

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 to remove management for reasons 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.

Keywords: Corporate Finance, Corporate Control, Ownership structures, Government Regulation

JEL Classifications: G3, G32, G38

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1. Introduction : separation of ownership and control.

In the traditional international corporate governance literature, governance systems are classified according to the trade-off between liquidity and control (see e.g. Becht and Roell (1997))¹. In Anglo-American or market-based governance systems -characterised by a large number of listed companies, strong boards and prevalence of institutional investors- individual investors and investment funds benefit from high trading liquidity of shares. Still, the high free float may create a serious agency problem, sometimes referred to as ‘strong managers, weak owners’ (Roe (1994)). Due to the lack of large shareholder monitoring, Jensen (1989) even predicted the ‘eclipse of the public corporation’. In contrast, 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 (2001)).² In this system, share liquidity is low and agency costs of a different type may arise, namely those between majority and minority shareholders.

Given that controlling a firm is expensive (in terms of portfolio diversification), several mechanisms have been developed in countries with the blockholder system to deviate from the one-share-one-vote rule. By utilising dual class shares³, ownership pyramids⁴ or proxy votes⁵, some shareholders can exert a higher degree of control than their cash flow rights would lead one to expect. Likewise, in the market-based governance systems, several mechanisms exist to reduce agency problems or to avoid that the balance of power is tilting too much towards management. Firstly, the lack of shareholder monitoring may be compensated by an active take-over market. In contrast to US evidence (e.g. Martin and McConnell (1991)), Franks and Mayer (1996) are not

¹ For similar classifications also Wymeersch 1994, Franks and Mayer 1995, Shleifer and Vishny 1997.

² 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 by one single investor (group). In contrast, the largest share stake in the US and UK 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%.

³ Dual class shares are frequently used in Scandinavia, Germany, Italy, the Netherlands, The control premium, measured by the difference in share price between voting and non-voting shares, is the US small as concluded in Lease et al. (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).

⁴ In the UK, regulation has discouraged the creation of ownership pyramids. Germany is characterised by complex shareholdings around and within industrial groups (Becht and Boehmer (2001)) while the French system is characterised by ownership cascades of financial groups and cross-company shareholdings (Bloch and Kremp (2001)). In Italy, long pyramids controlled by state or family-owned corporations are typical (Bianchi et al. (2001)). More than a third of listed and non-listed Belgian companies are controlled by financial holdings companies (Goergen and Renneboog, 2001). Although state controlled ownership has decreased substantially in Spain since the privatisation wave of 1995, state holding companies still own a golden-share in strategic sectors (Crespi and Garcia, 2001).

convinced that the market for hostile take-overs in the UK fulfils a disciplinary role. Secondly, management remuneration schemes can be designed to align managerial interest with those of the shareholders. However, a large body of UK empirical evidence has shown that the compensation packages consisting of salary, bonus, long term incentive plans and option schemes, are more related to corporate growth than value creation (e.g. Conyon and Murphy (2000)). Thirdly, it may be that – in spite of the diffuse nature of control concentration – UK shareholders do monitor after all. In particular, this will be the case if shareholders create *voting pacts*. This paper attempts to investigate the monitoring role of shareholder voting coalitions in the UK. Testing the impact of such coalitions directly is not possible because their existence is usually not disclosed. The reason is that the regulatory authorities consider a long term shareholder coalition (investor group) as one shareholder who has to comply with all regulations concerning information disclosure, mandatory tender offer, disclosure of strategic intent etc. Therefore, if coalitions are formed, they exist on ad hoc basis with a specific aim, like the removal of underperforming management. Hence, we investigate (indirectly) whether disciplining actions are the consequence of interactions among shareholders with high relative voting power.

To our knowledge, little empirical research has been done on shareholder voting coalitions. Interesting models were developed by Zwiebel (1995) and Bennedsen and Wolfenzon (2000). The former paper develops a game theory model in which small block shareholders join to form controlling coalitions. This deters other block investors such that the ruling coalition is not challenged. The latter paper shows that in the absence of a resale market for shares, the founder of a firm may optimally choose the ownership structure such that there are multiple large shareholders in order to prevent that a single shareholder could take unilateral actions that might hurt other shareholders. Subsequently, coalitions compete to seize control of the firm. In our study, we allow insider and outsider shareholder to compete for control of the firm. If the outsiders win, they replace management. If the management wins, they are able to impede board restructuring by coalitions of outside shareholders.

