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# Women on the Board and Executive Duration – Evidence for European Listed Firms

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## Abstract

The participation of women in top-level corporate boards (or rather the lack of it) is subject to intense public debate. Several countries are considering legally binding quotas to increase the share of women on boards. Indeed, research on board diversity suggests positive effects of gender diverse boards on corporate governance and even firm performance. The mechanism through which these benefits materialize remain however mostly speculative. We study boards of directors in a large sample of listed companies in 15 European countries over the period 2003-2011 and find that female representation on firms' non-executive boards is associated with reduced turnover and an increase in tenure of executive board members. An increase in the performance-turnover sensitivity of executives suggests that this effect may be explained by better monitoring practices rather than by less effective control or a "taste for continuity".

**JEL-Classification:** G34, J24, J63, L25, M00

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## **1. Introduction**

Gender diversity in top corporate jobs is a central theme in the public debate on corporate governance reforms in recent years. The majority of European member states has implemented corporate governance reforms in particular aiming to improve board competences, monitoring and advising. The introduced requirements and recommendations address, for instance, director remuneration, disclosure and transparency rules, but also board composition concerning diversity and independence.

The European Commission (2011a, 2011b), however, draws attention to the still prevalent gender-inequality in corporate boards and calls for further improving the gender balance on European boards by raising the number of women in economic decision-making positions. In response, a small number of European Member States have already taken steps to increase the proportion of women on the board or are considering imposing certain quotas (see Ahern and Dittmar, 2012 or Heidrick & Struggles, 2014 for an overview).

Besides policy efforts to mitigate discrimination against women, an increasing number of firms voluntarily undertake specific actions to improve career opportunities for women and to increase gender equality on the top decision-making bodies (European Commission, 2011c; Gratton et al., 2007). Farrell and Hersch (2005) find arguments for a firm internal but also outside pressure to increase gender diversity.

In the academic literature in the fields of corporate governance and finance a number of empirical studies deal with the relationship between certain board characteristics and corporate outcomes (see Joecks et al., 2013 for a summary). A separate stream of research focuses on gender differences in a variety of situations including risk attitude and other behavioral patterns (see Niederle, 2014 for a review).

The relationship between gender-diverse boards and corporate outcomes, however, is still largely speculative. On the one hand, gender diversity may contribute to better corporate governance through improved group-thinking (European Commission, 2011a) or women may adopt different leadership styles (McKinsey & Company, 2007) that translate into motivated employees and thus higher performance.

On the other hand, gender diversity may facilitate better monitoring because women are less prone to engage in the “old boys network” which impedes independent control of executives (Adams and Ferreira, 2009). Insights from studies on the relationship between female representation on boards and firm performance are however ambiguous, some of them suggesting even negative performance effects (Rhode and Packel, 2014).

This study adds to the debate on the link between gender-diverse boards and board performance by studying the relationship between non-executive board composition and the duration of executive board members. In particular, we examine the presence of monitoring and advising non-executive female directors on the board and their influence on both executive tenure and turnover. The study builds on a comprehensive dataset including more than 18,000 executive and non-executive directors in nearly all listed firms in 15 European member states in the period 2003 to 2011.

We estimate duration models and find that female non-executive directors on the board decrease executive turnover. Further analysis also shows a positive association of gender diversity with executives’ tenure measured by years in office. In order to assess the mechanism behind his result, we test whether the share of non-executive female directors on the board is associated with a higher performance-turnover sensitivity of executives. The results support this and therefore indicate that the punishment of

executive board members for weak performance is stronger in more diverse boards. While the first finding may also be explained by a “taste for continuity” of female board members or weak punishment of bad performance, the results point to better monitoring through female non-executive directors or higher advising competences reducing the risk of turnover and leading to prolonged terms in office. These results are robust to several estimation techniques and definitions of the sample.

Further, while women on the executive board exhibit significantly lower tenure themselves, we cannot confirm that they face a higher risk of turnover. Finally, the presence of women as non-executives is not associated with higher (nor lower) financial performance suggesting that the link between female board representation and financial performance is not direct, but may materialize in the longer-run through its effect on management practices.

While these results suggest that gender-diverse boards may be indeed beneficial, they do not advocate gender quotas. With the exception of Norway no country had implemented a quota during the period investigated here and it is not ex-ante clear that enforced diverse teams would show the same effects. More importantly, these results stress that it is in the self-interest of firms to aim for gender diversity in the boardroom if it facilitates better monitoring with potential long-run beneficial effects on corporate governance and eventually firm performance.

The remainder of the paper is organized as follows. In section 2 we discuss the relevant literature and develop our hypotheses. In section 3 we introduce the data, briefly review the different legal and institutional frameworks in the countries covered by this study and provide first descriptive findings. In section 4 we describe the methodology and present empirical results on the influence of monitoring and advising female directors on the board on executive duration and failure. Section 5 concludes and

gives an outlook on further research in the field.

## **2. Board of Directors in Corporate Governance Literature**

### **2.1. Board Diversity and Corporate Governance**

Responding to public pressure, Norway was one of the first European countries to introduce a legally binding 40% quota for female representation on supervisory boards of stock companies which became effective in January 2008. Likewise, France and Spain have decided to increase the percentage of women on the board to 40% via quotas. Germany, so far relying on voluntary commitments, is also shifting towards a quota rule for supervisory boards in listed corporations. In other countries, the decision to adopt legal quotas is pending or still discussed (see Ahern and Dittmar, 2012 for an overview). Besides ethical and social reasons, legislators justify these initiatives based on the view that more gender-diverse boards improve corporate governance.

Previous research indeed suggests that the composition and structure of the board of directors matters for corporate governance (see Adams et al., 2010 for a survey). Different theories have been used to explain the presence of women on the board and their influence on corporate behavior and outcomes (see Terjesen et al., 2009 for a comprehensive summary). In the specific case for gender diverse boards, arguments range from tapping a broader talent pool (Higgs, 2003) to the theory that women who are not part of the “old boys club” perform better in the role as independent supervisor. Women usually exhibit fewer social ties to established male directors making them more likely to increase board independence (Adams and Ferreira, 2009). It is also argued that women on the board increase its human and social capital as directors are recruited from a broader talent pool (Adams and Ferreira, 2009). Women may therefore contribute to enhance diversity of experiences, knowledge and opinions in the

boardroom (Terjesen et al., 2009). Research, however, also shows that women are more risk-averse than men (e.g. Borghans et al., 2009; Croson and Gneezy, 2009 or Niederle and Vesterlund, 2007) which may affect decision making in positive as well as adverse ways. Moreover, critical mass theory postulates that gender diversity improves team efficiency solely if a certain threshold is reached (Kanter, 1977a, 1977b or Schwartz-Ziv, 2013 for a discussion).

Existing empirical studies on the relationship between board or top management gender diversity and corporate performance yield ambiguous findings (Rhode and Packel, 2014). Adams and Ferreira (2009) who investigated almost 2,000 US firms during 1996 to 2003 find that female directors impact board inputs like higher attendance and monitoring-related committee assignments as well as CEO turnover and compensation. On the other hand, it is argued that “tokenism”, i.e. appointing a flagship female director, may have no significant impact on the companies that employ them.

Francoeur et al. (2008) report that firms with a high proportion of female executive officers generate higher abnormal returns while the participation of female directors does not yield significant performance differences. Weber and Zulehner (2010) find evidence that gender diversity in leading positions reduces the risk of firm exits in the case of start-ups. Schwartz-Ziv (2013) identifies significant higher performance if at least three male and female directors are simultaneously present on the board.

In contrast, there are studies pointing to adverse effects such as Adams and Ferreira (2009) who find a negative effect of gender diversity on firm performance. Ahern and Dittmar (2012) even show that the introduction of a quota for women on the board caused a reduction of stock market performance in Norwegian firms. Similar, Haslam et al. (2010) find a negative relation between market-based performance



measures but not for accounting-based measures. Bøhren and Staubo (forthcoming) find evidence that the gender quota in Norway leads to inefficient organizational forms and boards.

