

Cause and Effect in CEO Changes*

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Abstract

We examine CEO turnover and its relation to past firm performance, future performance and firm governance. For our analysis we construct a new cross-country data set containing over 6,000 CEO years and 1,000 CEO changes. We find that CEO turnover increases asymmetrically with extreme low performance and that under the incoming CEO performance increases sharply, corrected for mean-reversion of performance. Powerful boards increase CEO turnover, but act indiscriminately in their firing decisions and typically fail to distinguish between normal and underperforming incumbent CEOs. Further, powerful boards are detrimental even to the improvement in performance under the new CEO. We find that indiscriminate firing and hiring is not only a feature of powerful boards, but associated also with large blockholders, financial leverage and takeover pressure. None of these governance mechanisms are associated with successful turnarounds. Instead, the degree of improvement in performance is only positively related to whether the newly appointed CEO is an outsider (instead of an insider). Incoming CEOs engage in significant downsizing and layoffs, which coincide with performance improvements. Despite large differences in country-level governance regimes, these results are remarkably similar across countries.

JEL Classifications: G30, G34

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1 Introduction

This paper analyses the relation between managerial turnover, firm performance and governance mechanisms and extends prior research in two main ways. First, it uses the largest and most detailed cross-country sample yet, which provides several advantages over prior research. The cross-sectional variation of firm-level governance mechanisms is greatly increased, as our data set contains CEO changes from the U.K., which features one-tier boards, widely held firms, an active takeover market, and weak legal protection of employees, and from Germany, which features two-tier boards, concentrated ownership, a less active takeover market and strict employment protection. Our data set is significantly larger and more detailed than the samples used in prior cross-country studies and contains over 1,000 CEO changes and over 6,000 CEO-year observations.¹ Importantly, our coverage is comparable to the largest U.S. datasets and therefore provides important out-of-sample evidence relative to the extensive literature on CEO turnover in the U.S.²

Our second main contribution is the analysis of the interaction of turnover, performance and governance. Few studies have been able to link the causes of managerial turnover with its results as far as firm performance is concerned. We analyze both how pre-turnover performance influences the probability of the incumbent CEO to be removed and how the incoming CEO influences consequent performance. We show that outgoing and incoming CEOs are closely connected by performance patterns that are robust across countries.

Specifically, we find that the sensitivity to past performance is asymmetric, with significantly higher turnover probability among the lowest performance firms. We split firms into performance deciles and while normal or high performance does not lead to

¹The global sample of 3,179 CEO changes in Defond and Hung (2004) is larger than ours, but only covers a time period of five years, which is shorter than the average tenure of a CEO. The emerging market sample in Gibson (2003) is roughly half the size of our sample, but again only for a period of five years. Significantly, both papers do not collect any data on board characteristics, such as board size or number of outside directors, or CEO characteristics, such as age or whether the incoming CEO is an insider or outsider. The earliest cross-country study is Kaplan (1994a), using a sample of 448 Japanese and 485 U.S. CEO-year observations.

²See Coughlan and Schmidt (1985), Warner, Watts, and Wruck (1988), Weisbach (1988), Bonnier and Bruner (1989), Denis and Denis (1995a), Khanna and Poulsen (1995), Fee and Hadlock (2004), Huson, Malatesta, and Parrino (2004), and Kaplan and Minton (2006)

higher likelihood of the CEO staying, the lowest performing firms experience sharply higher CEO turnover.

What is driving this apparent disciplining of underperforming CEOs? We find that firm-level governance is highly relevant for CEO changes and governance mechanisms matter as predicted by theory. Outsider-dominated boards, small boards, and particularly outsider-dominated small boards significantly increase the likelihood of CEO turnover. Similarly, if firms have a controlling blockholder, are subject to takeover pressure or have high financial leverage, the likelihood of turnover is increased. These parties however act indiscriminately and typically fail to distinguish between normal and underperforming incumbent CEOs. While they therefore significantly influence the level of turnover, the change in turnover in response to a decline in performance is insignificant or even goes against firing underperforming managers. The interpretation is that while there is strong evidence that managers are significantly more likely to be fired following bad performance, the firing decision is not triggered by the examined governance mechanisms.

For incoming CEOs we find a similar asymmetric pattern in performance. Incoming CEOs are associated with large improvements in performance for poorly performing firms, but have little effect in firms that did not previously underperform. Denis and Denis (1995b), Denis and Kruse (2000), Huson, Malatesta, and Parrino (2004) and Cornelli, Kominek, and Ljungqvist (2009) also report post turnover performance improvements in poorly performing firms. Our contribution is to show that these improvements are robust to adjusting for industry performance, mean reversion, higher order autocorrelation, firm unobserved heterogeneity and year effects. The improvement in performance is mostly attributable to the appointment of an external CEO, as opposed to appointing an insider. Firms that appoint an outside CEO candidate experience a significantly higher increase in performance following the appointment. Other governance mechanisms however fail to have an impact on performance or even contribute to a decrease in performance under the new CEO. Incoming CEOs also trigger significant layoffs and downsizing, with large effects concentrated among previously underperforming firms. Incoming CEOs signifi-

cantly reduce assets over a 3-year period following the turnover. This asset reduction is larger for CEO turnover following bad performance and is of similar size in both countries. Similar patterns hold for employment, as incoming CEOs also coincide with significant layoffs. Remarkably, layoff patterns are similar in the U.K. and Germany, despite the fact that German employees enjoy a higher level of legal employment protection and can affect corporate decisions through the codetermination system.

Taken together, the results clearly show that CEOs are forced out in case the firms that they run underperform and at the same time firm-level governance significantly influences CEO turnover. The two mechanisms however are almost entirely unrelated. This is confirmed by the fact that managers are forced out after bad performance, although very different governance parameters are prevalent in the average firm in the two countries. Governance therefore matters for CEO turnover, but turnover is not disciplinary.

Instead, CEO turnover seems to follow a remarkably similar pattern across countries, that determines the relation between turnover, past performance and future performance. This is that underperformance triggers the removal of incumbent CEOs. Underperforming CEOs are consequently replaced by external hires. The newly hired CEOs oversee a significant improvement in performance and implement large layoffs and downsizing.

Our results suggest that CEO firing and hiring decisions are generally taken efficiently and make a strong case for appointing external CEO candidates to turn around underperforming companies. However, they also show the very limited role that the board plays in these turnarounds.

Our results are important out-of-sample evidence relative to prior studies. Our large sample is crucial in this respect, as CEO changes pose a data challenge empirically, that we refer to here as a *triple sort*. To illustrate, one of our goals is to determine whether board characteristics influence the probability that a CEO will be removed after bad performance. To do this, a first sort requires that a firm has a change of CEO. As CEO changes are relatively rare events—Kaplan and Minton (2006) report an average CEO tenure of 5.7-6.4 years for the US, we find an average CEO tenure of 6.8 years for the

UK and 7.5 years for Germany—a large sample of events as a starting point is crucial. A second sort requires firms to be classified by performance into underperforming firms and all remaining ones. A third sort then is by firm-level board characteristic, for example firms with outsider-dominated boards versus others. The triple interaction leaves few observations in many prior studies and a crucial advantage of our large cross-country sample is having a higher probability of detecting small effects that may otherwise be undetectable by low-powered tests.

Another important finding—and contrary to what might be expected, given the large differences between the financial systems of the UK and Germany—we find virtually no difference in turnover characteristics between the two countries. The frequency of external turnover and its sensitivity to performance are almost identical for both countries. Managers are therefore equally likely to be held accountable for poor performance under vastly different governance regimes. A similar result is obtained by Kaplan (1994a) for a comparison of turnover events in Japan and the US and our results provide very strong support of these findings. Country-level differences therefore seem to matter little for disciplining managers.

Our analysis is based on a specifically constructed rich data panel of firms, that ties together a number of data sources. The managerial turnover data comes from MANIFEST, a novel database with broad coverage of listed U.K. firms and from HOPPENSTEDT, with broad coverage of listed German firms. MANIFEST is an electronic database, HOPPENSTEDT is an annual yearbook and we therefore collect all data by hand. We perform extensive cleaning and adjustments for both data sets as we describe in detail later on.

The remainder of the paper is structured as follows. Section 2 discusses related research, while Section 3 discusses the sample. In Section 4 we present and interpret our empirical findings, while Section 5 concludes.

2 CEO changes and firm performance

In this section we review the prior evidence of the interaction of firm performance, governance mechanisms and corporate restructuring in the event of CEO turnover.