We first report the ownership structure of a random sample of UK firms and calculate the relative voting power of the largest shareholders and of potential coalitions of shareholders. Subsequently, we estimate the relation between executive board restructuring (corrected for natural turnover) and different measures of shareholder concentration: a. ownership percentages, b. Herfindahl indices, c. Shapley values of the largest shareholders and d. Shapley values of the shareholders of specific

⁵ Proxy votes are used by German banks: the Depotstimmrecht (e.g. Wenger and Kaserer (1997) and Franks and Mayer (2001)).

types. We consistently find that the models with Shapley values of shareholder groups (d) outperform the other models (a, b and c). We also obtain robust results that coalitions of executive directors successfully ward off any attempts to discipline underperforming management. If management does not own a sufficient level of relative voting power, managerial disciplining is undertaken by large corporations and by coalitions of specific institutions, insurance companies.

As shareholders and coalitions are not the only source of corporate monitoring, we also investigate whether corporate performance triggers large changes in ownership concentration which in turn leads to a higher level of board restructuring (Denis and Sarin (1999)). Likewise, we analyse whether or not the board and capital structure and corporate refinancing can help to dispose of poorly performing management. We find little evidence of a market in ownership blocks. In addition, we conclude that it is easier to discipline management in highly levered companies, in companies that are refinanced with seasoned equity issues and in companies where the roles of the CEO and the (non-executive) chairman are separated. The internal monitoring mechanism, the non-executive board, seems to support incumbent management even in the wake of poor corporate performance.

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)). 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 (2000)).⁶

Still, there may be another reason why diffuse ownership structure persist: the classic agency problem in the Anglo-American context of ‘strong managers, weak owners’ (Roe (1994)) may be reduced if a coalition of shareholders assumes the role of a monitoring controlling blockholder. When coalitions are formed they are necessarily ‘ad hoc’ voting coalitions because if they are 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 Take-over Panel 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, we test the existence of shareholder coalitions 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 calculates the relative voting power of each blockholder in potential voting coalitions⁷. 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 extent to which individual shareholders or groups of shareholders are pivotal in (potential) voting coalitions. We then relate the relative voting power shareholders or shareholder groups to observed disciplinary actions against executive directors or the CEO. Especially in the context of poor performance, we expect a strong positive relation. Subsequently, we contrast the relation between relative voting power and board restructuring to the relation between ownership concentration and board restructuring. If the former relation is stronger than the latter, this may be interpreted as indirect evidence of the role of voting coalitions in the context of the removal of underperforming management. Thus, we hypothesise that: *Shareholder coalitions with high relative voting power remove underperforming management (Hypothesis 1a).*

⁶ Shareholders transgressing this threshold are required by the Takeover Panel 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%.

⁷ 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.

This hypothesis assumes that every blockholder has an equal propensity to take part in a shareholder voting pact and to be active in the monitoring and disciplining process. In other words, the monitoring by a coalition of shareholders is assumed to be independent of the type of shareholder(s). Still, categories of shareholders may have different incentives or abilities to monitor a firm such that it may be easier to create coalitions with shareholders of the same type. For example, given that executive directors have similar private benefits of control, they may combine their shareholdings into one voting block and try to obstruct any attempts to remove these executive directors. Evidence of such managerial entrenchment in the UK is given in Lai and Sudarsanam (1997) and Franks et al. (2001). As such, it is possible that the relative voting power of a coalition 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). Consequently, the executive directors' equity stakes are first summed and, subsequently, the relative voting power of this voting block is calculated. Applying this to the previous example, we would not investigate the relative voting power of individual executive directors but rather that of the executive directors as a group.