A possible explanation for the contradictory evidence may be the fact that a number of unobserved factors affect both firm performance and the composition of the board. Another concern is the problem of reverse causality for the case that firm performance might also determine board composition (see Hermalin and Weisbach, 2003 for a discussion).

Therefore, firm performance may only be affected in the very long-run via board performance and improved governance. Given the limitations to directly evaluate the relationship between board characteristics and firm performance, we address in the following the question as the extent to which the structure of the board rather affects its behavior.

## **2.2. Executive Turnover as an Indicator of Effective Corporate Governance**

From an academic, management and policy point of view it is of high interest to analyze specific board behavior as a function of certain board characteristics. Hermalin and Weisbach (2003) argue that a respective approach is more direct than focusing on firm performance. The idea is that board characteristics determine its actions, which in turn affect firm outcomes. Figure A1 in the appendix illustrates this rationale graphically. In addition to factors such as M&A activity or director remuneration, executive turnover is a relevant indicator for effective governance representing the ability of monitoring directors to discipline (underperforming) managers. Research in the field of corporate governance, finance or management increasingly pays attention to factors influencing executive turnover or succession. For instance, Yermack (2004)

shows that turnover is lower for outside directors compared to executives. In addition, outside directors increase the likelihood of external succession (Balsmeier et al., 2013; Borokhovich et al., 1996; Huson et al., 2001). Balsmeier et al. (forthcoming) find a substitutive relationship between capital control and outside directors with regard to executive turnover. Gregory-Smith et al. (2009) show that the risk of forced departures decreases from the fifth year in office indicating that CEOs are more likely to entrench themselves with ongoing tenure.

A number of studies address the influence of certain board characteristics on the sensitivity of executive turnover to corporate performance (e.g. Dahya et al., 2002; Jenter and Kanaan, 2014; Kaplan and Minton, 2006). Hermalin and Weisbach (2003) develop a theoretical model and argue that CEO turnover is more sensitive to performance when the board is more independent (see also Laux, 2008). However, the sensitivity is lower if the majority of outside directors on the board hold three or more parallel directorships (Fich and Shivdasani, 2006). Weisbach (1988) documents higher sensitivity of turnover to performance in outsider dominated boards. Goyal and Park (2002) find evidence for a lower sensitivity in the case of CEO-chairman duality. Yermack (1996) finds that smaller boards are more likely to dismiss CEOs following low performance. Faleye (2007) reports that classified board increase managerial entrenchment as they reduce involuntary CEO exits and the performance-turnover sensitivity.

In the present study we aim to contribute to the existing literature by linking questions of gender diversity with regard to board composition and executive turnover. In particular, we are interested in the relationship between the presence of monitoring and advising non-executive women in the boardroom and their influence on fluctuation and tenure of executive directors in European listed firms.

### **2.3. Gender Diversity and Executive Turnover**

From a theoretical perspective, the anticipated effects of female directors on executive duration are ambiguous and call for empirical testing. On the one hand one might argue that women are weaker monitors as they may be subordinated in relation to their male board colleagues and are less likely to speak up in case things go wrong. Critical mass theory therefore suggests that a low number of female directors restricts their potential to perform effectively (Kanter, 1977a; Schwartz-Ziv, 2013) resulting in a lower ability of the entire board to monitor adequately. If women are characterized by a “taste for continuity” or are more risk-averse (Croson and Gneezy, 2009; Niederle and Vesterlund, 2007) they may be more likely be associated with lower fluctuation rates of their executives. The same relationship could be explained by human capital theory if non-executive monitoring and advising female directors increase experiences and knowledge in the boardroom. On the other hand, it is also plausible to assume that women are tougher monitors because they are more independent as they have less personal or social relationships to the incumbent executives, for example shared career paths. Previous empirical findings support the latter explanation. For instance, Adams and Ferreira (2009) find for a sample of US firms that gender-diverse boards have higher monitoring competences. Further, women on the board increase the performance-turnover sensitivity of their CEO (similar Schwartz-Ziv, 2013 for a smaller sample).

### **3. Data and Descriptive Findings**

For the following empirical investigation, we matched information from different private databases. The initial population is based on the “Officers & Directors” database provided by Thomson Reuters which contains detailed individual information on

executive and non-executive directors on the boards of stock-market listed firms. Thomson Reuters allocates an individual identification number to each executive enabling us to track executives' spells over time. Within the framework of our analysis, we focus on firms in 15 different Western European countries.

In a next step, we merged supplementary financial and ownership data from the "ORBIS" database provided by Bureau van Dijk based on the ISIN number. As subsidiaries are controlled by national or global parent companies and executive turnover and tenure are likely to be influenced by the ultimate owner, all majority-owned subsidiaries were removed from the sample. Furthermore, firms operating in the sector of financial intermediation were excluded from the sample. Following this approach and after eliminating observations with incomplete records our final panel includes information for 18,456 executives from 3,369 different firms yielding 62,068 person-year observations in the period 2003 to 2011.<sup>1</sup>

In contrast to monistic board structures in Anglo-Saxon countries, firms in a number of European member states are characterized by two-tiered boards. Monistic or unitary boards consist of a single body with executive directors who are in charge of the day-to-day business and non-executive directors who appoint, monitor and advise the management in strategic decision-making, define the scale of compensation and dismiss members of the management board. In contrast, dualistic boards have a separated supervisory board with non-executive directors and an executive or management committee (see Figure A1 in the appendix). European firms received the option to implement a single-tier administrative board or a two-tiered board structure (Council Regulation (EC) No 2157/2001 of 8 October 2001 on the Statute for a European Company). In the following, we therefore distinguish between executive and non-

executive directors, a distinction that can be applied for all countries.

Table I provides the pooled descriptive statistics.<sup>2</sup> We use return on assets (*ROA*) as a measure of financial performance.<sup>3</sup> Following Czarnitzki and Kraft (2009) *Block* is used as a proxy for ownership concentration which takes a value of 1 if at least one shareholder holds 25 % or a higher fraction of the voting rights. Firm leverage is measured by the *Debt Equity Ratio*. Further, we use the number of *Employees* as a proxy for firm size. To account for the possible influence of board size on executive turnover we include both the number of executive (*No. Executives*) and non-executive (*No. Non-Executives*) directors in the estimations.<sup>4</sup> To investigate the influence of female representation on the non-executive board on executive duration we use three different indicators: the total number of women, a dummy variable indicating at least one female director and the fraction of non-executive female directors. With regard to the individual characteristics of executive directors, we observe 9 % women among the executive directors in the sample (*Gender*). The average *Tenure* of the executives is 4.5 years. Further, we observe 6,724 *Failure* events, meaning that about one third of the individual spells end during the sample period. Due to data restrictions, we obtained information on executives' *Age* for less than 50 % percent of all observation. For this subsample, average age amounts to 48.9 years.

**(Table I: Descriptive statistics)**

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<sup>1</sup> Tables A2 A3 in the appendix illustrate the pooled distribution by country and industry.

<sup>2</sup> Table A1 in the appendix provides an overview of the description of the variables and its sources.

<sup>3</sup> Alternative accounting- and market-based performance measures (not reported) like return on equity, return on capital employed or Tobin's q yielded similar results. As accounting indicators of performance are better predictors of management turnover than stock price performance Hermalin and Weisbach (2003), we focus on the former, measured by ROA.

<sup>4</sup> It has to be mentioned that the figures reported for board size in table I deviate from previous studies (e.g. Heidrick & Struggles (2014)). This is because the latter usually focus on a sample of the top publicly listed firms in each country while we account for all listed firms including Small and Medium-sized Enterprises (SMEs). In some cases the figures refer to the extended management board.

The presence of non-executive female directors on the board is displayed in Figure I. The upper part (a) of the figure represents the percentage of women on all director appointments whose participation almost doubled from 10.6 percent in the year 2003 to 20.8 percent in 2011. Thereafter, shown in part (b) of the figure, the fraction of women on all non-executive directors on the board increased from 7.2 percent to 11.4 percent in the same period whereby the development differs between countries.