Hermalin and Weisbach (1998) propose a theoretical framework which suggests that performance declines lead to reputation losses for the CEO and raise the probability that the board of directors replaces him. Prior evidence generally confirms this relation. Warner, Watts, and Wruck (1988) find a negative relationship between stock price performance and turnover of top managers (CEO, Chairman and President) in the U.S. This evidence has been confirmed by an international body of research. The negative association of turnover frequency to firm performance is not limited to CEOs. Fee and Hadlock (2004) find that non-CEO top managers are almost as likely to be subject to disciplinary turnover as CEOs, although their turnover is less sensitive to previous stock price performance.

It is important to stress the difference between voluntary and forced CEO changes. Voluntary turnover can arise in an array of cases. First, managers may retire due to age, due to expiry of their contract or due to other circumstances. Such turnover cases may not be motivated by previous performance and may not indicate quality. Also, as Huson, Malatesta, and Parrino (2004) argue, voluntary turnover does not allow a prediction of whether the replacing managers is of higher or lower quality than the incumbent. Therefore, changes in expected firm performance after voluntary turnover should be smaller than after forced turnover.

Following the rationale in Hermalin and Weisbach (1998), outside board directors are frequently assumed to be independent and play the role of monitors. Further, board size may matter because as boards become too large, agency problems increase within the board, and its monitoring quality declines (Jensen (1993)).

Whether the board independence view applies is ultimately an empirical question and the evidence is mixed. In the U.S., outside directors have been shown to increase the sensitivity of turnover to past performance (see Weisbach (1988)). The evidence for

outside directors in the U.K. is ambiguous. Dahya, McConnell, and Travlos (2002) report a significant disciplinary role for outsider-dominated boards for a sample of 460 U.K. firms from 1988 to 1996. Franks, Mayer, and Renneboog (2001) however, using a sample of 250 U.K. firms from 1988 to 1993, find no evidence of disciplining by outside board members. They suggest that regulatory differences between the U.S. and the U.K. may lead to the irrelevance of outsider board representation. In the U.S. directors have significant fiduciary obligations, whereas very few such obligations exist in the U.K. With respect to Germany, it has been argued that supervisory board members of German firms might be more or less independent than their U.S. and U.K. counterparts (Roe (1993), Fauver and Fuerst (2006)).

Regarding board size, Yermack (1996) and consequent studies find that firms with smaller boards are more likely to discipline managers with larger boards in the U.S. Dahya, McConnell, and Travlos (2002) confirm this finding for the U.K. For Germany, the size of the supervisory board is regulated by law, with a minimum of three and a maximum of 21 members, with the actual number depending on firm size and industry. Also, all firms in our German sample are subject to codetermination rules according to which 50 percent of supervisory board members have to be employee representatives.³ Firm discretion over board size is therefore more limited in Germany than in the U.S. or the U.K. and any empirical relation is likely to be weaker.

Apart from the board, which governance mechanisms determine the hiring and firing of CEOs? We consider blockholders, financial leverage and corporate takeovers.

Blockholder ownership has been argued to be instrumental in overcoming free rider problems of management monitoring and acts a disciplinary mechanism. The empirical evidence is mixed however. While Franks, Mayer, and Renneboog (2001) find no disciplinary effect of blockholders, Huson, Malatesta, and Parrino (2004) find that larger institutional shareholdings improve the sensitivity of turnover to prior performance.

³There is some evidence that the larger size of German boards with respect to their U.S. and U.K. is a direct result of the introduction of mandatory employee board representation in 1976. Prior to the mandatory rule, in 1975 average supervisory board size was 7 members, increasing to 13.3 in 1996 (Hopt (1998) and sources cited there).

Jensen (1986) argues that debt financing reduces free cash flow and therefore acts as a disciplinary device for managers. Further, banks may play an active monitoring role and bank financing has a disciplinary effect on management. Therefore, any disciplinary impact of leverage should be greatest when a large fraction of debt is bank debt. Financing sources differ between Germany and the U.K., with bank financing playing a large role for German firms, often in the form of relationship banking (Franks and Mayer (2001)). In the U.K., debt is more likely to come in the form of public debt rather than bank debt. In Germany debt is more likely to be bank debt. Leverage therefore might be expected to play a more important disciplinary role in Germany than in the U.K.

3 Data

3.1 Sample selection

The dataset that we use for our analysis is specifically constructed for this purpose and novel in its characteristics. It ties together a number of data sources and is constructed as follows. Firms are initially selected based on coverage by COMPUSTAT Global, which according to Standard&Poor's covers 95% of total European market capitalization.⁴ Between 1995 and 2005 COMPUSTAT covers roughly 3,500 firms in the U.K. and 1,100 firms in Germany. These firms are matched with the primary data sources of board data, which is the electronic Manifest database for the U.K. and the annual issues of Hoppenstedt Aktienfuehrer for Germany. For U.K. board data, we use the population of listed firms over the period covered by Manifest. For both countries we restrict data to firms that enter COMPUSTAT until 1997 by the latest. From the matched sample of firms covered both by COMPUSTAT and Manifest/Hoppenstedt we eliminate investment trusts (SIC codes 61 and 62), firms for which board composition is missing and firms that have any coverage gaps. The final sample contains 950 firms for the U.K. and 340 firms for Germany.

⁴See Standard& Poor's COMPUSTAT Data Manual (2009).

An important feature of our board data is the comparison of two different board systems, the one tier system of the U.K. and the two-tier system of Germany. In order to construct comparable board turnover measures we process board data as follows. CEO and Chairman in the U.K. correspond to Chairman of the management board (Vorstandsvorsitzender) and Chairman of the supervisory board (Aufsichtsratsvorsitzender) in Germany respectively. Executive directors in the U.K. correspond to management board (Vorstand) members in Germany and nonexecutive directors in the U.K. correspond to supervisory board (Aufsichtsrat) members in Germany. Following Dahya, McConnell, and Travlos (2002) and Kaplan (1994b) we classify all executive directors and management board members as inside directors and all nonexecutive directors and supervisory board members as outside directors.⁵

We collect managerial turnover data by tracking firms over the period in Manifest for the U.K. and in the annual issues of Hoppenstedt for Germany. We record board size, the number of executive and nonexecutive directors and the names of CEO and Chairman on a yearly basis. Information on CEO and Chairman age is recorded by Manifest for the U.K. and collected from Capital IQ, Factiva and annual reports for Germany.

A special identification problem arises in the German sample. Some papers in the management turnover literature assume implicitly that the concept of a CEO is identical across legal systems. Under German corporate law, however, corporations are required to have a Chairman (of the supervisory board) but are *not* required to have a CEO. While many firms choose to always appoint a CEO, some never choose to and some switch regimes over time. CEO changes therefore do not always correspond to true turnover events. For Germany we therefore search every turnover event on Factiva and eliminate artificial turnover events arising from firms switching regimes.

Further, in both countries we classify CEO and Chairman appointments into internal and external ones, depending on whether the director was a board member in the pre-

⁵Under the German codetermination system 50 percent of the members of the supervisory boards of corporations are appointed by employees, see *Mitbestimmungsgesetz of 4 May 1976*. This applies for companies with more than 2000 employees (for smaller companies mandatory representation is 30 percent, see *Betriebsverfassungsgesetz of 15 January 1972*, replaced by *Drittelbeteiligungsgesetz of 18 May 2004*).

appointment year or not. We also distinguish internal from external turnover. Internal turnover for U.K. indicates that the CEO or Chairman resigns from his position, but stays on the board of directors, whereas external turnover means that they leave the board. Similarly, internal turnover for Germany indicates that the CEO or Chairman resigns from his position, but stays either in the management board or in the supervisory board.

Along with board composition information, Manifest and Hoppenstedt Aktienfuehrer provide yearly ownership data for U.K. and German corporations respectively. For both countries, a company is considered widely held when no shareholder owns more than 25% of voting rights. Otherwise the firm is regarded as controlled by a block shareholder. Block shareholders are classified by type as being a financial investor, a family, a non-financial firm or as other (which includes non-family controlled foundations, the state, employees, and management).

We also record time series of restructuring activities that take place at the firm level. We record asset and labor size changes using COMPUSTAT and trace incidents of divestitures and acquisitions using SDC Platinum.

Finally, all data items in monetary units are deflated and measured in 2000 U.S. dollars.