Whereas the management is expected to impede board restructuring, which categories of large shareholders are expected to monitor the firm? 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 or at least has been (too) low. Institutions may take a passive stance due to lack of monitoring expertise or due to the desire to safeguard investment liquidity since insider trading regulation may immobilise portfolio rebalancing. This may be the reason why, for instance, occupational pension funds do not seem to create any 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 (2002)). The increase in the systematic casting of votes by institutions has been a relatively recent phenomenon, predominantly of the last 5 years. Surveys revealed that many UK institutions have established voting policies (for examples, see Mallin (1999)).⁸ Only 20% of investment funds exercised voting rights in 1991 (ISC (1991)), 35% voted in 1995 (Mallin (1996)) and 41% in 1997

⁸ 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.

(MVA (1998)). 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 institutional voting trends concludes that overall proxy voting levels have increased to over 50%. These surveys may 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 the national associations (like 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. 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 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. Holderness and Sheehan (1988), for Belgium by Renneboog (2000), for France by Banerjee et al. (1997). 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)). This leads to the following hypothesis: *Shareholder coalitions consisting of - respectively - institutions, industrial companies and non-executive directors and retaining strong relative voting power, discipline underperforming management unless executive directors are able to 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.⁹

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 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 on monitoring. Hence, increases in shareholdings or new share blocks 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 the 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. Moreover, non-executive directors have incentives to develop

⁹ 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 a voting pact, whereas the other shareholders do not engage in the creation of coalitions such that they participate in the Shapley game as individual players. Alternatively, as there is some evidence that non-executive directors support incumbent management (Berger et al. 1999), it is possible that executive and non-executive directors forge coalitions.

reputations as experts in decision control because the value of their human capital depends on their performance as monitors in other organisations. Consequently, directors are subjected to the disciplining of passive leadership by the external labour market. Brickley et al. (1999) find that both the likelihood that a retired CEO serves on his own board two years after his retirement as a CEO, as well as the likelihood of serving as an outside director on other boards, are positively and strongly related to his performance while CEO. Kaplan and Reishus (1990) and Gilson (1990) confirm that the number of non-executive directorships dwindles for poorly performing managers.

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.¹⁰ 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 also facilitates disciplining of underperforming management: such dual control should lead to higher board restructuring (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

¹⁰ Such recommendations have been formulated in the U.S. Bacon report (1993), the U.K. Cadbury Committee report in 1992, the French Viénot report II in 2000, the Dutch Peeters Commission report in 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).

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. This period is prior to the implementation of the Cadbury report on good corporate governance and allows us to test whether or not some of the recommendations were essential. Only those companies for which at least three years of ownership data were available, were retained in the sample in order to allow an 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.

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'.¹¹ 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

¹¹ 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.

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.

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:

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

and game \mathbf{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 $\mathbf{w}\emptyset=0$. Any member of N (the grand coalition of \mathbf{w}), a , is a player of \mathbf{w} . If X is a coalition, the real number $\mathbf{w}X$ is called the worth of X in \mathbf{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.¹²

A problem in calculating the relative voting power is induced by the fact that the owners of a substantial proportion of the equity capital (on average about 56%) are unknown. These anonymous shareholders – hence called atomistic shareholders - are not directors (for whom full disclosure of equity stakes is mandatory) and do not have to 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 (to discipline management) 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

¹² 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).

votes of atomistic shareholders to buttress a 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).¹³

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

¹³ 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 less than 5% and companies with 2 shareholders each owning less than 5%. This resulted in removing 3% of the observations.

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 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 about 40%. Panel B shows the relative importance of the different classes of shareholders in terms of ownership. 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). Still, since many institutions hold stakes between 2 and 3% of a firm's equity, the true accumulated holdings of institutions are estimated to be around 60%. The combined board of directors controls 17.3% of voting rights. On average, 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%.¹⁴ 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.

¹⁴ 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.

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 can participate in potential voting coalitions (regardless of class of owner) and that shareholders without disclosed shareholdings are atomistic and do not buttress a coalition with their voting rights. 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 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. Section 2 reported some empirical evidence that specific classes of shareholders are better monitors than others, which 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 can exert a relatively power of 0.21 and 0.16.¹⁵

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 purchases, 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 of 10% or more occurred and new share stakes of similar size were acquired.