The lower part of the figure illustrates that the share of firms with at least one female non-executive director steadily increased from 0.34 in 2003 to 0.46 in 2011, while the share of firms with exactly one female non-executive director remained virtually unchanged at an average level of around 0.25. The diverging trends suggest that the increase of non-executive directors in our sample period is not driven by “tokenism”.

*(Figure I: Fraction of female directors on the board)*

The state and development of female non-executive directors on the country-level is summarized in Figure II showing substantial differences among the different countries in the observed period 2003 to 2011. For instance, in Austria, Germany and Switzerland the fraction seems to remain almost stable on a low level. In contrast, for Norway the table clearly shows the significant increase before the quota of 40 percent became effective in the year 2008.

*(Figure II: Fraction of female non-executive directors by country)*

Table II shows the mean comparisons on the firm-level for the group of firms

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In the case of CEO-chairman duality in mixed board structures we allocate the respective directors to the group of executive directors to avoid double-counting.

without and with at least one female non-executive director on the board.<sup>5</sup> We find that firms with gender-diverse boards produce significantly higher returns, are larger, measured by employees, and are characterized by a larger number of both executive and non-executive directors.

*(Table II: Mean comparisons)*

#### **4. Methodological Remarks and Regression Results**

##### **4.1. Methodology**

We use semi-parametric Cox proportional hazard estimations to analyze the factors that influence executive turnover. Compared to probit or logit models, this approach offers several advantages. In the following, we briefly illustrate the econometric setup (see e.g. Greene, 2003; Kalbfleisch and Prentice, 2002 for a detailed introduction).

In the model  $T$  denotes a random variable describing the duration of the executives on the management board and  $t$  is the realization of  $T$ . The random variable  $t$  follows the function  $F(t)$  with an unknown distribution. The survival function  $S(t)=1-F(t)$  denotes the probability that an individual spell lasts at least until  $t$ . The hazard rate measures the probability that an ends after duration  $t$  given that it lasted at least until period  $t$  and is defined as:  $\lambda(t)=f(t)/S(t)$ . The respective survival and hazard curves for the group of executive female and male directors are displayed in Figure III.

*(Figure III: Gender-specific hazard and survival rates of executive directors)*

The Cox proportional hazard model considers a baseline hazard  $\lambda_0(t)$  representing individual heterogeneity and a vector of covariates  $X$  of individual  $i$ . The model

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<sup>5</sup> The correlation coefficients are displayed in Table A4 in the appendix.

specifies that the hazard rate is multiplicatively proportional to the general baseline hazard and the individual explanatory variables:  $\lambda(t, X) = \lambda_0(t) e^{(\beta X)}$ .<sup>6</sup> The parameter vector  $\beta$  is estimated using maximum likelihood. The obtained hazard rate is a function of the covariates that may increase or reduce the baseline hazard.

The Cox model is an appropriate approach to handle left-censored data (the start date of a spell is unknown) and right-censored data (the end of a spell is unknown). Further, the semi-parametric model does not require assumptions concerning the distribution of the function  $F(t)$ . As we are interested in the factors determining both executives' turnover and tenure in office, we exclusively focus on the cases with a reported historical start date and therefore set aside left-censoring.

In addition to duration models, we can estimate executive tenure measured by the number of years in office. In that case, executive tenure is non-negative integer value larger than or equal to one. Therefore we can specify count data models when we investigate the factors determining executives' time in office. The tenure function in its most general form is then given by:

$$\lambda_{it} = E[Y_{it} / Z_{it}, X_{it}, c_i] = \exp(\alpha Z_{it} + X_{it}'\beta + c_i) \quad (1)$$

where  $Y_i$  is the count of years in office,  $Z_{it}$  is the share of female board members, and  $X_{it}$  represents the set of controls including eight time and 14 country dummies. Parameters  $\alpha$  and  $\beta$  are to be estimated. Individual-specific, time-constant, unobserved effects are captured by  $c_i$ . By introducing an unobserved effect explicitly, a random effects analysis typically accounts for the overdispersion and serial dependence assumptions (Wooldridge, 2002, p. 672).

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<sup>6</sup> We tested the proportionality condition for all model specifications using  $\chi^2$ -tests on the basis of Schoenfeld residuals (Hosmer et al., 2008). Since all test results, for each explanatory variable and the



## 4.2. Empirical Findings

Table III reports the results of Cox proportional hazard regressions for different model specifications. The basic model (a) shows the coefficients of the different variables excluding indicators for gender diversity. We find no significant link between firm performance and executive turnover. In firms with a blockholder, executives' risk to leave the board is significantly lower. We also find weak evidence for a negative relationship between firm debt and executive turnover. Further, the hazard rates are lower in larger firms, measured by employees. Executive turnover is significantly higher in larger management boards.

In specifications (b), (c) and (d) we include different indicators of gender diversity among non-executive directors: in model (b) we control for the total number of female non-executive directors, model (c) includes a dummy indicating at least one non-executive female director on the board and model (d) accounts for the fraction of female directors among all non-executive directors on the board. All estimations show that gender diversity significantly reduces the likelihood of executive turnover. It should be noted that we also tested for whether the presence of exactly one female non-executive board member has a similar effect. Interestingly, this variable does not turn out to be significant pointing to the conclusion that it is the extent of gender diversity (number or share), not the presence of a single female person that affects executive tenure (see Table A5a).

### *(Table III: Cox proportional hazard regressions of executive turnover)*

The previous analysis has shown that executives face a lower risk of turnover if

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global tests confirm that the flexible semi-parametric Cox models is applicable, we do not report parametric models, i.e. probit estimations which yielded similar results.

women are appointed as non-executive directors on the board. In Table IV we focus on executives' tenure, measured by the years they stay in office. In the table we repeat specifications (b) to (d) from Table III, except the dependent variable now refers to executive tenure. In line with the previous results we find that gender diversity among the non-executive directors increases executives time in office.<sup>7</sup> We also find that female executive directors exhibit significantly lower tenures. This finding reflects the trend that a relative high number of female directors have been appointed to the board during the last years while the majority of board positions are still occupied by longer-tenured male directors.<sup>8</sup>

*(Table IV: Poisson regressions of executive tenure in office)*

So far, the results may either point to higher advising competences of female non-executive directors but could also reflect weak monitoring. To discriminate between both possible explanations we address the role of women for the performance-turnover sensitivity of executives and in the case of unexpected turnover events as additional robustness checks.

### **4.3. Further Robustness Tests**

#### *4.3.1. Performance-Turnover Sensitivity*

In Table V we include an interaction term between the three gender-indicators and firm performance. While the interaction between non-executive female directors on the board and different continuous performance measures is insignificant, we obtain significant results when we use a dummy variable indicating below-average returns. We

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<sup>7</sup> Similar to Table A5a we find no significant influence of a dummy indicating exactly one woman among non-executive directors on executive tenure (not reported).

<sup>8</sup> These findings are robust to different distributional assumptions. See Table A5b for the results from a

find that below-average performance significantly increases the risk of executive turnover. Further, while women still reduce the propensity of executive turnover the interaction with the below-average performance is positive indicating that firms with (more) female directors exhibit higher performance-turnover sensitivities. In line with the findings of Adams and Ferreira (2009) the results support the assumption that female non-executive directors contribute to improve the monitoring intensity.

*(Table V: Performance-turnover sensitivity)*

*4.3.2. Unexpected Turnover*

It might be objected that, in our previous empirical analyses, we treated all exit events equally. Indeed, it seems reasonable to assume that hazard rates differ for different replacement decisions, for instance regular resp. voluntary exits or unexpected turnover (Gregory-Smith et al., 2009). To account for the influence of women on the board on different types of executive turnover, in particular departures following dismissals or forced turnover, we perform additional robustness tests.

