

Corporate governance structures, control and performance in European markets: A tale of two systems.

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Traditionally share price returns and their variance have been explained by factors linked to the operations of the company such as systematic risk, corporate size and P/E ratios or by factors related to the influence of the macro-economic environment. In these models, the institutional environment in terms of concentration and nature of voting rights, bank debt dependence and corporate and legal mechanisms to change control have rarely been included. In this paper we have a dual objective. We first highlight the large discrepancies among corporate governance environments. We conclude that there is a need for a theoretically well-grounded measure of corporate control applicable to all systems and we define such a measure. Secondly, the impact of ownership structure on the share price performance and corporate risk is empirically analysed for companies listed on the London Stock Exchange. Within Europe, the UK corporate landscape is particularly interesting because of its widely held nature and the liquidity of the market for controlling rights. We show that financial performance

increases with the level of control held by the second largest shareholder. One possible explanation is that when the largest shareholder owns most of the control, she essentially maximizes her own utility function, which may differ from the firm's profits. When there exists a counterbalancing pole of control in other hands, utility functions are usually different and the best compromise between both poles of control may be to maximize profits. Yet, it was not our purpose to survey the many (sometimes contradictory) theories of corporate governance, nor to test any specific hypothesis. We hope however to have conveyed the message that there exists a link between corporate governance and financial performance and that a sound index, based on game-theoretic arguments, is the appropriate instrument for researchers in the field.

Key words : corporate governance, voting rights, shareholder coalitions, corporate performance. **JEL codes :** G10, G32, G34

Corporate governance structures, control and performance in European markets: A tale of two systems.

1. Introduction

Traditionally share price returns and their variance have been explained by factors linked to the operations of the company such as systematic risk, corporate size and P/E ratios (as in Fama and French, 1992, among many examples) or by factors related to the influence of the macro-economic environment. In these models, the institutional environment in terms of concentration and nature of voting rights, bank debt dependence and corporate and legal mechanisms to change control have rarely been included. In fact, empirical research on the dynamics of ownership and its impact on corporate performance in European economies has only become possible in recent years. Indeed, while detailed data on ownership for listed corporations in Anglo-American markets have been available for some decades, the European Commission's Transparency Directive of 1988 (88/627/EEC) has only gradually been integrated into the national legislation of continental European countries.¹ Even so, each country retained the right to modulate the Commission's directive according to its own specific requirements with the result that ownership disclosure regulation of voting rights differs substantially across countries in terms of notification thresholds and frequency.² In this paper we have a dual objective. Firstly, we focus on highlighting the large discrepancies among corporate governance environments. As environments differ widely, we conclude that there is a need for a theoretically well-grounded measure of corporate control applicable to all systems and we define such a measure. Secondly, the impact of ownership structure on the share price performance and corporate risk is empirically analysed for companies listed on the London Stock Exchange. Within Europe, the UK corporate landscape is particularly interesting because of its widely held nature and the liquidity of the market for controlling rights.

¹ The following countries adopted the disclosure regulations: Belgium in 1989; Spain in 1989, France in 1989, Italy in 1974 with adaptation in 1992, Netherlands in 1992, Germany in 1995.

² For instance, shareholdings exceeding 2% of the equity capital (voting rights) are to be disclosed in Italy whereas, in most other European countries the notification threshold is at 5%. Furthermore, disclosure frequency in e.g. Belgium and the UK differs: in the former changes in ownership need to be reported as soon as the new threshold transgresses any subsequent threshold of 5% (5%, 10%, 15% etc) of equity whereas in the UK, a change of 1% in a large shareholding (of more than 3%) triggers disclosure.

We show that financial performance increases with the level of control held by the second largest shareholder.

The paper is organised as follows. Section 2 discusses the main differences in ownership structures in Europe. The section draws upon the first (unpublished) research results of the European Corporate Governance Network³. For convenience, the main preliminary country studies of this on-going research effort are mentioned separately in the bibliography. In section 3, we show that voting rights are but one element – albeit an important factor – in the corporate governance framework and we highlight the role of corporate law, minority protection, courts and banks. Section 4 focuses on a key issue in any economic analysis of corporate governance, i.e. the definition of *effective measures of control in complex ownership structures*, possibly characterised by multiple, intertwined layers of shareholding. We briefly discuss the weaknesses of classical approaches to this issue (via raw voting rights or Herfindahl indices) and we propose an alternative measure of control based on the Banzhaf index (well-known to game theorists) which we call the *Z index*. We illustrate why the *Z index* more adequately captures each shareholder's negotiating power. On the basis of a sample of British companies, section 5 provides an econometric illustration of the importance of control dispersion on some key economic variables (beta and returns). We also briefly illustrate how the *Z index* can be applied in the case of Continental European economies. Conclusions are presented in section 6.

2. Ownership concentration and voting blocks

Insider versus outsider corporate governance systems

In spite of the relative paucity of data on shareholding structure, some striking features emerge from a simple cross-country comparison. For example, Table 1 highlights the major difference in ownership concentration between continental Europe and the Anglo-American countries. In the former, all large (disclosing) shareholders combined own more than 60% of the equity capital⁴, in the latter these

³ The European Corporate Governance Network consists of researchers from, among others: Banque Nationale de Paris, Banca d'Italia, University of Oxford, Princeton University, University of Tilburg, Free University of Brussels (ECARE), Catholic University of Leuven, University of Vienna, Autonomous University of Barcelona, University of Groningen, Humboldt University Berlin, University of Manchester, Stockholm School of Economics, University of Milan. The ECGN is financed by the European Union and Fondazione E. Mattei (Milan). The Network consists of about 25 researchers at 18 universities and National Banks in 9 European countries.

