1).

The median values of the Herfindahl index show the common patterns of ownership concentration in Belgium, France, Germany and Italy. Spanish corporations and UK corporations have identified shareholder with significantly smaller voting stakes.

Demsetz and Lehn (1985) proved that the size of the corporation influences the stake of the largest shareholder. Table 2 gives some detailed information on the average and median stake of the largest shareholder in four size classes. In all countries, the largest shareholder has on average the smallest voting block in large corporations. Nevertheless the average voting block of the largest shareholder substantially differs between different countries. Whereas large Italian corporations have a shareholder holding on average 40% of the votes, a U.K. corporation of the same size only has a shareholder owning on average 7.6% of the ordinary voting shares.

Large shareholders of large corporations in Spain, France and Germany seem to have a comparable voting block. However, when comparing means one can see large differences in the variance of the voting blocks between these countries. Half of the largest blocks in the largest Spanish corporations do not exceed 11% whereas at least 50% of the largest shareholders of large German corporations hold a blocking minority stake of 25%.

In all other size classes, the largest shareholder has a significantly larger voting block. The differences between continental European countries and the U.K. are large for each size type. Notwithstanding the fact that the average voting block of the largest shareholder of micro caps in the U.K. is three times as large as these of the largest U.K. caps, it remains significantly smaller than the largest block in continental European corporations. In French small and microcaps, medium German corporations and Italian microcaps the largest shareholder has, on average, a majority stake. More than 50% of all French and Italian corporations, except the large caps, have one majority shareholder. The same conclusion can be drawn for medium and small German corporations.

Another difference between the largest shareholder of a U.K. company and the largest shareholder of continental European companies concerns the ratio between the averages and median values. In the U.K., in each size class, a small number of companies have one shareholder with a significantly higher voting block. These blocks significantly influence the average. Therefore the median voting block is lower than the average in the U.K.. In all other countries at least one size class have more than 50% of the companies with a shareholder owning a block that is higher than the average.

[insert table 2 here]

e) industry specificity

In each country the differences between some of the industry classes are significant and except for Italy, the lowest average is less than half of the highest average (table 3). Furthermore, in all countries except in the U.K., in some industry classes the average shareholder controls the company, while in others, the largest shareholder has on average only an influential minority voting block. Third, no homogeneity in the averages of the voting blocks in one industry can be found. As an example, one can refer to the class of real estate corporations. In Belgium, the largest shareholder of these companies does not have, on average, a blocking minority of 25%. In Italy, real estates companies are, on average controlled by one shareholder holding more than 60% of the votes.

Given the large differences of the voting blocks of the largest shareholder in the U.K. compared to those in continental European countries, it is not surprising that in each industry class the average voting block of the largest shareholder in a U.K. company is smaller than in the same industry class in other countries.

Some of the lowest and highest figures can be found in the financial sector. Banks have only small shareholders in the U.K. and, relatively speaking, in Italy, and the average block of the largest shareholder of other financial companies in Germany is more than 10% below the other German industry averages. High concentration patterns can be found in the insurance industry in Spain where it is the only industry class with shareholders having on average a majority stake.³ Further, also the second highest concentration level for Germany is found in the industry class “insurance” and for France in the banking sector.

Another remarkable “within industry” difference is located in the sector electronic and electrical equipment. This is the only industry class where the average stake of the largest shareholder is below the threshold of 50% in all countries for which a sufficient number of data is available.

A significant number of differences between the mean and the median value can be found in Spain. In five industry classes the average is significantly influenced by a number of companies having one shareholder with a larger stake: chemical & pharma, electronic & electrical equipment, household goods and textiles, real estate and utilities.

³ However, it must be said that only a limited number of Spanish corporations active in this industry are stock exchange listed.

Finally from all these industry-specific information on ownership concentration it is already clear that industry-specificity is only one of more variables to explain the differences in ownership structure. In fact, the average and median concentration ratios show other patterns of ownership concentration “in” and “between” countries.

[Insert table 3 here]

2. Empirical analysis

The first part of this section clearly indicated that there are some significant differences in ownership concentration. Not only in different size classes, the largest shareholder owns different voting blocks, but also in the different industry classes. Furthermore, it is already clear that even countries having the same legal “roots”, like Spain, Italy and Belgium, do not necessarily share the same ownership structure. In light of the LLSV research it is important to note that the variable “country” does not only cover the legal system but all country related characteristics. A one way analysis of variance indicates whether significant differences of ownership concentration exist for different size and industry classes within different countries.

a) size specificity within different European countries

A one-way anova shows that ownership structures in countries differ as far as size is used as an explanatory factor (annex 3). The Tukey method indicates the significant differences between the different size subsets. Annex 3 shows that size is not always a discriminatory variable to explain differences in ownership concentration.

For France and Germany the model confirms that larger companies have a more dispersed ownership structure. These differences stem from the smaller stake of the largest shareholder in large caps. The average stake is between 19% and 34% - in France - and 15% and 23% - in Germany - smaller in large corporations than in the other classes. Large Spanish corporations have a significantly wider distribution of ownership than small corporations. On average the stake is 21% larger in small corporations than in large corporations. Somewhat surprising, but it could already be deducted from table 2, the average voting block of Spanish micro caps is significantly smaller than the average voting block of small corporations.

Due to statistical reasons, the figures for the U.K. cannot be compared with the other countries. The Levene test indicates that the hypothesis of the homogeneity of the variances, an important assumption in anova, must be rejected. To solve this problem, the logarithm of the stakes of the largest shareholder was taken. All the results are significant and the hypothesis that larger companies have a more widely distributed ownership structure is confirmed.

For Belgium and Italy no significant ownership concentration differences exist between the different classes of groups of companies.

From these data one can conclude that the thesis that larger corporations always have a more widely distributed ownership structure must be shaded. For some countries no significant differences can be found, while for some size classes the inverse scenario is true.

b) Sector specificity within different countries

Next the impact of industry activity on ownership concentration is analysed.

The German model is significant at the 1%-level (annex 4). However, the results of the differences between the subsets indicate only a limited number of significant industry concentration differences. “Other financial services” (nr. 11) is the only class for which the industry average is significantly smaller than the average of several other industry classes. Banks (1), engineering & machinery (5), household goods & textiles (9) and insurance companies (10) have a significantly larger shareholder. The difference of “other financials” with the industry “engineering & machinery” is 26%, with “banks” 30.1%, with “household goods and textiles” 33.9% and with the “insurance companies” 35%.

Second the computer industry (4) has a significantly wider distribution of ownership stakes than the sector household goods & textiles (9). This difference is more than 23%.

All the other differences are not significant at the 5%-level.

