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**UNITED WE STAND: CORPORATE
MONITORING BY SHAREHOLDER
COALITIONS IN THE UK**

By Rafel Crespi-Cladera and Luc Renneboog

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United We Stand:

Corporate monitoring by shareholder coalitions in the UK

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Abstract :

This paper investigates whether voting coalitions are formed by shareholders in order to discipline incumbent management. Shapley values capturing the relative power of shareholder coalitions by category of owner, outperform models with percentage ownership stakes and models measuring the relative voting power of individual owners. There is evidence of successful executive director resistance to board restructuring if these executive directors can combine their ownership stakes to a substantial block of voting power. Non-executive directors seem to support incumbent management, but poor performance is penalised by industrial and commercial companies with large relative voting power. The voting power of insurance companies is positively related to executive director turnover, but this voting power is used for remove management for reasons of other than performance, which may be of strategic nature. Investment/pension funds and funds managed by banks do not play a role in the management substitution process.

A large number of share blocks change hands, and new shareholders –industrial companies, individuals and families– are related to increased executive director turnover. Still, these changes in share stakes do not constitute a market in (partial) control since there is no systematic evidence that these changes are triggered by poor performance with the notable exception of industrial companies. There is little evidence that adjusting the board composition to allow for more independence for non-executive directors leads to higher managerial removal. In contrast, high gearing facilitates substitution of executive directors, especially if the company needs to be refinanced.

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1. Introduction : separating ownership and control.

A dichotomy: market versus blockholder system.

Traditionally, corporate governance systems in western economies have been categorised into a market oriented system and a blockholder system¹. The former is typical for Anglo-American countries with a large number of listed companies, strong boards, prevalence of institutional investors (Roe 1994) and high trading liquidity of shares (Becht and Roell 1999). The blockholder system refers to Continental European countries and Japan which have a (relatively) small number of listed companies, concentrated ownership, complex cascade-like shareholding structures with powerful controlling families, industrial firms or holding companies (Barca and Becht 2000). Table A1 (appendix) shows that the cumulative shareholdings of the largest three shareholders largely exceed the absolute majority threshold in most Continental European countries. In Austria, Belgium, France, Germany and Italy, a majority of shares in the average quoted company is even controlled (directly and indirectly) by one single investor (group). In contrast, the largest share stake in Anglo-American countries amounts to less than 15%. In 85% of the listed companies, the largest shareholder does not even control a blocking minority (of 25% or more) and a coalition of the largest three shareholders still holds less than 30%.

This dichotomy has important consequences at the level of agency costs (see a.o. Shleifer and Vishny 1997). Due to free riding of control, dispersed concentration of ownership and voting rights might lead to low levels of monitoring and consequently to a balance of power tilted towards management. Still, the lack of shareholder monitoring may be compensated by an active take-over market.² In contrast, high levels of concentrated ownership and voting rights enhance monitoring since control is obtained by one large shareholder group, but agency conflicts may arise between majority and minority shareholders.

Deviations from the traditional market versus blockholder framework.

The dichotomy between market oriented and blockholder systems is but an oversimplification of control allocation. Firstly, it is not just mere ownership concentration which has important monitoring repercussions but rather the *nature* of shareholding concentration. Specific categories of owners have different monitoring abilities: e.g corporate shareholders may value dominant shareholding positions not just for a financial return on investment, but also for potential benefits of control, especially when a customer or supplier relation exists with the target company (Barclay and

¹ See a.o. Wymeersch 1994, Franks and Mayer 1995, Shleifer and Vishny 1997.

Holderness, 1989). Table A2 (appendix) shows the variation of voting power among the main investor categories by country. Whereas domestic industrial and commercial companies are the main shareholders in Germany, Austria and Italy, financial holding companies dominate in France and Belgium. Banking groups are powerful in France and Germany. A substantial number of companies is controlled by wealthy families in Belgium and Italy. In Anglo-American countries, the majority of shares is held by institutions.

The evidence of large shareholder assuming monitoring responsibilities in the blockholder system is mixed. French, Belgian or Italian listed holding companies do not actively monitor listed companies, as reflected in managerial disciplining or superior corporate performance (see Banerjee et al. 1997 for France, Renneboog 2000 for Belgium, and Bianco and Casavola 1999 for Italy). In contrast, there is some weak evidence that listed industrial companies in these countries are well monitored and, in turn, discipline companies in which they hold a large equity participation. Kaplan (1994) and Crespi and Garcia (1999) find limited evidence of beneficial monitoring consequences for German and Spanish listed companies. In contrast, Kaplan and Minton (1997) conclude that changes are implemented to the board structure of poorly performing Japanese companies which belong to a keiretsu group. For the US, Holderness and Sheehan (1988) and Bethel et al. (1998) found substantial management turnover associated with majority blocks trade. In contrast, Franks et al. (1999) conclude that large shareholders – with the exception of industrial companies – do not seem to discipline listed poorly performing UK companies but find strong evidence of managerial entrenchment. In Anglo-American countries, much is expected from institutional shareholders in terms of corporate control (e.g. Black 1990, Gilson and Kraakman 1991). Still, in spite of the dominance of this investor class, there is little evidence –with some notable exceptions like CalPERS or LENS- that institutions have accepted an active governance active role (Stapledon 1996 for UK, Romano 1999 for US).

A second reason explaining the weak relation between ownership concentration (as a percentage of equity) and monitoring (managerial disciplining) is that ownership concentration is not necessarily congruent with concentration of voting rights and hence control. Deviations from correspondence between concentration of cash flow rights and of voting rights are induced by *dual class shares*. The value of control can be derived from the (control) premium of voting shares.³ Whereas dual

² Whereas Martin and McConnell (1991) show that the market for hostile take-overs in the US fulfils this disciplinary role in the US, Franks and Mayer (1996) do not find evidence supporting this role in the UK.

³ The control premium in the US is small as concluded in Lease et al. (1983, 1984), DeAngelo and DeAngelo (1985) and Zingales (1995) but increases when control is contested. The average voting premium is higher in other countries: 6.5% for Sweden (Rydqvist 1987), 82% or 69% in Italy (respectively, Zingales 1994 and Nicodamo 1998), 45.5% in Israel (Levy 1982), 20% for Switzerland (Horner 1988) and 5% for France (Banerjee et al 1997).

class shares are common in e.g. Sweden and Italy, in other countries, like the UK, dual class shares are not allowed or are discouraged by the regulatory authorities⁴. *Ownership pyramids or cascades* enable investors to ensure (full) control over a company while holding less than 50% of the cash flow rights.⁵ The longer the chain of intermediate holding companies and the higher the deviation from full intermediate ownership, the higher the discrepancy between ownership and control. This pyramiding technique is common in Continental Europe (especially in Belgium, France and Italy).⁶ Another way of accumulating voting power is through *proxy votes*. For example, German banks commonly use proxy votes of the shares deposited in their custody (*Depotstimmrecht*, Wenger and Kaserer, 1997) and the management of UK firms are often soliciting proxy votes to support propositions on the annual meeting (Stapledon, 1996). *Voting pacts* often take the form of priority purchase rights of share blocks or are instrumental in forming investor groups in e.g. Belgium (Becht et al. 1998) and Germany (Franks and Mayer 1998).

Whereas, above mechanisms allow control retention (or accumulation) with limited equity ownership, there are also mechanisms eroding voting power. For example, a majority of Dutch listed companies have adopted the '*structured regime*' which induces complete ownership and control separation as voting rights are held by the Administration Office controlled by the supervisory board (Moerland 2000, De Jong et al. 2000). The imposition of *voting caps* can also erode voting power in Germany, Belgium or Spain.⁷ Furthermore, since the take-over wave in the 1980s, several types of *poison pills*, like issuing bonds cum warrants or convertible bonds, shelf registration of equity, are frequently used to dilute the voting power of 'hostile' shareholders.

A third factor influencing the relation between ownership and governance is *corporate law and its enforceability in court*, which influences the relative costs of holding equity blocks. Corporate governance systems are embedded in different broad legal traditions: the common law system of Anglo-American countries and the Commonwealth versus the civil law tradition of Continental

⁴ See e.g. Brennan and Franks (1997) and Goergen and Renneboog (2000a).

⁵ If the investor owns at least 51% of the voting rights in a subsidiary which owns, in turn, 51% in the target company, the dominant ultimate investor retains absolute control while he only owns a quarter of the equity (or cash flow rights) in the target company.

⁶ In the UK, regulation has discouraged the creation of ownership pyramids. Higher complexity of ownership structures are encountered in Continental European countries. Germany is characterised by complex shareholdings around and within industrial groups (Becht and Boehmer, 2000) while the French system is characterised by ownership cascades of financial groups and cross-company shareholdings (Bloch and Kremp, 2000). In Italy, long pyramids controlled by state or family-owned corporations are typical (Bianchi et al., 2000). More than a third of listed and non-listed Belgian companies are controlled by financial holdings companies (Becht et al., 2000). 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, 2000). All the studies referred to in this footnote are forthcoming in Barca and Becht (2000).

⁷ The board can install voting caps only after prior consent of the annual meeting and the authority can only be delegated for a limited amount of time. In addition, voting caps are only introduced under specific conditions, e.g. when

Europe and its sphere of influence (former colonies). According to La Porta et al. (1997, 1999), the common law system provides stronger shareholder and creditor protection.⁸ However, even within each governance system, there are differences in corporate control regulation leading to different cost of control. For instance, Franks et al. (1998) claim that the relative cost of holding large share blocks is higher in the UK than in the US.

This discussion has shown that the distinction between market oriented and blockholder corporate governance systems is an oversimplification as corporate law allows for numerous ways to deviate from the one-share-one-vote rule. In the remainder of this paper, we focus on one particular way of control accumulation, namely, we investigate whether there is (indirect) evidence of voting rights coalition formation in the UK. We also investigate whether high relative voting power is used in active corporate monitoring. Section 2 describes the legal aspects of coalition formation and formulates the hypotheses. Section 3 discusses the data sources and describes the data. In section 4, the methodology is explained, while section 5 presents the results. Section 6 concludes.

2. Shareholder voting coalitions and alternative corporate governance mechanisms.

2.1 Relative power of voting pacts.

Since shareholders bear all costs related to their control efforts but only benefit in proportion to their shareholding, monitoring management may be prohibitively expensive (Grossman and Hart 1980, 1988). Only a large control stake will make monitoring cost-effective such that the costs of corporate control can be internalised and free riding on control constrained. Little shareholder monitoring is expected in the UK as most listed industrial UK companies (85%) are widely-held (lacking a controlling share block of 25% or more). Bebchuk and Roe (1999) argue that diffuse ownership persists – in spite of its inherent drawbacks in terms of agency costs – as a result of historic regulatory evolution (structure- and regulation-driven path dependence). For example, for investors who are not interested in acquiring a complete company, the mandatory take-over threshold of 30% is an upper boundary (Goergen and Renneboog 2000a).⁹

the company is threatened by a hostile take over. In each of the 3 German hostile take over attempts since WWII, voting caps were used (Franks and Mayer, 1998).

⁸ La Porta et al. (1997) built an index capturing shareholder protection which increases when (i) shareholders are not required to deposit their shares prior to annual meetings, (ii) shareholders can mail proxy votes, (iii) cumulative voting is allowed, (iv) minority protection legislation is strong and (v) and small shareholders can call extra-ordinary meetings. The creditor protection is larger when the rule of absolute priority is followed in case of financial distress.

⁹ Shareholders transgressing this threshold are required by the Mergers and Monopolies Commission to make a tender offer for all outstanding shares at a price at least as high as the as highest price that the bidder paid for the target company's shares during the 12 months preceding the date when her stake reached 30%. If the offer is accepted within four months by the shareholder who, as a result, own 90%, the bidder has the right to acquire the remaining 10%.

Agency costs between management and shareholders may be reduced if shareholders increase control power by forming voting rights coalitions. Usually, shareholders form ‘ad hoc’ voting coalitions because if such a coalition were to be formed for longer periods of time, regulatory authorities will consider the coalition as an investor group. In that case, a coalition owning more than 15% of the shares is required to disclose its ‘strategic intention’ or, if it controls 30% or more of the votes, the Mergers and Monopolies commission may require the coalition to comply to the mandatory take-over rule (Stapledon 1996). Thus, voting coalitions are usually temporary and are customarily forged with a specific aim (e.g. the removal of incumbent management). Moreover, they are commonly kept confidential, although explicit voting contracts may be drawn up (Van Hulle 1998). Given the confidential nature of voting pacts, there is little direct evidence of shareholder coalitions in the UK. Therefore, the existence of shareholder coalitions is tested indirectly in the context of top management removal. In contrast to most previous corporate control research where absolute measures of voting power (percentage stakes of equity or Herfindahl indices) were used, this study captures the relative voting power of each blockholder in potential voting coalitions¹⁰. All potential pacts are simulated by company and by year and are used to calculate shareholders’ Shapley values (SV’s) (see section 3), which measure the extend to which shareholders are pivotal in (potential) voting pacts. The relation between disciplinary actions against executive directors or CEO and ownership concentration is contrasted with the relation between disciplining and voting power of shareholder coalitions. If the latter relation is stronger, we interpret this as indirect evidence of shareholder coalition monitoring. Thus, we hypothesise that: *Shareholders with high relative voting power remove underperforming management (Hypothesis 1a)*.