⁴ In France, total ownership concentration in CAC40 or DAX30 companies is lower because relatively high free float is required.

control only about 40% of the voting rights. The differences in voting rights held by the largest shareholder are even more remarkable: the largest owner in the median UK listed company holds a stake of less than 15% and this stake is less than 5% in the US. In contrast the largest shareholder (or group of large shareholders) controls 40-54% of the voting rights on the continent. About 85% of the listed non-financial companies in Continental Europe have a large shareholder which holds at least a blocking minority (25%) and in about half the companies, one shareholder owns an absolute majority.

The high concentration of ownership in Continental European equity markets is only one manifestation of what is known as an *insider system*. The corporate sector has controlling interests in itself because companies are often shareholders of other ones; the number of listed companies is small compared to the size of the economy; and the capital market is illiquid because controlling blocks are held by a few dominant shareholders. Worse still, in spite of all the efforts made to simplify corporate structures, there remains a large number of holdings or interlocked companies, which de facto deter any attempt by outsiders to control any of them. Thus, while given an opportunity to participate in equity returns, outside investors have little hope to trade and acquire control. In contrast, the Anglo-American system is labelled as an *outsider system*. In that system, the number of listed companies is large; the process of acquiring control (not only participate in equity return) is effectively market-oriented (i.e. there is a liquid capital market with frequently traded ownership and control rights); and there are few corporate holdings or interlocked patterns of ownership. Finally, there are few major, controlling shareholdings and these are rarely associated with the corporate sector itself (Wymeersch, 1994, Franks and Mayer, 1995).

Cash flow versus voting rights

Although equity markets in Continental Europe indeed display some similarity, they also markedly differ with regard to a number of criteria. We concentrate on two of them. Firstly, as shown in Table 1, the nature of the main shareholders varies from country to country. Obviously, each category of shareholder has different incentives or abilities to exert control. For example, there is little evidence that institutional investors undertake any disciplinary actions against poorly performing management (Stapledon, 1996). In contrast, corporate shareholders might value dominant shareholding positions, not only for the financial return of their investment, but also for other potential benefits of control, especially when a customer or supplier relation exists with the target company (Barclay and Holderness, 1989).

Secondly, the complexity of ownership structures also varies across countries. Germany, for example, is characterised by complex shareholdings around and within industrial groups (Becht and Boehmer, 1998) while the French system is characterised by ownership cascades of financial groups and cross-company shareholdings (Bloch and Kremp, 1998). In Italy, long pyramids controlled by state or family-owned corporations are typical (Bianchi et al., 1998). More than a third of listed and non-

listed Belgian companies are controlled by financial holdings companies (Becht et al., 1998) while in most Dutch listed companies, the separation of ownership and control is almost absolute, as blocks of voting rights are not held by shareholders but by an Administration Office (De Jong et al., 1998). Finally, although state controlled ownership has decreased substantially in Spain since 1995, state holding companies still own a golden-share in strategic sectors (Crespi and Garcia, 1998).

These differences have important implications in terms of the one-share-one-vote principle dear to game theorists. *Ownership pyramids*, for instance, allow power concentration with limited investment, since controlling a target company can be achieved via a number of subsidiaries and a chain of 51% of their voting rights (see Figure 1). With one intermediate holding, the ultimate shareholder retains absolute control while only receiving 25% ($=0.51 \times 0.51$) of the cash flow.⁵ Whereas legal restrictions have impeded the occurrence of ownership cascades in the UK, they are common practice in Belgium, France or Italy. Another way of amassing voting power is through *voting pacts* and *proxy votes*. For example, voting pacts are not uncommon in Germany (Chirinko and Elston, 1995) and German banks commonly use proxy votes of the shares deposited in their custody (called the “Depotstimmrecht”, see for example Wenger and Kaserer, 1997).⁶

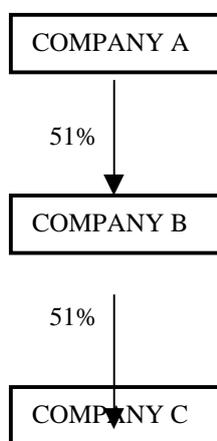


Figure 1

Still, a number of mechanisms exist to erode voting power, such as the imposition of *voting caps*. An extreme case is the Netherlands where under the ‘structural

⁵ This example illustrates the major difference between voting rights and cash flow rights. Through control leverage, it is possible to detain control over a large number of entities while only investing little money (and being entitled to a small portion of the cash flows).

⁶ Wenger and Kaserer (1997) mention that in a 1992 survey of the 24 largest German companies, banks controlled over 80 percent of the votes.

governance regime', non-voting certificates are distributed to ordinary shareholders while the voting power is given to a foundation controlled by company insiders (De Jong et al, 1998). In Germany, Belgium or Spain, a decision by the board of directors can limit any percentage of voting power to e.g. 5%.⁷ Whereas *dual class shares* are frequently used to separate ownership and control in Sweden (Agnblad et al. 1999), this has been actively discouraged in the UK by the LSE (Brennan and Franks, 1997). Finally, since the take-over wave in the 1980s, several *poison pills* like shelf registration of equity⁸, issuing bonds cum warrants or convertible bonds, are frequently used to dilute the voting power of 'hostile' shareholders.

Corporate governance and agency costs

Both the insider and outsider corporate governance systems present weaknesses and advantages which can be analysed in terms of the principal-agent theory (see Table 2). The Anglo-American system, characterised by high dispersion of voting and cash flow rights and called the 'Weak owners, strong managers'–case by Roe (1994), may induce free riding⁹ on control. As a single small shareholder only benefits from performance improvements in direct proportion to the cash flow rights, he or she may not find it profitable to monitor management while a large shareholder will necessarily feel differently. This situation may result in agency conflicts between management and shareholders.¹⁰ Still, the large free float allows investors to take advantage of portfolio diversification possibilities and introduces the discipline of the (hostile) take-over market¹¹.