Insert about here Tables 3 and 4.

¹⁵ 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

5.3 *Performance, capital structure and corporate size.*

Table 4 reports summary statistics of the performance data and shows, as expected for a random sample, that 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) amounts to 1.42 for the average company.

5.4 *Board composition and top management turnover.*

In the average UK company, the number of directors amounts to 9.5 with a median of 9 (table 5). Over time, there has been a gradual increase in the average number of directors from 9.2 to 10.1. Sixty-one per cent of directors hold executive positions in the company and in about two thirds of companies the positions of CEO and chairman are held by separate directors. The CEOs and chairman's average age is 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. (2001) 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.

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).

In this section, Tobit regression results of the relation between relative voting power and alternative governance mechanisms, and executive board restructuring are presented. The robustness of these results is verified by models with alternative performance measures and by fixed effects models. The results from logit models with CEO turnover as an alternative dependent variable are 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 significant increases in turnover in the current or two subsequent years.¹⁶ 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 decreases¹⁷ 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)), 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 by total ownership concentration (not shown), and managerial disciplining. Substituting relative voting power for the percentage of ownership concentration does not yield consistent results for the largest share stakes. This negative coefficients of the Shapley variables may result from the fact that some of these largest share stakes are held by directors which may oppose board restructuring. We conclude from table 6 that mere ownership concentration does not matter. The rejection of hypothesis 1a is confirmed by fixed effects models and by logit models with CEO turnover as dependent variable.

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)

¹⁶ Other tested performance variables like cash flow measures, ROA, earnings losses (dummy) all yield a similar high correlation with turnover.

¹⁷ These increases are net of additional turnover due to monitoring actions by large shareholders, creditor and corporate boards.

executive and non-executive directors.¹⁸ In order to investigate whether large individual shareholders or coalitions of substantial shareholders discipline underperforming management, we estimate three different ownership models in table 7. Firstly, the largest equity stake classified by type of owner is included in the model as it may be that it is the largest shareholder who disciplines 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 $SV_{\text{largest/cat}}^i$. 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. This third model not only tests whether specific categories of shareholders are more able to monitor, but a comparison of the results of models 2 and 3 reveals whether or not coalitions are needed to discipline management. Hypothesis 1b predicts increased monitoring by coalitions of outsiders and increased resistance to board restructuring by management coalitions.

Insert here table 7.

The following example shows how the SV_{category}^i 's are computed. Suppose a company has 5 shareholders: industrial company 1 (owning 16% of the voting rights), industrial 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 is not involved in toppling incumbent management. Therefore, the above equity stakes are rescaled which, in this example, doubles their voting stake in the company. Calculating the SV's of the individual shareholders gives 0.30 and 0.13 for industrial companies 1 and 2, 0.13 for each insurance company 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 $SV_{\text{largest/cat}}^i$ 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.

¹⁸ 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).

Table 7 reveals that executive director removal significantly decreases when executive directors can form a strong voting coalition. Whereas the ownership percentage held by the largest executive director is statistically significant at the 5% level of statistical significance in 3 performance models, the largest executive director's relative voting power ($SV_{\text{largest/cat}}^i$) yields a better fit (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. This (indirectly) supports the hypothesis that executive directors form voting coalitions to impede board changes. Faccio and Lasfer (1999) also report that substantial managerial ownership may create an entrenchment effect in the UK.

Whereas the percentage of equity held by the largest non-executive director is not related to executive board turnover, the relative voting power (SV) 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 to support incumbent management, a suggestion also made by Franks et al. (2001). This finding results from the fact that poor corporate performance is not only the consequence of managerial underperformance but also of a breakdown of corporate governance by non-executive directors. Thus, non-executives may also be also culpable for the 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 some (indirect) evidence that non-executive directors form coalitions to ward off executive board changes.