In the United Kingdom more differences of the average voting block between different industries are significant. However as for the size of the corporation, the Levene test indicated that the homogeneity of variances must be rejected. Therefore the logarithm of the stakes was used as the dependent variable. Banks (nr. 1), food producers & beverages (7) and household goods and textiles (9) are all industry classes for which the largest shareholder has a significant different voting block compared to the voting block of the largest shareholder of more than two other industry-classes. The average stake of the largest shareholder in banks (1) is significantly smaller than the stakes of shareholders in corporations active in the production of food & beverages (7), household goods and textiles (9), or real estate corporations (15). The concentration of voting blocks within the industries food & beverages (7) or household goods and textiles (9) is significantly higher than the concentration in the industry class investment companies (12), pharmaceuticals (14) and utilities (17). The two latter industries have a significantly wider distribution of ownership than real estate corporations (15). Finally, real estate corporations (15) are more concentrated, as far as the ownership structure is concerned than companies in the utilities sector (17).

The Belgian model for industry-specificity is significant at the 2% level. However there is only one significant ownership concentration difference between two industries.

Holding companies (nr.12) have significant larger shareholders than real estate corporations (15). The difference between these two classes is more than 28%. In France

holding companies have a more concentrated ownership structure than corporations in the steel industry. The difference exceeds even 50%.⁴

No results are given for Italy and Spain as the test for the homogeneity of variances is not guaranteed even after the transformation of the voting block. Furthermore, the general results indicate no significant differences.

The assumption of homogeneity in the factorial analysis of variance is also violated. To solve this statistical problem, regression analysis and dummy variables are used.

c) Regression analysis

Regression analysis is used to further determine the influence of size, country of incorporation and sector activity on ownership concentration. The dependent variable is the logarithm of the voting block of the largest shareholder. The independent variable for size is 1/logarithm of the capitalisation of the corporation at the end of 1999. Interactive terms consisting of the product of the country of incorporation and the sector activity are introduced to measure the country of incorporation and industry specific effects on ownership concentration.

The model to explain the ownership concentration is:

$$\text{Log (voting block)}_i = \alpha + \beta_1 \text{ size}_i + \sum_{k \in K, j \in J} \beta_{kj} \text{ sector}_k * \text{country}_j + \varepsilon \quad (1)$$

⁴ The models are on file with the author.

With $k \in K = 1$ to 16 (six sectors for all countries and 10 different sectors for one or more but not all countries) and $j \in J = 1$ to 6 (six countries) and i the companies included in the analysis.

To correct for heteroscedasticity the model has been estimated with generalized least squares (GLS). To escape the “dummy variable trap” the results have been determined excluding one dummy variable in the regression. First the results for the six sectors for which data of all countries are available are presented and second the results for all industry classes are shown. As the “within-country” differences have been analysed in the anova, the discussion of the result is focusing on the sector differences between countries. Significant differences have been indicated with different characters.

Annex 6 illustrates the pearson correlation coefficients of the different variables in the analysis. The results confirm the anova-analysis. First, there are only a limited number of correlations significant. The British real estate industry and the household good and textiles and the German software business industry are significantly negatively correlated with some other sectors. Second, size matters.

The results in table 4 confirm the study of Demsetz and Lehn (1985). Larger corporations have a more dispersed structure. This contradicts some of the results of the analysis of variance. This might be due to the randomly chosen size classes. The inverse relationship is not perfectly linear and thus classification might influence the results of the anova.

Second the industry-specific results of the anova analysis are confirmed. Different concentration patterns can be found in different countries, though, generally, *within countries*, only a limited number of sectors have a significantly different ownership structure. If the Belgium chemical industry is taken as the base case, there are no significant differences in ownership structures between the industries in Belgium, Germany and France, most Italian and Spanish industries except to the extent that firm size is correlated with industry. The UK industry, Italian banking industry and the Spanish household good producers are less concentrated than the Belgian chemical industry, *ceteris paribus*. The UK food and real estate industry are more concentrated than the other British industries when the UK chemical industry is taken as the base case.

Third, *within industries*, UK corporations have a significantly more dispersed ownership structure than continental European corporations. An exception is found in the British, Spanish and French chemical industry. Other moderate differences exist between the British and Spanish household good producing industry, the British and Spanish food industry and the British and Belgian real estate sector.

[insert table 4 here]

V. Policy conclusions and further research

Recently a number of theories on the development of capital markets and ownership structures emerged. Where LLSV (1997) focus on the protection of minority shareholders

as a driver for the development of capital markets and dispersed ownership, Roe (2003) points at the major impact of social democracies. Bebchuk (1999) believes the ownership structure is not only determined by the legal origin of a country but also by industry-specific and company-specific parameters. These parameters determine the private benefits the shareholder(s) extract from a corporation. This study refines these two parameters. Ownership concentration differs substantially between countries. Within countries some industries have substantially larger shareholders than others. However, only for a limited number of industries these differences are statistically significant. Furthermore the differences within a country are different between countries. Industry-specificities seem only to be important in combination with the country of incorporation. The analysis of the variances and the regression analysis confirm this result. This indicates that characteristics related to a country, like the legal system as LLSV have found, but also the presence of institutional investors, the social security system etc. are of more importance for the dispersion of ownership than industry-specificity.

Further, as differences are found between different sectors in different countries, it seems plausible that company specific characteristics determine ownership concentration and thus, in the rent-seeking theory, the opportunities for majority shareholders to extract private benefits rather than industry characteristics. This finding supports the study of Lamba and Stapledon (2001), differentiating the controlling blockholders by type. Higher levels of private benefits are directly related to the likelihood of the controlling shareholder to be either a corporate entity or a family entity. In a broader context it provides an argument to focus on the rules to disclose or forbid related party transactions

and support independent directors to scrutinize the relationship of corporations with (large) shareholders.

Thirdly, as Italy, Spain and Belgium all belong to the group of civil law countries with underdeveloped investor protection rights (LLSV, 1997), while this study shows that the ownership concentration patterns differ from one another, these findings support the recent interest group theory of financial development (Rajan and Zingales 2001) rather than the country's legal origin theory. In Belgium, a significant number of corporations in different industries have families as controlling shareholders. Direct voting blocks are held by intermediary holding companies (pyramids), controlled by these mostly noble families. The holding companies were founded in the 1930's due to new specific financial legislation. These laws prohibited banks to participate in industrial companies. Some studies indicate that these controlling blocks constrain the development of small and medium sized Belgian companies (Van Hulle, 1998). This evidence helps to explain the severe regression of the ratio of deposits to GDP, the fraction of gross fixed capital formation raised via equity and stock market capitalization over GDP after the 1930's (see table 1, 2 and 3 in Rajan and Zingales, 2001).

The Italian scenery of shareholders of listed companies is comparable to the Belgian situation. A limited number of families control a large number of listed corporations. However, the openness of the country was smaller and the direct government intervention larger. The Italian government has speed up the development of the financial system, already encouraged by the Draghi reform. Until recently, the political constellation of Spain significantly differed from that in Belgium and Italy. It probably had an impact on

the different financial development and ownership structures of companies. This can be the subject of further research.