Concentration of ownership and voting rights, on the other hand, stimulates corporate governance actions against under-performing management, but may lead to expropriation of the rights of minority shareholders as discussed in panel D of Table

⁷ Usually, the board of directors can only install voting caps after prior consent of the annual general meeting. This authority can be delegated for a limited amount of time. In addition, the installation of voting caps can only happen under specific conditions e.g. when the company is threatened by a hostile take over. In the only 3 hostile take over attempts since WWII, voting caps were used in each case (Franks and Mayer, 1998).

⁸ With prior consent of the shareholders at an annual meeting, the board of directors can issue new equity, place it with 'friendly' shareholders and thus dilute the share stakes of other shareholders.

⁹ For a theoretical discussion of the free riding problem of dispersed shareholdings. See for example Shleifer and Vishny (1986), Hart (1995b).

¹⁰ Low monitoring resulting from voting rights dispersion might be compensated by increased bank monitoring. In spite of the close connections between banks and industry in Germany, which include ownership stakes, positions on the supervisory board and proxy votes, several studies show that German banks have provided less finance to industry than in UK banks (Edwards and Fisher, 1994 and Edwards and Ogilvie, 1996). Furthermore, Edwards and Fisher (1998) do not find a positive effect of bank ownership of equity on the profitability of German firms.

¹¹ The hostile take over market in the US has been considered as a disciplinary device to correct managerial failure. Empirical research supports this view for the US (Martin and McConnel, 1991). Several papers on the UK confirm that the targets of hostile take-overs in the 1980s were not poorly performing, but mostly average or good performers (e.g. Franks and Mayer, 1996).

2. Furthermore, share liquidity is reduced due to the low free float and hostile takeovers are virtually ruled out.

Panels B and C of Table 2 present the other combinations of concentrations of ownership and voting rights which can be attained by some of the instruments described above to amass or dilute voting power. For example, when shareholder coalitions or proxy votes are allowed, the supervisory power of a block of shareholders vis-à-vis management increases, but the agency conflicts shift from shareholder-management towards large versus minority shareholders.

3. *Corporate governance : symbiosis of financial markets and corporate law.*

The discussion above clearly points to the difficulty in explaining corporate governance systems on the basis of conventional theories. In this section, we shall emphasise this critical point before moving on to a discussion of the methodology we use to measure control.

Indeed, neither transaction costs theory¹², nor principal agent theory¹³, nor the theory of implicit contracting¹⁴ nor the theory of vertical integration¹⁵ can fully explain why two governance systems (Continental European and Anglo-American) have emerged or, in a more refined way, why Continental European countries differ in terms of structure and concentration of ownership (cash flow rights) and voting rights. In the previous section, we have shown that the weaknesses of both systems have been partially dealt with through mechanisms separating cash flow and voting rights. In addition however, governments have often found it necessary to develop a legal environment able to limit the inconveniences (e.g. agency costs) induced by the corporate governance system.

In fact, historic evolution of regulation has shaped ownership structures, capital markets and corporate governance systems. Not surprisingly, there are two broad legal traditions; the common law system, found in Anglo-American countries and the Commonwealth, and the civil law tradition of Continental Europe and its sphere of influence (former colonies). These two legal systems are different in terms of shareholder protection, adherence to the one-share-one-vote principle and creditor protection. According to Laporta et al. (1996 and 1997), the common law system

¹² Pioneered by Coase (1937) and Williamson (1983).

¹³ See for example : Jensen and Meckling (1976), Milgrom and Roberts (1992).

¹⁴ The theory of implicit contracting is well described in by Grossman and Hart (1982, 1986) Hart and Holmstrom (1987), Hart and Moore (1988), Hart (1995a).

¹⁵ See e.g. Alchian and Demsetz (1972).

appears to provide stronger shareholder and creditor protection.¹⁶ But legal distinction can explain differences in corporate governance systems and the degree of capital market development. In common law countries, the ratio of external capital to GDP is higher, as are the ratio of corporate debt to GDP and the number of listed domestic firms and initial public offerings as a proportion of the corporate population. Whether or not the institutional environment has a momentous impact on economic activity has been explored by a number of authors. In particular, Carlin and Mayer (1998) investigate the relation between economic growth, R&D investment and fixed income formation, on the one hand, and the presence of bank-firm relations, development of security markets, degree of ownership concentration and the legal system on the other. For a sample of companies in 20 countries, there is little influence of banking activity and ownership concentration on economic growth, but they find that legal protection of investors and development of securities markets matter.

A seemingly logical implication of the discussion above is that it would be extremely difficult to develop a set of corporate governance regulations applicable to all EU countries without undertaking the difficult task of concomitantly dismantling the existing country-specific mechanisms that currently provide shareholder protection. Indeed, several attempts made in that direction had to be withdrawn. For example, the mandatory take-over bid requirement for all listed companies included in the first draft of the 13th Company Law Directive was dropped. The consequence would have been a weakening of direct monitoring resulting from reduced voting block sizes (Becht, 1999). The 5th Company Law Directive (now abandoned as well) aimed at imposing the one-share-one-vote rule on all European companies. As dual class shares would also have been ruled out, there was a danger that shareholders would have reacted by relying increasingly on pyramids and voting pacts in order to retain control, thereby reducing market liquidity.