Out of the categories of institutions, it is only insurance companies which are important in terms of managerial disciplining in all performance models of table 7. 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. The fact that it is insurance companies rather than investment and pension fund managers or fund managing banks, who exert their voting rights is not surprising for the following two reasons. First, insurance companies often hold larger share stakes in a single company. Second, as the surveys on the

exercise of voting rights (discussed in section 2) revealed, 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 in several cases lower than that of the $SV_{\text{largest/cat}}^i$. The result can be explained by the fact that in many sample firms a coalition among several corporate shareholder is simply not possible as there is often only one corporation owning a large equity stake. Table 7 also demonstrates that the voting power of individuals' or families' is not related to managerial disciplining.

6.2 Robustness checks.

The robustness of the findings with the SV_{category}^i -measures of table 7 was verified by re-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 owner¹⁹. 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 further supports our conclusion that executive and non-executive directors and insurance companies seem to forge voting coalitions.

We also re-estimated the Tobit models of table 7 using three alternative estimation techniques: (i) OLS regressions with fixed effects (including corporate dummies), (ii) OLS regressions with first differences and (iii) GMM in differences. We found that the evidence of section 6.1 is confirmed. Repeating the models of table 7 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. The non-executive directors also seem to support the incumbent CEO.

From the above analyses, 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

¹⁹ 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.

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.

So far, the analysis has focused on the impact of relative voting power on board restructuring while controlling for capital and board structure. Still, several questions remain unanswered. Firstly, although relative voting power and coalitions may matter, we have not analysed whether or not coalitions of large shareholders discipline management *as the result of poor corporate performance*. Secondly, we have not yet analysed whether *alternative governance mechanisms* are functioning in the wake of poor performance. The next section attempts to provide the answers.

6.3 Alternative corporate governance mechanisms.

Corporate monitoring is not only expected from blockholders or coalitions, but also from the internal control mechanisms (the non-executive board, board committees), the market in share stakes and creditors (see hypotheses 2-4). Including all monitoring mechanisms into one model allows for testing which disciplinary devices dominate in the UK. Moreover, including interaction terms of all governance mechanisms with performance can give an answer to the question whether or not it is poor performance which triggers managerial disciplining by one or more governance mechanism.

Table 8, which includes the SV_{category}^i (shown in table 7 to give the strongest correlation with managerial disciplining), exhibits that 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.²⁰ In addition, the findings supporting hypothesis 1b are largely confirmed. Executive directors seem to be able to defend their positions by impeding board restructuring irrespective of corporate performance: the Shapley variables are strongly significant but the relative power of executive directors interacting with performance is not. Thus, even if the company performs poorly, a voting pact among the management is able to ward off managerial disciplining. 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 by the statistically significant negative interaction terms with lagged performance.

²⁰ 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.

Managerial disciplining is also performed by coalitions of insurance companies. Still, it is not clear whether or not 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 at any moment in time will not reflect any change. Therefore, gross increases in voting rights for each category of owner are included in the models of table 8.²¹ We find 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 shareholder categories industrial companies, individuals and families, executive and non-executives are all positively related to increased board turnover.²² The interactive terms test whether these increases are triggered by performance: the changes in shareholdings do not seem to constitute a performance-induced market for (partial) control (hypothesis 2). 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.²³ 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

²¹ 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.

²² At first sight, the positive sign of the changes in executive directors' stakes is counterintuitive or at least is not in line with the entrenchment effect documented above. The changes in ownership are taken over the period $[t-1, t]$ whereby t is the year of executive turnover. We found that the changes in the (non)executive directors' ownership were predominantly new equity blocks acquired by the new executive and non-executive directors who replaced the removed management. Consequently, the changes in (non)executive ownership is the result of managerial disciplining rather than its cause. For the other categories the causality problem was not an issue: most of those changes preceded the board restructuring. Lagging one more period (for $[t-2, t-1]$) does not make sense because if new blockholder emerges in a poorly performing company why wait more then one year to remove underperforming management?

hypothesis 3. In four performance models, the larger the percentage of non-executive directors on the board, the more negative the correlation with executive turnover. This counter-intuitive finding is in line with earlier (weak) evidence that non-executives seem to support incumbent management, but is neutralised by the negative interaction terms (in two performance models). This indicates that, when performance is poor, the percentage of non-executive directors on the board is not related to executive removal. Separating the functions of CEO and chairman is not related to more corporate governance actions.