Finally one can argue that measures to enhance a dispersed ownership structure should focus on the company specific parameters. These measures must be embedded in an environment with structural impediments for the domestic incumbents to retard financial developments. Some of these company specific parameters could be: risk of the firm (Goergen and Renneboog, 2003), identity of the largest shareholder, the maturity of the firm, etc.

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Table 1: Determinants of ownership structures

Scope	Independent variables	assessment	Ownership measure	Influence on ownership concentration	authors	date	Critical note
Differences of ownership structures between countries	Legal determinants:						
	Strength of investor protection rights	Regression analysis	C3	-	La Porta e.a.	1997	Analysis conflicts with LT evolution
	Enforcement mechanisms	Regression analysis	C3	-	La Porta e.a.	1997	
	Political determinants:						
	Social democracy	Regression analysis	Dummy largest shareholder exceeds 20%	+	Roe	2003	
	Economic determinants:						
Financing takeovers	Regression analysis	Rate of dispersion based on 25% threshold	-	Franks, Mayer, Rossi	2003	Only UK evidence	
Differences of ownership structures within countries	Industry related:						
	Sector activities: sports and media	Regression analysis	C5, C20 and Herfindahl	+	Demsetz & Lehn;	1985	
	Riskiness of operating environment	Regression analysis	C5, C20 and Herfindahl	+	Demsetz & Lehn;	1985	
	Size of private benefits	Theoretical	-	+	Bebchuk	1999	No empirical evidence
	Level of regulation	Regression analysis	C5, C20 and Herfindahl	-	Demsetz & Lehn;	1985	
	Company related:						
	Size of corporation	Regression analysis	C5, C20 and Herfindahl	-	Demsetz & Lehn;	1985	
	Corporate performance	Regression analysis	C5 and shares owned by management	Non-linear	Demsetz & Villalonga	2001	
Size of private benefits	Theoretical Regression analysis	- Dummy largest shareholder exceeds 10% or 20%	+ +	Bebchuk Lamba & Stapledon	1999 2001		

Table 2: Concentration of the voting block of the largest shareholder (1999; UK 2001)

	Belgium	France	Germany	Italy	Spain	U.K.
average	41.71% (40.9%)	51.98% (54.9%)	46.13% (47.0%)	48.14% (51.5%)	37.91% (30.0%)	18.26% (14.1%)
st. dev.	21.72%	25.55%	26.60%	22.20%	26.95%	13.51%
maximum	88.99%	99.66%	100%	100%	100%	78.12%
minimum	<5%	<5%	<5%	<2%	<5%	<3%
Herfindahl	2430 (2557)	3518 (2856)	3062 (2856)	2973 (2794)	2409 (1366)	736 (418)
Comp. type						
Large	35.66% (34.8%)	30.13% (24.0%)	30.18% (25.0%)	40.30% (37.8%)	27.12% (10.8%)	7.65% (5.3%)
Medium	36.23% (33.3%)	53.09% (50.4%)	49.27% (56.7%)	46.38% (53.5%)	39.00% (36.0%)	12.85% (9.9%)
Small	44.21% (43.0%)	47.78% (57.9%)	59.86% (50.0%)	48.40% (52.3%)	47.56% (49.3%)	16.98% (13.0%)
Micro	42.76% (44.2%)	45.86% (67.8%)	64.55% (45.1%)	51.07% (51.1%)	35.06% (27.0%)	21.50% (16.7%)

Median values between brackets

Table 3: Average voting block of the largest shareholder in different industry classes

Sector classification	Belgium	France	Germany	Italy	Spain	U.K.
Automobiles & parts		32.2%		45.3%		
Banks	35.7%	52.2%* ⁺	55.7%	36.1%	49.1%	6.7%
Beverages, Food produc. & process.	41.8%	35.5%	50.5%	53.4%	36.7%	26.8%
Chemicals & pharmaceuticals	42.6%	55.1%* ⁻	43.6%	41.3%	33.9%* ⁻	13.6%
Construction & building materials	37.5%	41.4%* ⁻	52.6%	50.7%	44.8%	17.1%
Diversified industrials		48.5%	36.4%* ⁻			
General retailers		27.8%	54.1%			
Electronic & electrical equipment		40.5%	39.4%	45.3%	29.0%* ⁻	19.5%
Engineering & machinery	49.9%	25.2%	51.9%	40.5%		16.2%
Health			45.1%			17.0%
Holding companies	52.9%	20.1%	38.4%	38.2%	23.9%	
Household goods & textiles	48.2%	30.2%	59.6%	50.3%	29.6%* ⁻	23.5%
Insurance and Life Assurance			60.7%	49.1%	55.2%	17.3%
Investment banks						18.2%
Investment companies						16.0%
Leisure, entertainment & Hotels		38.6%	51.6%			
Media & Photography		42.9%	42.6%	53.9%		
Mining					32.7%	
Oil & gas						19.7%
Other financial & speciality			25.7%			
Personal care & household prod.			62.5%			
Pharmaceuticals						13.7%
Real estate	24.3%	40.8%	49.2%	60.2%	37.4%* ⁻	23.5%
Software & computer services	35.8%	32.0%	36.2%			18.6%
Steel		50.5%	44.0%			
Support services		37.5%	46.6%			
Telecommunication Services						15.8%
Transport				46.0%	33.2%	
Utilities			50.6%	52.8%	22.7%* ⁻	13.3%

*: indicates that the median blocks differs more than 10% (+ or -) of the average voting block.