4. Effective measures of control

The weakness of Herfindahl indices

The previous discussion underlines the difficulty of apprehending the whole intricacy and diversity of the issues surrounding corporate governance. In this context, a most

¹⁶ In countries with the common law system, La Porta et al (1996) build an index which captures shareholder protection and increases when: shareholders are not required to deposit their shares prior to annual meetings; shareholders can mail proxy votes; cumulative voting is allowed; minority protection legislation is strong; and small shareholders can call extra-ordinary meetings. Regarding creditor protection, this index increases when the rule of absolute priority is followed in case of financial distress. However, Franks et al. (1998) conjecture that even within the Anglo-American countries there are substantial differences in corporate control regulation. Essentially, this would be because the relative cost of control is higher in the UK than in the US because of stronger minority protection legislation than in the US, where the reliance on courts is higher.

fundamental question appears to be that of *measuring* the extent to which a given company is controlled by each of its (ultimate) shareholders and to measure the dispersion of control among shareholders. Economists have proposed a number of indices to answer this question. Most of these indices belong to the Herfindahl family, i.e. they focus on the (square of the) proportion of shares owned by the largest direct shareholder(s) in the company. We claim, however, that such indices do not provide a theoretically sound measure of dispersion.

Let us first tackle the case of the Anglo-American or “outsider” system. Consider a target company whose capital is first diluted from 5 shares to 7 shares, then from 7 to 9 shares, as illustrated in Exhibits 1a to 1c (in Table 3). It is easy to verify that company A1 has full control over the target in Exhibit 1a, no more control than any other shareholder in Exhibit 1b¹⁷ (meaning that dilution leads to less concentration of control in this case), but more than any other shareholder in Exhibit 1c¹⁸ (meaning that dilution leads to higher control concentration in this case). Yet, each successive dilution yields Herfindahl indices which wrongly diagnose less concentration, mostly due to the fact that the proportion of shares owned by company A1 steadily decreases in the process!¹⁹ In addition, since Herfindahl indices concentrate on the largest shareholders and totally disregard the float, they fail to integrate a very important element of the potential disciplinary effect of small shareholders in the outsider system.

Let us next consider the case of the Continental European (or insider) system. By definition, Herfindahl indices can only tackle one layer of shareowners. While this may be a good approximation of reality in outsider systems, a simple look at Exhibit 2 (Table 3) reveals that it is clearly insufficient in more complex, multi-layered structures. Indeed, should one compute the Herfindahl index on the basis of the largest direct shareholder (which we already know is wrong from Exhibit 1b) or take into account the presence of B1 and B2? If we do the latter, A2 (or A3 or A4 indifferently) becomes the largest shareholder since B1 would only have the equivalent of $9/5 (= 3 \cdot 3/5 < 2)$ direct shares. In practice, however, B1 has more control over T than any other shareholder and a Herfindahl index would fail to diagnose it.

Similarly, corporate laws fail to capture the whole complexity of the issue. Banking commissions and other regulatory bodies usually rely on rather simple concepts of

¹⁷ Because any two shareholders jointly detain a majority of shares.

¹⁸ Because when the main shareholder colludes with any other shareholder, they jointly detain a majority, whereas all three small shareholders should collude in order to counter A1, a clearly more difficult task.

¹⁹ Although this example may appear overly simplified, we have been able to identify a number of real-world cases where control over companies behaves as described here.

corporate control, whereby owners are classified into a small number of distinct categories. For instance, a shareholder is said to detain majority control if he controls (directly or indirectly) more than 51 percent of the shares; he has at least a blocking minority if he controls between 25 and 50 percent of the shares (and could be considered to have more control if he has the ability to remove administrators); otherwise, he is viewed as having no control at all. There are many situations, however, where such rules prove unsatisfactory. A striking example occurs when a single individual (call him for instance Bill Gates) owns 20 percent of the shares of a company (call it Microsoft), while the remaining 80% of the shares are totally dispersed among an "ocean" of small investors. In such a case, the main shareholder typically rules the company, while legal regulations would consider him as possessing no significant control.²⁰

Thus, it appears difficult to build indices of corporate control that succeed in providing effective and consistent estimates of ownership dispersion, especially when studying a variety of corporate governance systems. Promising attempts, however, have been made to handle this question within a formal game theoretic framework. The idea is here to model shareholders as *players* in a *voting game*, and to use classical *power indices* (such as Shapley indices, see e.g. Owen (1982)) to measure the extent of their control over a target company. Intuitively, such power indices reflect the relative ability of each player (or shareholder) to impose his will to the target company through coalitions with other players. This approach has been applied to the study of corporate control by a few authors (see Cubbin and Leech, 1983; Gambarelli, 1991; Zwiebel, 1995). Yet, their investigations are mostly theoretical and/or restricted to the analysis of a single layer of shareowners.

We propose here to use the Banzhaf index, which measures the ability of a voter to swing the decision in his or her own favor. More precisely, the Banzhaf index of a player can be defined as the probability that the outcome of the voting process changes when the player changes her mind unilaterally, under the assumption that all vectors of votes are equally likely (see Banzhaf, 1965, 1966, 1968). Although there are technical differences between the Banzhaf Index and the Shapley value, both indices essentially capture the same phenomenon and often yield nearly equivalent measures of power. However, we found the Banzhaf Index easier to compute algorithmically, especially in the case of complex structures. The reader interested in a detailed discussion of the differences between the Banzhaf Index and the Shapley value is referred to Dubey and Shapley (1979).

²⁰ Alternatively, it may happen that a corporate shareholder with more than 50 percent shares in a subsidiary is himself owned by a dispersed group of shareholders, in which case, it is highly debatable whether the subsidiary is controlled or not.