3.2 Descriptive statistics

In the following we report descriptive statistics for country, firm, board structure and turnover characteristics. The U.K. and Germany are primary examples of "outsider" and "insider" financial systems, data is provided in Appendix 1. Investor protection in Germany, as measured by the anti-director rights and anti self-dealing scores of Djankov, La Porta, Lopez-de Silanes, and Shleifer (2008), is much lower than that of the U.K. Not surprisingly, the stock market capitalization relative to GDP in Germany is smaller, listed firms relatively fewer, IPOs scarcer and corporate financing more dependent on credit markets. In addition, the German employment protection legislation is stricter than that of the U.K., which is also reflected in the protection scores of labour unions in

Germany and the high labour adjusting costs.

Table 1 reports statistics for all firm-year observations in both countries. Board characteristics are similar across countries in Panel A, with two exceptions. In Germany, there is a legally mandatory separation of the roles of Chairman and CEO. This is not the case in the U.K., but most firms choose to separate these roles. German boards are larger on average, due to supervisory boards in Germany generally having more members than the comparable number of outsider directors in the U.K.

Turnover probabilities in Panel B are almost identical in both countries, with mean total turnover of 14.8% in the UK and 13.4% in Germany. External turnover is 11.2% in the UK and 12.0% in Germany. CEOs are more likely to be externally appointed in the U.K. Internal turnover events by definition do not indicate a significant change of managerial power within the board and are frequently temporary appointments, for example cases in which the CEO dies unexpectedly and a board member assumes the CEO role temporarily. In all consequent results we exclude internal turnover events from the sample and consider only external appointments as turnover events.

Firms are of comparable size and have similar profitability, measured by EBITDA over lagged assets. As expected, leverage in Germany tends to be higher than in the U.K.

Another input into the performance analysis of the following section are time series data of ownership structures in the U.K. and Germany. Panel D reports the breakdown of ownership concentration. The data confirm the large differences in ownership structures between the two countries, that have been reported by previous studies for similar time periods. On average 14.8 percent of voting rights of a U.K. firm is concentrated among shareholders with stakes of 5 percent or more. Ownership in Germany is much more concentrated, as on average 56.5 percent of voting rights are controlled by shareholders of 5 percent or more.

Table 2 reports a univariate analysis of the sensitivity of turnover to prior performance. Towards that end, we divide firms by their economic performance, measured by return on assets (ROA) and by dividends, in the year preceding the turnover event. Panel

A reports results for performance quintiles formed according to ROA. In Panel B ROA is adjusted for industry. Panel C reports results obtained by splitting the sample into observations where there was no reduction of dividends in the year prior to the turnover and observations where a reduction or an omission of the dividend preceded the turnover event.

The results are strikingly similar for both countries. In Panel A, moving from the highest performance quintile to the lowest performance quintile increases the likelihood of external managerial turnover from 9 percent to 15 percent in the U.K. and from 11 percent to 17 percent in Germany. In both countries, turnover probabilities are highest in the lowest performance quintiles. The pattern is even more pronounced using industry-adjusted ROA in Panel B. In Panel C, dividend cuts as a sign of lower economic performance produce the same pattern. In the U.K. financial years that are not preceded by dividend cuts have an 8 percent probability of external managerial turnover and a 16 percent probability of turnover in the event of a dividend cut or omission. In Germany the probability of external turnover increases from 9 percent to 13 percent. Overall the results show a strong sensitivity of turnover to past performance that is very similar in both countries.

A finer breakdown of performance into deciles is provided in Figure 1. The results show that sensitivity to performance is essentially flat for deciles 5 to 10, and sharply decreasing for deciles 1 to 4.

4 Results

4.1 Testing the relation between past firm performance and managerial turnover

Having established very similar levels of managerial turnover in both countries in the previous section, we now turn to the analysis of the relation between past performance and managerial turnover in a multivariate setting.

4.1.1 Determinants of managerial turnover

Table 3 reports the results of random effects logit regressions with year fixed effects, where the dependent variable equals 1 for all firm years during which an external CEO turnover event is recorded and zero otherwise. Performance is measured by industry-adjusted performance IAROA and dividend cuts DIVCUT. Industry-adjusted firm performance (IAROA) has a significantly negative effect on the probability of turnover and dividend cut or omission cases—which indicate poor performance—have a significantly positive effect. The cross country comparison of sensitivities in the interaction of IAROA and DIVCUT with GER, a dummy for German firms, shows that the likelihood of turnover is not significantly different between both countries. Overall, the evidence of Table 3 suggests that CEOs in both systems are held accountable for poor performance.

Next, we focus on the governance mechanisms that have been suggested to play a disciplinary role for managers—blockholding shareholders, board independence and size, takeovers and capital structure of the firm. We regress managerial turnover on these mechanisms to establish first whether they influence managerial turnover and second whether managerial turnover is disciplinary and more frequent after prior underperformance.

The results are reported in Table 4. In Panel A we find that there is a significant effect of ownership structure on managerial turnover, as widely held firms have significantly lower turnover. Board independence significantly increases managerial turnover, consistent with prior evidence. Our results therefore confirm those of Franks, Mayer, and Reneboog (2001) but are opposed to those of Dahya, McConnell, and Travlos (2002). Larger boards have a significantly negative effect on the probability of managerial turnover. Takeover pressure, measured by industry-specific takeover activity, significantly increases the likelihood of managerial turnover. We also find that leverage increases turnover, and the effect does not derive exclusively from cases of financial distress for which we control separately.⁶ The results indicate that industry adjusted leverage increases the frequency of turnover.

⁶Distress is a dummy variable that takes the value of one during any year in which a firm's interest coverage ratio (Interest expense over EBITDA) is lower than one for that year *and* the previous year.

Panel B reports results for these governance mechanisms interacted with performance. For this we split firms into performance quintiles, to allow for the previously observed non-linear effect of performance on turnover, and interact performance quintile dummies with board independence, board size, block shareholders, takeover pressure and financial leverage. The highest performance quintile $Q5_{IAROA}$ serves as the base case.

The coefficients on $Q1_{IAROA}$ (lowest performance quintile) to $Q4_{IAROA}$ (second-highest quintile) confirm the previously observed non-linear relationship. Only the $Q1_{IAROA}$ coefficient is significantly positive in all regressions, confirming that the sensitivity of turnover to past performance is due to the lowest performing firms.

The coefficients of the interaction terms of firm performance and firm governance however show that the governance mechanisms do not distinguish between normal and low performance and removal of CEOs therefore appears to be indiscriminate. The interaction terms of IBOARD, BSIZE, HOT, MAXSH and IA Lev with $Q1_{IAROA}$ are insignificant, indicating no effect of these mechanisms on the turnover probability of low performance firms. The evidence therefore shows that while the impact of governance characteristics on turnover *levels* is significant, there is no effect on turnover *changes* from high to low performance. In unreported results we re-run the regressions in Panel B and replace the performance quintile dummy variables $Q1_{IAROA} - Q4_{IAROA}$ with IAROA itself and interact IAROA with the five governance variables. The results are unchanged and the interaction terms are never significant.

4.2 Post-turnover corporate performance

4.2.1 Univariate Analysis

This section examines the implications that a CEO change has for corporate performance in either country of our study, U.K. and Germany. In order to conduct this investigation, it is necessary to distinguish turnover incidents in underperforming firms from those in normally performing firms. We expect that performance improvements should be more pronounced in the former group of firms, where the likelihood of disciplinary

turnover is higher. The performance measure used is return on assets, both raw and industry adjusted. In addition, the analysis needs to account for mean reversion in operating performance: The fact that low performance firms experience on average larger performance improvements than high performance firms do. Since turnover occurs more frequently in cases of poor performance, neglecting this mean reversion may overstate the performance benefits of CEO turnover. We correct for mean reversion in operating performance, following the control group adjustment methodology proposed by Barber and Lyon (1996). In the managerial turnover literature, control group adjusting of return on assets was introduced by Denis and Kruse (2000) and Huson, Malatesta, and Parrino (2004). This methodology compares the performance changes a given firm experiences following a turnover event, with the performance changes of other firms in the same industry and with roughly the same performance (at the year preceding turnover) as the firm in question. More precisely, the control group adjusted change in ROA for firm i which experiences turnover is computed as:

$$\Delta CAROA_i = \Delta ROA_i - Median(\Delta ROA_k | k \in G_i)$$

where G_i is the set of comparison firms for firm i at the year of turnover. This set comprises the firms which satisfy three criteria: a. They are traced by Global COMPUS-TAT. b. Their ROA is within ± 2 percent of the performance of the firm at the fiscal year preceding the turnover event. c. They are incorporated in the same country and belong to the same industry as the firm. Industries are defined using the two digit SIC code. If there are no matching firms for a particular observation, we use the one digit SIC code and if no matching is obtained either, we use all firms in the respective country. 81% of the ROA observations for U.K. firms at the year of external turnover are matched using two digit SIC code industries and 15.4% using one digit. The respective numbers for the German sample are 80.4% and 18.6%.