Table 4: Determinants of largest voting block

	Parameter estimates							
	B chem 6 sectors	t-value	B chem All sectors	t-value	UK chem 6 sectors	t-value	Uk chem All sectors	t-value
(Constant)	0,878	5,31*	0,894	6,10*	0,361	2,85*	0,407	3,81*
1/logkap	5,609	5,72*	5,474	7,45*	5,609	5,72*	5,474	7,45*
It chem	-0,031	-0,19	-0,030	-0,18	0,486	3,90*	0,457	3,62*
It constr.	0,116	0,75	0,116	0,76	0,633	5,99*	0,603	5,48*
It house	0,077	0,60	0,078	0,61	0,594	9,56*	0,565	7,92*
It food	0,138	0,84	0,138	0,84	0,655	5,41*	0,625	4,99*
It banks	-0,351	-2,30**	-0,352	-2,32**	0,166	1,59	0,135	1,23
It real est.	0,167	1,22	0,168	1,24	0,684	8,92*	0,655	7,79*
UK oil			-0,444	-3,35*			0,043	0,53
UK chem.	-0,517	-4,06*	-0,487	-3,70*				
UK constr.	-0,453	-3,62*	-0,452	-3,64*	0,064	1,18	0,035	0,54
UK elec.			-0,400	-3,10*			0,087	1,19
UK engin.			-0,454	-3,67*			0,033	0,52
UK house	-0,368	-2,87*	-0,366	-2,89*	0,149	2,47**	0,121	1,77
UK food	-0,329	-2,50**	-0,327	-2,50**	0,188	2,76*	0,160	2,09**
UK health			-0,451	-3,39*			0,036	0,45
UK pharma			-0,536	-4,07*			-0,049	-0,62
UK bank	-0,728	-4,08*	-0,731	-4,15*	-0,211	-1,51	-0,244	-1,72
UK insur.			-0,440	-3,30*			0,047	0,57
Uk real est.	-0,314	-2,51**	-0,313	-2,52**	0,203	3,69*	0,174	2,67*
UK softw.			-0,345	-2,69*			0,142	1,94
Sp chem.	-0,319	-1,93	-0,318	-1,89	0,198	1,63	0,170	1,30
Sp constr.	-0,012	-0,08	-0,013	-0,09	0,505	5,04*	0,474	4,50*
Sp house	-0,331	-2,00**	-0,329	-2,01**	0,187	1,54	0,158	1,27
Sp food	-0,115	-0,78	-0,114	-0,79	0,402	4,27*	0,373	3,72*
Sp bank	-0,040	-0,45	-0,041	-0,25	0,476	3,90*	0,446	3,53*
Sp real est.	-0,140	-1,01	-0,139	-1,01	0,377	4,71*	0,348	4,02*
D chem.	-0,025	-0,18	-0,025	-0,18	0,492	6,04*	0,462	5,22*
D constr.	0,078	0,58	0,079	0,59	0,595	7,99*	0,566	6,83*
D house	0,069	0,51	0,070	0,52	0,586	7,68*	0,557	6,68*
D food	0,040	0,31	0,048	0,32	0,564	5,75*	0,535	5,14*
D bank	0,151	1,05	0,150	1,05	0,668	7,36*	0,637	6,57*
D real est.	-0,036	-0,24	-0,035	-0,24	0,481	5,03*	0,453	4,55*
D elect.			-0,186	-1,31			0,301	3,16*
D engin.			0,043	0,33			0,530	7,01*
D hold			-0,141	-1,02			0,346	3,90*
D softw.			-0,112	-0,89			0,375	5,44*
D distrib.			0,099	0,71			0,586	6,51*
D support			0,025	0,20			0,512	7,30*
B chem.					0,517	4,06*	0,487	3,70*
B constr.	0,026	0,16	0,027	0,17	0,543	4,64*	0,514	4,24*
B house	0,123	0,80	0,124	0,81	0,640	6,19*	0,611	5,54*
B food	0,090	0,66	0,091	0,67	0,607	7,65*	0,579	6,62*
B bank	0,189	1,14	0,187	1,15	0,701	5,74*	0,674	5,40*
B holding			0,097	0,70			0,584	6,54*
B real est.	-0,231	-1,38	-0,230	-1,39	0,286	2,32**	0,257	2,02**
Fchem.	-0,096	-0,41	-0,097	-0,41	0,421	2,02**	0,390	1,86
Fconstr.	-0,099	-0,47	-0,098	-0,47	0,418	2,37**	0,389	2,17**
Fhouse	0,169	1,18	0,170	1,20	0,686	7,75*	0,657	6,98*
Ffood	0,023	0,13	0,023	0,14	0,540	4,28*	0,510	3,92*
Fbank	-0,122	-0,67	-0,123	-0,69	0,395	2,76*	0,364	2,48**
Freal	0,036	0,17	0,037	0,18	0,553	3,13*	0,524	2,93*
F	12,19*		13,88*		12,19*		13,88*	
R2 adj.	0,34		0,33		0,34		0,33	
Obs.	791		1310		791		1310	

* and ** indicate significance levels of 1%, and 5 % respectively.

Annex 1: Number of companies classified by size

	Capitalisation	Belgium	Germany	France	Italy	Spain	U.K.*
large corp.	>5 bill. €	7	37	43	29	14	42
medium corp.	1-5 bill. €	21	69	29	44	24	51
small corp.	0.25-1 bill. €	27	119	19	62	49	112
micro corp.	<0.25 bill. €	85	317	69	99	122	414
total number		140	542	160	234	209	619 (820)**
% of all listed companies		100%	16.6%	52.0%	97.7%	81.3%	27.0%(35.8%)
% of total market cap.		100%	83.8%	95.0%	98.0%	93.5%	45.5%

*: For the U.K. a conversion rate of 1 euro = 0.62 £ was used.

** : The figures between brackets include investment companies.

Annex 2: Sector activity and number of companies in the database

Sector classification

	Nr.	Belgium	France	Germany	Italy	Spain	U.K.
Automobiles & parts	25		8		9		
Banks	1	6	7	21	37	17	10
Beverages, Food producers & processors	7	14	10	16	6	19	41
Chemicals (U.K.) & pharmaceuticals*	3	8	5	28	8	6	19
Construction & building materials	2	8	8	24	9	19	83
Diversified industrials	23		5	8			
General retailers	21		8	20			
Electronic & electrical equipment	6		11	36	7	13	41
Engineering & machinery	5	6	8	51	6		70
Health	8			19			30
Holding comp./investment comp. (UK)	12	23	8	31	17	15	201
Household goods & textiles	9	6	12	31	36	12	61
Insurance and Life Assurance	10			15	13	5	28
Investment banks	28						14
Leisure, entertainment & Hotels	20		7	12			
Media & Photography	19		8	10	9		
Mining	27					11	
Oil & gas	13						35
Other financial & speciality	11			19			
Personal care & household products	22			8			
Pharmaceuticals (U.K.)	14						29
Real estate	15	17	5	17	16	30	88
Software & computer services	4	8	9	73			34
Steel	24		5	7			
Support services	18		5	54			
Telecommunication Services	16						13
Transport	26				8	8	
Utilities	17				10	7	19

*: For the U.K. pharmaceuticals is studied as a different class.

Annex 3: One way anova for voting blocks and size of corporations

	<i>F</i>	Large	Company type Medium	Small
France	23.949***			
Large				
Medium		19.10%***		
Small		29.69%***	10.59%	
Micro		34.37%***	15.28%***	4.69%
Germany	6.292***			
Large				
Medium		23.00%***		
Small		17.17%***	-5.83%	
Micro		15.72%***	-7.28%	-1.45%
Spain	3.428**			
Large				
Medium		11.89%		
Small		20.44%	8.55%	
Micro		7.94%	-3.95%	-12.50%*
U.K. (Logstake)	34.61***			
Large				
Medium		0.155***		
Small		0.291***	0.136***	
Micro		0.391***	0.236***	0.101***

*: significant at 5%-level; **: significant at 2%-level; ***: significant at 1%-level.
All tables read from column to row.