Thus, we have computed an index (the Z Index) largely based on Banzhaf's methodology. For the computation of the Z Index, we have assumed that the float was constituted of a large number of small voters. This is not always done as it is often assumed that only large shareholders matter, in which case the float is neglected by normalizing the total number of shares to the sum of the shares held by the largest identified shareholders.

How to compute the Z Index: an illustration

For those not familiar with game-theoretic power indices, we illustrate the computation of the Z Index in the simple cases displayed in Table 3a. The mechanics are a little tedious but simple. Let us first consider Exhibit 1a, and assume that there is one issue concerning T on which shareholders have to vote "yes" or "no". Assuming that votes are not correlated, there are 4 (2^2) possible voting strings as shown in Table 3b. Among these, there are two where (A1) changes her mind while (A2) does not. Thus, (A1) changes her mind twice and the result of the vote changes in both occasions. On the other hand, although (A2) changes her mind twice as well, the final vote does not change in either occasion, reflecting the absolute incapacity of (A2) to affect the outcome. We already knew that (A1) has full control over T. The Z index is computed as the ratio between the number of swings in the final outcome induced by each player over the total number of swings in the final outcome induced by all players. It is equal to 100 percent ($2/2$) for (A1) and 0 percent ($0/2$) for (A2). Let us move to Exhibit 1b. There are 8 (2^3) possible voting strings among which 4 correspond to situation where (A1) changes her mind while the others do not. Thus, (A1) can induce two swings in the final outcome when changing her mind 4 times. The same holds for both other players, so that a change in the final outcome caused by one single change of mind can only occur in 6 instances. Thus, the Z Index for each player is the same and equal to $2/6$ or $1/3$. Consider now Exhibit 1c. This time there are 16 (2^4) possible voting strings. A similar computation, detailed in Table 3b shows that the Z Index has now increased for (A1) from $1/3$ to $2/3$ while the Z Index of all three other players has gone down to $1/6$. Thus, the Z Index provides results which are fully consistent with the intuition discussed in the previous subsection. In particular, the control held by (A1) goes down then up as the capital is diluted.

In order to make the case that the Z Index can be used in more complex structures, we also consider Exhibit 2. There are 5 players only because the vote of (A1) is fully determined by the vote of (B1) and (B2). A similar mechanism based on the analysis of 32 (2^5) possible voting strings shows that the Z Index is $2/3$ for (B1), $1/6$ for (A2), (A3), and (A4) and 0 for (B2).

In the next section, we use the Z index to analyse the impact of corporate ownership dispersion on the financial performance of firms.²¹

5. *Empirical results*

Corporate control in the UK

We have already discussed the main features of the corporate governance system that prevails in the UK. We are now going to describe some of the relationships that emerge between the financial characteristics of firms, on the one hand, and either Herfindahl or Z indices on the other, as they emerge from an empirical study of a panel of listed British firms.

Data sources

A random sample of 250 companies quoted on the London Stock Exchange was selected and (yearly) data relative to these companies were collected for the period 1988-1993. All disclosed ownership stakes were retrieved from microfiche and hard-copy annual reports : these include all beneficial and non-beneficial shareholders with stakes of 3% or more, as well as all directors' shareholdings. Whenever a nominee was mentioned as major shareholder, the individual, corporation or institution behind the nominee shareholding was identified by contacting the companies' finance managers. The risk measures are from the Risk Measurement Service; betas have been calculated via a Vasicek Bayesian-updating procedure. Share price performance measures are from the London Share Price Database. Accounting and firm specific characteristics data (including several non-risk security characteristics dividends, P/E ratio, etc) are from Datastream.

Tests and results

In order to illustrate the importance of ownership dynamics in the economy, we report here on two specific issues. First, we investigate the possible link between the performance of a stock and the ownership structure of the firm at the previous period. Performance is measured by annual return, i.e. by the ratio called *Return_t* in Table 4: (capital gain plus dividend) to (value of the stock at the previous period). Four types of control indices are used to capture the ownership structure of each firm:

- *Z1* denotes the *Z index* of the largest shareholder;
- *Z2* denotes the *Z index* of the second largest shareholder;

²¹ The authors of this paper are preparing a forthcoming paper discussing the econometrics of the Z index and some of its game theoretic properties (see Crama et al., 1999).

- *Herf1* denotes the square of the percentage of shares detained by the largest shareholder;
- *Herf5* denotes the sum of squared percentages of shares detained by the five largest shareholders.

The other variables appearing in the regression (Table 4) are standard and are included to control for firm specific characteristics. They include the level of employment ($Empl_{t-1}$), market capitalization ($Mcap_{t-1}$), the price-earning ratio ($PE\ ratio_{t-1}$), the systematic risk of the stock as measured by its Beta ($Beta_{t-1}$) and a dummy for the sector of activity ($Sector_t$). Note that a Z index is defined for each firm's shareholder while Herfindahl indices correspond to a distribution of ownership for the firm. Thus, while *Herf1* and *Z1* may correspond to the same unique financial link when the largest direct shareholder also happens to be the largest ultimate shareholder, there is no such similarity between the Z indices and Herfindahl indices of higher order.

In a second model, we investigate the possible link between the systematic risk of a stock, as measured by its Beta, and the above indices of ownership structure.

Thus, we have obtained three econometric equations (with either *H1* and *H2*; or *Z1* and *Z2*; or *Z1* only respectively) explaining returns and three explaining the Beta. The main results are summarised in Table 4.

It is interesting to note that the coefficients of both Z indices are highly significant in both models tested. By contrast, the coefficients of *Herf1* and *Herf5* are only significant at a very low level. We believe this is a quite remarkable result, since the British market is one for which the difference between Herfindahl and Z indices could a priori be expected to be less marked. Note that one should be careful before drawing definitive conclusions given the potential pitfalls that apply to this type of standard cross-sectional studies of stock returns (see *inter alia*, Kan and Zhang, 1999; Kim, 1995).