Forced departures, even for CEOs (Balsmeier et al., 2013; Parrino, 1997 or Hermalin and Weisbach, 2003), are hardly to identify because firms generally do not publish announcements that an executive has been dismissed. Therefore we use executives' age as a simple proxy for forced or unexpected turnovers. We argue that the observed executives in the data have reached a top-management position and therefore usually do not resign voluntarily before retirement age. Following this reasoning, we consider exclusively exit events below retirement age.<sup>9</sup> Further, we corrected for

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negative binomial model.

<sup>9</sup> We refer to an age threshold of 62 years to indicate retirement age. We repeated the estimations using alternative age limits that yielded similar results. Following Parrino et al. (2003) we controlled for an alternative limit of 60 years. Further, we used different typical age thresholds for German firms such as 60, 62 or 65 years, as mentioned in the literature (e.g. Ringleb et al., 2010). Yermack (1996) refers

executives who move to a non-executive position in the same firm. Due to a lack of available data with respect to executives' age this approach leads to a reduction to 7,956 different spells. The results in Table VI reveal that the previous findings remain qualitatively unchanged in the reduced sample. The interaction term remains significant at the 5 resp. 10 percent level in all specifications with a stronger magnitude of the covariates in the subsample of unexpected turnover events supporting the view that female non-executive directors increase the monitoring competences of the board.

*(Table VI: Cox proportional hazard regressions of unexpected executive turnover)*

## **5. Discussion and conclusion**

This study provides support for the role of non-executive board composition of executive turnover in European listed companies. For a large sample of boards and directors in more than 3,000 different companies in 15 European countries over the period 2003 to 2011, we observe an increase in female board members. This raises questions regarding the impact of more gender diverse boards on corporate governance and eventually firm performance.

Building on previous work such as by Adams and Ferreira (2009) who found the share of female board members to affect various measures of governance in US firms, we add to these insights by pointing to a positive correlation between gender diverse boards and executive turnover. Research has long stressed that lower executive turnover may benefit corporate governance and promote performance in the long-run. While it is not a-priori clear that gender diversity increases executive duration as a result of better governance, our observation that gender diversity is also associated with a higher

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to 64, 65 and 66 years as regular retirement ages for CEOs. Also an age threshold of 70 years yielded similar results (e.g. Fahlenbrach et al., 2013).

performance-turnover sensitivity of executives suggests that diversity may improve monitoring and hence reduce executive drop-out. In line with several previous studies, when controlling for other performance drivers, we do not find any significant impact of companies' short-run financial performance. These results also point to the conclusion that the effect from increasing the share of women in corporate boards will (at least) not immediately translate into measurable financial performance.

It is important to stress, that while these results suggest that gender-diverse boards may be indeed beneficial for board stability, they do not advocate gender quotas. On the contrary, these results suggest that it may be in the self-interest of companies to aim for gender diversity in the boardroom if it facilitates better monitoring with potential long-run beneficial effects on corporate governance.

Although this study provided an attempt to identify the mechanism through which gender diversity affects executive tenure, we encourage more research on pinning down the behavioral factors that may explain this outcome. Experimental studies explicitly testing for gender differences in monitoring may allow to conclude whether the observed patterns are indeed due to better monitoring and conflict resolution or due to alternative explanations such as female taste for continuity. Alternatively, longer executive duration may be explained by too weak punishment of executive board members in case of conflicts.

## Figures and Tables

**Table I: Descriptive statistics**

<b>Variable</b>	<b>Obs.</b>	<b>Mean</b>	<b>Std. Dev.</b>	<b>Min</b>	<b>Max</b>
<b>Firm Characteristics (No. Firms: 3,369)</b>					
Return on Assets	17,073	1.27	11.42	-61.52	26.89
ROA low	17,073	0.31	-	0	1
Block	17,073	0.35	-	0	1
Debt Equity Ratio	17,073	1.76	1.72	0.08	15.25
Employees	17,073	10,099	37,587	1	639,904
No. Executives	17,073	6.46	4.44	1	29
No. Non-Executives	17,073	5.85	3.63	1	33
No. Female Non-Executives	17,073	0.61	0.95	0	8
Dummy Female Non-Executives	17,073	0.39	-	0	1
Dummy One Female Non-Executive	17,073	0.25	-	0	1
Fraction Female Non-Executives	17,073	9.20	14.34	0.00	100.00
<b>Individual Characteristics (No. Individuals: 18,456)</b>					
Gender	62,068	0.09	-	0	1
Tenure	62,068	4.47	3.94	1	44
Failure	62,068	0.11	-	0	1
Age	28,420	48.87	7.73	22	100

**Table II: Mean comparisons**

Variable	Total	No	One or More	Mean Comparison t-Test
		Female Non-Executive Directors		
Return on Assets	1.27	0.70	2.15	-8.1120***
ROA low	0.31	0.33	0.27	7.2049***
Block	0.35	0.35	0.36	-1.4183
Debt Equity Ratio	1.76	1.66	1.90	-8.9014***
Employees	10,099.30	4,689.31	18,470.98	-23.7788***
No. Executives	6.46	5.64	7.72	-30.6667***
No. Non-Executives	5.85	4.65	7.70	-58.7447***
Obs.	17,073	10,371	6,702	

**Table III: Cox proportional hazard regressions of executive turnover**

	Model			
	(a)	(b)	(c)	(d)
Return on Assets	0.002 (0.96)	0.001 (0.61)	0.001 (0.42)	0.001 (0.45)
Block	-0.229*** (-3.67)	-0.224*** (-3.57)	-0.191*** (-3.10)	-0.242*** (-3.96)
Debt Equity Ratio	-0.030* (-1.71)	-0.042** (-2.42)	-0.032* (-1.88)	-0.040** (-2.31)
Log Employees	-0.432*** (-7.07)	-0.370*** (-6.48)	-0.381*** (-6.66)	-0.369*** (-6.45)
No. Executives	0.253*** (23.88)	0.234*** (22.88)	0.249*** (23.74)	0.238*** (23.04)
No. Non-Executives	-0.022 (-1.27)	0.080*** (4.42)	0.020 (1.26)	-0.014 (-0.90)
Gender	-0.023 (-0.55)	-0.025 (-0.59)	-0.026 (-0.61)	-0.029 (-0.67)
No. Female Non-Executives		-0.834*** (-22.10)		
Dummy Female Non-Executives			-1.035*** (-17.15)	
Fraction Female Non-Executives				-0.050*** (-17.36)
No. Spells	18,967	18,967	18,967	18,967
No. Failures	6,724	6,724	6,724	6,724
No. Observations	62,068	62,068	62,068	62,068
Pseudo R <sup>2</sup>	0.048	0.072	0.060	0.066
Log Likelihood	-9,762	-9,510	-9,638	-9,572
Akaike Information Criterion (AIC)	19,538	19,035	19,291	19,159
Stratified (firm-level)	yes	yes	yes	yes
Global Test of PH Assumption ( $\chi^2$ )	5.60	4.91	4.18	4.80

*Notes:* The table reports estimations of executive turnover likelihoods using Cox proportional hazard models. The dependent variable is the hazard rate. Positive coefficients imply an increase of the hazard rate and thus a higher risk of turnover while negative coefficients imply a longer expected tenure of the executives in the sample. Z-statistics (in parentheses) are calculated using heteroskedasticity-robust standard errors that allow for autocorrelation at the firm-level. All estimations stratified on the firm-level to control for unobserved heterogeneity across firms. \*, \*\*, \*\*\* denote significance at the 10%, 5% and 1% levels, respectively.