Annex 4: One way anova for voting blocks and industry-specificity of corporations in Germany

Germany	1	2	3	4	5	6	7	8	9	10	11	12	15	18	19	20	21	22	23	
F: 3.01**																				
1																				
2	3.1																			
3	12.1	9.0																		
4	19.5	16.5	7.5																	
5	3.8	0.7	-8.3	-15.7																
6	16.3	13.2	4.2	-3.3	12.5															
7	5.2	2.2	-6.8	-14.3	1.4	-11.0														
8	10.6	7.5	-1.5	-9.0	6.8	-5.7	5.3													
9	-3.9	-6.9	15.9	-23.4**	-7.7	-20.1	-9.1	-14.4												
10	-5.0	-8.0	-17.0	-24.5	-8.8	-21.2	-10.2	-15.5	-1.1											
11	30.1*	27.0	-18	10.5	26.2*	13.8	24.8	19.5	33.9**	35.0*										
12	17.3	14.2	5.2	-2.2	13.5	1.0	12.0	6.7	21.2	22.3	-12.8									
15	6.5	3.5	-5.6	-13.0	2.7	-9.7	1.3	-4.0	10.4	11.5	-23.5	-10.8								
18	9.1	6.0	-3.0	-10.4	5.3	-7.2	3.9	-1.4	13.0	14.1	-20.9	-8.2	2.6							
19	13.1	10.1	1.1	-6.4	9.3	-3.1	7.9	2.6	17.0	18.1	-16.9	-4.1	6.6	4.0						
20	4.1	1.0	-8.0	-15.4	0.3	-12.2	-1.1	-6.5	8.0	9.1	-25.9	-13.2	-2.4	-5.0	-9.0					
21	1.6	-1.4	-10.5	-17.9	-2.2	-14.6	-3.6	-8.9	5.5	6.6	-28.4	-15.7	-4.9	-7.5	-11.5	-2.5				
22	-6.8	-9.8	-18.6	-26.3	-10.6	-23.0	-12.0	-17.3	-2.9	-1.8	-36.8	-24.1	-13.3	-15.9	-19.9	-10.9	-8.4			
23	19.3	16.3	7.3	-0.2	15.5	3.1	14.1	8.8	23.2	24.3	-10.7	2.0	12.8	10.2	6.2	15.2	17.7	26.1		
24	11.7	8.7	-0.3	-7.8	7.9	-4.5	6.5	1.2	15.6	16.7	-18.3	-5.6	5.2	2.6	-1.4	7.6	10.1	18.5	-7.6	

The numbers in the first row and column of the table stand for specific industries and are described in table 4. All tables read from column to row. *: significant at 5%-level; **:significant at 1%-level.

Annex 5: One way anova for voting blocks and industry-specificity of corporations in U.K.

U.K.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
F: 4.625**																	
1																	
2	-0.29																
3	-0.22	0.08															
4	-0.35	-0.06	-0.14														
5	-0.28	-0.01	-0.08	0.07													
6	-0.33	-0.04	-0.12	0.02	-0.04												
7	-0.47*	-0.18	-0.25	-0.12	-0.18*	-0.14											
8	-0.27	-0.02	-0.06	0.08	-0.01	0.06	0.19										
9	-0.42*	-0.13	-0.21	-0.08	-0.14	-0.09	0.05	-0.15									
10	-0.31	-0.02	-0.09	0.04	-0.02	0.02	0.16	-0.04	0.11								
28	-0.35	-0.06	-0.14	0.00	-0.65	-0.02	0.12	-0.08	0.07	-0.04							
12	-0.28	-0.01	-0.06	0.07	-0.01	-0.05	0.19*	-0.006	0.14**	0.03	0.07						
13	-0.32	0.03	-0.11	0.03	-0.03	-0.01	0.15	-0.05	0.10	-0.01	0.03	-0.04					
14	-0.19	0.11	0.03	0.17	0.10	0.15	0.28*	-0.09	0.24*	0.12	0.17	0.10	0.14				
15	-0.42*	-0.13	-0.20	-0.07	0.13	-0.09	0.05	-0.15	0.004	-0.11	-0.07	-0.14*	-0.10	-0.24*			
16	-0.28	0.01	-0.06	-0.07	-0.01	0.05	0.19	-0.004	0.14	0.03	0.07	0.002	0.04	-0.09	0.14		
17	-0.12	0.17	-0.09	0.23	0.17	0.21	0.35*	0.15	0.30*	0.19	0.23	0.16	0.20	0.06	0.29*	0.16	

The numbers in the first row and column of the table stand for specific industries and are described in table 4. *: significant at 5%-level; **:significant at 1%-level.