This hypothesis assumes that every blockholder has equal propensity to take part in a shareholder voting pact and to monitor a corporation. However, it is possible that the relative power is better described as resulting from a voting game consisting of two stages: it may be easier for specific classes of shareholders to form ex ante coalitions (first stage) before entering in a voting game as a block (second stage). For example, given that executive directors have similar private benefits of control, they may combine their shareholdings to form one block and try to obstruct other shareholders’ actions (e.g. attempts to remove executive directors). Evidence of managerial entrenchment in the UK is given in Lai and Sudarsanam (1997) and Franks et al. (1998). Consequently, the executive directors’ equity stakes are first summed and, subsequently, the relative voting power of this voting block is calculated.

¹⁰ Interesting studies relating voting power (measured by power indices) and performance are those by Leech (1988, 1991) who uses probabilistic indices for the UK and by Zwiebel (1995) for the US.

From the repeated call for more institutional shareholder activism by the Cadbury (1992), Greenbury (1995) and Hampel (1998) corporate governance commissions, one might infer that the level of institutional investor involvement in corporate control in the UK is (too) low. Institutions may take a passive stance due to lack of monitoring expertise or due to the desire to ensure investment liquidity since insider trading regulation may immobilise portfolio rebalancing. This may be the reason why, for instance, occupational pension funds do not add monitoring value (Faccio and Lasfer 2000). Furthermore, the Newbold Committee of Inquiry (1999) into UK vote execution by institutions reported that the voting cycle for institutions represents ‘a tortuous process’ because the proxy forms are held by the custodians and not by the fund managers (Stapledon and Bates 2000). Still, surveys on voting behaviour of investment funds reveal that vote casting by institutions has been growing rapidly. Currently, many institutions have established voting policies (for examples, see Mallin 1999).¹¹ Investment fund voting has grown swiftly in the 1990s: 20% voted in 1991 (ISC 1991), 35% in 1995 (Mallin 1995) and 41% in 1997 (MVA 1997). Pension funds exercise voting rights more frequently with 44% in 1993 (ISC 1993) and 59% in 1996 (Mallin 1996). The vast majority of insurance companies votes: 70% exercised voting rights in 1993 (ISC 1993) and 87% in 1996 (Mallin 1996). The PIRC-survey (1999) on voting trends concludes that proxy voting levels have increased to over 50%. Such surveys provide some justification for the calculation of SV’s for accumulated share blocks held by coalitions of bank managed funds, of investment and pension funds and of funds managed by insurance companies (see section 5). As different types of institutional investors regularly meet through associations like e.g. the National Association of Pension Funds, coalition formation among (types of) institutions may be facilitated.

Similarly, investor categories of non-executive directors, industrial companies, and individuals and families may each have corresponding monitoring abilities. This may justify the calculation of SV’s (relative voting power) for each class of owners (after having aggregated all shareholdings by investor class). The reason why a coalition between shareholders of one particular type may be easier to forge, results from similarities in private benefits of control within shareholder classes. Indeed, for the US, Barclay and Holderness (1989) detected that blocks were priced at substantial premiums of, on average, 20% reflecting the private benefits of control which the investors are

¹¹ As a necessary (but not sufficient) condition for potential voting pact formation by institutions, the casting of votes at annual meetings is considered. Legally, many corporate issues are subject to a shareholder vote: e.g. declaration of the dividend (after board recommendation), transactions involving the acquisition or disposal of assets worth 25% or more of the company’s net assets, removal of directors, certain alterations in the capital structure (e.g. share repurchases), disapplication of the pre-emption rights, directors’ remuneration, etc. For an exhaustive enumeration see Stapledon (1996), p.84.

expected to capture subsequently in the form of additional compensation and perquisites. Furthermore, the premiums differed according to the acquirer's ownership class. That different classes of owner have different abilities to extract control rents is also empirically supported for the US by a.o. Demsetz and Lehn (1985) and Holderness and Sheehan (1988). Firm value does not only depend upon ownership concentration but also on the specific skills and expertise of blockholders because poor corporate performance not only results from managerial underperformance but also from a breakdown in corporate control (Barclays and Holderness 1991)¹². This leads to the following hypothesis: *Shareholders coalitions consisting of - respectively - institutions, industrial companies and non-executive directors and retaining strong relative voting power, discipline underperforming management unless executive directors form a strong voting coalition to impede board restructuring (Hypothesis 1b).*

Note that a dual hypothesis is embedded in the above proposal: (i) the nature of concentrated ownership matters - in terms of monitoring- rather than mere ownership concentration, and (ii) shareholder coalitions of the same category of owners discipline underperforming management rather than individual shareholders. For hypothesis 1a, the SV's are computed as if shareholders enter the Shapley voting game as individual players: they do not form ex ante-coalitions. In contrast, the shareholders of hypothesis 1b form coalitions with shareholders belonging to the same category of owner such that the relative voting power of their corresponding category is computed as the SV of the accumulated share stakes.

As such, hypotheses 1a and 1b are two extreme cases. Several intermediate cases are possible. For example, it may be that only the executive directors form coalitions. Also, as there is some evidence that non-executive directors support incumbent management (Franks et al. 1998, Berger et al. 1999), it is possible that only executive and non-executive directors forge coalitions such that the SV of all their combined stakes can be computed whereas the other shareholders are participating in the Shapley game as individuals.

2.2 The market for control

The relative voting power described above does not capture dynamic patterns in control. Still, Burkart et al. (1997) and Bolton and von Thadden (1998) state that even when tight shareholder control is ex post efficient, it constitutes ex ante an expropriation threat which reduces managerial

¹² Banerjee et al (1997) for France and Renneboog (2000) for Belgium show that the private benefits and reasons for control accumulation by holding companies – which are the largest shareholders in France and Belgium - are manifold: capturing tax reductions by facilitating intercompany transfers, reducing transaction costs by offering economies of scale or by supplying internal sources of funds.

discretion to undertake (over)investment initiatives. Hence, equity can act as a commitment device to delegate a certain degree of authority from shareholders to management. Equity control should be state-contingent: in some states of the world (e.g. with low corporate profitability), close monitoring resulting from strong ownership concentration is desirable. In other states, close monitoring may reduce managerial discretion and hence management's effort. Therefore, performance may induce a partial corporate control market. If poor performance results from underperforming management but also from insufficient control, low quality monitors may sell their stakes and new (controlling) shareholders could improve future corporate performance by substituting incumbent management. Bethel et al. (1998) find empirical support for US companies: activist shareholders purchase large blocks in diversified companies with poor profitability. Hence, we expect that: *Poor corporate performance gives rise to changes in the ownership structure in companies without sufficiently large shareholders or with shareholders who take a passive stance concerning monitoring. Hence, changes in shareholdings are associated with higher managerial turnover in the same year or the year following the monitors' disciplinary actions (Hypothesis 2).*

Voting power is not the only corporate control mechanism and, given interdependence of corporate governance mechanisms, it is not a priori certain which mechanism dominates (Agrawal and Knoeber 1996). Therefore, it is important to include alternative governance mechanisms like board structure- and capital structure- related variables to the voting power models.

2.3 Internal corporate governance systems.

Part of the fiduciary duty of non-executive directors is monitoring corporate and managerial performance. A well functioning board reduces transaction or agency costs associated with separation of ownership and control. Non-executive directors have incentives to develop reputations as experts in decision control because the value of their human capital depends on their performance as monitors in other organisations (Fama and Jensen 1983). Consequently, directors are subjected to the disciplining of passive leadership by the external labour market. For the U.S., Kaplan and Reishus (1990) report that managers of poorly performing companies are likely to lose directorships in their own companies and will rarely be offered new directorships. Directors who left the boards of distressed U.S. companies, of firms that filed for bankruptcy or restructured their debt, held approximately one-third fewer directorships three years after their departure (Gilson 1990). Brickley et al. (1999) find that both the likelihood that a retired CEO serves on his own board two years after departure, as well as the likelihood of serving as an outside director on other boards, are positively and strongly related to his performance while CEO. Separating the role of CEO and of non-executive chairman is supposed to strengthen the board's monitoring ability as a

non-executive chairman could ensure more independence from management.¹³ Consequently, we expect that a *greater proportion of non-executive directors implies lower board domination by management due to higher monitoring ability by non-executive directors. This is reflected by increased executive director turnover when performance is poor. Separating the functions of CEO and chairman facilitates disciplining of underperforming management: such dual control should lead to higher turnover (Hypothesis 3).*

2.4 *Capital structure as a pre-commitment device.*

The probability of defaulting on debt covenants rises with high debt/equity ratios. Hence, creditor intervention may be expected with falling levels of profitability. The choice of gearing can therefore be considered as a precommitment mechanism for management (e.g. in Aghion and Bolton, 1992; Berkovitch et al., 1997) such that high executive director turnover is positively related to high gearing. The relative power of creditors increases when there is corporate underperformance and a need to refinance the company. Empirical evidence for the US is provided by Dennis and Dennis (1993) who infer creditor monitoring from the fact that high leverage (combined with high managerial ownership) improves shareholder returns. Therefore, *we expect that management of poorly performing companies with high leverage and poor liquidity experience increased turnover (Hypothesis 4).*

3. Data sources and variable description.

3.1 *Sample description*

A sample of 250 companies was randomly selected from all the companies quoted on the London Stock Exchange in 1988 excluding financial institutions, real estate companies and insurance companies. We collected data on voting rights (ownership), performance, capital structure and board structure over the period 1988 to 1993. Only those companies for which at least three years of ownership data were available, were retained in the sample in order to allow a dynamic analysis via panel data. As a result, companies delisted through take-overs or insolvencies between 1988 through to 1990 were therefore excluded, but those that were delisted subsequent to 1990 were included in the analysis. In addition, seven of the remaining 250 companies were dropped through lack of performance data. Subsequent to 1990, 29 of the sample companies were acquired and 5 were liquidated or entered a formal bankruptcy process.

¹³ Such recommendations have been formulated in the U.S. Bacon report (1993), the U.K. Cadbury Committee report (1992), the French Viénot report (1995), the Dutch Peeters Commission report (1997), the Belgian corporate governance guidelines by the Stock Exchange Commission, the Association of Employers and the Commission for Banking and Finance (all in 1998).

3.2 Ownership and control data.

Ownership data on the size of shareholdings both for existing and new shareholders for each year in the period 1988-1993 were collected. All directors' holdings greater than 0.1% are included as well as outside shareholders' stakes of 5% and more (until 1989) and of 3% and above (from 1990 when the statutory disclosure threshold was reduced to 3%). Non-beneficial share stakes held by directors on behalf of their families or charitable trusts were added to the directors' beneficial holdings. Although directors do not obtain cash flow benefits from these non-beneficial stakes, they usually have control rights. Shareholdings were classified into 9 categories: bank managed funds, funds managed by insurance companies, investment/pension funds, industrial and commercial companies, families and individuals (not directly related to any director), government stakes, real estate companies, executive directors (and their immediate family and trusts), and non-executive directors (and their immediate family and trusts). Directors and their families as hence called 'insiders' whereas other major shareholders are labelled 'outsiders'.¹⁴ The identity of the owner of substantial shareholdings labelled as 'nominees' was collected from the company secretaries who were contacted by fax. In almost all cases, the shareholder behind the nominee company is an institutional investor. Attempts to collect data on shareholder attendance and vote casting for a subsample of companies failed as these companies were not willing to disclose such data.

3.3 Performance measures and capital structure.

In order to investigate the relation between substitute forms of corporate governance and performance, several performance measures were collected for the period 1986-1995: abnormal share price returns, dividends per share, after tax cash flow margins (cash flows divided by total sales), operational return (before interest and taxes) on assets, after tax rates of return on book equity, and changes in earnings after tax and interest (standardised by total assets). Abnormal share price returns were calculated from the London Share Price Database (LSPD) and include a beta-correction for thin trading. Accounting returns were collected from Datastream. Data on capital structure (gearing, measured as the book value of debt/total assets) and liquidity (interest coverage, measured as EBIT/interest payments) are from Datastream. A second leverage measure includes market data from the LSPD: debt/(debt + market capitalisation). Corporate refinancing in the form of new equity issues are collected from the LSPD.

¹⁴ The pattern of ownership is not significantly affected by recent IPOs (where insider ownership is particularly high) because the large majority of our companies, 71%, have been listed for at least eight years.