**Table IV: Poisson regressions of executive tenure in office**

	Model		
	(a)	(b)	(c)
Return on Assets	0.009*** (15.42)	0.009*** (15.55)	0.009*** (15.42)
Block	-0.005 (-0.31)	-0.003 (-0.21)	-0.003 (-0.21)
Debt Equity Ratio	-0.022*** (-4.94)	-0.022*** (-5.03)	-0.022*** (-5.05)
Log Employees	0.019*** (4.20)	0.019*** (4.38)	0.019*** (4.24)
No. Executives	-0.010*** (-4.82)	-0.010*** (-4.91)	-0.010*** (-4.83)
No. Non-Executives	-0.022*** (-7.64)	-0.019*** (-6.87)	-0.018*** (-6.70)
Gender	-0.148*** (-5.99)	-0.144*** (-5.85)	-0.147*** (-5.96)
No. Female Non-Executives	0.038*** (4.57)		
Dummy Female Non-Executives		0.040** (2.53)	
Fraction Female Non-Executives			0.002*** (4.17)
Constant	1.486*** (37.45)	1.497*** (37.76)	1.468*** (36.27)
Joint sign. of time dummies $\chi^2$ (8)	328.50***	355.12***	335.39***
Joint sign. of industry dummies $\chi^2$ (16)	121.04***	118.77***	119.25***
Joint sign. of country dummies $\chi^2$ (14)	129.80***	121.61***	128.15***
No. Observations	62,068	62,068	62,068
Log Likelihood	-176,399	-176,485	-176,394

Notes: The table reports estimations of executive tenure. Clustered at the individual-level. \*, \*\*, \*\*\* denote significance at the 10%, 5% and 1% levels, respectively.

**Table V: Cox proportional hazard regressions of executive turnover: performance-turnover sensitivity**

	Model			
	(a)	(b)	(c)	(d)
ROA low	0.214*** (5.22)	0.159*** (3.24)	0.152*** (2.90)	0.142*** (2.85)
Block	-0.233*** (-3.71)	-0.232*** (-3.69)	-0.196*** (-3.17)	-0.251*** (-4.08)
Debt Equity Ratio	-0.046*** (-2.63)	-0.060*** (-3.52)	-0.049*** (-2.88)	-0.057*** (-3.35)
Log Employees	-0.447*** (-7.33)	-0.379*** (-6.61)	-0.390*** (-6.79)	-0.374*** (-6.50)
No. Executives	0.252*** (23.85)	0.232*** (22.73)	0.248*** (23.54)	0.237*** (22.84)
No. Non-Executives	-0.023 (-1.29)	0.080*** (4.32)	0.020 (1.24)	-0.013 (-0.86)
Gender	-0.020 (-0.47)	-0.022 (-0.53)	-0.024 (-0.56)	-0.026 (-0.62)
No. Female Non-Executives		-0.857*** (-21.99)		
No. Female Non-Ex. times ROA low		0.092** (2.03)		
Dummy Female Non-Executives			-1.096*** (-16.86)	
Dummy Female Non-Ex. times ROA low			0.173** (2.23)	
Fraction Female Non-Executives				-0.053*** (-17.66)
Fraction Female Non-Ex. times ROA low				0.009*** (2.64)
No. Spells	18,967	18,967	18,967	18,967
No. Failures	6,724	6,724	6,724	6,724
No. Observations	62,068	62,068	62,068	62,068
Pseudo R <sup>2</sup>	0.048	0.073	0.061	0.068
Log Likelihood	-9,752	-9,497	-9,624	-9,557
Akaike Information Criterion (AIC)	19,518	19,011	19,266	19,132
Stratified (firm-level)	yes	yes	yes	yes
Global Test of PH Assumption ( $\chi^2$ )	5.44	4.82	3.91	4.59

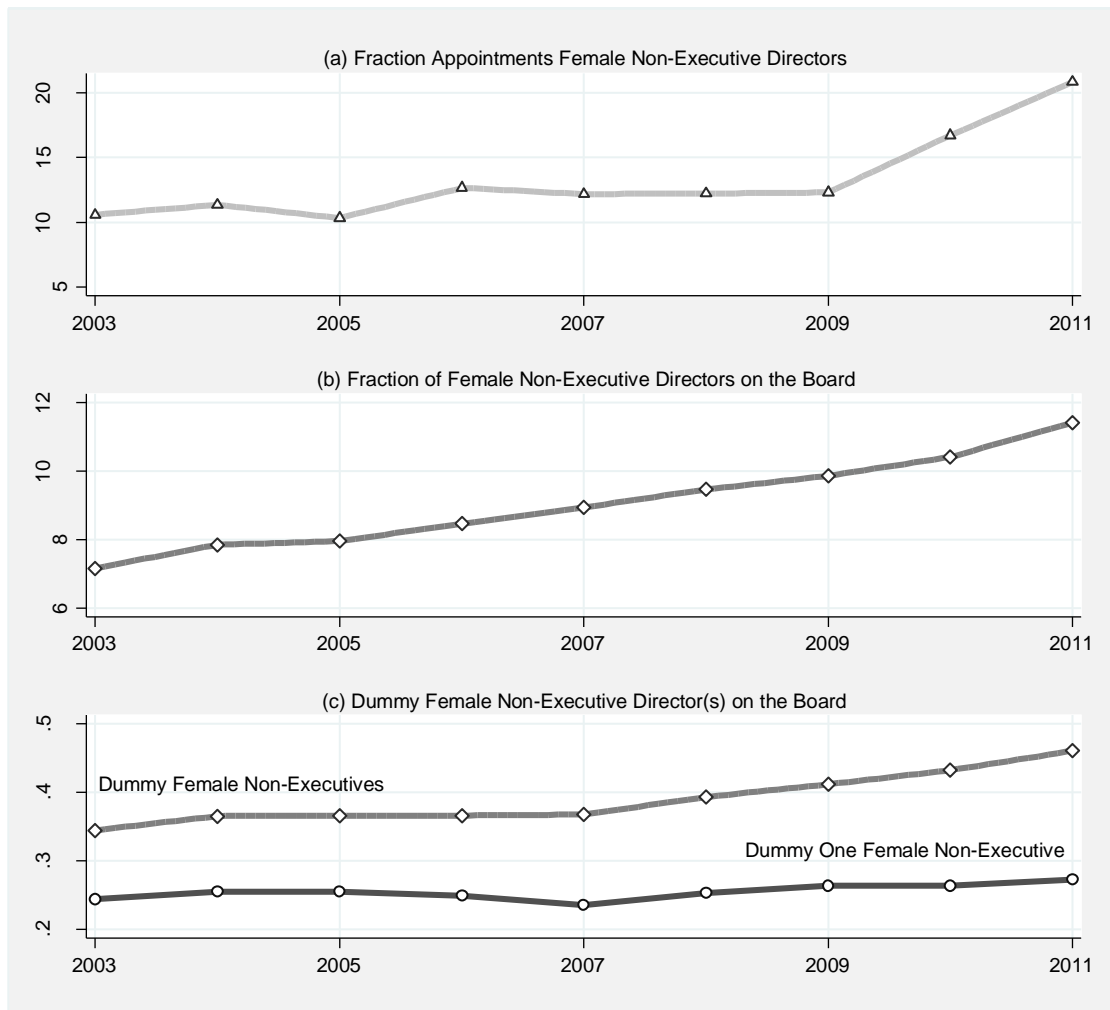
*Notes:* The table reports estimations of executive turnover likelihoods using Cox proportional hazard models. The dependent variable is the hazard rate. Positive coefficients imply an increase of the hazard rate and thus a higher risk of turnover while negative coefficients imply a longer expected tenure of the executives in the sample. Z-statistics (in parentheses) are calculated using heteroskedasticity-robust standard errors that allow for autocorrelation at the firm-level. All estimations stratified on the firm-level to control for unobserved heterogeneity across firms. \*, \*\*, \*\*\* denote significance at the 10%, 5% and 1% levels, respectively.