Annex 6: Correlation matrix of variables

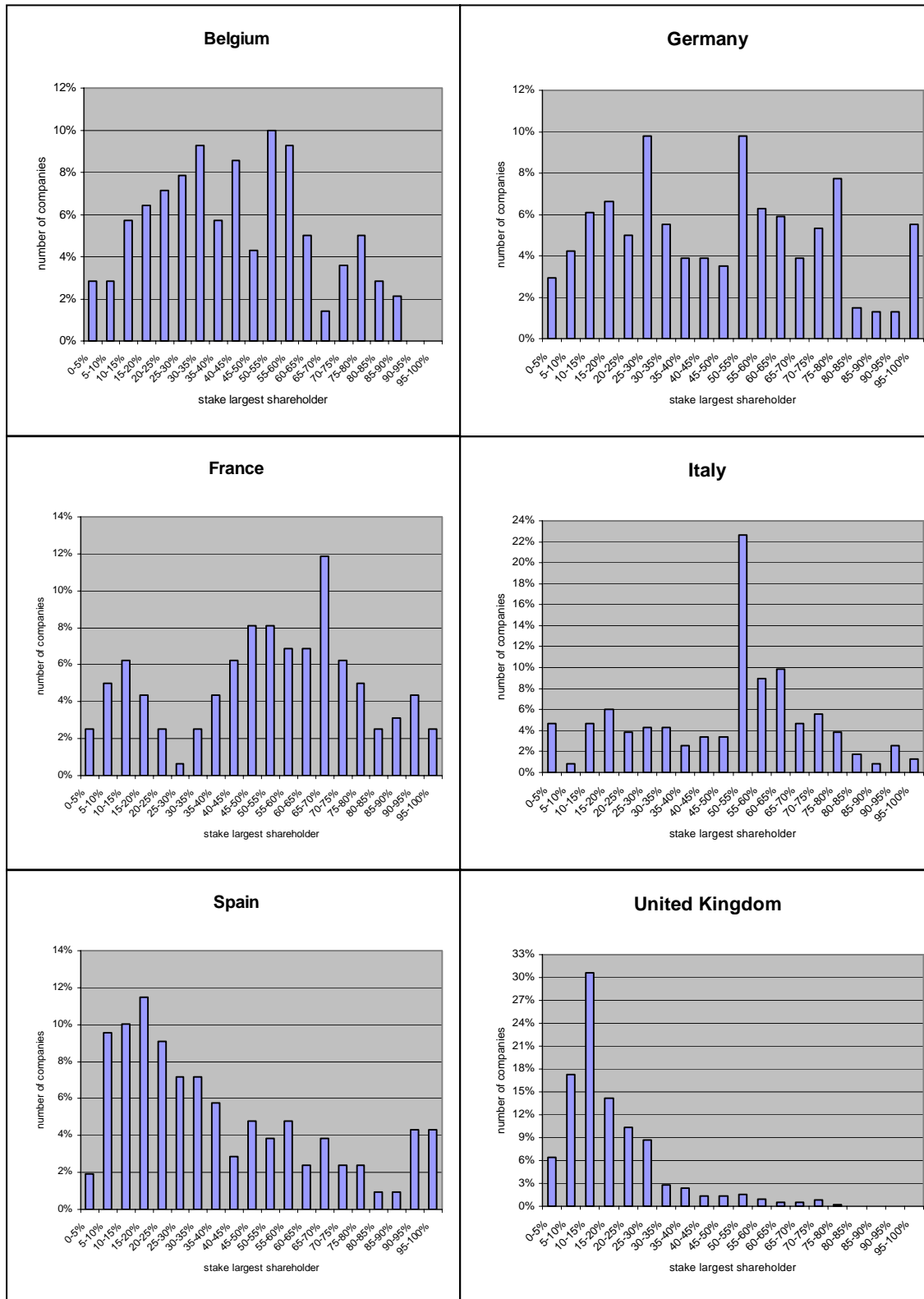
	logAH	1/logkap	Itchem	Itconst	Itthouse	Itfood	Itbank	Itreal	Ukcoil	Ukchem	Ukconst	Ukelect	Ukeng	Ukhouse	Ukfood	Ukhealth	Ukphar	Ukbank	Ukinsur	Ukreal	Uksoft	Schem	Sconst	Shouse	Sfood	Sbank
logAH	1																									
1/logkap	0,14**	1																								
Itchem	0,03	0,01	1																							
Itconst	0,06*	-0,02	-0,01	1																						
Itthouse	0,11**	0,00	-0,01	-0,01	1																					
Itfood	0,05	-0,02	-0,01	-0,01	-0,01	1																				
Itbank	-0,10**	-0,18**	-0,01	-0,01	-0,03	-0,01	1																			
Itreal	0,10**	0,00	-0,01	-0,01	-0,02	-0,01	-0,02	1																		
Ukcoil	-0,09**	0,05*	-0,01	-0,01	-0,03	-0,01	-0,03	-0,02	1																	
Ukchem	-0,09**	-0,01	-0,01	-0,01	-0,02	-0,01	-0,02	-0,01	-0,02	1																
Ukconst	-0,15**	0,03	-0,02	-0,02	-0,04	-0,02	-0,04	-0,03	-0,04	-0,03	1															
Ukelect	-0,08**	0,07*	-0,01	-0,01	-0,03	-0,01	-0,03	-0,02	-0,03	-0,02	-0,05	1														
Ukeng	-0,13**	0,09**	-0,02	-0,02	-0,04	-0,02	-0,04	-0,03	-0,04	-0,03	-0,06*	-0,04	1													
Ukhouse	-0,05	0,24**	-0,02	-0,02	-0,04	-0,01	-0,04	-0,02	-0,04	-0,03	-0,06*	-0,04	-0,05	1												
Ukfood	-0,05	0,06*	-0,01	-0,01	-0,03	-0,01	-0,03	-0,02	-0,03	-0,02	-0,05	-0,03	-0,04	-0,04	1											
Ukhealth	-0,09**	0,03	-0,01	-0,01	-0,03	-0,01	-0,03	-0,02	-0,03	-0,02	-0,04	-0,03	-0,04	-0,03	-0,03	1										
Ukphar	-0,13**	-0,05	-0,01	-0,01	-0,03	-0,01	-0,03	-0,02	-0,02	-0,02	-0,04	-0,03	-0,04	-0,03	-0,03	-0,02	1									
Ukbank	-0,14**	-0,18**	-0,01	-0,01	-0,01	-0,01	-0,01	-0,01	-0,01	-0,01	-0,02	-0,02	-0,02	-0,02	-0,02	-0,01	-0,01	1								
Ukinsur	-0,10**	-0,08**	-0,01	-0,01	-0,02	-0,01	-0,03	-0,02	-0,02	-0,02	-0,04	-0,03	-0,04	-0,03	-0,03	-0,02	-0,02	-0,01	1							
Ukreal	-0,06*	0,08**	-0,02	-0,02	-0,05	-0,02	-0,05	-0,03	-0,04	-0,03	-0,07*	-0,05	-0,06*	-0,06*	-0,05	-0,04	-0,04	-0,02	-0,04	1						
Uksoft	-0,06*	-0,03	-0,01	-0,01	-0,03	-0,01	-0,03	-0,02	-0,03	-0,02	-0,04	-0,03	-0,04	-0,04	-0,03	-0,02	-0,02	-0,01	-0,02	-0,04	1					
Schem	-0,02	0,01	-0,01	-0,01	-0,01	0,00	-0,01	-0,01	-0,01	-0,01	-0,02	-0,01	-0,02	-0,01	-0,01	-0,01	-0,01	-0,01	-0,01	-0,02	-0,01	1				
Sconst	0,05	-0,04	-0,01	-0,01	-0,02	-0,01	-0,02	-0,01	-0,02	-0,01	-0,03	-0,02	-0,03	-0,03	-0,02	-0,02	-0,02	-0,01	-0,02	-0,03	-0,02	-0,01	1			
Shouse	-0,02	0,06*	-0,01	-0,01	-0,02	-0,01	-0,02	-0,01	-0,02	-0,01	-0,02	-0,02	-0,02	-0,02	-0,02	-0,01	-0,01	-0,01	-0,01	-0,03	-0,02	-0,01	-0,01	1		
Sfood	0,02	-0,01	-0,01	-0,01	-0,02	-0,01	-0,02	-0,01	-0,02	-0,01	-0,03	-0,02	-0,03	-0,03	-0,02	-0,02	-0,02	-0,01	-0,02	-0,03	-0,02	-0,01	-0,01	-0,01	1	
Sbank	0,02	-0,10	-0,01	-0,01	-0,02	-0,01	-0,02	-0,01	-0,02	-0,01	-0,03	-0,02	-0,03	-0,03	-0,02	-0,02	-0,02	-0,01	-0,02	-0,03	-0,02	-0,01	-0,01	-0,01	-0,01	1
Sreal	0,04	0,09**	-0,01	-0,01	-0,03	-0,01	-0,03	-0,02	-0,03	-0,02	-0,04	-0,03	-0,04	-0,03	-0,03	-0,02	-0,02	-0,01	-0,02	-0,04	-0,02	-0,01	-0,02	-0,01	-0,02	-0,02
Dchem	0,04	-0,08	-0,01	-0,01	-0,02	-0,01	-0,03	-0,02	-0,02	-0,02	-0,04	-0,03	-0,04	-0,03	-0,03	-0,02	-0,02	-0,01	-0,02	-0,04	-0,02	-0,01	-0,02	-0,01	-0,02	-0,02
Dconst	0,09**	0,01	-0,01	-0,01	-0,02	-0,01	-0,02	-0,02	-0,02	-0,02	-0,04	-0,02	-0,03	-0,03	-0,02	-0,02	-0,02	-0,01	-0,02	-0,04	-0,02	-0,01	-0,02	-0,01	-0,02	-0,02
Dhouse	0,11**	0,05	-0,01	-0,01	-0,03	-0,01	-0,03	-0,02	-0,03	-0,02	-0,04	-0,03	-0,04	-0,03	-0,03	-0,02	-0,02	-0,01	-0,02	-0,04	-0,03	-0,01	-0,02	-0,01	-0,02	-0,02
Dfood	0,07*	0,01	-0,01	-0,01	-0,02	-0,01	-0,02	-0,01	-0,02	-0,01	-0,03	-0,02	-0,03	-0,02	-0,02	-0,02	-0,02	-0,01	-0,02	-0,03	-0,02	-0,01	-0,01	-0,01	-0,01	-0,01
Dbank	0,08*	-0,15**	-0,01	-0,01	-0,02	-0,01	-0,02	-0,01	-0,02	-0,02	-0,03	-0,02	-0,03	-0,03	-0,02	-0,02	-0,02	-0,01	-0,02	-0,03	-0,02	-0,01	-0,02	-0,01	-0,02	-0,01
Dreal	0,05	0,03	-0,01	-0,01	-0,02	-0,01	-0,02	-0,01	-0,02	-0,01	-0,03	-0,02	-0,03	-0,03	-0,02	-0,02	-0,02	-0,01	-0,02	-0,03	-0,02	-0,01	-0,01	-0,01	-0,01	-0,01
Delect	0,00	-0,01	-0,01	-0,01	-0,03	-0,01	-0,03	-0,02	-0,03	-0,02	-0,04	-0,03	-0,04	-0,04	-0,03	-0,03	-0,03	-0,01	-0,02	-0,05	-0,03	-0,01	-0,02	-0,02	-0,02	-0,02
Dengin	0,11**	-0,04	-0,02	-0,02	-0,03	-0,01	-0,03	-0,02	-0,03	-0,02	-0,05	-0,04	-0,05	-0,04	-0,04	-0,03	-0,03	-0,02	-0,03	-0,05	-0,03	-0,01	-0,02	-0,02	-0,02	-0,02
Dhold	0,03	0,04	-0,01	-0,01	-0,03	-0,01	-0,03	-0,02	-0,03	-0,02	-0,04	-0,03	-0,04	-0,03	-0,03	-0,02	-0,02	-0,01	-0,02	-0,04	-0,03	-0,01	-0,02	-0,01	-0,02	-0,02
Dsoft	0,04	-0,05	-0,02	-0,02	-0,04	-0,02	-0,04	-0,03	-0,04	-0,03	-0,06*	-0,04	-0,05*	-0,05	-0,04	-0,04	-0,03	-0,02	-0,03	-0,06	-0,04	-0,02	-0,03	-0,02	-0,03	-0,03
Ddistr	0,09**	-0,01	-0,01	-0,01	-0,02	-0,01	-0,02	-0,01	-0,02	-0,02	-0,03	-0,02	-0,03	-0,03	-0,02	-0,02	-0,02	-0,01	-0,02	-0,03	-0,02	-0,01	-0,02	-0,01	-0,02	-0,01
Dsupp	0,11**	-0,01	-0,02	-0,02	-0,03	-0,01	-0,04	-0,02	-0,03	-0,03	-0,05	-0,04	-0,05	-0,05	-0,04	-0,03	-0,03	-0,02	-0,03	-0,06*	-0,03	-0,01	-0,03	-0,02	-0,03	-0,02
Bchem	0,03	-0,06*	-0,01	-0,01	-0,02	-0,01	-0,02	-0,01	-0,02	-0,01	-0,02	-0,02	-0,02	-0,02	-0,02	-0,01	-0,01	-0,01	-0,01	-0,02	-0,02	-0,01	-0,01	-0,01	-0,01	-0,01
Bconst	0,04	0,01	-0,01	-0,01	-0,01	-0,01	-0,01	-0,01	-0,01	-0,01	-0,02	-0,01	-0,02	-0,02	-0,01	-0,01	-0,01	-0,01	-0,01	-0,02	-0,01	-0,01	-0,01	-0,01	-0,01	-0,01
Bhouse	0,06*	0,04	-0,01	-0,01	-0,01	0,00	-0,01	-0,01	-0,01	-0,01	-0,02	-0,01	-0,02	-0,01	-0,01	-0,01	-0,01	-0,01	-0,01	-0,02	-0,01	0,00	-0,01	-0,01	-0,01	-0,01
Bfood	0,08*	0,02	-0,01	-0,01	-0,02	-0,01	-0,02	-0,01	-0,02	-0,01	-0,03	-0,02	-0,02	-0,02	-0,02	-0,02	-0,02	-0,01	-0,02	-0,03	-0,02	-0,01	-0,01	-0,01	-0,01	-0,01
Bbank	0,04	-0,10**	-0,01	-0,01	-0,01	0,00	-0,01	-0,01	-0,01	-0,01	-0,02	-0,01	-0,02	-0,01	-0,01	-0,01	-0,01	-0,01	-0,01	-0,02	-0,01	0,00	-0,01	-0,01	-0,01	-0,01
Bhold	0,09**	-0,05	-0,01	-0,01	-0,02	-0,01	-0,02	-0,01	-0,02	-0,02	-0,03	-0,02	-0,03	-0,03	-0,02	-0,02	-0,02	-0,01	-0,02	-0,04	-0,02	-0,01	-0,02	-0,01	-0,02	-0,02
Breal	-0,01	0,01	-0,01	-0,01	-0,02	-0,01	-0,02	-0,01	-0,02	-0,01	-0,03	-0,02	-0,03	-0,03	-0,02	-0,02	-0,02	-0,01	-0,02	-0,03	-0,02	-0,01	-0,01	-0,01	-0,01	-0,01