The results of our estimation nevertheless show that the presence of a substantial controlling minority in the hands of the second largest shareholder has a positive and statistically significant impact on financial performance. A possible explanation for this phenomenon goes as follows. When the largest shareholder owns most of the control (*Z1* is high, *Z2* is low), she essentially maximizes her own utility function, which may differ from the firm's profits. When there exists a counterbalancing pole of control (both *Z1* and *Z2* are high), utility functions are usually different and the best compromise is then to maximize profits. This balancing effect clearly appears as the coefficient of *Z2* is significantly positive while that of *Z1* is significantly negative. For information, we also include the equation where only *Z1* appears.

As a matter of fact, many arguments have been proposed in the literature to predict the sign of the relationship between ownership dispersion and the financial performance or risk of a stock. It has been argued, for instance, that dispersed ownership increases the role of management and thereby affects the financial performance of the firm.²² It is not our purpose here to survey these (sometimes

²² We have avoided the difficult problem of the sense of the causality by only considering lagged explanatory variables. Indeed, many authors believe that financial performance may have an impact on

contradictory) theories nor to test any specific hypothesis. We simply want to suggest that a link exists between corporate governance and financial performance and that a sound index, based on game-theoretic arguments, is a useful instrument for researchers in the field.

The case of insider systems

The above analysis dealt with the case of an *outsider* system, for which Herfindahl indices do not exhibit all of the weaknesses described in Section 4. As already mentioned, we may expect to observe an even more striking difference between the behaviour of Herfindahl indices (computed on the basis of direct shareholdings) and Z indices in *insider* systems, characterised by interlocked pyramidal ownership structures. We do not carry out here a detailed econometric analysis for this type of systems. However, we can present some partial evidence to sustain this claim.

Using a sample of French companies, we have computed the Z index for the main (possibly indirect) shareholder and compared it with the percentage of shares held by the largest direct shareholder. We display here two exhibits (see Table 5). In the first exhibit, we show the relationship between the Z index for the main shareholder and the percentage of shares held when the latter is below 50 percent (about 35 companies). It is readily apparent that the relation between both indicators is highly non linear. In the second exhibit, we display the Z index of the main indirect shareholder for a sample of about 70 companies in which the largest direct shareholder owns more than 50 percent. Note that this does not imply a Z index of 1 because the majority direct shareholder may feature a dispersed ownership structure itself.²³ Actually, the graph in Table 5 suggests that this must often be the case.

Thus, it clearly appears that the Z Index provides a strikingly different picture of shareholding structures from that based on the Herfindahl concept. The above discussion also shows that the Z Index (or any index of a similar nature) would provide a sound measure for all systems of corporate governance.

6. Conclusion

This paper has described two broad systems of corporate governance existing in Continental Europe (the *insider* system) and in the UK (and the US, the *outsider* system). We have emphasised a number of striking differences in concentration and nature of ownership between both systems. For example, in a typical Continental European country, (majority) control is held by one shareholder or a small group of

the ownership structure, and not just the opposite. An interesting analysis of this issue can be found in the seminal paper by Jensen and Meckling (1976) and subsequent work.

²³ Leaving aside the issue of the possible existence of a blocking minority.

interlocked (corporate) shareholders, whereas Anglo-American companies are predominantly widely held. These discrepancies have important consequences in terms of agency costs and therefore, mechanisms have been developed in most countries to separate ownership (cash flow rights) and control (voting rights) both at the level of the firm and through corporate law.

The complexity of apprehending the numerous and intricate issues related to corporate governance has led us to focus on the need to adequately measure the extent to which a company is controlled by its shareholders. We have shown that traditional indices belonging to the Herfindahl family do not provide theoretically sound measures and have proposed to use another index (the Z index) based on the idea that shareholders are players in a voting game.

In order to illustrate the importance of ownership dynamics on the economy, we analysed empirically the impact of the Z-index and Herfindahl indices on the financial performance of a stock and its risk (measured by the beta). Given the widely held nature of companies listed on the London Stock Exchange, the importance of the role played by potential shareholder coalitions, and the availability of data, the equations have been estimated for the UK. Our results point to the fact that voting power, as measured by Z indices, is tightly correlated to both share price performance and risk. Classical Herfindahl indices, on the other hand, appear to exhibit a weaker relationship.

We also find that financial performance is highest for companies where the second largest shareholder has a substantial amount of control. This is because with a counterbalancing pole of control, the largest shareholder is forced to compromise and maximize firm's profits rather than his or her own utility function.

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Table 1 : Concentration of voting rights by country

This table presents total ownership concentration of all large shareholders and of the largest shareholder. The ownership classes which hold (cumulatively) the largest percentage of equity in the average listed company are also exhibited.

Ownership data capture both direct and indirect (ultimate) shareholdings: all voting rights controlled directly and indirectly possibly via a cascade of intermediate holdings are added. In other words, alliances based on share stakes are taken into account.

The companies in these studies are listed and exclude financial institutions.