A high gearing ratio may be a pre-commitment device for management to generate a steady stream of cash flows. If the gearing ratio increases due to poor performance and equity erosion, increased creditor monitoring is expected. We do find that high gearing is significantly positively related to executive board turnover (table 8). The negative interaction terms show that when high gearing coincides with low abnormal returns, managerial disciplining is intensified, which supports hypothesis 4. In contrast, low liquidity (in combination with poor performance) does not seem to be a reason to remove management.²⁴ Refinancing the corporation using a seasoned equity offering increases managerial disciplining because a need to recapitalize the company is the prime occasion for existing shareholders or new shareholders to remove management (Slovin et al. (2000)).²⁵ The fact that the interactive term of refinancing with performance is significant in four models confirms that poor performance combined with corporate refinancing leads to high executive turnover.

The re-estimation results for the models of table 8 using fixed effects (see above) do not reject our the conclusions. Still, the findings for models with disciplining of the CEO as dependent variable 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 CEO 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.

²³ 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.

²⁴ 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.

²⁵ 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.

This paper has investigated whether voting coalitions are formed by shareholders in order to discipline incumbent management in the wake of corporate underperformance. The relative power of shareholder coalitions by category of owner was measured by power indices (Shapley values) which outperform other measures of voting power, like the percentage of voting rights controlled by the largest shareholders and the relative voting power of individual owners. There is strong 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 corporate 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 control 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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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.

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

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

	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
1 Banks	62	5.7%	0.16	0.04	204	1.7%	0.05	0.01
2 Investment and Pension funds	139	6.2%	0.18	0.04	204	1.9%	0.05	0.01
3 Insurance co's	173	6.0%	0.20	0.08	204	4.1%	0.14	0.06
Total	187	8.9%	0.27	0.08	204	6.1%	0.18	0.06
Institutions	86	8.4%	0.26	0.11	204	7.2%	0.22	0.09
4 Industrial cos	86	17.1%	0.46	0.18	204	14.5%	0.39	0.16
5 Families and individuals	31	8.4%	0.32	0.13	204	7.2%	0.29	0.06
6 Government	6	24.4%	0.68	0.13	204	22.4%	0.62	0.06
7 Executive directors	103	12.8%	0.34	0.07	204	5.4%	0.14	0.01
8 Non-executive directors	58	14.3%	0.36	0.04	204	6.0%	0.15	0.00
Total directors	118	10.7%	0.19	0.08	204	1.6%	0.03	0.04
		16.4%	0.27	0.07	204	2.5%	0.04	0.00
		5.7%	0.03	0.04	204	0.2%	0.00	0.00
		5.7%	0.03	0.04	204	0.2%	0.00	0.00
		8.1%	0.16	0.07	204	4.1%	0.08	0.04
		11.6%	0.21	0.08	204	5.9%	0.11	0.02
		10.3%	0.21	0.08	204	2.9%	0.06	0.02
		14.5%	0.26	0.10	204	4.1%	0.07	0.06
		10.3%	0.21	0.10	204	4.1%	0.12	0.06
		17.3%	0.31	0.10	204	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 #. of Invest. (Cat.)	Mean (Tot.)	Mean #. of Invest. (Cat.)	Mean (Tot.)	Mean #. of Invest. (Cat.)	Mean (Tot.)	Mean #. of Invest. (Cat.)	Mean (Tot.)	Mean #. of Invest. (Cat.)	
Banks	0.29	1.11	0.02	1.00	0.00	1.00	0.00	0.00	0.00	0.00	0
Invest./pension funds	1.06	1.63	0.04	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0
Insurance companies	2.01	2.57	0.22	1.21	0.02	1.00	0.00	0.00	0.00	0.00	0
Total Institutions	3.35	3.76	0.29	1.26	0.02	1.00	0.00	0.00	0.00	0.00	0
Industrial companies	0.31	1.14	0.11	1.05	0.04	1.00	0.01	1.00	0.00	1.00	1
Families and indiv.	0.22	1.84	0.03	1.40	0.02	1.00	0.00	0.00	0.00	0.00	0
Executive directors	0.24	1.40	0.14	1.38	0.04	1.14	0.00	1.00	0.00	0.00	0
Non-executive directors	0.26	1.71	0.08	1.23	0.02	1.00	0.00	1.00	0.00	0.00	0
Total directors	0.50	1.85	0.22	1.55	0.06	1.30	0.01	1.00	0.00	0.00	0
All shareholders	4.42	4.69	0.65	1.51	0.15	1.11	0.02	1.00	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 1992 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: Tobit 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.