Fchem	0,00	-0,07**	0,00	-0,01	-0,01	0,00	-0,01	-0,01	-0,01	-0,01	-0,02	-0,01	-0,01	-0,01	-0,01	-0,01	-0,01	-0,01	-0,01	-0,02	-0,01	0,00	-0,01	-0,01	-0,01	-0,01
Fconst	0,01	-0,06*	-0,01	-0,01	-0,01	-0,01	-0,01	-0,01	-0,01	-0,01	-0,02	-0,01	-0,02	-0,02	-0,01	-0,01	-0,01	-0,01	-0,01	-0,02	-0,01	-0,01	-0,01	-0,01	-0,01	-0,01
Fhouse	0,09**	0,03	-0,01	-0,01	-0,02	-0,01	-0,02	-0,01	-0,02	-0,01	-0,02	-0,02	-0,02	-0,02	-0,01	-0,01	-0,01	-0,01	-0,01	-0,03	-0,02	-0,01	-0,01	-0,01	-0,01	-0,01
Ffood	0,04	-0,02	-0,01	-0,01	-0,01	-0,01	-0,01	-0,01	-0,01	-0,01	-0,02	-0,02	-0,02	-0,02	-0,02	-0,01	-0,01	-0,01	-0,01	-0,02	-0,01	-0,01	-0,01	-0,01	-0,01	-0,01
Fbank	-0,01	-0,11**	-0,01	-0,01	-0,01	0,00	-0,01	-0,01	-0,01	-0,01	-0,02	-0,01	-0,02	-0,02	-0,01	-0,01	-0,01	-0,01	-0,01	-0,02	-0,01	0,00	-0,01	-0,01	-0,01	-0,01
Freal	0,03	0,00	0,00	-0,01	-0,01	0,00	-0,01	-0,01	-0,01	-0,01	-0,02	-0,01	-0,01	-0,01	-0,01	-0,01	-0,01	-0,01	-0,01	-0,02	-0,01	0,00	-0,01	-0,01	-0,01	-0,01