	Studies (1998) Eur.Corp.Governance Network	Sample co's All quoted	Disclosure Threshold	Total ownership concentr.		Largest shareholding		Shareholder classes with largest nbr of voting rights	
				Mean	Median	Mean	Median	Most	2nd most
Austria	Gugler, Kalss, Stomper, Zechner	50 listed (all)	5%	65.5	60.0	54.1	52.0	Domestic co's	Fx co's/bks
Belgium	Becht et al.	150 listed (all)	5%	63.4	66.5	55.8	55.5	(Fin)Holding co's	Ind&com Co's
France	Bloch and Kemp	40 listed (CAC) (1)	5%	52.0	30.0	29.4	20.0	Fin. holding co's	Ind&com Co's
Germany	Becht and Boehmer	374 listed (all) (3)	5%	<65%	<65%	n.a.	52.1	Companies	Fin. Inst.
Italy	Bianchi, Bianco and Enriques	216 listed (all)	2%	68.4	62.3	51.9	54.5	Companies	Individuals
Netherlands	De Jong, Kabir, Mara and	137 listed (all)	5%	62.5	69.8	42.8	43.5	Administr. office	Fin. Inst.
Spain	Crespi and Garcia-Cestona	193 listed (all)	5%	65.1	63.2	40.1	34.2	Domestic co's	Fx co's
UK	Goergen et al.	250 listed (2)	3%	40.8	39.0	15.2	10.9	Institutions	Directors
US	Becht	1309 (NYSE)	5%	ca 30%	n.a.	<5%	<5%	Institutions	Individuals

All studies (a.o.) forthcoming in Barca, F. and M. Becht (1999) : Ownership and Control: A European perspective, Oxford Univ. Press

Note : (1) for all 680 French listed firms, the largest owner controls an average of 56% of voting rights. Companies which are part of an index have to assure sufficient Liquidity; hence, the high free float and smaller blockholdings. For comparison; the median largest voting block of a DAX30 company amounts to 11.0%.

(2) random sample of all non-financial firms listed on the LSE.

(3) all listed from the official market.

Table 2: Ownership and Voting Power: Structure and Consequences

Panel A : Dispersed Ownership and Dispersed Voting Power

- *where* : US, UK.
- *advantages* : a. portfolio diversification and liquidity; b. take over possibility
- *disadvantages* : insufficient monitoring : free riding problem
- *agency conflicts* : management vs shareholders

Panel B : Dispersed Ownership and Concentrated Voting Power

- *where* : countries where a stake holder can collect proxy votes and shareholder coalitions are allowed.
- *advantages* : a. monitoring of management, b. portfolio diversification and liquidity;
- *disadvantages* : a. violation of one-share-one-vote b. reduced take over possibility
- *agency conflicts* : controlling block holders vs small shareholders

Panel C : Concentrated Ownership and Dispersed Voting Power

- *where* : any company with voting right restrictions
- *advantages* : protection of minority rights
- *disadvantages* : a. violation of one-share-one-vote b. low monitoring incentives, c. low portfolio diversification possibilities and low liquidity d. higher cost of capital e. reduced take over possibilities
- *agency conflicts* : management vs shareholders

Panel D : Concentrated Ownership and Concentrated Voting Power

- *where* : Continental Europe, Japan, in any company after take over.
- *advantages* : high monitoring incentives
- *disadvantages* : a. low portfolio diversification possibilities and low liquidity b. reduced take over possibilities
- *agency conflicts* : controlling block holders vs small shareholders.

Table 3 b: Computation of Z Indices - An illustration

Exhibit 1a

String #	Possible voting choices		Outcome
	(A1)	(A2)	(T)
1	Y	Y	Y
2	Y	N	Y
3	N	Y	N
4	N	N	N

Results

Number of possible strings		4
=		
Number of swings for (A1)		2
=		
Number of swings for (A2)		0
=		
Total number of swings =		2
Z Index (A1)	(= 2/2)	1
=		
Z Index (A2)	(=0/2)	0
=		

Exhibit 1b

String #	Possible voting choices			Outcome
	(A1)	(A2)	(A3)	(T)
1	Y	Y	Y	Y
2	Y	Y	N	Y
3	Y	N	Y	Y
4	Y	N	N	N
5	N	Y	Y	Y
6	N	Y	N	N
7	N	N	Y	N
8	N	N	N	N

Results

Number of possible strings		8
=		
Number of swings for (A1)		2
=		
Number of swings for (A2)		2
=		
Number of swings for (A3)		2
=		
Total number of swings =		6
Z Index (A1)	(= 2/6)	0.333
=		
Z Index (A2)	(= 2/6)	0.333
=		
Z Index (A3)	(= 2/6)	0.333

=

Exhibit 1c

String #	Possible voting choices				Outcome (T)
	(A1)	(A2)	(A3)	(A4)	
1	Y	Y	Y	Y	Y
2	Y	Y	Y	N	Y
3	Y	Y	N	Y	Y
4	Y	Y	N	N	Y
5	Y	N	Y	Y	Y
6	Y	N	Y	N	Y
7	Y	N	N	Y	Y
8	Y	N	N	N	N
9	N	Y	Y	Y	Y
10	N	Y	Y	N	N
11	N	Y	N	Y	N
12	N	Y	N	N	N
13	N	N	Y	Y	N
14	N	N	Y	N	N
15	N	N	N	Y	N
16	N	N	N	N	N

Results

Number of possible strings		16
=		
Number of swings for (A1)		6
=		
Number of swings for (A2), (A3), (A4) =		2
Total number of swings =		12
Z Index (A1)	(= 6/12)	0.5
=		
Z Index (A2), (A3), (A4) =	(= 2/12)	0.166