**Table VI: Cox proportional hazard regressions of unexpected executive turnover**

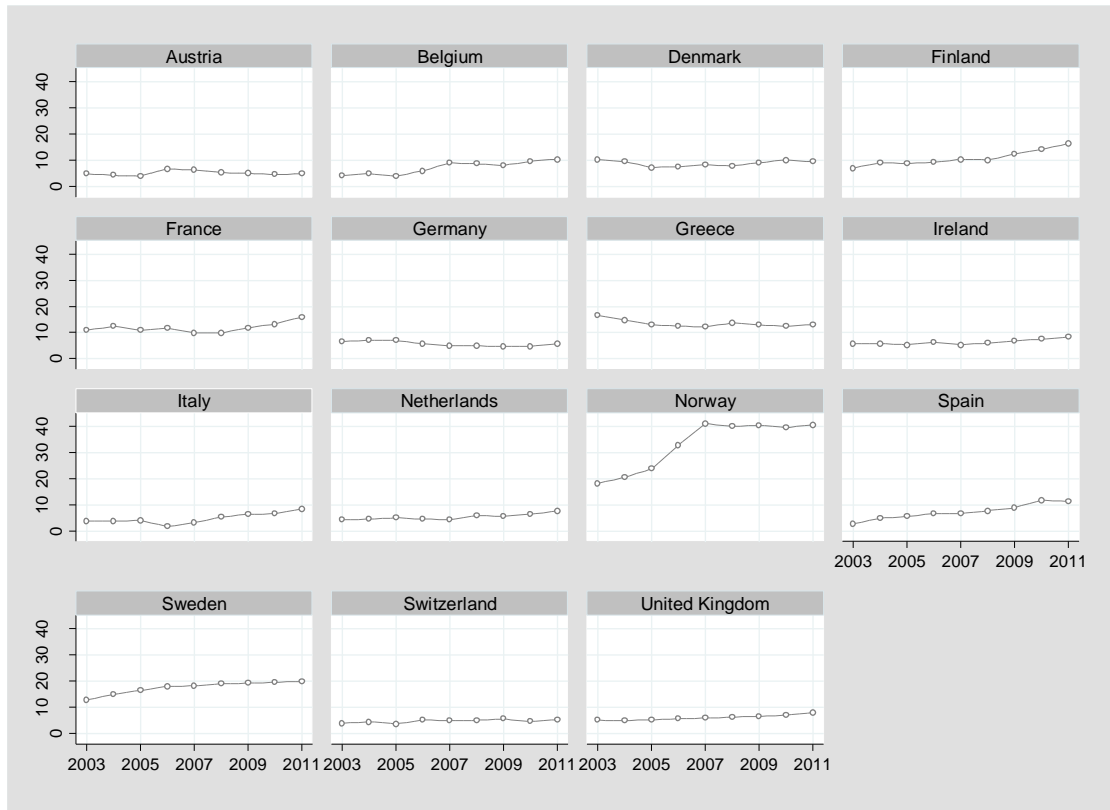
	Model			
	(a)	(b)	(c)	(d)
ROA low	0.133*	0.052	0.086	0.089
	(1.95)	(0.60)	(0.88)	(1.01)
Block	-0.148	-0.157	-0.123	-0.179*
	(-1.41)	(-1.51)	(-1.18)	(-1.77)
Debt Equity Ratio	-0.023	-0.048*	-0.041	-0.042
	(-0.83)	(-1.79)	(-1.54)	(-1.64)
Log Employees	-0.644***	-0.572***	-0.573***	-0.536***
	(-5.99)	(-5.68)	(-5.53)	(-5.23)
No. Executives	0.182***	0.162***	0.175***	0.166***
	(12.60)	(11.88)	(12.16)	(11.96)
No. Non-Executives	0.005	0.127***	0.040	0.005
	(0.16)	(4.29)	(1.60)	(0.20)
Gender	-0.035	-0.043	-0.050	-0.043
	(-0.53)	(-0.64)	(-0.75)	(-0.64)
Log Age	-0.719***	-0.679***	-0.736***	-0.676***
	(-4.88)	(-4.65)	(-5.02)	(-4.59)
No. Female Non-Executives		-0.926***		
		(-16.81)		
No. Fem. Non-Ex times ROA low		0.145**		
		(2.22)		
Dummy Female Non-Executives			-1.372***	
			(-12.48)	
Dummy Fem. Non-Ex times ROA low			0.253*	
			(1.95)	
Fraction Female Non-Executives				-0.070***
				(-15.31)
Fraction Fem. Non-Ex times ROA low				0.009*
				(1.75)
No. Spells	7,956	7,956	7,956	7,956
No. Failures	2,821	2,821	2,821	2,821
No. Observations	28,420	28,420	28,420	28,420
Pseudo R <sup>2</sup>	0.032	0.066	0.050	0.064
Log Likelihood	-3,987	-3,846	-3,913	-3,856
Akaike Information Criterion (AIC)	7,990	7,713	7,845	7,731
Stratified (firm-level)	yes	yes	yes	yes
Global Test of PH Assumption ( $\chi^2$ )	5.73	5.61	5.98	6.78

*Notes:* The table reports estimations of executive turnover likelihoods using Cox proportional hazard models. The dependent variable is the hazard rate. Positive coefficients imply an increase of the hazard rate and thus a higher risk of turnover while negative coefficients imply a longer expected tenure of the executives in the sample. Z-statistics (in parentheses) are calculated using heteroskedasticity-robust standard errors that allow for autocorrelation at the firm-level. All estimations stratified on the firm-level to control for unobserved heterogeneity across firms. \*, \*\*, \*\*\* denote significance at the 10%, 5% and 1% levels, respectively.

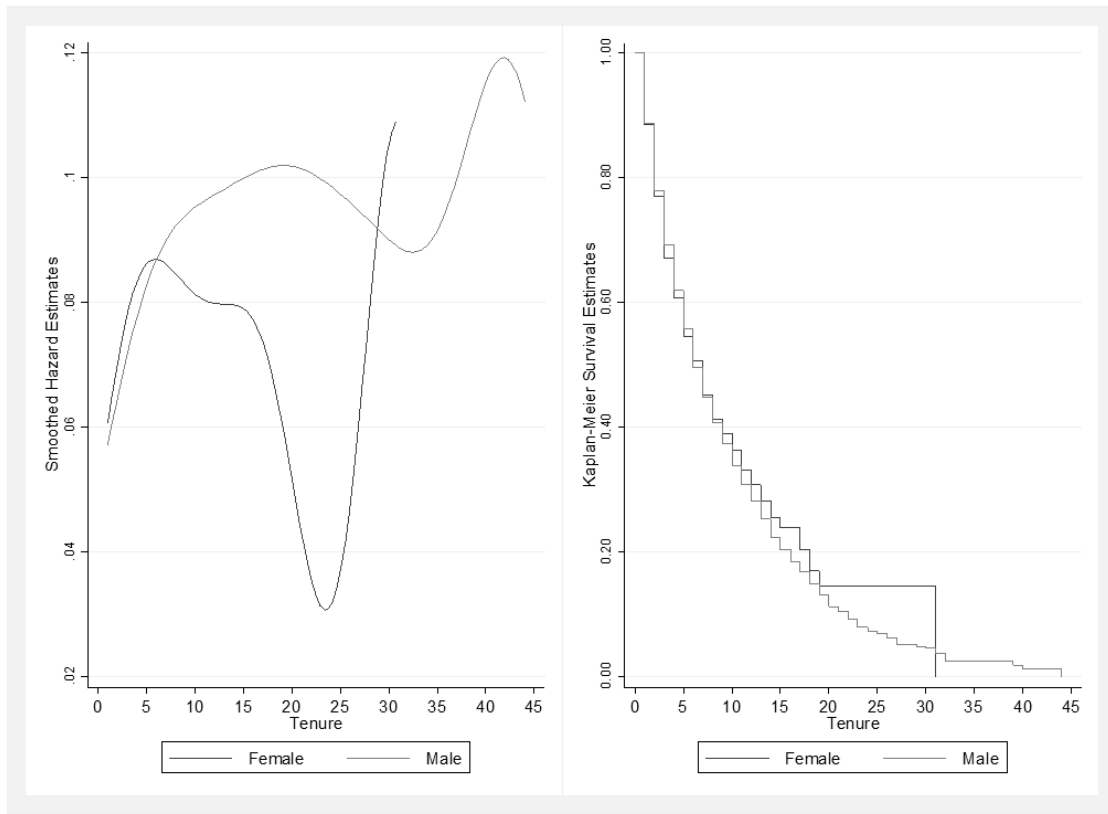
**Figure I: Average proportion of non-executive female directors in the period 2003 to 2011**