3.4 *Board of Directors.*

In order to determine the number of directors who had borne board responsibility over the fiscal years, as well the number of directors joining and leaving the board, the notes of the annual reports over the period 1988-93 were consulted. About all directors the following information was collected: name, status (executive versus non-executive, chairman, CEO), age and tenure (for CEO and chairman only). The reasons for directors leaving the board were collected from annual reports as well as from the Financial Times and Nexus databases. This way, a distinction was made between conflictual and natural turnover, the latter being defined – in line with Weisbach (1988) - as turnover due to illness, death, and retirement at the age of 63 or above. Due to lack of informative reasons and the use of euphemistic terms explaining director turnover, all non-natural turnover is considered to be conflictual. For companies entering bankruptcy procedures or taken over, board turnover is included only up to the year prior to the event.

4. Methodology

4.1 *Shareholder control measurement.*

The one-share-one-vote principle is upheld in listed UK companies as there are no dual class voting shares and as regulation has impeded cascade ownership structures. Still, the percentage of ownership does not necessarily reflect the degree of control as 50% of equity plus 1 vote yields absolute control. Given that most UK companies are characterised by diffuse ownership structures, measures need to be used which capture the true degree of shareholder control. To some extent, the Herfindahl index captures the dispersion of ownership across shareholders. For example, if there are three shareholders with 40%, 40% and 20%, the total percentage of voting rights of the largest three shareholders amounts 1.00 whereas the Herfindahl of the 3 largest shareholdings sums the squared percentages to 0.36. Still, the Herfindahl does not reflect the degree of control which individual shareholders (on a stand-alone basis or in a coalition) can exert. Therefore, we resort to Shapley values (SV's) which assign a power index to each shareholder reflecting his relative importance in forming winning voting coalitions. In the example given above, each shareholder's SV is 0.33 because each is pivotal in coalitions yielding more than 50% of the control rights.

Within a framework of co-operative games - with transferable utility - in characteristic functional form, Shapley (1953) developed 'Shapley value assignment' ϕ defined as follows:

$$\phi_a(\mathbf{w}) = \text{def } \frac{1}{n!} \sum_{X \subset N} (|X|-1)!(n-|X|)! (\mathbf{w}X - \mathbf{w}(X - \{a\}))$$

and game w is a real-valued function whose domain is the power set (the set of subsets) of N (a non-empty finite set) such that $w\emptyset=0$. Any member of N (the grand coalition of w), a , is a player of w . If X is a coalition, the real number wX is called the worth of X in w .

Shapley and Shubik (1954) introduced the concept of P-power which posits an office-seeking motivation of voting behaviour and which is reflected in the Shapley values (or Shapley-Shubik values). If the coalition wins, it gains collective possession of a fixed amount of transferable utility and each of the winning votes receive a non-negative payoff, all adding up to the total prize. The remaining voters get zero as a pay off (Felsenthal and Machover 1998). In the context of this study, the winning coalition disciplines the incumbent management. As differential voting behaviour is motivated by different conceptions of future performance and private benefits under the incumbent management, the resisting shareholders (among which the equity owning incumbent management) are expected will suffer a reduction in financial returns and private benefits.¹⁵

A problem in calculating the relative voting power is the fact that the owners of a substantial proportion of the equity capital (on average about 56%) are unknown. These shareholders – hence called atomistic shareholders - are not directors and do not comply to the disclosure regulation because their share stakes do not exceed the notification threshold of 3%. Although assumptions on potential coalition formation and voting behaviour could be quantified for this ‘ocean’ of atomistic shareholders, we assume that they do not participate in voting coalitions as it is in practice difficult to organise minuscule share stakes into voting blocks (Chung and Kim 1999). During protracted hostile take-over battles, coalitions of large shareholders may solicit votes of atomistic shareholders to buttress the coalition, but management removal seems to be more the competence of large shareholders due to free riding behaviour of small shareholders. Therefore, prior to calculating the SV’s, rescaling the sum of the large share blocks (the director’s stakes and the share stakes exceeding the 3% threshold) to 100% is a fair assumption. The resulting SV’s reflect the relative voting power whereby a winning coalition is expected to reach absolute control (50%+1 of the rescaled vote).¹⁶

¹⁵ Felsenthal and Machover (1998) also discuss several alternative power indices like the Deegan-Packel index and the Johnston index but illustrate the “extremely counter-intuitive ‘pathological’ behaviour of these indices” (p.211).

¹⁶ There are a few cases where a shareholder who owns only a little share stake is given a disproportionately large relative voting power. For example, when the sole large shareholder holds 3% of the shares, he received a SV of 1. In order to avoid this potential problem, we have excluded companies with only one shareholder with an ownership stake

4.2 *Methodology*

Panel data regressions for the period 1988-93 are performed with executive director turnover as dependent variable and, as independent variables, power indices by category of owner as well as power indices interacting with lagged performance. Alternative corporate control variables capturing capital structure, financial distress, board composition and changes in ownership are also included as lagged variables in each model. The parameter coefficient of the interaction terms indicates whether corporate governance actions are triggered by (lagged) poor performance. Industry dummies are also included.

When the dependent variable is executive board turnover, Tobit models (with and without logistic transformations of the dependent variable) are used to adjust for the truncation of the dependent variable. When the dependent variable is CEO turnover (a dummy variable equalling one in case of conflictual CEO replacement), a logit model is utilised. The basic framework is structured as follows: turnover (exec. directors or CEO) depends upon

- a. performance (performance at t , $t-1$ and $t-2$; whereby performance is measured by annual abnormal returns, operational ROA, earnings losses, ROE, cash flow margin and dividend changes),
- b. relative voting power (SV's at t or $t-1$ and interaction between SV's at t and performance at $t-1$; whereby various assumptions are made about the likelihood that specific classes of shareholders vote: see section 2),
- c. changes in voting power (increases in ownership concentration by class of shareholder),
- d. leverage and refinancing (leverage at $t-1$, interaction of leverage with performance at $t-1$, interest coverage at $t-1$ and interaction of interest coverage with performance at $t-1$, new equity issues at t ; whereby leverage is measured as the ratio of debt on (debt + market capitalisation), interest coverage as EBIT/interest payments and new equity issues as a dummy variable),
- e. board structure (proportion of non-executive directors at $t-1$ and interaction with performance at $t-1$, separation of CEO and chairman at t and interaction with performance at $t-1$) and
- f. disclosure dummy and controls (change in disclosure threshold (dummy) and industry variables).

The control variables are taken at $t-1$ in order to take care of endogeneity problems. To check the robustness of results, fixed effects models were estimated as were models including industry dummies.

5. Description of Ownership in the UK and coalition formation.

5.1 Share stake concentration and the nature of ownership.

Panel A of table 1 shows that the largest shareholder's equity stake over the period 1989-93 is between 14 and 19% with an average of 16.6%. A coalition of the three largest shareholders own 30.1% in the average listed company and the combined equity stake of all large shareholders (owning 3% or more) amounts to 39.1%. Panel B shows the relative importance of the different classes of shareholders in terms of ownership for the year 1992. Institutions, and in particular insurance companies, are the most important shareholder category owning 24.4% of the total equity (averaged over the companies with an institutional investor as owner), while the combined board of directors controls 17.3% of voting rights. The combined shareholdings of families and individuals amount to 16.3% while industrial and commercial companies control 14.3% of the voting rights.

Insert about here Tables 1 and 2

The number of investors owning at least 3% in the average sample company is about 6 (Table 2, panel A). This average has increased from 3.8 in 1988 to 6.4 in 1992 because of the change in transparency regulation which decreased the mandatory disclosure threshold from 5% to 3%.¹⁷ Panel B reveals that most institutional shareholdings are small (below 10%). Larger stakes are rare with an average of respectively 0.29 shareholders per company. The most important category of shareholder controlling stakes of 10% or more are directors with 60 stakes (38 of which are held by executives). In 19% of sample companies industrial and commercial companies hold 34 large blocks of 10% or more.

The SV's presented in table 1 represent the relative voting power of a shareholder in potential voting coalitions. In this computation, it is assumed that all large investors (owning 3% and more) and all directors participate in voting coalitions with each other (regardless of class of owner) and that shareholders without disclosed shareholdings are atomistic and do not add their voting rights to a coalition. The SV's of the individual shareholders are subsequently summed by class of owner. The dispersed nature of the shareholding structure is reflected in panel A of table 1: the largest shareholder with an ownership stake of about 15% has a relatively high SV of at least 0.50. If the largest three shareholders form a coalition, their relative voting power increases to over 0.75. This means that such a coalition would have a de facto supermajority yielding substantial power and

¹⁷ After 1991, the average number of shareholders decreases to 5.5. As mentioned in section 3.1, we study the impact of relative voting power in relation to performance and managerial disciplining. Hence, in order to capture the dynamics of voting power, at least 3 years of data were required for each sample company in the period 1988-1991. This implies that the companies that were taken over or went bankrupt were excluded from the sample. In the years 1992 and 1993, more than 30 companies, with a size smaller than the median, disappear from our sample following receivership or take-overs. Thus, the decrease in average number of shareholders is the result of this size effect.

enabling it to even change the articles of incorporation (see Stapledon 1996). Still the SV's of panel A may be misleading as they assume that every large shareholder has a similar interest in accumulating voting power, a similar propensity to participate in voting coalitions and similar control abilities. The empirical evidence that specific classes of shareholders are better monitors than others (see section 2) motivates the inclusion of SV's calculated by class of owner in the disciplining models. Panel B of table 1 shows the relative voting power by shareholder class. The SV of the largest shareholder by class of owner shows that insurance companies hold a SV of 0.26 in the average company, industrial companies have an average SV of 0.34, and executive and non-executive directors respectively hold a relatively power of 0.21 and 0.16.¹⁸

5.2 The market for share stakes.

Table 3 exhibits that the market in share stakes is not unimportant: it shows the number of increases and decreases in large shareholdings by degree of ownership concentration and also distinguishes among new shareholders (those who transgress the disclosure threshold of 3% for the first time) and 'old' shareholders who increase their existing stake. The table reveals that the number of sales of share stakes is more or less balanced by the number of purchases¹⁹, which confirms the fact that, once a block of shares is assembled, the position is unlikely to be dissipated (Shleifer and Vishny 1986). It is in the large shareholder's interest to wait until someone who values control, expresses interest in this block because if the block is broken up and sold on the open market, part of the firm's value arising from the possibility of value-increasing monitoring is lost. A shareholding increase of more than 5% took place in 60% of the sample companies, while in 16.5% of the sample substantial shareholding increases and new share stakes occurred.

Insert about here Tables 3 and 4.

5.3 Performance, capital structure and corporate size.

Table 4 reports summary statistics of the performance data for the year 1992. As expected for a random sample, the average annual abnormal return is close to zero, while this average company has an ROE of 11.8%, a cash flow margin (cash flow/sales) of 6.2 and a profit margin of 2.9. This firm's capital gearing amounts to 37% and its interest coverage is more than 9 times (with a median of about 4). Eleven per cent of companies issued new equity using rights issues (146 rights issues are recorded over the period 1988-93). The working capital ratio (short term assets/ short term liabilities) is 1.42 for the average company.

¹⁸ The numbers mentioned in the text refer to the left hand side columns of panel B where the average SV is taken over all companies with stakes of a specific shareholder class represented in the company. The numbers in the right hand

5.4 Board composition and top management turnover.

Over the period 1989-93, the average number of directors amounts to 9.5 with a median of 9 (table 5). Over time, there is a gradual increase in the average number of directors from 9.2 in 1988 to 10.1 in 1993. Sixty-one per cent of directors held executive positions in the company and in about two thirds of companies the positions of CEO and chairman were held by separate directors. The CEOs and chairman's average age was 53 and 59 years, respectively, with tenures of 5 and 6 years.

Total turnover amounts to 7.4% yearly, with a higher proportion of executive directors leaving the board (8.7%) than of non-executives (4.7%). The annual turnover of CEOs amounted to 11.4% while there was a 7.8% turnover of the chairmen. These turnover data are corrected for natural turnover due to age related retirements (at 63 or above), illness or death. There is a strong relation between executive and CEO board turnover and performance. In loss making companies, average annual executive director and CEO turnover amount respectively to 15% and 26%, more than two and three times (respectively) the turnover in profitable companies. A similar degree of differentiation in turnover is found for companies with and without substantial dividend reductions. Companies with the lowest abnormal returns (below -25%) experience an average annual executive turnover of about 15% and CEO turnover of about 20% whereas the turnover in the other quintiles is only about half this number. Franks et al. (1998) and Faccio and Lasfer (1999) confirm the non-linearity in the performance-turnover relation for the UK as do Morck et al. (1988) for the US. Non-executive director turnover is not statistically different between subsamples of poorly and well performing companies.

Insert here table 5.

6. Results.

In this section, Tobit regression results of the relation between relative voting power and alternative governance mechanisms, and executive board turnover are presented. The robustness of these results is verified by alternative performance measures and fixed effects models, discussed in the text. As an alternative dependent variable, CEO turnover was used in logit models, the results of which are also discussed in the text.