Table 3a : Ownership concentration indices in the insider and outsider systems

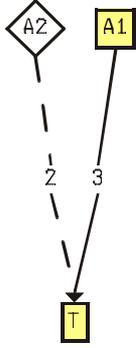


Exhibit 1a

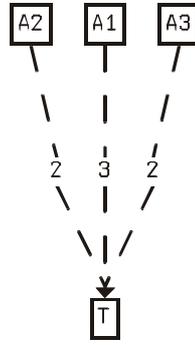


Exhibit 1b

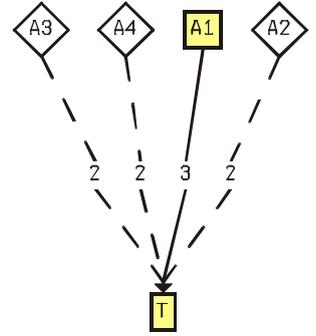


Exhibit 1c

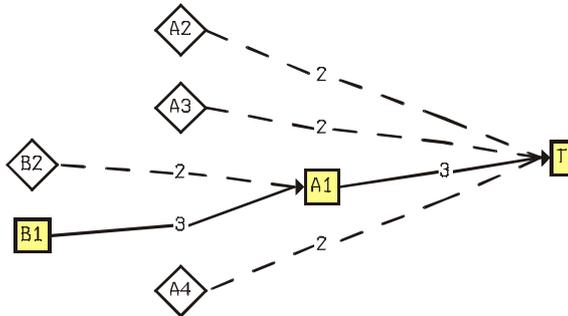


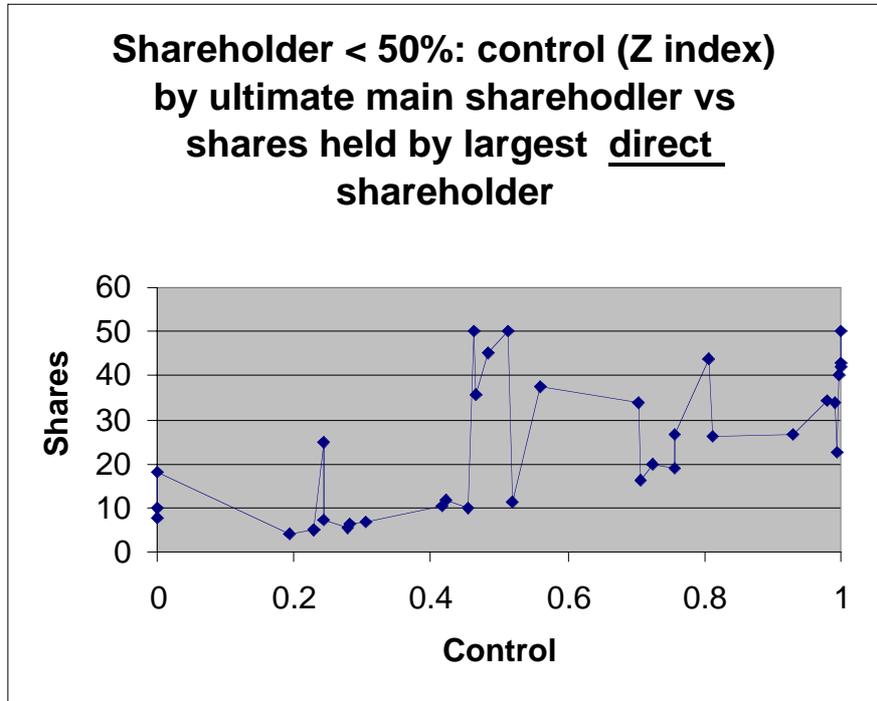
Exhibit 2

Table 4 : Impact of ownership dynamics on the risk and financial performance of a stock

Dependent variable :	$Beta_t$	$Beta_t$	$Beta_t$	$Return_t$	$Return_t$	$Return_t$
Explanatory Variables						
$Z1_{t-1}$	0.1222 (22.414)	-	0.1184 (19.341)	-3.3510 (2.51)	-	-7.0417 (4.55)
$Z2_{t-1}$	0.1019 (18.783)	-	-	24.3068 (11.31)	-	-
$Herf1_{t-1}$	-	-0.00003 (1.509)	-	-	0.0088 (1.688)	-
$Herf5_{t-1}$	-	0.00005 (3.215)	-	-	-0.1131 (2.299)	-
$Empl_{t-1}$	0.000004 (13.108)	0.000004 (15.281)	0.000004 (17.3118)	0.0007 (24.010)	0.0006 (21.378)	0.0007 (34.77)
$Mcap_{t-1}$	-0.00005 (65.050)	-0.00005 (32.671)	-0.00005 (60.459)	-0.0226 (46.392)	-0.0214 (45.108)	-0.0218 (12.71)
$PE\ ratio_{t-1}$	-0.0010 (21.215)	-0.0009 (12.458)	-0.0008 (18.074)	0.3415 (15.081)	0.1806 (7.550)	0.2813 (12.71)
$Beta_{t-1}$	-	-	-	39.0118 (17.096)	34.388 (8.803)	37.8001 (15.96)
$Sector_t$	-0.0003 (0.456)	-0.0009 (1.144)	0.0002 (0.236)	0.8963 (4.9894)	0.9661 (2.258)	0.8734 (4.890)
# of observations	782	782	782	767	767	767
Sample period	1989-1992	1989-1992	1989-1992	1989-1992	1989-1992	1989-1992
Adjusted R^2	0.78	0.76	0.78	0.16	0.16	0.16

- Note 1. Given the presence of missing observations for some years and/or firms in the sample, the models (fixed effects models with time/year specific dummies, not reported in this Table) were estimated from an unbalanced panel by feasible GLS using estimated cross-section residual variances.
- Note 2. Heteroskedasticity robust t-test statistics (in absolute value) are reported in parentheses. The higher the t-test statistics, the more significant the variable is.

Table 5 : Control vs ownership for a sample of French companies



Note. In the graph below, firms are ranked according to the amount of control held by their largest ultimate shareholder (control is on the vertical axis while firms are numbered on the horizontal axis).