Figure 2 reports ROA, IAROA and CGAROA with yearly frequency, for seven years around the event. For the whole sample, indicated by ALL POOLED, IAROA and

CGAROA are flat throughout the period, indicating that the industry and control-group adjustment of ROA works as intended. Patterns for firms in Germany (GER) and in the U.K. (GBR) are almost identical. QLOW indicates firms that belong to the lowest two quintiles (country-specific) of performance in the year before the event. The figures shows that these firms experience their lowest performance in year 0, the turnover year, and performance improves afterwards.

Table 5 reports performance changes in the three year period before and after CEO turnover. Prior to turnover, the median U.K. firm experiences a decrease in ROA by 0.9%, in IAROA by 3.6% and in CAROA by 1.1%. There are strong performance reversals for firms underperforming at the year of turnover. Specifically, the median change in ROA, IAROA and CGAROA for these firms, in the three year period preceding the turnover event is -8.1%, -25.3% and -9.2% respectively. Following the removal of the CEO, the corresponding changes are 8.1%, 33.2% and 9.65%. All of these changes are statistically significant at the one percent level. The pattern for non disciplinary turnovers is the reverse. Positive changes prior to turnover are followed by performance declines in the following years (by 2.3% in ROA, 8.2% in IAROA and 3.74% in CGAROA). These declines may reflect the cost of losing a good performing manager, but they may also reflect mean reversion not fully absorbed by control group adjusting. We return to this point in the next section, where we perform a regression analysis.

The evidence for performance changes surrounding turnover events in Germany yield similar patterns to the ones in the U.K. Firms underperforming at the year of turnover, have seen a median reduction in performance by 2% in ROA, 25.6% in IAROA and 5% in CGAROA over the previous three years. Cumulatively, in the subsequent three year period they realize median performance gains of 4% in ROA, 10% in IAROA and 1% in CGAROA. When mean changes in performance are examined, the post turnover performance gains are 3.9% in ROA, 22.5% in IAROA and 4.19% in CGAROA. In this descriptive analysis, statistically significant performance gains at the 5 percent level are identified for the ROA and CGAROA performance measures. Normally performing firms

at the year of turnover, experience performance declines in the following years, which are statistically significant for the ROA and IAROA performance measures.

4.2.2 Regression Analysis

The preceding analysis provided evidence of post-turnover performance improvements for underperforming firms in both countries. This analysis however, raises two important issues regarding unobserved heterogeneity and higher order autocorrelation. With respect to the former, any unobserved firm characteristic that is positively related to both future performance and current CEO turnover would lead to an overstatement of the turnover benefits for underperforming firms. Regarding the second issue, mean reversion, even after control group adjusting, may still be present if ROA has an autocorrelation order higher than one. We provide evidence below that this is indeed the case in both countries of our analysis. To the best of our knowledge, neither issue has been addressed in the existing literature on post-turnover performance changes. By now standard results in the econometrics literature (see Arellano and Bond (1991)) prove that dynamic panel data models cannot be estimated consistently by the usual fixed effects estimators since the set of regressors is by construction not strictly exogenous. Because of this, we make use of the GMM-type estimator proposed by Blundell and Bond (1998) and describe briefly its implementation in our analysis below.

The model to be estimated assumes the form:

$$y_{it+1} = a_0 + a_1 y_{it} + a_2 y_{it-1} + \beta' x_{it} + \gamma' d_t + \eta_i + \varepsilon_{it}$$

where y_{it} is the change in IAROA for firm i from year $t - 1$ to t , x_{it} is a vector of regressors, d_t is a set of year dummies, η_i captures fixed unobserved firm heterogeneity and ε_{it} is a white noise disturbance. We assume that $E(\eta_i) = 0$, $E(\varepsilon_{it}) = 0$, $E(\varepsilon_{it}\eta_i) = 0$, $E(\varepsilon_{it}\varepsilon_{is}) = 0$ for every $t \neq s$, $E(\varepsilon_{it}^2) = \sigma_\varepsilon^2 < \infty$, $E(\eta_i^2) = \sigma_\eta^2 < \infty$, and $E(y_{i1}\varepsilon_{it}) = 0$ for every $t > 1$. Let $u_{it} = \eta_i + \varepsilon_{it}$. The Blundell and Bover estimator is a linear optimal GMM estimator which makes use of the orthogonality conditions: $E(y_{i,t-s}\Delta\varepsilon_{it}) = 0$ for

$s > 1$, and $E(u_{it}\Delta y_{i,t-1}) = 0$ for $t \geq 3$. In the estimation procedure, the year dummies d_t are treated as strictly exogenous, whereas the regressors x_{it} as predetermined.

The results of the estimation are presented in Table 6. The effect of turnover on future performance is examined separately for firms that experience poor performance in the year of turnover from the firms that experience normal performance. Poorly performing companies are defined as the ones with IAROA in the bottom two quintiles, indicated by the dummy variable QLOW. The control variables include both performance classification dummies, proxies for firm size (in terms of asset size and employment size) and firm growth measures (asset and employment log-changes, dummies indicating incidence of divestitures or acquisitions). The results indicate that underperforming companies in terms of IAROA enjoy performance improvements, over and above all effects induced by mean reversion, firm growth at the year of turnover, unobserved firm heterogeneity and year-specific shocks. For the normally performing firms, turnover has insignificant performance implications. We conclude therefore, that the negative post-turnover performance reaction for normal performers, shown in the previous section, can be attributed mostly to mean reversion. In unreported results, we find that the post turnover performance gains do not differ significantly across the two countries of our study.

The interaction terms of QLOW with external appointment, BLOCK (firms with a shareholder owning at least 25 percent of voting capital), HOT (takeover pressure), leverage and board size show whether firm-level governance matters for performance improvement under the new CEO.

In a nutshell, only external appointments help performance improvements, as the interactions of external appointment with QLOW is positive and significant. All other firm governance mechanisms fail to have an impact or even decrease performance under the new CEO. Outsider dominated boards, block shareholders and financial leverage have no effect, as BLOCK and IA Leverage interactions are not significant. Board size and HOT have a positive and negative interaction coefficient, respectively, indicating that smaller boards and deals subject to takeover pressure improve performance *less* than

larger boards and deals not subject to takeover pressure. The results thus suggest that governance mechanisms mostly fail both in their firing and hiring decisions and make a strong case for using externally hired CEOs to turn around underperforming companies.

Overall, the analysis of post turnover performance changes shows that firms in both financial systems are successful in implementing turnover decisions that reverse the course of poorly performing firms. Firm-specific governance mechanisms however seem mostly unrelated or even detrimental to these turnarounds.

4.3 Post-turnover restructuring

In this section we examine restructuring measures that firms in either country undertake following a turnover event. In particular we focus on sales and workforce reductions following a turnover event. The results in Table 7 indicate that there is substantial and significant post-turnover downsizing in both Germany and the U.K. This downsizing is similar in magnitude across the two countries. The industry adjusted asset growth rate is -7.8% in the U.K. and -7.3% in Germany. Downsizing measures, for both countries are especially severe for turnover events that follow poor performance. However incidents of such measures are even encountered in normally performing firms. This is consistent with Weisbach (1995) who finds that incoming CEOs in the U.S. divest unprofitable firm divisions following the year of their appointment, even in overall well performing firms.

The comparison of employment changes yields similar patterns. Over the three year period after a turnover event, the industry adjusted employment growth rate is -5% in the U.K. and -5.7% in Germany. This similarity in the magnitude of employment changes holds true also when only disciplinary turnovers are considered (-9.4% in the U.K. and -9.8% in Germany for industry adjusted changes). This is a rather surprising finding, given the stronger employment protection legislation and the presence of labor codetermination in Germany.