6.1 Monitoring by individual shareholders or by coalitions.

Table 6 shows that (non-natural) turnover of the executive board is strongly dependent upon performance: negative abnormal returns and accounting returns, and dividend decreases lead to

side columns are necessarily smaller because the total number of sample companies is taken (which includes companies in which there is no shareholder of a specific shareholder class present).

¹⁹ Table A3 in the appendix shows the changes in shareholders by class of investor and by size.

significant increases in turnover in the current or two subsequent years.²⁰ A company in the lowest decile of abnormal performance (−50% or lower) during three consecutive years, will experience 7% more annual turnover compared to average performing companies. A dividend decrease in the year of turnover and one year prior, gives 8% more annual executive turnover than companies without decreases²¹ and loss making companies have 17% more annual turnover than firms generating profits. For both the US (e.g. Weisbach 1988) and the UK (e.g. Lai et al. 1997 and Franks et al. 1999), there is evidence that the negative relation between performance and turnover is non-linear with high turnover being concentrated in the worst performing companies. No support is found for hypothesis 1a: there is no (positive) relation between ownership concentration, measured by the largest and 2nd largest shareholdings (table 6) or total ownership concentration (not shown), and managerial disciplining. Substituting relative voting power for ownership concentration, only yields a statistically insignificant negative correlation with turnover. This negative relation may result from the fact that some of these largest share stakes are held by directors which may oppose board restructuring. Hence, mere ownership concentration does not matter, but the nature of concentrated ownership may influence director substitution. Fixed effects models confirm the rejection of hypothesis 1a. Model re-estimation with CEO turnover as dependent variable confirms the negative correlation with performance and the lack of significant correlation with ownership concentration.

Insert here table 6.

To test hypothesis 1b, the monitoring merits of block holdings by nature of ownership are investigated. A distinction is made among seven classes of owner: (i-iii) institutions, consisting of bank managed funds, of investment and pension funds and of insurance companies, (iv) industrial and commercial companies, (v) individuals and families (not related to a director) and (vi-vii) executive and non-executive directors. Other classes of owner, like governmental institutions or real estate companies, are not included as they only own a limited number of shareholdings (which are small).

In order to investigate whether large individual shareholders or coalitions of substantial shareholders discipline underperforming management, three different ownership models are investigated in table 7. Firstly, the largest equity stake by category of owner is included in the model as it may be that the shareholding of largest shareholder suffices for monitoring

²⁰ Other tested performance variables like cash flow measures, ROA, earnings losses (dummy) all yield a high correlation with turnover.

²¹ These increases are net of additional turnover due to monitoring actions by large shareholders, creditor and corporate boards.

underperforming management. Secondly, the relative voting power of the largest shareholder (measured by the SV or the degree to which the largest shareholder by category is pivotal in the potential coalitions) is tested and henceforth called $SV_{largest/cat}^i$. Thirdly, according to hypothesis 1b, coalition formation among shareholders of the same ownership class is facilitated by similarities in private benefits of control or by the existence of a forum for regular meetings. Consequently, SV's of the sum of all shareholdings by category of owner are calculated (henceforth called $SV_{category}^i$), reflecting the relative voting power of this class of shareholders. Hypothesis 1b predicts increased monitoring by coalitions of outsiders and increased resistance to board restructuring by management coalitions.

The following example shows how the $SV_{category}^i$'s are computed. Suppose a company has 5 shareholders: company 1 (owning 16% of the voting rights), company 2 (owning 8%), insurance company 1 (owning 6%), insurance company 2 (owning 6%) and a family which is not related to a director (owning 14%). In total, these large shareholders control 50% of the company. We assume that the ocean of atomistic shareholders (who are not directors) is not involved in toppling incumbent management. Therefore, the equity stakes of the large shareholders and of directors are rescaled which, in this example, doubles their interest in the company. Calculating the SV's of the individual shareholders gives 0.30 and 0.13 for companies 1 and 2, 0.13 for each institution and 0.30 for the family. The ranked SV's of individual shareholders (independent of their category of owner) were input in the model of table 6. The $SV_{largest/cat}^i$ of table 7 are 0.30 for the class of industrial companies, 0.13 for insurance companies and 0.30 for the category of individuals and families. With regard to the $SV_{category}^i$, all the share stakes by category are first added and subsequently the SV of the combined shareholders by category is calculated. In this example, the categories of industrial companies, insurance companies and families own rescaled ownership stakes of, respectively, 48%, 24% and 28%. The $SV_{category}^i$'s happen to be equal for each of the categories to 0.33.

Table 7 reveals that executive director removal significantly decreases when executive directors can form a strong voting coalition. Franks et al. (1999) and Faccio and Lasfer (1999) also report that substantial managerial ownership leads to entrenchment effect: management is able to ward off successfully any attempts to replace them, even in the wake of poor performance. Whereas the ownership percentage held by the largest executive director is statistically significant in 3 performance models, the executive relative voting power ($SV_{largest/cat}^i$) yields stronger results (5 performance models within the 1% level of significance and 1 within the 5% level). The SV's of the executive directors' combined stakes ($SV_{category}^i$) are more negatively correlated with managerial

disciplining. Consequently, this (indirectly) supports the hypothesis that executive directors form voting coalitions to impede board changes.

Whereas the percentage of equity held by the largest non-executive director is not related to executive board turnover, the relative voting power of the group of non-executive directors leads to less managerial disciplining. Hence, it seems that a coalition of non-executives uses its relative voting power to resist managerial disciplining and presumably votes along with management. This may be because poor corporate performance not only results from managerial underperformance but also from a breakdown of corporate governance by non-executive directors and thus makes non-executives also culpable for weak corporate performance. In order to comprehend the unexpected finding that non-executive directors seem to support incumbent management, it should be pointed out that this analysis focuses on the ‘pre-Cadbury’ period. In 1993, the London Stock Exchange required all listed companies to implement the recommendations for good corporate governance of the Cadbury commission, in which the independence and monitoring role of non-executive directors was strengthened. It should be noted that the non-executives’ SV_{category}^i measure (the relative voting power of non-executive directors as a group) has a higher correlation with executive board turnover than the $SV_{\text{largest/cat}}^i$ measure (which captures the relative voting power of non-executive directors as individuals). This provides (indirect) evidence that non-executive directors form coalitions to ward off board changes.

The presence of investment/pension funds and banks with high relative voting power does not seem to have any impact on managerial substitution which validates the call for more institutional shareholder activism. However, the percentage ownership of insurance companies is positively correlated to (non-natural) executive board turnover in all performance models. The fact that it is insurance companies rather than investment and pension fund managers or fund managing banks, exert their voting rights is not surprising as insurance companies often hold larger share stakes in a single company and as the surveys on the exercise of voting rights (discussed in section 2) revealed that insurance companies are used to cast voting rights more frequently than other institutions. As before, the fact that the SV_{category}^i measure is statistically more significant than the $SV_{\text{largest/cat}}^i$ measure implies that insurance companies seem to collaborate to remove executive directors.

Finally, industrial and commercial companies with high relative voting power seem to remove management in badly performing companies. Still, there is no evidence that it is coalitions of industrial companies rather than individual companies with high relative voting power which remove management because the significance of the SV_{category}^i is lower than the $SV_{\text{largest/cat}}^i$. The

reason is that in many companies a coalition among several corporate shareholder is not possible as there is often only one corporation owning a large equity stake. The voting power of individuals' or families' is not related to managerial disciplining.

Insert here table 7.

The robustness of the findings with the SV_{category}^i -measures was verified by estimating the models including, respectively, the cumulative percentage of equity by category of owner and the sum of the Shapley values of individual shareholders by category of owner²². These models showed significant results for the same categories of owner as in the models with SV_{category}^i -measures, but at lower levels of statistical significance. This confirms that executive and non-executive directors and insurance companies seem to forge voting coalitions.

A re-estimation the Tobit models controlling for fixed effects shows that the findings of table 7 are upheld. Repeating previous analyses for CEO disciplining (non-natural CEO turnover) generally yields weaker results. There is little monitoring evidence for insurance companies and industrial companies, but substantial executive ownership protects the CEO of an underperforming company against a forced resignation.

From the above analysis, we conclude that there is a strong relation between executive turnover and voting power. The influence of ownership can be summarised as follows: there is evidence of shareholder coalition formation by outside shareholders (mainly for insurance companies, but less so for industrial companies) to discipline management and by executive and non-executive directors to resist board restructuring. Table 7 has shown that the use of relative voting power measures are an important improvement to the use of percentages of ownership.²³

6.2 Alternative corporate governance mechanisms.

Hypotheses 2-4 state that monitoring can be expected from the internal control mechanism (the non-executive board), the market in share stakes and creditors. Including all monitoring mechanisms into one model allows for testing which disciplinary device dominates. Moreover, including interaction terms of all governance mechanisms with performance can give an answer to the question whether or not disciplining takes place in the wake of poor performance.

²² The SV calculated via this method amount for the categories of industrial companies, of insurance companies and of family to, respectively, 0.43, 0.27 and 0.30.

Table 8, which includes the SV_{category}^i (shown in table 7 to give the strongest correlation with managerial disciplining), exhibits that the findings supporting hypothesis 1b are confirmed. Executive board changes are induced by poor share price and accounting performance, measured by abnormal returns, operational return on assets, earnings losses, return (after interest and tax) on equity, cash flow margin and dividend changes.²⁴ Executive directors seem to be able to defend their positions by impeding board restructuring irrespective of corporate performance as no relation between turnover and the relative power of executive directors interacting with performance was uncovered. Similarly, there is some (weak) evidence that non-executive directors resist the removal of executive directors even in the wake of poor performance. In contrast, industrial and commercial companies with high relative voting power seem to discipline executive directors. That this happens when performance is poor, is reflected in significant negative interaction terms with lagged performance. As shown in table 7, it is the voting power of (potential) coalitions of insurance companies rather than that of individual companies which is related to executive turnover. Table 8 confirms this finding but does not show that executive director substitution by insurance companies is related to underperformance as the interactive terms vary in sign. It may well be that insurance companies are instrumental in supporting management teams with strategic alternatives whereas removing management teams when the company is subject to (extreme) poor performance is left to other agents.

The Shapley values by category of owner (SV_{category}^i) capture the distribution of voting rights but not the trading in blocks of share stakes. For example, it may be that a shareholder with low monitoring ability sells out to a shareholder with a managerial alternative. If the new shareholder is of the same category of owner, the SV will ceteris paribus not reflect any change. Therefore, gross increases in voting rights for each category of owner are included in the model of table 8.²⁵ There is strong evidence that changes in ownership structure lead to increased board turnover. With the exception of increases in equity stakes by institutions, ownership increases by the classes of corporations, individuals and families, executive and non-executives are positively related to increased board turnover. Whereas the new or larger share stakes held by companies and individuals and families precede the executive removal, the changes in executive and non-executive shareholdings coincide or follow executive board changes as these are owned to new directors

²³ Running OLS-regressions controlled for fixed effects rather than Tobit models, the adjusted R^2 is 7-9% if the equity percentage of the largest owner is included. This adjusted R^2 increases by about 2% for models with the relative voting power $SV_{\text{largest/cat}}^i$ and increases by another 2-3% to a range of 11-16% when including SV_{category}^i .

²⁴ The performance variable at t-1 in table 8 is not significant in contrast to this variable in table 7. This results from the fact that performance at t-1 in table 8 is included in the interactive terms.

²⁵ In 1989, the ownership disclosure threshold was reduced from 5% to 3%, which is reflected in annual reports of 1990. As the data used for table 8 reflect all changes, the data as of 1990 are more refined, a disclosure dummy variable was included. The results do not change if the pooled regression was run with only data subsequent to the disclosure change.

promoted to the board. This explains the positive correlation between directors' increases in shareholdings and board turnover. The interactive terms test whether these increases are triggered by performance. Table 8 also reveals that the changes in shareholdings do not seem to constitute a market for (partial) control (hypothesis 2) because there is no evidence that increases in voting rights are related to increased monitoring (with the exception of increases in stakes controlled by corporations).

Hypothesis 3 states that an independent non-executive board will acquit themselves better of their governance tasks. Two measures are used as proxies for non-executive directors' independence from management: the proportion of non-executive directors on the board and duality of the functions of CEO and chairman.²⁶ The degree of independence (and hence monitoring) is expected to rise when the non-executive directors are not outnumbered by executive directors and when the CEO does not chair the board. Table 8 shows that there is little consistent evidence to support hypothesis 3. In four performance models, a large number of non-executive directors is negatively correlated to executive turnover. This counter-intuitive finding is in line with earlier (weak) evidence that non-executives seem to support incumbent management, but is attenuated by the negative interaction terms (in two performance models) indicating that when performance is poor, a high number of non-executives leads to more executive removal. Separating the functions of CEO and chairman is not related to more corporate governance actions.