**Figure II: Fraction of female non-executive directors by country**



**Figure III: Gender-specific hazard and survival rates of executive directors**



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## Supplementary material

**Table A1: Variable definitions and data sources**

Variable	Description	Source
<b>Firm Characteristics</b>		
Return on Assets	= (net income after taxes / total assets) in percent	Bureau van Dijk
ROA low	Dummy indicating whether firm performance is below the average industry-adjusted ROA	Bureau van Dijk
Block	Dummy variable that equals 1 if the largest shareholder owns at least 25 % of the capital stock	Bureau van Dijk
Debt Equity Ratio	= (total assets - shareholders funds) / shareholders funds	Bureau van Dijk
Employees	Number of employees (in thousands)	Bureau van Dijk
No. Executives	Number of executives directors on the board	ThomsonReuters
No. Non-Executives	Number of non-executives directors on the board	ThomsonReuters
No. Female Non-Executives	Number of female non-executive directors	ThomsonReuters
Dummy Female Non-Executives	Dummy indicating if at least one female non-executive director is observed	ThomsonReuters
Dummy One Female Non-Executive	Dummy that equals 1 if one female non-executive director is observed	ThomsonReuters
Fraction Female Non-Executives	Proportion of female non-executive directors	ThomsonReuters
<b>Individual Characteristics</b>		
Gender	Dummy variable that equals 1 if an executive director is female	ThomsonReuters
Tenure	Executives' tenure in office in years	ThomsonReuters
Failure	Dummy indicating if an executive director leaves the board	ThomsonReuters
Age	Executives' age in years	ThomsonReuters

*Notes:* Bureau van Dijk: "ORBIS" database. ThomsonReuters: "Officers & Directors" database.

**Table A2: Pooled distribution by country**

Country	Description	No. Firms	Observations	Fraction	Female Non-Executive(s)			
					Number	Dummy	Dummy One	Fraction
1	Austria (AT)	50	259	1.52	0.41	0.36	0.31	5.21
2	Belgium (BE)	79	348	2.04	0.57	0.37	0.25	7.30
3	Switzerland (CH)	131	868	5.08	0.34	0.27	0.21	4.68
4	Germany (DE)	456	2,194	12.85	0.56	0.33	0.20	5.64
5	Denmark (DK)	75	404	2.37	0.68	0.46	0.29	8.82
6	Spain (ES)	101	483	2.83	0.71	0.49	0.36	7.65
7	Finland (FI)	93	689	4.04	0.84	0.55	0.40	10.86
8	France (FR)	411	2,024	11.85	0.69	0.47	0.32	11.85
9	United Kingdom (UK)	1,107	5,620	32.92	0.30	0.24	0.20	6.06
10	Greece (GR)	166	752	4.40	0.64	0.44	0.32	13.05
11	Ireland (IE)	58	285	1.67	0.45	0.38	0.33	6.38
12	Italy (IT)	122	438	2.57	0.41	0.33	0.25	5.18
13	Netherlands (NL)	112	637	3.73	0.31	0.25	0.21	5.26
14	Norway (NO)	118	564	3.30	2.41	0.95	0.13	34.74
15	Sweden (SE)	290	1,508	8.83	1.29	0.74	0.39	17.94
Total		3,369	17,073	100.00	0.61	0.39	0.25	9.20

**Table A3: Pooled distribution by industry**

<b>Industry</b>	<b>NACE Industry Code(s)</b>	<b>Description</b>	<b>No. Firms</b>	<b>Observations</b>	<b>%</b>
1	Agriculture and Mining	01-09	179	783	4.59
2	Food Products, Beverages and Tobacco	10-12	126	657	3.85
3	Textiles	13-15	90	449	2.63
4	Wood, Paper, Printing, Coke and Refined Petroleum	16-19	103	581	3.40
5	Manufacture of Chemicals and Chemical Products	20	86	495	2.90
6	Manufacture of Basic Pharmaceutical Products	21	129	630	3.69
7	Rubber, Plastic and Other Non-metallic Minerals	22, 23	80	435	2.55
8	Manufacture of Basic and Fabricated Metal (Products), except Machinery and Equipment	24, 25	130	719	4.21
9	Manufacture of Computer, Electrical Equipment, Electronic and Optical Products	26, 27	332	1,811	10.61
10	Machinery, Motor Vehicles, (Semi-)Trailers and Other Transport Equipment	28-33	317	1,794	10.51
11	Electricity, Gas, Steam, Water, Sewerage, Waste and Remediation Activities	35-39	90	459	2.69
12	Wholesale and Retail Trade, Accommodation and Food Service Activities	45-47, 55-56	353	1,714	10.04
13	Construction, Transporting and Storage	41-43, 49-53	209	1,176	6.89
14	Publishing, Programming and Broadcasting, Telecommunications	58-61	318	1,566	9.17
15	Computer Programming, Consultancy, Information Service Activities	62-63	249	1,180	6.91
16	Real estate activities	68	171	805	4.72
17	Other Service Activities	69-82	407	1,819	10.65
<b>Total</b>			<b>3,369</b>	<b>17,073</b>	<b>100.00</b>

**Table A4: Correlation coefficients**

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)
(1) Return on Assets	1.00														
(2) ROA low	-0.66	1.00													
(3) Block	0.00	0.02	1.00												
(4) Debt Equity Ratio	-0.08	0.13	0.07	1.00											
(5) Employees	0.07	-0.10	-0.05	0.17	1.00										
(6) No. Executives	0.12	-0.10	0.03	0.06	0.26	1.00									
(7) No. Non-Executives	0.11	-0.11	0.03	0.15	0.46	0.30	1.00								
(8) No. Female Non-Executives	0.09	-0.08	0.04	0.04	0.23	0.20	0.49	1.00							
(9) Dummy Female Non-Executives	0.08	-0.07	0.01	0.07	0.21	0.22	0.42	0.76	1.00						
(10) Dummy One Female Non-Executive	0.02	-0.03	-0.03	0.07	0.06	0.11	0.13	0.12	0.66	1.00					
(11) Fraction Female Non-Executives	0.05	-0.03	0.03	0.02	0.06	0.11	0.14	0.81	0.78	0.28	1.00				
(12) Gender	0.00	0.00	0.02	0.00	-0.02	0.06	-0.03	0.06	0.04	0.00	0.07	1.00			
(13) Tenure	0.09	-0.08	0.01	-0.04	-0.03	-0.04	-0.04	0.00	0.00	0.00	0.02	-0.05	1.00		
(14) Failure	-0.05	0.06	-0.02	0.01	0.01	0.03	0.01	0.00	0.00	0.01	-0.01	0.00	-0.03	1.00	
(15) Age	0.02	-0.04	-0.01	0.07	0.18	0.05	0.22	0.06	0.07	0.03	-0.01	-0.13	0.29	0.05	1.00

Notes: The table presents the correlation coefficients between the variables used in the study (n = 62,068. Correlation coefficients regarding executives' age: n = 28,420).