Performance :	Dependent Variable : Executive Director Turnover.									
	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	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	0.53	-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	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	-0.86	-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	0.62	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	0.38	-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	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	-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	-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	-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	1.23	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	2.98
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	0.36	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	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	2.60	2.76
Observations	1015		1033		1060		1042		816	

Table 7 : Tobit 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/catⁱ}. For SV_{categoryⁱ}, all substantial ownership stakes first are summed by category of owner and subsequently the SV of these combined shareholdings is calculated. Thus, SV_{categoryⁱ} 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/catⁱ}	SV _{categoryⁱ}	% Eq _{largest}	SV _{largest/catⁱ}	SV _{categoryⁱ}	% Eq _{largest}	SV _{largest/catⁱ}	SV _{categoryⁱ}
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				
Intercept		0.06710***	(3.23)	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	
Performance t-2		-0.00042***	(-3.61)	-0.00229***	(-3.35)	-0.0312*	(-1.87)	-0.00002	(-0.23)	0.00229***	(4.45)
Performance t-1		0.00053	(0.90)	-0.01630	(-1.21)	-0.0493	(-0.45)	-0.00065	(-0.73)	0.00320	(0.96)
Performance t		-0.00020*	(-1.84)	0.00005	(0.04)	-0.0634***	(-4.44)	-0.00010***	(-3.85)	-0.00166**	(-2.19)
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)
Non-executives		-0.0495*	(-1.89)	-0.0348	(-1.40)	-0.1437*	(-1.66)	-0.0277	(-1.14)	-0.0149	(-0.43)
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)
Investm./pension funds		0.0211	(0.81)	0.0208	(0.80)	0.0297	(0.19)	0.0122	(0.49)	0.0804*	(1.81)
Insurers managed funds		0.0674***	(4.03)	0.0857***	(5.41)	-0.0062	(-0.08)	0.0694***	(3.92)	0.0992***	(4.20)
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)
Individuals and families		-0.0162	(-0.36)	0.0130	(0.27)	-0.2037	(0.00)	0.00450	(0.06)	-0.0224	(-0.26)
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)
Companies		0.000781	(0.71)	0.002089**	(2.40)	0.01200***	(4.57)	0.002336***	(2.73)	0.002481**	(2.47)
Individuals and families		0.003738**	(2.02)	0.004032***	(2.76)	0.003625	(0.20)	0.002854*	(1.66)	0.000611	(0.37)
Executives		0.006292***	(4.80)	0.005202***	(4.32)	0.006145***	(2.66)	0.005275***	(2.70)	0.004892**	(2.43)
Non-executives		0.004719***	(2.61)	0.005151***	(3.61)	0.006354	(0.42)	0.004809***	(2.60)	0.000019	(0.01)
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)
Unitary supervision		0.0073	(0.70)	0.0044	(0.45)	-0.0236	(-0.49)	0.0196	(1.47)	0.0147	(0.93)
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)
Liquidity (t-1)		0.000053	(0.59)	0.000049	(0.62)	0.000054	(0.63)	0.000056	(0.64)	0.000062	(0.62)
Refinancing (t)		0.038200***	(3.01)	-0.003752	(-0.37)	-0.13500***	(-3.60)	-0.000646	(-1.63)	-0.002225	(-1.31)
										0.000576**	(2.55)
										0.000054	(0.63)
										0.04470	(0.97)

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