A high debt-ratio may be a pre-commitment device for management to generate a steady stream of cash flows. If the debt-ratio increases due to poor performance and equity erosion, increased creditor monitoring is expected. Table 8 exhibits that high gearing is significantly positively related to executive board turnover. The negative interaction terms show that when high gearing coincides with low abnormal returns, increased managerial disciplining is taking place. Low liquidity (in combination with poor performance) does not seem to be a reason to remove management.²⁷ Refinancing, measured by new equity issues, precedes managerial disciplining because a need to recapitalize the company is the prime occasion for existing shareholders (via rights issues) or new shareholders to remove the executive directors.²⁸ The interactive term shows that poor performance combined with corporate refinancing leads to high executive turnover.

²⁶ Note that the period analyzed is prior to the Cadbury recommendations. Therefore, few corporate governance variables (like the presence of audit, remuneration and nomination committees, the number of outside directorship etc) were consistently reported in this period and could not be included in the model.

²⁷ The correlation between liquidity (interest coverage) and capital gearing is low and does not lead to multicollinearity. Deleting capital gearing or liquidity, does not lead to statistically significant results across the performance models.

Re-estimating the model with fixed effects supports the conclusions described above. The findings for the CEO turnover model are weaker: there is evidence of managerial entrenchment, (weak) non-executive support for the incumbent CEO and (weak) disciplining by corporations. Furthermore, poor performance combined with a critical financial situation (i.e. refinancing need) and separating the functions of CEO and chairman enhances the probability of CEO removal. For a small sample of companies, data on CEO tenure were available. For this subsample, long tenure reduces the probability of CEO removal as potential past successes in longer track records may compensate current underperformance.

Insert here table 8.

7. Conclusion.

This paper has investigated whether voting coalitions are formed by shareholders in order to discipline incumbent management. Shapley values capturing the relative power of shareholder coalitions by category of owner, outperform models with percentage ownership stakes and models measuring the relative voting power of individual owners. There is evidence of successful executive director resistance to board restructuring if these executive directors can combine their ownership stakes to a substantial block of voting power. Non-executive directors seem to support incumbent management, but poor performance is penalised by industrial and commercial companies with large relative voting power. The voting power of insurance companies is positively related to executive director turnover, but this voting power is used for remove management for reasons of other than performance, which may be of strategic nature. Investment/pension funds and funds managed by banks do not play a role in the management substitution process.

A large number of share blocks change hands, and new shareholders – industrial companies, individuals and families– are related to increased executive director turnover. Still, these changes in share stakes do not constitute a market in (partial) control since there is no systematic evidence that these changes are triggered by poor performance with the notable exception of industrial companies. There is little evidence that adjusting the board composition to allow for more independence for non-executive directors leads to higher managerial removal. In contrast, high gearing facilitates substitution of executive directors, especially if the company needs to be refinanced.

²⁸ Refinancing takes place in the same year as executive director turnover. However, this does not induce a causality problem because in almost all cases, the equity issue took place prior to management turnover.

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Table 1 : Concentration and distribution of ownership and voting power.

This table shows the ownership concentration and distribution of the largest shareholders by category of owner over the sample period.

Source: own calculations.

Panel A : Ownership concentration and voting power of large shareholders for 1988-93.

Year	Sample	Largest shareholder		3 largest owners		5 largest owners		all shareholders		
		%ownership	Shapley	%ownership	Shapley	%ownership	Shapley	%ownership	Shapley	Herfindahl
1988	193	18.9%	0.68	33.0%	0.92	36.5%	0.98	37.6%	1.00	0.46
1989	206	18.2%	0.68	31.6%	0.92	35.4%	0.98	36.4%	1.00	0.45
1990	232	17.3%	0.55	31.2%	0.80	37.7%	0.92	42.4%	1.00	0.32
1991	233	16.1%	0.50	30.3%	0.76	37.5%	0.90	43.6%	1.00	0.29
1992	204	15.3%	0.50	28.8%	0.77	35.6%	0.90	41.1%	1.00	0.29
1993	152	13.9%	0.56	25.5%	0.83	30.5%	0.94	33.7%	1.00	0.34

Panel B : Ownership concentration and voting power of large shareholders by shareholder category for 1992.

		Average based on total number of co's with a shareholding for this category of owner				Average based on total number of sample companies			
		Numb. of co's with large owners	% equity	Shapley	Herfindahl	All sample companies	% equity	Shapley	Herfindahl
1992									
1 Banks	Largest	62	5.7%	0.16		204	1.7%	0.05	
	Sum	62	6.2%	0.18	0.04		1.9%	0.05	0.01
2 Investment and Pension funds	Largest	139	6.0%	0.20		204	4.1%	0.14	
	Sum	139	8.9%	0.27	0.08		6.1%	0.18	0.06
3 Insurance co's	Largest	173	8.4%	0.26		204	7.2%	0.22	
	Sum	173	17.1%	0.46	0.11		14.5%	0.39	0.09
Total	Largest	187	8.4%	0.32		204	7.2%	0.29	
	Sum	187	24.4%	0.68	0.18		22.4%	0.62	0.16
4 Industrial cos	Largest	86	12.8%	0.34		204	5.4%	0.14	
	Sum	86	14.3%	0.36	0.13		6.0%	0.15	0.06
5 Families and individuals	Largest	31	10.7%	0.19		204	1.6%	0.03	
	Sum	31	16.4%	0.27	0.07		2.5%	0.04	0.01
6 Government	Largest	6	5.7%	0.03		204	0.2%	0.00	
	Sum	6	5.7%	0.03	0.04		0.2%	0.00	0.00
7 Executive directors	Largest	103	8.1%	0.16		204	4.1%	0.08	
	Sum	103	11.6%	0.21	0.07		5.9%	0.11	0.04
8 Non-executive directors	Largest	58	10.3%	0.21		204	2.9%	0.06	
	Sum	58	14.5%	0.26	0.08		4.1%	0.07	0.02
Total directors	Largest	118	10.3%	0.21		204	4.1%	0.12	
	Sum	118	17.3%	0.31	0.10		10.0%	0.18	0.06

Table 2 : Relative importance of shareholders by class of owner and by size of equity stake.

This table shows the average number of large shareholders over the period 1988-1993. Mean (tot.) and Mean (cat.) stand for the average stake by class of shareholder whereby the denominator is, respectively, the total number of companies and the total number of companies with a shareholder of this category. # of invest. stands for the number of investors in this category. Source: Own calculations with data of annual reports.

Panel A : Number of shareholder by sample company.

Year	1988	1989	1990	1991	1992	1993
Average number of shareholders per co.	3.77	3.92	6.08	6.62	6.44	5.45
Total number of investors in all sample co's	840	879	1429	1549	1327	839
Number of sample co's	223	224	235	234	206	154

Panel B : Average number of large shareholders by shareholder category and by size of equity stake in 1992.

	[3%,10%]			[10%,25%]			[25%,50%]			[50%,75%]			[75%,100%]		
	Mean (Tot.)	Mean (Cat.)	#. of Invest.	Mean (Tot.)	Mean (Cat.)	#. of Invest.	Mean (Tot.)	Mean (Cat.)	#. of Invest.	Mean (Tot.)	Mean (Cat.)	#. of Invest.	Mean (Tot.)	Mean (Cat.)	#. of Invest.
Banks	0.29	1.11	60	0.02	1.00	4	0.00	1.00	1	0.00	0.00	0	0.00	0.00	0
Invest./pension funds	1.06	1.63	219	0.04	1.00	9	0.00	0.00	0	0.00	0.00	0	0.00	0.00	0
Insurance companies	2.01	2.57	414	0.22	1.21	46	0.02	1.00	4	0.00	0.00	0	0.00	0.00	0
Total Institutions	3.35	3.76	691	0.29	1.26	59	0.02	1.00	5	0.00	0.00	0	0.00	0.00	0
Industrial companies	0.31	1.14	64	0.11	1.05	22	0.04	1.00	9	0.01	1.00	2	0.00	1.00	1
Families and indiv.	0.22	1.84	46	0.03	1.40	7	0.02	1.00	4	0.00	0.00	0	0.00	0.00	0
Executive directors	0.24	1.40	49	0.14	1.38	29	0.04	1.14	8	0.00	1.00	1	0.00	0.00	0
Non-executive directors	0.26	1.71	53	0.08	1.23	16	0.02	1.00	5	0.00	1.00	1	0.00	0.00	0
Total directors	0.50	1.85	102	0.22	1.55	45	0.06	1.30	13	0.01	1.00	2	0.00	0.00	0
All shareholders	4.42	4.69	910	0.65	1.51	133	0.15	1.11	31	0.02	1.00	4	0.00	1.00	1

Note: Mean (tot.) and Mean (cat.) stand for the average stake by class of shareholder whereby the denominator is, respectively, the total number of companies and the total number of companies with a shareholder of this category. # of invest. stands for the number of investors in this category. Source: Annual reports.

Table 3: Changes in large shareholdings by size and shareholder concentration

This table reports the number of share stake purchases and sales by size for different total shareholding concentrations. Panel A reports the number of large new shareholdings by size class. Panel B shows the number of increases in existing shareholdings while panel C reports the number of decreases in shareholdings. In order to avoid picking up changes due to the decrease of disclosure threshold, the number of changes reported in this table is the sum of the changes over the years 1990-91, 1991-92 and 1992-93. These changes in ownership took place in 594 firm-years (the number of co 's in 1991, 1992 and 1993 amount to respectively 234, 206 and 154) and the number of shareholdings can be found in table 2.

Source : Own calculations with data of annual reports.

Panel A : Number of large new shareholdings by size of the new shareholding and by total ownership concentration.

	Size of new shareholdings					
	[3-5%[	[5-10%[	[10-15%[	[15-25%[	[25-50%[	>50%
Total ownership concentration						
<15%	67	20	7	1	2	0
[15%,25%[	63	25	5	3	1	0
[25%,35%[	106	41	8	3	2	0
[35%,50%[	143	60	9	4	3	0
>50%	134	75	19	11	4	0
Total	513	221	48	22	12	0

Panel B : Number of increases in existing shareholdings by size and by total ownership concentration

	Size of increases in shareholdings					
	[3-5%[	[5-10%[	[10-15%[	[15-25%[	[25-50%[	>50%
Total ownership concentration						
<15%	1	1	0	2	0	0
[15%,25%[	4	3	1	1	1	0
[25%,35%[	9	7	1	0	0	0
[35%,50%[	18	6	5	0	2	0
>50%	26	18	2	1	0	0
Total	58	35	9	4	3	0

Panel C : Number of decreases in existing shareholdings by size and by total ownership concentration

	Size of decreases in shareholdings					
	[3-5%[	[5-10%[	[10-15%[	[15-25%[	[25-50%[	>50%
Total ownership concentration						
<15%	36	12	1	1	0	0
[15%,25%[	56	14	2	2	0	0
[25%,35%[	101	45	6	4	0	0
[35%,50%[	188	76	12	8	3	0
>50%	153	93	17	16	7	2
Total	534	240	38	31	10	2

Table 4 : Performance, capital structure and corporate size.

This table presents summary data on performance measures, capital structure, corporate size.

Source: Own calculations with data from LSPD and Datastream.

Panel A : Performance	Sample	Mean	Stand. Dev.	Skewness	Kurtosis
Year	1992				
Annual abnormal return (%)	224	-0.24	42.01	0.39	0.35
Return on equity (%)	217	11.76	38.80	-5.27	57.21
Cash flow margin (%)	214	6.24	16.55	-7.89	94.44
Dividends per share (p/share)	217	6.41	5.78	1.79	5.15
EBIT (£ 000)	217	45123.86	179464.84	7.48	73.53
Earnings after tax (£ 000)	206	26610.66	131166.01	5.63	53.79
Earnings per share (p/share)	207	11.93	14.31	2.64	9.97
Profit margin (%)	215	2.92	14.38	-7.10	80.18
		Sum	Std		
Number of co's with losses	206	41	0.40		
Number of co's with div. reductions	217	55	0.44		
Panel B: Capital Structure	Sample	Mean	Std	Skewness	Kurtosis
Capital gearing (book) (%)	217	37.24	35.33	5.98	55.22
Interest coverage ratio	211	9.27	22.20	5.71	38.50
Number of co's with rights issues	211	16	0.25		
Working capital ratio	215	1.49	0.70	3.68	28.20
Panel C: Company Size	Sample	Mean	Std	Skewness	Kurtosis
Sales (£ 000)	208	973889.71	3598283.09	9.45	101.90
Number of employees	217	11523.85	28149.74	5.77	45.58

Notes: Annual abnormal return are calculated as deviations from its CAPM expectations with betas corrected for thin trading; Return on equity (%) = earnings / (equity capital and reserves - total intangibles + deferred tax); Cash flow margin (%) = earnings + depreciation + (overseas) tax equalisation / total sales * 100; EBIT = Operating earnings before interest payments and taxes; Profit margin = Profit/Sales; Working capital ratio = total current assets / total current liabilities; Capital gearing (%) = (total loan capital + short term borrowings + preference capital + subordinated debt) / (total capital employed + short term borrowings (<1j) - total intangibles - future income tax benefits).