In order to ensure that these results are not due to data errors, we select ten turnover events in Germany associated with the largest negative industry-adjusted workforce re-

ductions. We perform a news search on FACTIVA centered around the turnover event and construct brief case histories. An additional reason for doing so is that the cross-sectional result of the association of managerial turnover with consequent significant workforce reductions offers little insight into both the nature of the correlation and possible interactions between board characteristics, firm performance and downsizing. These cases include firms such as Pfleiderer AG (a producer of flooring materials), Kloeckner Werke AG (a machine manufacturer), Glunz AG (a manufacturer of wood products) and BMW AG (a car manufacturer).

The analysis shows a pattern that is broadly similar for all firms. According to this, around the time of the turnover, usually after the incumbent CEO leaves the firm, the firm reports a large and unexpected drop in sales or performance. The new CEO announces broad restructuring measures, that include significant downsizing of the workforce. Decisions to reduce the workforce seem to be generally supported by both boards and while it is not clear whether labour representatives on the supervisory board always support this downsizing, the results at least show that their votes do not prevent strong downsizing measures. While a more thorough analysis of the effects of codetermination on restructuring flexibility is beyond the scope of this paper, our results still suggest that in cases of strong performance declines, supervisory boards in Germany are willing to both replace the CEO and to support broad corporate restructuring that includes significant workforce reductions. Our conclusion is therefore that codetermination per se does not appear to be an impediment to large-scale layoffs in Germany. A possible explanation for this may be that layoffs after managerial turnover are particularly concentrated in foreign subsidiaries, where differences in labor protection may be less pronounced. Testing this relationship in detail appears to offer an interesting avenue for future research.

5 Conclusion

This paper studies the relationship between firm performance, CEO turnover and firm level governance mechanisms and relies on a large sample of 6,000 CEO-year observations

from the U.K. and Germany. We find that the relation between firm performance and CEO turnover is asymmetric, both before and after turnover events. Specifically, *before* the turnover event, low prior performance triggers higher turnover (but high prior performance does not affect turnover). Then, *after* the turnover event, the turnover event triggers performance improvements for previously low performing firms (but turnover does not affect performance of previously high-performance firms). Surprisingly, both relations are virtually identical across the two financial systems, although the two countries exhibit large differences in average board structure, shareholder structure, takeover market activity and investor protection.

Does firm governance matter for this? We do find strong evidence that turnover depends on board characteristics: smaller and outsider-dominated boards significantly increase CEO turnover. The results show that turnover also depends on ownership concentration, financial leverage and takeover activity in a firm's industry. However, there is no evidence that board characteristics help to fire bad incumbent CEOs and there is no evidence that board characteristics help to hire good incoming CEOs. Instead, boards seem to act indiscriminately both in their firing and their hiring decisions and perform no disciplinary role. This lack of a disciplinary role not only applies to boards, but also to block shareholders, financial leverage and takeover activity. Instead, the only consistent solution to turning around underperforming firms is the hiring of an outsider CEO (instead of a corporate insider).

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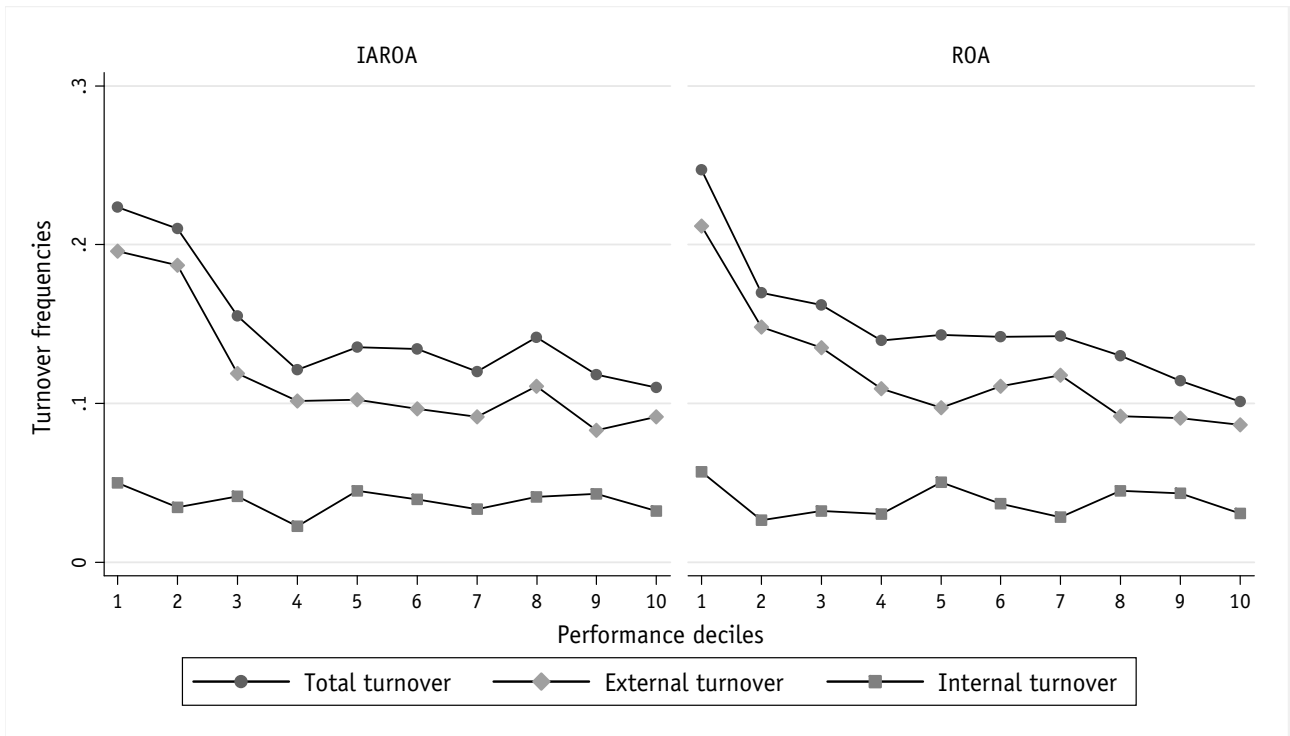


Figure 1: CEO turnover frequencies and prior performance

This figure reports mean CEO turnover frequencies classified by performance deciles. Performance is measured in the fiscal year prior to the turnover. Return on assets (ROA) is calculated as EBITDA over lagged total assets. Industry adjusted return on assets is ROA minus the industry median ROA, where industry medians are calculated at the two-digit SIC level. If less than five firms exist in the same two-digit industry in that fiscal year, the industry median is defined at the one-digit SIC industry level.