	Sreal	Dchem	Dconst	Dhouse	Dfood	Dbank	Dreal	Delect	Dengin	Dhold	Dsoft	Ddistr	Dsupp	Bchem	Bconst	Bhouse	Bfood	Bbank	Bhold	Breal	Fchem	Fconst	Fhouse	Ffood	Fbank	Freal
Sreal	1																									
Dchem	-0,02	1																								
Dconst	-0,02**	-0,02	1																							
Dhouse	-0,02**	-0,02	-0,02	1																						
Dfood	-0,02*	-0,02	-0,02	-0,02	1																					
Dbank	-0,02**	-0,02	-0,02	-0,02	-0,01	1																				
Dreal	-0,02	-0,02	-0,02	-0,02	-0,01	-0,01	1																			
Delect	-0,03	-0,02	-0,02	-0,03	-0,02	-0,02	-0,02	1																		
Dengin	-0,03**	-0,03	-0,03	-0,03	-0,02	-0,03	-0,02	-0,03	1																	
Dhold	-0,02	-0,02	-0,02	-0,02	-0,02	-0,02	-0,02	-0,03	-0,03	1																
Dsoft	-0,04	-0,03	-0,03	-0,04	-0,03	-0,03	-0,03	-0,04	-0,05	-0,04	1															
Ddistr	-0,02**	-0,02	-0,02	-0,02	-0,01	-0,02	-0,01	-0,02	-0,03	-0,02	-0,03	1														
Dsupp	-0,03**	-0,03	-0,03	-0,03	-0,02	-0,03	-0,02	-0,03	-0,04	-0,03	-0,05	-0,03	1													
Bchem	-0,01	-0,01	-0,01	-0,01	-0,01	-0,01	-0,01	-0,02	-0,02	-0,01	-0,02	-0,01	-0,02	1												
Bconst	-0,01	-0,01	-0,01	-0,01	-0,01	-0,01	-0,01	-0,01	-0,02	-0,01	-0,02	-0,01	-0,02	-0,01	1											
Bhouse	-0,01*	-0,01	-0,01	-0,01	-0,01	-0,01	-0,01	-0,01	-0,01	-0,01	-0,02	-0,01	-0,01	-0,01	-0,01	1										
Bfood	-0,02**	-0,02	-0,01	-0,02	-0,01	-0,01	-0,01	-0,02	-0,02	-0,02	-0,02	-0,01	-0,02	-0,01	-0,01	-0,01	1									
Bbank	-0,01	-0,01	-0,01	-0,01	-0,01	-0,01	-0,01	-0,01	-0,01	-0,01	-0,02	-0,01	-0,01	-0,01	-0,01	-0,01	0,00	-0,01	1							
Bhold	-0,02**	-0,02	-0,02	-0,02	-0,01	-0,02	-0,02	-0,02	-0,03	-0,02	-0,03	-0,02	-0,03	-0,01	-0,01	-0,01	-0,01	-0,01	1							
Breal	-0,02	-0,02	-0,02	-0,02	-0,01	-0,01	-0,01	-0,02	-0,02	-0,02	-0,03	-0,01	-0,02	-0,01	-0,01	-0,01	-0,01	-0,01	-0,02	1						
Fchem	-0,01	-0,01	-0,01	-0,01	-0,01	-0,01	-0,01	-0,01	-0,01	-0,01	-0,01	-0,01	-0,01	-0,01	0,00	0,00	-0,01	0,00	-0,01	-0,01	1					
Fconst	-0,01	-0,01	-0,01	-0,01	-0,01	-0,01	-0,01	-0,01	-0,01	-0,02	-0,02	-0,01	-0,02	-0,01	-0,02	-0,01	-0,01	-0,01	-0,01	-0,01	-0,01	0,00	1			
Fhouse	-0,01**	-0,01	-0,01	-0,01	-0,01	-0,01	-0,01	-0,02	-0,02	-0,01	-0,02	-0,01	-0,02	-0,01	-0,01	-0,01	-0,01	-0,01	-0,01	-0,01	-0,01	-0,01	-0,01	-0,01	1	
Ffood	-0,01	-0,01	-0,01	-0,01	-0,01	-0,01	-0,01	-0,01	-0,02	-0,01	-0,02	-0,01	-0,02	-0,01	-0,01	-0,01	-0,01	-0,01	-0,01	-0,01	-0,01	-0,01	-0,01	-0,01	-0,01	1
Fbank	-0,01	-0,01	-0,01	-0,01	-0,01	-0,01	-0,01	-0,01	-0,01	-0,01	-0,02	-0,01	-0,02	-0,01	-0,01	-0,01	0,00	-0,01	0,00	-0,01	-0,01	0,00	-0,01	-0,01	-0,01	1
Freal	-0,01	-0,01	-0,01	-0,01	-0,01	-0,01	-0,01	-0,01	-0,01	-0,01	-0,01	-0,01	-0,01	-0,01	0,00	0,00	-0,01	0,00	-0,01	-0,01	0,00	0,00	-0,01	-0,01	0,00	1

* and ** indicate significance levels of 5% and 1 % respectively.

Figure 1: Distribution of the voting blocks of the largest shareholder



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