Table 5 : Composition and structure of the board of directors and board turnover.

This table presents data on the board composition, structure and turnover.

Source: Own calculations with data of annual reports.

	1988	1989	1990	1991	1992	1993	1988-93
Number of directors	9.2	9.3	9.3	9.4	9.6	10.2	9.5
% of executive directors	64.5%	62.6%	61.9%	60.8%	58.0%	57.2%	60.8%
% of non-executive directors	35.5%	37.4%	38.1%	39.2%	42.0%	42.8%	39.2%
CEO=chairman (1=yes)	36.6%	39.6%	37.7%	33.9%	29.2%	24.0%	33.5%
Age of CEO	51.2	52.2	52.3	53.1	53.4	53.6	52.6
Tenure of CEO	4.6	5.0	5.1	5.4	5.7	5.9	5.3
Age of Chairman	58.0	58.2	58.6	58.7	59.9	60.9	59.1
Tenure of Chairman	5.2	5.6	6.1	6.2	6.0	5.9	5.8
Total Turnover (%)	7.0%	8.4%	7.5%	7.1%	6.9%	7.6%	7.4%
Executive board turnover (%)	8.9%	9.5%	8.3%	8.1%	9.4%	7.9%	8.7%
Non-executive turnover (%)	3.8%	5.5%	4.9%	5.5%	3.3%	5.4%	4.7%
CEO turnover (%)	4.0%	10.7%	13.4%	12.1%	14.5%	13.5%	11.4%
Chairman turnover (%)	7.4%	9.5%	6.4%	4.4%	10.4%	8.7%	7.8%

Table 6: The relation between ownership concentration and managerial disciplining.

This table investigates the relation between (non-natural) executive director turnover, performance and ownership concentration using Tobit models. Ownership concentration is measured respectively by the largest, 2nd, 3rd, 4th and 5th largest stake by company and by the Shapley values of each of these stakes. Three different performance measures are calculated: annual abnormal return, return on equity and dividend cuts and omissions (-1=yes). As control variables were included: proportion of non-executive directors, capital gearing, equity refinancing (1=yes), change in disclosure regulation (1 for 1990 onwards) and industry dummies. The t-statistics of the parameter estimates are given below the estimated coefficients. ***, **, * stand for significance at respectively the 1%, 5% and 10% level. Source: own calculations.

		Dependent Variable : Executive Director Turnover.									
Performance :	Ann. abn. return		Earnings losses		ROE		Cash flow margin		Dividend changes		
	% Equity	SV	% Equity	SV	% Equity	SV	% Equity	SV	% Equity	SV	
Intercept	0.045734**	0.119496**	0.245694***	0.293565***	0.055347***	0.111918**	0.063589***	0.113545**	0.063819***	0.097039**	
	t-stat	2.43	2.33	8.97	5.58	2.97	2.28	3.40	2.27	3.28	1.99
Largest	0.056816	-0.053639	0.034944	-0.046811	0.062518	-0.03879	0.054863	-0.032127	0.02898	-0.026503	
	t-stat	1.14	-1.06	0.74	-0.96	1.31	-0.79	1.15	-0.65	0.53	-0.56
2nd largest	0.158111	-0.174426	0.071852	-0.18316	0.152801	-0.177722	0.174754	-0.182093	0.00565	-0.094614	
	t-stat	1.28	-1.48	0.56	-1.57	1.28	-1.48	1.45	-1.51	0.03	-0.82
3rd largest	-0.400849*	-0.004717	-0.453439**	0.004467	-0.516331**	-0.003433	-0.493301**	0.017307	-0.23894	-0.033426	
	t-stat	-1.95	-0.04	-2.08	0.04	-2.46	-0.03	-2.33	0.14	-0.86	-0.27
4th largest	0.544667*	0.012235	0.506902	0.010567	0.495241	0.01208	0.499275	0.02167	0.252501	0.059157	
	t-stat	1.70	0.13	1.59	0.11	1.54	0.13	1.50	0.22	0.62	0.57
5th largest	-0.244246	-0.122379	-0.332485	-0.135034	-0.178967	-0.07882	-0.287062	-0.084495	0.130685	-0.035656	
	t-stat	-0.87	-0.75	-1.22	-0.90	-0.64	-0.51	-0.98	-0.55	0.38	-0.23
Performance at t-2	-0.000313***	-0.000317***	-0.053333***	-0.048579***	-0.000046	-0.000053	0.002053***	0.002085***	0.006675	0.005925	
	t-stat	-3.23	-3.33	-4.08	-3.72	-0.55	-0.68	4.73	4.82	0.77	0.70
Performance at t-1	-0.000587***	-0.000596***	-0.054902***	-0.054067***	-0.000169***	-0.000166***	-0.002286***	-0.002124***	-0.041514***	-0.041362***	
	t-stat	-4.84	-4.96	-4.00	-3.93	-3.95	-3.73	-3.76	-3.52	-4.78	-4.70
Performance at t	-0.00028***	-0.000283***	-0.076361***	-0.077816***	-0.0001***	-0.000097***	-0.001658**	-0.001849***	-0.036599***	-0.036509***	
	t-stat	-2.74	-2.72	-6.13	-6.24	-3.32	-3.35	-2.54	-2.85	-3.96	-3.98
Control Variables t-1:											
Prop. non-executives	-0.024734	-0.022884	-0.029112	-0.025456	-0.025598	-0.023548	-0.013913	-0.011596	-0.048577*	-0.046051*	
	t-stat	-0.82	-0.75	-0.98	-0.84	-0.83	-0.76	-0.44	-0.37	-1.80	-1.70
Unitary supervision (1=yes)	0.014327	0.012167	0.009375	0.006957	0.013987	0.011574	0.015735	0.013437	0.013034	0.012045	
	t-stat	1.43	1.23	0.96	0.72	1.39	1.17	1.57	1.37	1.23	1.14
Capital gearing	0.000464**	0.000444**	0.000299	0.000351*	0.000712***	0.000751***	0.000546***	0.000577***	0.000633***	0.000644***	
	t-stat	2.28	2.19	1.58	1.85	3.87	4.05	2.81	2.92	2.92	2.98
Liquidity	-0.000018	-0.000026	-0.000007	-0.000011	-0.000021	-0.000027	-0.000026	-0.000032	0.000036	0.000034	
	t-stat	-0.29	-0.46	-0.11	-0.19	-0.32	-0.45	-0.39	-0.54	0.36	0.36
Refinancing (1=yes)	0.043597***	0.043885***	0.035369***	0.035793***	0.030622***	0.030475***	0.029732**	0.030072**	0.009816	0.009724	
	t-stat	3.70	3.79	3.03	3.07	2.64	2.67	2.39	2.45	0.63	0.63
Change in disclosure	0.023422**	0.026834**	0.016469	0.019944**	0.009678	0.012775	0.015687	0.019103*	0.032955***	0.034355***	
	t-stat	1.99	2.35	1.64	1.99	0.96	1.28	1.48	1.79	2.60	2.76
Observations	1015		1033		1060		1042		816		

Table 7 : The relation between ownership concentration and managerial disciplining.

This table shows Tobit models exploring the relation between (non-natural) executive director turnover, performance and ownership concentration and its distribution over different categories of shareholders. Control is measured by the equity stake held by the largest shareholder by category of owner (%Eq_{largest}). For these largest shareholders by category, the relative voting power (Shapley value) is computed, called SV_{largest/cat}ⁱ. For SV_{category}ⁱ, all substantial ownership stakes first are summed by category of owner and subsequently the SV of these combined shareholdings is calculated. Thus, SV_{category}ⁱ captures the relative voting power of a category. Seven different classes of owner are included: banks, investment and pension funds, insurance co's, industrial and commercial co's, individuals and families, executive and non-executive directors. Equity blocks held by governmental institutions or real estate co's were not included because they only few minor stakes. Six different performance measures are calculated: annual abnormal return, operational return on assets, earnings losses (-1=yes), return on equity (after interest and taxes), cash flow margin (cash flow/sales) and dividend cuts and omissions (-1=yes). As control variables were included: proportion of non-executive directors, unitary board supervision (dummy indicating whether the Chairman is the same person as the CEO (1=yes)), capital gearing, liquidity (interest coverage), refinancing via new equity issues (1=yes), change in disclosure regulation (1 for '90 onwards). ***, **, * stands for statistical significance at respectively the 1%, 5% and 10% level. T-statistics are given below the parameter estimates (between brackets). Source: own calculations.

Performance :	Dependent Variable : Executive Director Turnover.								
	Annual abnormal return			Operational ROA			Earnings losses		
	% Eq _{largest}	SV _{largest/cat} ⁱ	SV _{category} ^I	% Eq _{largest}	SV _{largest/cat} ⁱ	SV _{category} ⁱ	% Eq _{largest}	SV _{largest/cat} ⁱ	SV _{category} ⁱ
Intercept	0.05221	0.06177	0.07895	0.06190***	0.08040***	0.07930***	0.23459***	0.24133***	0.25061***
t-stat	(2.89)	(3.24)	(4.68)	(3.24)	(4.03)	(4.36)	(8.38)	(8.86)	(9.67)
Exec. dir.	-0.04859	-0.03749***	-0.04579***	-0.07410*	-0.05640***	-0.05110***	-0.09046**	-0.05321***	-0.05768***
t-stat	(-1.24)	(-2.55)	(-2.89)	(-1.84)	(-3.78)	(-3.23)	(-2.46)	(-3.72)	(-3.80)
Non-ex. dir.	0.01197	-0.02300	-0.03715*	0.00616	-0.02920*	-0.03600*	-0.00771	-0.02792*	-0.04583**
t-stat	(0.25)	(-1.43)	(-1.85)	(0.13)	(-1.79)	(-1.74)	(-0.16)	(-1.79)	(-2.28)
Banks	0.05250	0.03561	0.04923	0.01280	0.02170	0.03380	0.03405	0.03880	0.03805
t-stat	(0.38)	(0.80)	(0.97)	(0.09)	(0.55)	(0.79)	(0.26)	(1.03)	(0.96)
Invest/pensio	-0.05193	0.02725**	0.01285	-0.14300**	0.01700	0.01810	-0.08683	0.02154*	0.01282
Funds t-stat	(-0.75)	(2.27)	(0.77)	(-2.03)	(1.35)	(1.04)	(-1.28)	(1.74)	(0.78)
Insur. co's	0.11060***	0.04111***	0.07135***	0.10010***	0.02600**	0.06990***	0.06520**	0.02537**	0.05862***
t-stat	(3.53)	(3.59)	(5.12)	(3.05)	(2.28)	(4.89)	(1.98)	(2.22)	(4.26)
Industr. co's	0.07935**	0.04957***	0.04578***	0.09390**	0.05340***	0.06450***	0.05919	0.04462***	0.04772***
t-stat	(2.17)	(4.09)	(3.23)	(2.56)	(4.25)	(4.53)	(1.46)	(3.52)	(3.32)
Indiv./famil.	0.07334	0.02042	0.03293	0.05070	0.00632	0.03940	0.03121	-0.00524	0.02517
t-stat	(1.41)	(0.88)	(1.08)	(0.87)	(0.24)	(1.16)	(0.57)	(-0.21)	(0.85)
Perfor. at t-2	-0.00030***	-0.00030***	-0.00033***	0.00774	-0.00993	-0.03413***	-0.04884***	-0.04446***	-0.04632***
t-stat	(-3.28)	(-3.35)	(-3.76)	(0.79)	(-1.03)	(-3.63)	(-3.44)	(-3.10)	(-3.40)
Perfor. at t-1	-0.00057***	-0.00058***	-0.00057***	0.00778***	0.08515***	0.11052***	-0.05048***	-0.04612***	-0.04852***
t-stat	(-4.86)	(-4.92)	(-5.05)	(5.90)	(6.62)	(8.75)	(-3.59)	(-3.25)	(-3.57)
Perfor. at t	-0.00030***	-0.00030***	-0.00026***	-0.13506***	-0.14067***	-0.14001***	-0.07322***	-0.07765***	-0.07481***
t-stat	(-2.97)	(-3.00)	(-2.67)	(-11.72)	(-12.50)	(-12.70)	(-5.75)	(-6.08)	(-5.95)
Prop. non-ex	-0.03774	-0.052851***	-0.06018***	-0.03500	-0.05320**	-0.05800***	-0.03366	-0.04879*	-0.05518**
t-stat	(-1.35)	(-2.20)	(-2.91)	(-1.21)	(-2.22)	(-2.69)	(-1.18)	(-1.93)	(-2.50)
Unit.Superv.	0.009566	0.01072	0.01015	0.00978	0.01040	0.01050	0.00688	0.00732	0.00733
t-stat	(1.01)	(1.16)	(1.11)	(0.96)	(1.04)	(1.06)	(0.70)	(0.76)	(0.77)
Cap.gearing	0.00048**	0.00038*	0.0003*	0.00066***	0.00059***	0.00059***	0.00030	0.00023	0.00023
t-stat	(2.39)	(1.91)	(1.79)	(3.42)	(3.00)	(3.15)	(1.55)	(1.24)	(1.21)
Liquidity	-0.00001***	0.00002	0.00002	-0.00002	0.00001	0.00001	0.00001	0.00003	0.00003
t-stat	(-0.13)	(0.32)	(0.35)	(-0.30)	(0.06)	(0.12)	(0.04)	(0.44)	(0.49)
Refinancing	0.04037***	0.03492***	0.03572***	0.02890**	0.02250**	0.02380**	0.02936**	0.02421**	0.02475**
t-stat	(3.61)	(3.26)	(3.36)	(2.50)	(2.02)	(2.19)	(2.56)	(2.19)	(2.27)
Δ disclosure	0.02584***	0.02996***	0.02357***	0.01640*	0.02220**	0.01650*	0.02191**	0.02873***	0.02333***
t-stat	(2.41)	(2.93)	(2.43)	(1.67)	(2.36)	(1.84)	(2.23)	(3.07)	(2.65)
Log Likelih.	1719.855	1737.754	1748.97	1706.536	1727.229	1737.656	1734.915	1756.449	1767.591
Observations	1122			1143			1143		

Table 7 continued.