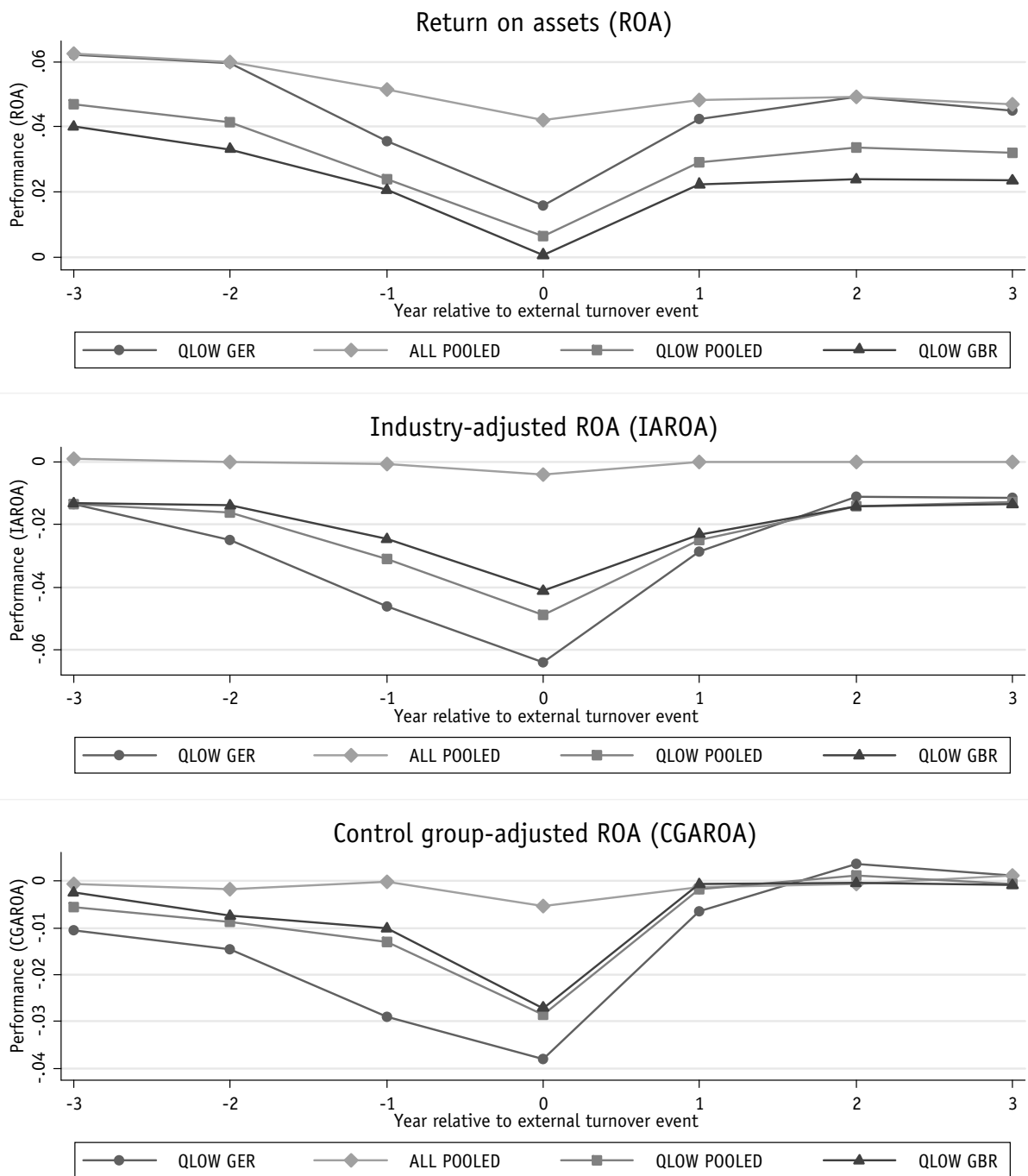


Figure 2: Operating return on assets around CEO changes

This figure reports median return on assets (ROA) for all external managerial turnover events between 1996 and 2004. Year 0 is the fiscal year during which the turnover event takes place. CEO changes are classified as forced if the firm is in the lowest two ROA quintiles in the year before the event. ROA is EBITDA over lagged total assets. Industry adjusted return on assets is ROA minus the industry median ROA. Control group-adjusted ROA is $ROA_t - \text{Median}(ROA_k/k \in G_t)$, where G_t is the set of comparison firms for firm i . Comparison firms are in the same two-digit SIC industry as firm i and their performance in year $t-1$ is within ± 10 percent (not percentage points) of ROA_t . If no firm in the same industry can be matched by performance the control group is defined at the one-digit SIC industry level. Control groups are calculated for each turnover observations and kept constant for -3 to +3 fiscal years.

Table 1: Board and firm summary statistics

This table reports summary statistics for all sample firms from 1995 to 2004. CEO externally appointed is a dummy variable equal to 1 if the CEO was not a board member in the year prior to his appointment. Chairman externally appointed is a similar dummy variable for the Chairman of the board in the U.K. and the Chairman of the supervisory board in Germany. Leverage is book debt over total assets. ROA is EBITDA over lagged total assets. Sales and assets are in millions, employees are in thousands. All accounting items are adjusted to US\$ in 2000.

	UK			Germany						
	Mean	Median	N	Mean	Median	N				
Panel A: Board characteristics										
Inside board members	3.7	4	5266	3.8	3	2230				
Outside board members	4.1	4	5266	10.8	11	2230				
CEO age	51.0	52	5016	59.4	55	1445				
Chairman age	.	.	.	60.9	61	1569				
Outsider ratio	53%	50%	5266	72%	75%	2230				
CEO externally appointed	49%	0%	1946	38%	0%	890				
Chairman externally appointed	43%	0%	2008	46%	0%	965				
Separation of CEO and Chairman	89%	100%	5266	100%	100%	2225				
Panel B: Turnover event characteristics										
Total turnover likelihood	0.158	0	4471	0.137	0	2058				
External turnover likelihood	0.121	0	4471	0.128	0	2058				
Internal turnover likelihood	0.037	0	4471	0.041	0	2058				
Outgoing CEO age	53.1	54	604	56.1	57	210				
Incoming CEO age	48.7	49	653	51.9	52	180				
New CEO is externally appointed	52%	100%	663	45%	0%	236				
Panel C: Financials										
Sales	3005.6	594	5266	3448.8	407.8	1951				
Assets	8274.5	365.5	4716	17709.8	594.6	2357				
Employees	9.6	1.8	4591	15.4	2.6	2320				
Leverage	56.00%	55.00%	4706	70.30%	72.10%	2357				
ROA	13.10%	12.70%	4648	12.10%	11.30%	2249				
Capex/Assets	6.20%	4.80%	3904	7.10%	5.60%	1588				
Panel D: Shareholder structure (largest shareholder stake in percent)										
	UK					Germany				
	Mean	Median	p10	p90	N	Mean	Median	p10	p90	N
	14.8	12	4	28	3,704	57.71	56.5	15	98.6	2,210

Table 2: Univariate analysis of sensitivity of turnover to past performance

This table reports CEO turnover frequencies in the U.K. and in Germany classified by ROA quintile and dividend cut/omission incidents. ROA is EBITDA over lagged total assets. Industry adjusted return on assets is ROA minus the industry median ROA. A dividend cut/omission is an event in which a firm distributing positive common dividends in year t-1 distributes a lower or no common dividend in year t. p-values indicate if turnover likelihood in the top and bottom performance quintiles are significantly different using a t-test.

		Panel A: Performance quintiles based on ROA					
		Q1 (lowest)	Q2	Q3	Q4	Q5 (highest)	p-value
UK	Total turnover	19%	16%	14%	14%	11%	***
	External turnover	15%	12%	10%	11%	8%	***
	Internal turnover	4%	4%	3%	4%	3%	ND
	No. obs.	1027	1027	1027	1027	1028	
Germany	Total turnover	16%	12%	14%	15%	9%	***
	External turnover	16%	13%	10%	12%	10%	***
	Internal turnover	4%	2%	5%	6%	4%	ND
	No. obs.	449	449	449	449	449	
		Panel B: Performance quintiles based on industry-adjusted ROA					
UK	Total turnover	21%	13%	14%	13%	12%	***
	External turnover	17%	10%	11%	9%	9%	***
	Internal turnover	4%	3%	4%	4%	4%	ND
	No. obs.	1027	1040	1014	1027	1028	
Germany	Total turnover	16%	15%	12%	12%	10%	**
	External turnover	17%	13%	9%	13%	9%	***
	Internal turnover	3%	4%	6%	3%	5%	ND
	No. obs.	449	449	449	449	449	
		Panel C: Performance based on dividend cuts					
		No dividend cut		Dividend cut or omission		p-value	
UK	Total turnover			11.5%	19.9%	***	
	External turnover			8.1%	16.0%	***	
	Internal turnover			3.4%	3.9%	ND	
	No. obs.			3211	2038		
Germany	Total turnover			11.1%	14.9%	**	
	External turnover			9.5%	14.0%	***	
	Internal turnover			4.3%	4.2%	ND	
	No. obs.			866	1483		

Table 3: Multivariate analysis of sensitivity of turnover to past performance

This table reports the results of random effects logit regressions with year fixed effects, where the dependent variable equals 1 for all firm years during which an external CEO turnover event is recorded and zero otherwise. IAROA is industry adjusted return on assets. Dividend cut equals 1 for all firm years during which a firm reduced or eliminated its dividend, zero otherwise. Financial equals 1 for all firms with SIC codes between 6000 and 6999. CC Separation equals 1 for all firm years during which CEO and Chairman are separated. Hot is industry-specific takeover activity and equals one if the number of takeovers in the industry in which a firm operates exceeds its long-term median. The long-term median is calculated by country year and two-digit SIC industry, from all takeovers of publicly trade firms (announced and completed) on SDC from 1995-2006. Standard errors are reported in brackets. *, ** and *** indicate a coefficient significantly different from 0 at the 10%, 5% and 1% confidence level.