**Table A5a: Cox proportional hazard regressions of executive turnover**

	Model			
	(a)	(b)	(c)	(d)
Return on Assets	0.001 (0.61)	0.001 (0.42)	0.002 (0.96)	0.001 (0.45)
Block	-0.224*** (-3.57)	-0.191*** (-3.10)	-0.229*** (-3.65)	-0.242*** (-3.96)
Debt Equity Ratio	-0.042** (-2.42)	-0.032* (-1.88)	-0.030* (-1.71)	-0.040** (-2.31)
Log Employees	-0.370*** (-6.48)	-0.381*** (-6.66)	-0.432*** (-7.07)	-0.369*** (-6.45)
No. Executives	0.234*** (22.88)	0.249*** (23.74)	0.253*** (23.75)	0.238*** (23.04)
No. Non-Executives	0.080*** (4.42)	0.020 (1.26)	-0.022 (-1.27)	-0.014 (-0.90)
Gender	-0.025 (-0.59)	-0.026 (-0.61)	-0.023 (-0.55)	-0.029 (-0.67)
No. Female Non-Executives	-0.834*** (-22.10)			
Dummy Female Non-Executives		-1.035*** (-17.15)		
Dummy One Female Non-Executive			0.002 (0.03)	
Fraction Female Non-Executives				-0.050*** (-17.36)
No. Spells	18,967	18,967	18,967	18,967
No. Failures	6,724	6,724	6,724	6,724
No. Observations	62,068	62,068	62,068	62,068
Pseudo R <sup>2</sup>	0.072	0.060	0.048	0.066
Log Likelihood	-9,510	-9,638	-9,762	-9,572
Akaike Information Criterion (AIC)	19,035	19,291	19,540	19,159
Stratified (firm-level)	yes	yes	yes	yes
Global Test of PH Assumption ( $\chi^2$ )	4.91	4.18	5.62	4.80

*Notes:* The table reports estimations of executive turnover likelihoods using Cox proportional hazard models. The dependent variable is the hazard rate. Positive coefficients imply an increase of the hazard rate and thus a higher risk of turnover while negative coefficients imply a longer expected tenure of the executives in the sample. Z-statistics (in parentheses) are calculated using heteroskedasticity-robust standard errors that allow for autocorrelation at the firm-level. All estimations stratified on the firm-level to control for unobserved heterogeneity across firms. \*, \*\*, \*\*\* denote significance at the 10%, 5% and 1% levels, respectively.

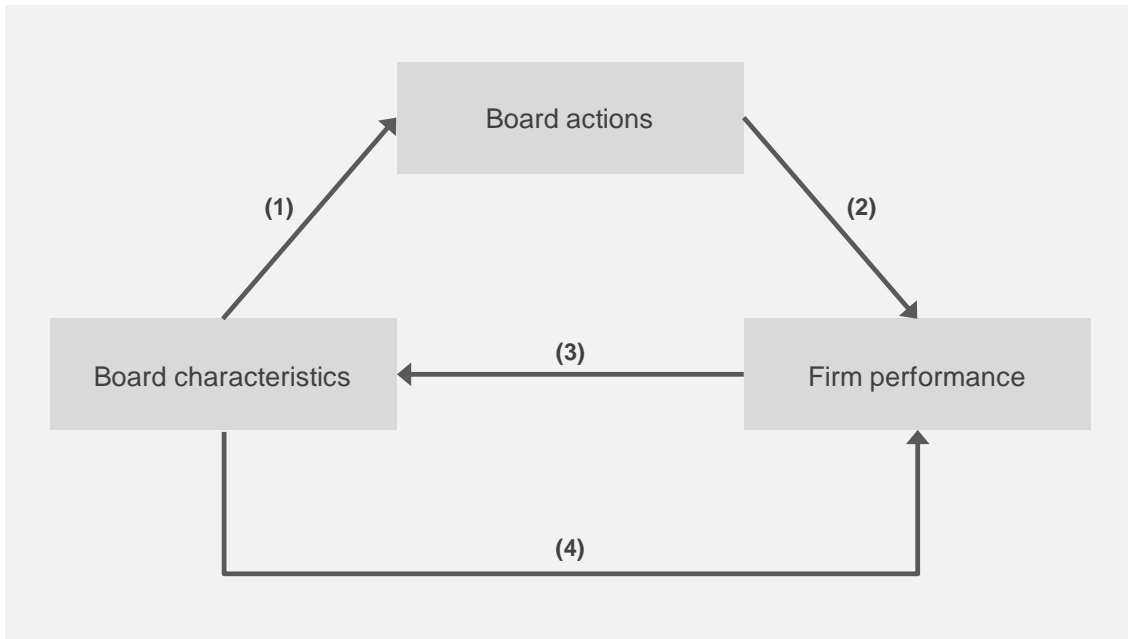
**Table A5b: Negative binomial regressions of executive tenure in office**

	Model		
	(a)	(b)	(c)
Return on Assets	0.008*** (15.40)	0.008*** (15.55)	0.008*** (15.40)
Block	-0.007 (-0.45)	-0.005 (-0.34)	-0.005 (-0.35)
Debt Equity Ratio	-0.021*** (-4.99)	-0.021*** (-5.07)	-0.021*** (-5.13)
Log Employees	0.017*** (3.95)	0.018*** (4.17)	0.017*** (4.02)
No. Executives	-0.009*** (-4.93)	-0.010*** (-5.04)	-0.009*** (-4.94)
No. Non-Executives	-0.020*** (-7.58)	-0.017*** (-6.73)	-0.016*** (-6.48)
Gender	-0.141*** (-5.68)	-0.138*** (-5.54)	-0.140*** (-5.64)
No. Female Non-Executives	0.037*** (4.64)		
Dummy Female Non-Executives		0.041*** (2.70)	
Fraction Female Non-Executives			0.002*** (4.36)
Constant	1.483*** (37.21)	1.493*** (37.33)	1.467*** (36.20)
Joint sign. of time dummies $\chi^2$ (8)	330.20***	354.89***	336.79***
Joint sign. of industry dummies $\chi^2$ (16)	122.70***	119.95***	120.95***
Joint sign. of country dummies $\chi^2$ (14)	131.06***	122.14***	128.38***
No. Observations	62,068	62,068	62,068
Log Likelihood	-152,821	-152,853	-152,822

*Notes:* The table reports estimations of executive tenure. Standard errors clustered at individual-level. \*, \*\*, \*\*\* denote significance at the 10%, 5% and 1% levels, respectively.

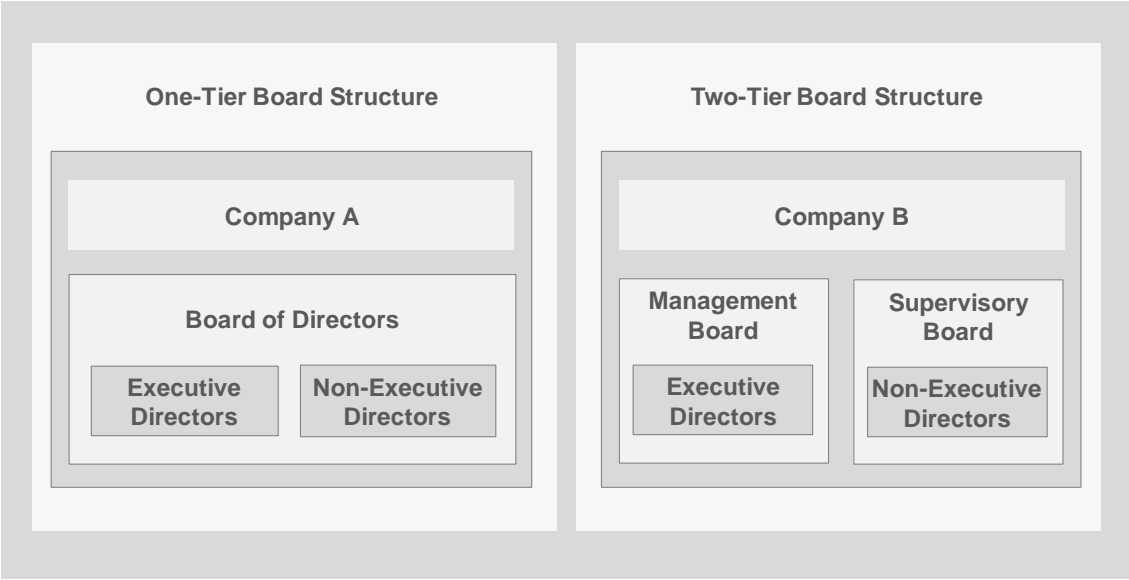


**Figure A1: Joint-endogeneity problem with respect to boards of directors**



*Source:* (Hermalin and Weisbach, 2003)

**Figure A2: Unitary and dualistic board structures**



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