Performance	Dependent Variable : Executive Director Turnover.								
	Return on Equity (after tax)			Cash flow margin			Dividend changes		
	% Eq.largest	SV _{largest/cat} ⁱ	SV _{category} ⁱ	% Eq.largest	SV _{largest/cat} ⁱ	SV _{category} ⁱ	% Eq.largest	SV _{largest/cat} ⁱ	SV _{category} ⁱ
Intercept	0.06073***	0.08206***	0.08360***	0.07005***	0.09430***	0.09706***	0.069898***	0.07183***	0.08440***
t-stat	(3.23)	(4.19)	(4.61)	(3.69)	(4.76)	(5.20)	(-4.10)	(3.50)	(4.55)
Exec. dir.	-0.07441*	-0.05909***	-0.05580***	-0.09055**	-0.06157***	-0.06142***	-0.076083**	-0.04009**	-0.04126**
t-stat	(-1.87)	(-4.00)	(-3.55)	(-2.25)	(-4.20)	(-3.88)	(-2.02)	(-2.44)	(-2.37)
Non-ex.dir.	0.00575	-0.02944*	-0.04010**	0.00810	-0.02855*	-0.04093**	0.077069	-0.00296	-0.02486
t-stat	(0.12)	(-1.82)	(-1.98)	(0.17)	(-1.81)	(-2.04)	(1.59)	(-0.17)	(-1.11)
Banks	0.01234	0.02015	0.03498	-0.00399	0.02907	0.03855	0.041549	0.05321	0.06814*
t-stat	(0.09)	(0.52)	(0.82)	(-0.03)	(0.76)	(0.93)	(0.33)	(1.46)	(1.85)
Invest/pensio	-0.13716**	0.01175	0.00738	-0.08914	0.01743	0.01167	-0.126736*	0.02615*	0.01489
Funds t-stat	(-1.98)	(0.96)	(0.44)	(-1.28)	(1.43)	(0.70)	(-1.73)	(1.77)	(0.64)
Insur. co's	0.10604***	0.02550**	0.06438***	0.09745***	0.02817**	0.06396***	0.130157***	0.04216***	0.08077***
t-stat	(3.30)	(2.28)	(4.64)	(2.99)	(2.55)	(4.66)	(3.52)	(3.05)	(5.36)
Industr. co's	0.08716**	0.04427***	0.05286***	0.09888***	0.05437***	0.05663***	0.02268	0.02901*	0.02198
t-stat	(2.41)	(3.62)	(3.86)	(2.70)	(4.28)	(3.91)	(0.54)	(1.89)	(1.21)
Indiv/ famil.	0.06293	0.01173	0.03448	0.03849	-0.00361	0.02248	0.032641	0.00163	0.03766
t-stat	(1.14)	(0.47)	(1.04)	(0.68)	(-0.14)	(0.72)	(0.58)	(0.05)	(0.58)
Perfor. At t-2	-0.00004	-0.00004	-0.00004	0.00218***	0.00200***	0.00201***	0.001938	0.00601	0.00832
t-stat	(-0.50)	(-0.52)	(-0.61)	(5.06)	(4.40)	(4.45)	(0.22)	(0.80)	(1.13)
Perfor. At t-1	-0.00006**	-0.00005*	-0.00005**	-0.00218***	-0.00212***	-0.00207***	-0.035818***	-0.03337***	-0.02997***
t-stat	(-2.05)	(-1.85)	(-2.01)	(-3.57)	(-3.34)	(-3.45)	(-3.04)	(-3.73)	(-3.70)
Perfor. At t	-0.00008***	-0.00008***	-0.00008***	-0.00182***	-0.00223***	-0.00218***	-0.03891***	-0.04028***	-0.03778***
t-stat	(-2.78)	(-3.05)	(-3.18)	(-2.86)	(-3.53)	(-3.62)	(-3.51)	(-4.68)	(-4.48)
Prop. non-ex	-0.03441	-0.05372**	-0.05842**	-0.02404	-0.04008	-0.04494*	-0.065265***	-0.07389***	-0.07937***
t-stat	(-1.17)	(-2.14)	(-2.57)	(-0.80)	(-1.47)	(-1.81)	(-2.79)	(-3.71)	(-4.67)
Unit. Superv.	0.01018	0.01185	0.01121	0.01218	0.01369	0.01336	0.006227	0.00673	0.00731
t-stat	(1.03)	(1.22)	(1.17)	(1.24)	(1.41)	(1.40)	(0.68)	(0.65)	(0.73)
Cap. gearing	0.00069***	0.00062***	0.00061***	0.00051**	0.00038*	0.00040**	0.000673***	0.00056**	0.00051**
t-stat	(3.64)	(3.22)	(3.27)	(2.53)	(1.94)	(2.03)	(3.17)	(2.55)	(2.34)
Liquidity	-0.00001	0.00001	0.00002	-0.00001	0.00001	0.00002	0.000057	0.00008	0.00007
t-stat	(-0.19)	(0.20)	(0.26)	(-0.17)	(0.22)	(0.25)	(0.88)	(0.78)	(0.74)
Refinancing	0.02701**	0.02114*	0.02198**	0.02601**	0.02026*	0.02153*	0.007035	0.00249	0.00239
t-stat	(2.36)	(1.92)	(2.04)	(2.16)	(1.73)	(1.90)	(0.53)	(0.18)	(0.17)
Δ disclosure	0.01564	0.02052**	0.01551*	0.02285**	0.02854***	0.02327**	0.027557**	0.03230***	0.024817**
t-stat	(1.63)	(2.25)	(1.79)	(2.24)	(2.93)	(2.52)	(2.37)	(2.76)	(2.25)
Log Likelih.	1751.1	1770.864	1781.278	1731.413	1755.815	1764.987	1394.302	1401.959	1414.6584
Observations	1171			1152			882		

Table 8: Alternative corporate governance mechanism and their disciplinary role.

This table shows Tobit models exploring the relation between (non-natural) executive board turnover, performance and alternative corporate governance mechanisms. Ownership concentration is measured by summing all substantial ownership by category of owner and by subsequently computing the Shapley Values of these combined share stakes ($SV_{category}^i$). As such, the relative voting power by category of owner is calculated. Seven different classes of owner are included: banks, investment and pension funds, insurance co's, industrial and commercial co's, individuals and families, executive and non-executive directors. Equity blocks held by governmental institutions or real estate co's were not included because there are only minor stakes. Five different performance measures are calculated: annual abnormal return, earnings losses (-1=yes), return on equity, cash flow margin and dividend cuts and omissions (-1=yes). Changes in shareholdings are gross changes; the increases of existing and new shareholders are summed by category of owner. Proportion of non-executive directors stands for number of non-executives/total number of directors on board. Unitary supervision means that the functions of chairman and CEO are held by one person (dummy which equals one if Chairman=CEO). Capital gearing is debt/total assets, liquidity is interest coverage, equity refinancing stands new equity issues (1=yes), size is the logarithm of total assets and change in disclosure threshold is the reduction of 5% to 3% in 1989 (dummy). All variables are interacted with performance at t-1. The t-statistics are given next to the parameter coefficients. ***, **, * stands for significance at respectively the 1%, 5% and 10% level. ^x denotes that this parameter estimate is multiplied by 1 million. Source: own calculations.

Dependent Variable : Executive Director Turnover.

	Par.Est.	t-stat	Par.Est.	t-stat	Par.Est.	t-stat	Par.Est.	t-stat	Par.Est.	t-stat	Par.Est.	t-stat
Intercept	0.06710***	(3.23)	0.05820***	(2.89)	0.21390**	(1.97)	0.07850***	(2.95)	0.03310	(0.95)	0.06330***	(2.93)
Performance	An. Abn. Return		Operational ROA		Losses (1=yes)		ROE		Cash flow margin		Dividend changes	
Performance t-2	-0.00042***	(-3.61)	-0.00229***	(-3.35)	-0.0312*	(-1.87)	-0.00002	(-0.23)	0.00229***	(4.45)	0.00918	(1.23)
Performance t-1	0.00053	(0.90)	-0.01630	(-1.21)	-0.0493	(-0.45)	-0.00065	(-0.73)	0.00320	(0.96)	0.06840	(0.85)
Performance t	-0.00020*	(-1.84)	0.00005	(0.04)	-0.0634***	(-4.44)	-0.00010***	(-3.85)	-0.00166**	(-2.19)	-0.03150***	(-3.35)
Relative voting power (Shapley Value: $SV_{category}^i$)												
Directors' ownership: $SV_{category}^i$												
Executives	-0.0497**	(-2.46)	-0.0444**	(-2.36)	-0.1393	(-1.55)	-0.0649***	(-2.90)	-0.0446	(-1.56)	-0.0546***	(-2.61)
Non-executives	-0.0495*	(-1.89)	-0.0348	(-1.40)	-0.1437*	(-1.66)	-0.0277	(-1.14)	-0.0149	(-0.43)	-0.0392*	(-1.65)
Institutional ownership: $SV_{category}^i$												
Bank managed funds	0.0422	(0.84)	0.0599	(1.41)	-0.1507	(0.81)	0.0732	(1.03)	0.1084	(1.00)	0.047	(0.88)
Investm./pension funds	0.0211	(0.81)	0.0208	(0.80)	0.0297	(0.19)	0.0122	(0.49)	0.0804*	(1.81)	0.0358	(1.42)
Insurers managed funds	0.0674***	(4.03)	0.0857***	(5.41)	-0.0062	(-0.08)	0.0694***	(3.92)	0.0992***	(4.20)	0.0871***	(5.02)
Corporate and indiv. ownership: $SV_{category}^i$												
Companies	0.0239	(1.20)	0.0393**	(1.98)	-0.0451	(-0.54)	0.0535**	(2.56)	0.0445*	(1.65)	0.0363*	(1.81)
Individuals and families	-0.0162	(-0.36)	0.0130	(0.27)	-0.2037	(0.00)	0.00450	(0.06)	-0.0224	(-0.26)	-0.0257	(-0.48)
Changes in voting rights (%) (t-1,t)												
Institutions	0.000353	(0.67)	0.000121	(0.26)	-0.00329	(-1.63)	0.000374	(0.68)	0.001032	(1.61)	0.000664	(1.33)
Companies	0.000781	(0.71)	0.002089**	(2.40)	0.01200***	(4.57)	0.002336***	(2.73)	0.002481**	(2.47)	0.000565	(0.51)
Individuals and families	0.003738**	(2.02)	0.004032***	(2.76)	0.003625	(0.20)	0.002854*	(1.66)	0.000611	(0.37)	0.003586*	(1.92)
Executives	0.006292***	(4.80)	0.005202***	(4.32)	0.006145***	(2.66)	0.005275***	(2.70)	0.004892**	(2.43)	0.006374***	(3.91)
Non-executives	0.004719***	(2.61)	0.005151***	(3.61)	0.006354	(0.42)	0.004809***	(2.60)	0.000019	(0.01)	0.004721***	(3.50)
Internal control (t-1)												
Non-execs on board	-0.0540**	(-2.53)	-0.0586***	(-2.75)	0.1086	(0.78)	-0.108***	(-2.85)	-0.0008	(-0.02)	-0.0589***	(-2.70)
Unitary supervision	0.0073	(0.70)	0.0044	(0.45)	-0.0236	(-0.49)	0.0196	(1.47)	0.0147	(0.93)	0.0097	(0.88)
Capital Structure												
Capital Gearing (t-1)	0.000275	(1.14)	0.00071***	(3.64)	0.000543	(1.00)	0.000856***	(4.53)	0.000658***	(3.66)	0.000576**	(2.55)
Liquidity (t-1)	0.000053	(0.59)	0.000049	(0.62)	0.000054	(0.63)	0.000056	(0.64)	0.000062	(0.62)	0.000054	(0.63)
Refinancing (t)	0.038200***	(3.01)	-0.003752	(-0.37)	-0.13500***	(-3.60)	-0.000646	(-1.63)	-0.002225	(-1.31)	0.04470	(0.97)