Dependent variable: External CEO turnover	Pooled	GBR	GER
IAROA	-1.083*** [0.329]	-1.250*** [0.352]	-1.949* [1.046]
DIVCUT	0.769*** [0.111]	0.847*** [0.116]	0.597*** [0.200]
(IAROA) x(GER)	-1.113 [1.114]		
(DIVCUT) x (GER)	-0.074 [0.223]		
GER	-0.027 [0.190]		
Log(assets)	0.046* [0.025]	0.054* [0.031]	-0.055 [0.051]
CEO age	0.000 [0.001]	0.051*** [0.009]	-0.002 [0.003]
Financial firm	-0.394** [0.166]	-0.418** [0.200]	-0.062 [0.328]
CC Separation	0.180 [0.169]	0.383** [0.178]	
Hot	0.247*** [0.092]	0.359*** [0.113]	0.077 [0.189]
Observations	6155	4717	1438
Year FE	YES	YES	YES
chi-square	130.9	141.6	26.62

Table 4: Determinants of managerial turnover

This table reports random effects logit estimates of the determinants of managerial turnover. Panel A reports regressions using levels of five governance characteristics. Panel B reports levels and interactions for these characteristics. In all regressions the dependent variable equals 1 for all firm years during which an external CEO turnover event is recorded and zero otherwise. In Panel A, IAROA is industry adjusted return on assets. In Panel B, quintile dummies of IAROA are used and interacted with the five governance characteristics. IAROA quintiles are defined by country. The base case is the highest IAROA quintile ($Q5_{IAROA}$) and excluded. IBOARD indicates a board dominated by outside directors. BSIZE is the log-number of all executive and non-executive directors. MAXSH is the percentage of voting rights held by the largest shareholder of the firm, with a minimum threshold of 5%. HOT is industry-specific takeover activity and equals one if the number of takeovers in the industry in which a firm operates exceeds its long-term median. The long-term median is calculated by country year and two-digit SIC industry, from all takeovers of publicly trade firms (announced and completed) on SDC from 1995-2006. IA Lev is firm leverage minus industry leverage, defined at the two-digit SIC industry per year per country. Financial distress is a dummy assuming the value one if the firm has interest coverage less than 1 for two consecutive years. IBOARD, BSIZE and IA Lev are lagged by one year. Financial firm equals 1 for all firms with SIC codes between 6000 and 6999. Robust standard errors are reported in parentheses. a, b and c indicate a coefficient significantly different from 0 at the 1%, 5% and 10% confidence level.

	Outside board	Board size	Blockholder	HOT	IA Leverage
IAROA	-1.688^a (0.310)	-1.897^a (0.315)	-1.553^a (0.328)	-1.811^a (0.311)	-1.296^a (0.381)
GER	-0.144 (0.133)	0.399^a (0.146)	-0.241 (0.171)	0.127 (0.115)	0.139 (0.112)
Log(assets)	-0.005 (0.026)	0.076^b (0.033)	0.024 (0.027)	0.017 (0.026)	0.032 (0.026)
CEO age	0.000 (0.001)	0.000 (0.001)	-0.000 (0.001)	0.000 (0.001)	0.000 (0.001)
Financial firm	-0.391^b (0.172)	-0.464^a (0.174)	-0.398^b (0.178)	-0.411^b (0.173)	-0.430^b (0.170)
IBOARD	1.347^a (0.341)				
BSIZE		-0.467^a (0.163)			
MAXSH			0.009^a (0.003)		
HOT				0.237^b (0.093)	
IA Lev					0.657^a (0.196)
Distress					0.664^a (0.188)
Observations	6128	6128	5239	6112	5920
Year FE	YES	YES	YES	YES	YES
chi-square	82.78	75.21	53.11	74.53	91.23

Panel B: Governance mechanisms interacted with performance quintiles

VARIABLES	Outside board		Board size		Blockholder		HOT		Book leverage	
$Q1_{IAROA}$	1.464^a	(0.481)	1.955^a	(0.660)	1.131^a	(0.210)	1.197^a	(0.202)	0.990^a	(0.143)
$Q2_{IAROA}$	0.222	(0.523)	0.462	(0.677)	0.520^b	(0.218)	0.559^a	(0.211)	0.499^a	(0.149)
$Q3_{IAROA}$	0.504	(0.544)	0.420	(0.733)	0.402^c	(0.224)	0.235	(0.225)	0.285^c	(0.155)
$Q4_{IAROA}$	-0.001	(0.499)	0.260	(0.679)	0.273	(0.205)	0.224	(0.208)	0.284^b	(0.141)
IBOARD	1.331^b	(0.654)								
$(Q1_{IAROA}) \times (IBOARD)$	-0.829	(0.829)								
$(Q2_{IAROA}) \times (IBOARD)$	0.516	(0.877)								
$(Q3_{IAROA}) \times (IBOARD)$	-0.401	(0.931)								
$(Q4_{IAROA}) \times (IBOARD)$	0.516	(0.849)								
BFSIZE			-0.302	(0.271)						
$(Q1_{IAROA}) \times (BFSIZE)$			-0.433	(0.308)						
$(Q2_{IAROA}) \times (BFSIZE)$			0.029	(0.304)						
$(Q3_{IAROA}) \times (BFSIZE)$			-0.070	(0.330)						
$(Q4_{IAROA}) \times (BFSIZE)$			0.014	(0.310)						
MAXSH					0.010^b	(0.004)				
$(Q1_{IAROA}) \times (MAXSH)$					-0.005	(0.006)				
$(Q2_{IAROA}) \times (MAXSH)$					-0.001	(0.006)				
$(Q3_{IAROA}) \times (MAXSH)$					-0.006	(0.006)				
$(Q4_{IAROA}) \times (MAXSH)$					0.003	(0.005)				
hot							0.255	(0.204)		
$(Q1_{IAROA}) \times (HOT)$							-0.286	(0.273)		
$(Q2_{IAROA}) \times (HOT)$							0.016	(0.281)		
$(Q3_{IAROA}) \times (HOT)$							0.122	(0.298)		
$(Q4_{IAROA}) \times (HOT)$							0.167	(0.275)		
IA Lev									-0.042	(0.392)
$(Q1_{IAROA}) \times (IA\ Lev)$									0.885^c	(0.501)
$(Q2_{IAROA}) \times (IA\ Lev)$									1.526^b	(0.717)
$(Q3_{IAROA}) \times (IA\ Lev)$									0.381	(0.743)
$(Q4_{IAROA}) \times (IA\ Lev)$									0.867	(0.645)
GER	-0.184	(0.133)	0.310 ^b	(0.146)	-0.269	(0.170)	0.082	(0.114)	0.089	(0.113)
Log(assets)	-0.001	(0.026)	0.071^b	(0.033)	0.031	(0.027)	0.019	(0.026)	0.006	(0.026)
CEO age	0.000	(0.001)	0.000	(0.001)	-0.000	(0.001)	0.000	(0.001)	0.000	(0.001)
Financial firm	-0.376^b	(0.172)	-0.447^b	(0.174)	-0.384^b	(0.178)	-0.400^b	(0.173)	-0.403^b	(0.171)
Observations	6128		6128		5239		6112		6120	
Year FE	YES		YES		YES		YES		YES	
chi-square	111.5		107.4		83.50		105.2		112.9	

Table 5: Firm performance surrounding external turnover events

This table reports unadjusted, industry adjusted and control group adjusted changes in return on assets. ROA is defined as EBITDA(t)/Total Assets(t-1). IAROA is equal to ROA minus the industry median ROA. CGAROA changes are calculated as ROA minus the median ROA of a control group of firms matched by country, industry and performance at the year preceding the turnover event. Each industry comprises all firm year observations in a given country with the same 2 digit SIC Code. Year 0 is the fiscal year closest to the external turnover event. *QLOW* turnovers are those in which the corresponding performance measure in year *t-1* measure lies in the bottom 2 quintiles. Test of medians report Wilcoxon rank sum z-statistics. *, ** and *** indicate a coefficient significantly different from 0 at the 10%, 5% and 1% confidence level; ND indicates no significant difference.