Table 8 continued												
Size (ln total sales) (t-1) ^x	-0.001311	(-0.84)	-0.001319	(-0.86)	-0.001517	(-0.122)	-0.001555**	(-0.215)	-0.001692	(-1.11)	-0.001549	(-1.12)
Δ in disclosure threshold	0.0292**	(2.36)	0.0204*	(1.94)	0.0267**	(2.54)	0.0207*	(1.91)	0.0239**	(2.14)	0.0277**	(2.35)
Variables interacted with performance at t-1												
Relative voting power (Shapley Value:SV_{categoryⁱ})												
Directors' ownership: SV _{categoryⁱ}												
Executives	0.000235	(0.40)	0.01010	(0.98)	0.08910	(0.97)	0.000575	(0.70)	-0.001064	(-0.39)	0.03430	(0.49)
Non-executives	-0.000454	(-0.71)	-0.00222	(-0.14)	0.10840	(1.17)	-0.000402	(-0.48)	-0.002971	(-0.62)	0.01860	(0.27)
Institutional ownership: SV _{categoryⁱ}												
Bank managed funds	-0.000599	(-0.37)	-0.00387	(-0.04)	0.20750	(0.38)	-0.000199	(-0.08)	-0.005226	(-0.36)	0.1947	(0.77)
Investm./pension funds	-0.000707	(-0.98)	-0.02120	(-0.99)	0.00166	(0.01)	0.000462	(0.73)	-0.005367	(-1.18)	-0.1738*	(-1.89)
Insurers managed funds	-0.001670***	(-3.01)	0.01510*	(1.76)	0.08740	(1.15)	0.001033*	(1.94)	-0.00102	(-0.45)	-0.0833*	(-1.71)
Corporate and individual ownership: SV _{categoryⁱ}												
Companies	-0.00196**	(-1.99)	-0.05881*	(-1.72)	0.08010	(0.94)	-0.000951*	(-1.65)	-0.009431**	(-1.94)	-0.1287**	(-1.99)
Individuals and families	-0.000031	(-0.03)	0.01110	(0.26)	0.20460	(0.00)	0.000385	(0.09)	-0.000976	(-0.10)	0.0695	(0.16)
Changes in voting rights (%) at (t-1,t)												
Institutions	0.000009	(0.64)	-0.001109	(-0.68)	0.000324	(0.02)	0.00008	(0.98)	0.000819***	(2.76)	-0.003535	(-0.20)
Companies	-0.000114**	(-1.66)	0.000295	(0.31)	-0.020225*	(-2.10)	0.000043	(0.48)	0.000183	(0.64)	-0.012371*	(-1.95)
Individuals and families	-0.000104**	(-2.42)	0.000266	(0.26)	-0.001738	(-0.11)	-0.000002	(-0.01)	0.000806**	(2.20)	-0.001121	(-0.24)
Executives	0.000043	(0.89)	0.002377	(0.33)	0.019200*	(1.82)	0.000595*	(1.92)	0.00109	(1.10)	-0.009445	(-0.25)
Non-executives	-0.000032	(-0.51)	-0.000016	(-0.13)	-0.000297	(-0.51)	0.000003***	(3.90)	-0.000027	(-1.61)	-0.00084	(-0.95)
Internal control (t-1)												
Non-exec. dir. on board	0.000101	(0.11)	-0.00097***	(-3.35)	0.003804*	(1.83)	-0.00001	(-0.59)	-0.000121**	(-2.00)	-0.001226	(-0.58)
Unitary supervision	-0.000137	(-0.39)	0.03680*	(1.69)	-0.18590	(-1.32)	0.001012	(1.18)	-0.005924	(-1.30)	-0.0972	(-0.74)
Capital Structure												
Capital Gearing (t-1)	-0.000016***	(-3.24)	0.00041	(0.55)	-0.0125***	(-4.37)	-0.000027	(-0.98)	-0.000079	(-1.03)	-0.005315	(-1.46)
Liquidity (t-1)	-0.000221	(-0.77)	0.00492	(0.71)	0.0270	(0.55)	-0.000564	(-1.00)	-0.00118	(-0.76)	-0.0396	(-1.00)
Refinancing (t)	0.000062	(0.17)	0.03110***	(2.65)	0.1501***	(4.27)	0.031900**	(2.30)	0.03800**	(2.36)	-0.001596	(-0.11)
Log Likelihood		1473.286		1497.054		1530.47		1514.367		1500.245		1410.609
Observations		906		930		939		949		930		854

APPENDIX :**Table A1 : Concentration of voting rights by country.**

This table presents total ownership concentration of all large shareholders (defined as shareholders with stakes exceeding the disclosure threshold) and of the largest shareholder. The most important ownership classes (in terms of cumulative ownership) are also exhibited.

Ownership data capture both direct and indirect shareholdings: all voting rights controlled directly and indirectly possibly via a cascade of intermediate holding

Companies 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 Eur.Corp.Governance Network	Sample co's All quoted	Disclosure Threshold	Total ownership concentr.		Largest shareholding		Shareholder classes with largest number 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	For. co's/bks
Belgium	Becht and Renneboog	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	Foreign co's
UK	Goergen and Renneboog	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 are forthcoming in Barca and Becht (2000): 'Who controls corporate Europe?' Oxford Univ. Press

Note: (1) for all 680 French listed firms, the largest owner controls an average of 56% of voting rights.

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

(3) all listed from the official market. For comparison; the median largest voting block of a DAX30 company amounts to 11.0%.

Table A2: Ownership distribution of largest shareholders in western economies.

This table gives the total large share holdings (over >3% or >5%; see table 1 of appendix) held by different investors classes. For all countries the ownership data cover the year 1996, except for Belgium (1994) and UK (1993).

1996	Sample	Ownership	Individuals and families	Banks	Insurance companies	Investm. funds	Holding and Industrial Companies	State	Directors
France	402	(2)	15.5	16.0	3.5	0.0	34.5	1.0	0.0
Austria	600	(2)	38.6	5.6	0.0	0.0	33.9	11.7	0.0
Italy	(1)	(2)	68.6	7.2	0.0	0.0	24.2	0.0 (4)	0.0
Netherlands	137	(3)	10.8	7.2	2.4	16.1	10.9	1.3	0.0
Spain	394	(2)	21.8	6.6	8.8	0.0	32.6	0.0	0.0
Belgium	155	(2)	15.6	0.4	1.0	3.8	37.5	0.3	0.0
UK	248	(3)	2.4	1.1	4.7	11.0	5.9	0.0	11.3
Germany	402	(2)	7.4	1.2	0.2	0.0	21.0	0.7	0.0

Note (1) : numbers for Italy refer to both listed and non-listed companies; for other countries only listed companies

Are taken; (2) : both direct and indirect shareholdings are considered; (3) : only direct shareholdings.

(4) : Of the listed Italian companies about 25% are directly and indirectly controlled by state holdings; this is classified in previous column under (State) Holdings and industrial holdings

Source : See table 1 of appendix.

Table A3 : Number of new large shareholdings and changes in existing share stakes by shareholder category

This table reports the number of share stake sales by size for different total shareholding concentrations and for categories of owner. Panel A reports the number of large new shareholdings by size class. Panel B shows the number of increases in existing shareholdings while panel C reports the number of decreases in shareholdings. The number of changes is the sum of the changes over the years 1990-91, 1991-92 and 1992-93. The sample size for the changes in share stakes over the period 1990-1991, is 243 companies :

Share ownership data are collected from annual reports.

Panel A : Number of changes in shareholdings held by institutional investors by size of the change and by total ownership concentration

Total ownership concentration	new shareholdings						increases existing share stakes						decreases in share stakes					
	[3-5%[	[5-10%[	[10-15%[	[15-25%[	[25-50%[	>50%	[3-5%[	[5-10%[	[10-15%[	[15-25%[	[25-50%[	>50%	[3-5%[	[5-10%[	[10-15%[	[15-25%[	[25-50%[	>50%
<15%	72	19	7	1	2	0	3	2	0	0	0	0	42	15	1	1	0	0
[15%,25%[	64	20	6	1	1	0	5	3	1	1	0	0	60	18	1	0	0	0
[25%,35%[	64	20	5	1	0	0	4	3	1	1	0	0	60	18	1	0	0	0
[35%,50%[	133	50	3	0	1	0	12	5	2	0	1	0	165	60	5	4	0	0
>50%	110	59	10	4	1	0	15	9	2	1	0	0	117	55	4	6	3	1
Total	443	168	31	7	5	0	39	22	6	3	1	0	444	166	12	11	3	1

Panel B : Number of changes in shareholdings held by industrial and commercial companies by size of change and by total ownership concentration

Total ownership concentration	new shareholdings						increases existing share stakes						decreases in share stakes					
	[3-5%[	[5-10%[	[10-15%[	[15-25%[	[25-50%[	>50%	[3-5%[	[5-10%[	[10-15%[	[15-25%[	[25-50%[	>50%	[3-5%[	[5-10%[	[10-15%[	[15-25%[	[25-50%[	>50%
<15%	1	2	1	0	1	0	0	0	0	1	0	0	4	0	0	1	0	0
[15%,25%[	3	5	0	1	1	0	0	0	0	0	0	0	1	1	0	1	0	0
[25%,35%[	11	2	0	1	0	0	0	1	0	0	0	0	6	6	1	2	0	0
[35%,50%[	10	5	6	1	2	0	3	1	1	0	0	0	17	10	4	1	3	0
>50%	9	10	2	3	1	0	3	2	0	0	0	0	5	10	4	2	1	1
Total	34	24	9	6	5	0	6	4	1	1	0	0	33	27	9	7	4	1

Panel C : Number of changes in shareholdings held by individuals and families by size of change and by total ownership concentration

Total ownership concentration	new shareholdings						increases existing share stakes						decreases in share stakes					
	[3-5%[	[5-10%[	[10-15%[	[15-25%[	[25-50%[	>50%	[3-5%[	[5-10%[	[10-15%[	[15-25%[	[25-50%[	>50%	[3-5%[	[5-10%[	[10-15%[	[15-25%[	[25-50%[	>50%
<15%	2	1	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0
[15%,25%[	2	1	0	0	0	0	0	1	0	0	0	0	1	0	1	0	0	0
[25%,35%[	3	4	0	0	0	0	0	0	0	0	0	0	2	3	1	0	0	0
[35%,50%[	2	4	0	2	0	0	1	0	1	0	0	0	4	5	0	1	0	0
>50%	13	9	3	1	2	0	0	1	0	0	0	0	12	8	1	0	0	0
Total	22	19	3	3	2	0	1	2	1	0	0	0	19	17	3	1	0	0

Panel D : Number of changes in shareholdings held by non-executive directors by size of change and by total ownership concentration

Total ownership concentration	new shareholdings						increases existing share stakes						decreases in share stakes					
	[3-5%[	[5-10%[	[10-15%[	[15-25%[	[25-50%[	>50%	[3-5%[	[5-10%[	[10-15%[	[15-25%[	[25-50%[	>50%	[3-5%[	[5-10%[	[10-15%[	[15-25%[	[25-50%[	>50%
<15%	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
[15%,25%[	1	1	0	1	0	0	1	0	0	0	0	0	1	0	0	0	0	0
[25%,35%[	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
[35%,50%[	2	1	0	0	0	0	1	0	1	0	1	0	1	3	1	0	0	0
>50%	6	3	3	3	0	0	3	1	0	0	0	0	14	8	5	2	1	0
Total	12	5	3	4	0	0	5	1	1	1	1	0	16	11	6	2	1	0

Panel E : Number of changes in shareholdings held by executive directors by size of change and by total ownership concentration

Total ownership concentration	new shareholdings						increases existing share stakes						decreases in share stakes					
	[3-5%[	[5-10%[	[10-15%[	[15-25%[	[25-50%[	>50%	[3-5%[	[5-10%[	[10-15%[	[15-25%[	[25-50%[	>50%	[3-5%[	[5-10%[	[10-15%[	[15-25%[	[25-50%[	>50%
<15%	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
[15%,25%[	1	1	0	0	0	0	1	0	0	0	1	0	0	1	0	0	0	0
[25%,35%[	0	0	1	1	0	0	0	0	0	0	0	0	2	2	0	1	0	0
[35%,50%[	1	3	0	1	0	0	1	1	0	0	0	0	7	1	2	2	0	0
>50%	0	0	1	0	0	0	5	5	0	0	0	0	13	15	3	6	2	0
Total	2	5	2	2	0	0	7	6	0	0	1	0	22	19	5	9	2	0