All CEO changes							
		Median change in performance			Test of medians -3 to 0 vs 0 to 3		
		POOLED	GBR	GER	POOLED	GBR	GER
ROA	-3 to 0	-1.96%	-2.45%	-1.05%	-3.02	-2.31	-1.69
	0 to 3	-0.48%	-0.63%	-0.37%	***	**	*
IAROA	-3 to 0	-0.25%	-0.29%	-0.18%	-1.77	-1.69	-0.76
	0 to 3	0.50%	0.83%	0.24%	*	*	ND
CGAROA	-3 to 0	0.20%	0.02%	0.65%	0.16	-0.42	0.79
	0 to 3	0.18%	0.18%	0.18%	ND	ND	ND
<i>QLOW</i> CEO changes							
ROA	-3 to 0	-5.55%	-6.54%	-3.92%	-10.797	-7.864	-7.335
	0 to 3	1.80%	1.55%	2.08%	***	***	***
IAROA	-3 to 0	-4.08%	-4.61%	-3.09%	-11.802	-8.929	-7.611
	0 to 3	3.74%	4.28%	3.48%	***	***	***
CGAROA	-3 to 0	-1.95%	-2.93%	-0.09%	-5.051	-4.149	-3.221
	0 to 3	3.09%	2.01%	5.14%	***	***	***

Table 6: Dynamic panel data regressions of firm performance

This table reports Blundell and Bond (1998) dynamic panel data regressions with fixed firm and year effects of the form

$$y_{it+1} = a_0 + a_1 y_{it} + a_2 y_{it-1} + \beta' x_{it} + \gamma' d_t + \eta_i + \varepsilon_{it},$$

where y_{it+1} is the 1-period lead change in industry adjusted return on assets, $CHGIAROA_{t+1} = IAROA_{t+1} - IAROA_t$. The regressors include two lags of $CHGIAROA_{t+1}$. In the estimation procedure, the year dummies d_t are treated as strictly exogenous, whereas the regressors x_{it} are treated as predetermined. Turnover is a dummy variable assuming value 1 for firm years with external turnover events. *QLOW* is a dummy variable for whether a firm's IAROA lies in the bottom two performance quintiles in $t-1$. Asset growth and employment growth are log changes of assets and number of employees. External appointment is a dummy variable assuming value 1 when there is external turnover and the incoming CEO was not a board member in the year preceding his appointment. BLOCK is a dummy variable assuming value 1 when there is a shareholder holding at least 25 percent of voting capital. IBOARD, HOT, IA Leverage, and BSIZE are defined in Table 4. GMM standard errors are in brackets. *, ** and *** indicate a coefficient significantly different from 0 at the 10%, 5% and 1% confidence level.

	Ext. Appoint.	Block- holder	Outside board	Board size	HOT	Book leverage
<i>CHGIAROA_t</i>	-0.263*** [0.015]	-0.263*** [0.015]	-0.266*** [0.015]	-0.267*** [0.015]	-0.263*** [0.015]	-0.271*** [0.015]
<i>CHGIAROA_{t-1}</i>	-0.154*** [0.013]	-0.152*** [0.013]	-0.154*** [0.013]	-0.149*** [0.013]	-0.152*** [0.013]	-0.155*** [0.013]
Turnover	0.004 [0.005]	0.004 [0.005]	0.003 [0.005]	0.007 [0.005]	0.003 [0.005]	0.003 [0.005]
(QLOW)x(Turnover)	0.018** [0.007]	0.022*** [0.007]	0.020*** [0.007]	0.018*** [0.007]	0.020*** [0.007]	0.018*** [0.007]
QLOW	0.015*** [0.004]	0.017*** [0.005]	0.019*** [0.004]	-0.022 [0.018]	0.027*** [0.004]	0.020*** [0.004]
Asset growth	-0.007*** [0.001]	-0.007*** [0.001]	-0.007*** [0.001]	-0.006*** [0.001]	-0.008*** [0.001]	-0.007*** [0.001]
Employment growth	-0.000 [0.000]	0.000 [0.000]	-0.000 [0.000]	-0.000 [0.000]	0.000 [0.000]	-0.000 [0.000]
Log(assets)	-0.021*** [0.004]	-0.019*** [0.003]	-0.021*** [0.004]	-0.026*** [0.004]	-0.012*** [0.003]	-0.019*** [0.004]
Log(employment)	0.020*** [0.004]	0.016*** [0.004]	0.019*** [0.004]	0.018*** [0.004]	0.010*** [0.003]	0.019*** [0.004]
Ext. appoint.	-0.000 [0.006]					
(Ext. appoint.)x(QLOW)	0.019** [0.007]					
BLOCK		-0.011** [0.005]				
(BLOCK)x(QLOW)		0.008 [0.006]				
IBOARD			0.011** [0.005]			
(IBOARD)x(QLOW)			-0.000 [0.008]			
BSIZE				0.036*** [0.008]		
(BSIZE)x(QLOW)				0.017** [0.008]		
HOT					-0.000 [0.003]	
(HOT)x(QLOW)					-0.010** [0.005]	
IA Leverage						0.071*** [0.014]
(IA Leverage)x(QLOW)						0.024 [0.016]
Constant	0.102*** [0.023]	0.112*** [0.022]	0.108*** [0.022]	0.058** [0.027]	0.056*** [0.021]	0.108*** [0.022]
Year FE	YES	YES	YES	YES	YES	YES
Observations	5534	5534	5534	5500	5513	5532
Number of groups	1074	1074	1074	1072	1071	1073
chi-square	944.5	940.3	944.8	955.4	929.7	998.2

Table 7: Post Turnover Restructuring in UK and Germany

This table reports post turnover restructuring as median changes in assets and number of employees in the three year period after external turnover events. Industry adjusted items are changes adjusted by subtracting SIC 2-digit industry median changes for firms in the same country. QLOW CEO changes are external turnovers for firms whose IAROA lies at the bottom two quintiles in the fiscal year before the change event. z-stats report Wilcoxon rank sum (median) tests.

	Pooled sample			GBR			GER					
	%	z-stat	N	%	z-stat	N	%	z-stat	N			
Percent change in assets from t0 to t+3												
<i>All CEO changes</i>												
Unadjusted	1.5	2.12	**	522	1.9	2.49	**	287	1.0	0.36	ND	235
Industry-adjusted	-1.3	-3.32	***	522	-7.5	-2.58	***	287	-2.8	-2.00	**	235
<i>QLOW CEO changes</i>												
Unadjusted	-11.8	-2.29	**	242	-11.1	-0.42	ND	133	-12.0	-3.01	***	109
Industry-adjusted	-7.1	-5.90	***	242	-16.7	-3.88	***	133	-12.1	-4.46	***	109
Percent change in employees from t0 to t+3												
<i>All CEO changes</i>												
Unadjusted	-0.8	0.95	ND	479	0.7	0.66	ND	278	-0.8	0.61	ND	201
Industry-adjusted	-4.7	-3.04	***	479	-7.0	-2.93	***	278	-2.2	-1.13	ND	201
<i>QLOW CEO changes</i>												
Unadjusted	-9.6	-3.29	***	224	-8.5	-2.01	**	129	-10.0	-2.81	***	95
Industry-adjusted	-12.8	-5.93	***	224	-17.8	-4.38	***	129	-10.7	-4.08	**	95

Appendix 1: Investor protection, financial development, and employment protection legislation in the U.K. and Germany

Antidirector rights measure the rights of minority shareholders against directors, as revised by Djankov et al. (2008). Law and order is the index produced by the International Country Risk Guide to assess the legal system and de-facto law and order quality of a country. Anti-self-dealing is the indicator produced by Djankov et al. (2008) to measure the power of minority shareholders against self-dealing by managers and controlling shareholders. Stock market capitalization over GDP is the ratio of the stock market capitalization to GDP for 1996. Domestic credit to private sector is measured as the ratio of the domestic credit to the private sectors and GDP. Source: World Development Indicators 1997. The number of listed firms is scaled by its population (in millions) in 1996. The number of IPOs scaled by the number of listed firms is defined as the ratio of the number of initial public offerings of equity in a given country to the number of listed companies for 1996. The number of domestic IPOs and the number of domestic listed firms are from country-level stock market statistics; while population is from World Development Indicators. Strictness of employment protection legislation scores are from OECD Employment Outlook (2008). Protection of labor unions measures the legal protection of labor unions and the regulation of collective disputes, labor flexibility costs measure the difficulty and the costs of reducing wages and covers regulations concerning overtime and the use of temporary workers; both indices are from Botero et al. (2004).

	U.K.	Germany
Panel A: Investor protection in 1996		
Antidirector rights	5	1
Law and order	0.97	0.83
Anti-self-dealing	0.95	0.28
Panel B: Financial development in 1996		
Stock market capitalization / GDP (%)	119.5	21.8
Domestic credit to private sector / GDP (%)	112.3	102.7
Number of listed firms /Population	35.22	8.3
Initial public offerings/ Listed firms (%)	9.14	2.94
Panel C: Employment protection		
Strictness of legislation 1990 (OECD average: 2.3)	0.6	3.2
Strictness of legislation 1998 (OECD average: 2.0)	0.6	2.5
Strictness of legislation 2003 (OECD average 2.0)	0.7	2.2
Protection of labor unions	0.19	0.61
Labor flexibility costs	0.28	0.7