

## SOCIAL INFLUENCE EFFECTS AND MANAGERIAL COMPENSATION EVIDENCE FROM GERMANY

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*I extend existing theories of social influence effects on executive compensation while at the same time showing the context dependence of these effects. Using original data on German firms and a longitudinal design, results of this study suggest that the operating of social influence mechanisms depends on demographic and social similarity between CEOs and board chairs. The findings reconcile previous mixed findings on the role of CEO human capital factors such as education and tenure and furthermore show that board vigilance is conditional on board compensation and the presence of major shareholders with an incentive to monitor board behavior. Finally, the study contributes to compensation and corporate governance research by providing evidence on how social influence effects operate outside the United States. Copyright © 2006 John Wiley & Sons, Ltd.*

The topic of executive pay continues to capture the imagination of academic researchers, as evidenced by a continuing stream of studies examining the determinants of CEO pay (e.g., Anderson and Bizjak, 2003; Barkema and Gomez-Mejia, 1998; Carpenter and Sanders, 2002; Conyon, Peck, and Sadler, 2001; Elston and Goldberg, 2003; Tosi *et al.*, 2000). Yet, our knowledge of the mechanisms affecting managerial pay remains far from complete, leading to calls for more studies that examine factors in addition to the economic and agency frameworks that have informed much of the prior research (Baker, Jensen, and Murphy, 1988; Barkema and Gomez-Mejia, 1998; Gomez-Mejia, 1994; Jensen and Murphy, 1990). One response to such calls has been the emergence

of socio-political and social-psychological models that show how social influence and reciprocity mechanisms operating between the CEO and the board affect managerial compensation (e.g., Belliveau, O'Reilly, and Wade, 1996; Finkelstein and Hambrick 1989; Hambrick and Finkelstein 1995; Westphal and Zajac, 1995, 1997). The current study contributes in several ways to this growing stream of research on the behavioral determinants of managerial pay.

First, I expand previous work on social influence processes by developing and testing new hypotheses that show how demographic and role similarity effects depend on the context in which they operate. In addition, I develop and test new arguments about reciprocity between CEO and the board and how these likewise affect the setting of compensation.

Second, empirical studies of managerial compensation have almost exclusively focused on the U.S. context and have used U.S. data, leading to several calls for greater international diversity in

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research (e.g., Barkema and Gomez-Mejia, 1998; Gomez-Mejia and Wiseman, 1997). The current study responds to this call and presents, to my knowledge, the first examination of social influence processes in management compensation outside the U.S. context. I use a new dataset of the largest German firms, covering the period from 1990 to 2000. As such, the current study addresses a growing need to broaden research on boards and corporate governance to account for different national institutions and contexts (e.g., Aguilera, 2005; Bird and Wiersema, 1996).

Third, my study makes several methodological contributions. Most prior research on compensation has employed cross-sectional data (cf. Cordeiro and Veliyath, 2003). In contrast, this study uses a longitudinal design with fixed firm effects, allowing for stronger causal inferences and more robust parameter estimates. By doing so, this research addresses a methodological weakness that has plagued compensation research more broadly and social influence models in particular. Finally, I compare different similarity measures and show how the use of relative rather than absolute difference measures may help resolve previously contradictory findings.

The results of my study also carry theoretical implications for research on executive compensation by considering how corporate control and social influence processes may differ in the German context due to the greater importance of factors such as the CEO–board relationship, formal education, and ownership concentration. For example, while current debate in the United States has largely focused on the role of independent directors to improve corporate governance, the considerably greater variance in ownership stakes in the German context allows this study to show that insider knowledge, when coupled with oversight, may provide an important alternative mechanism to protect shareholders.

## SOCIAL INFLUENCE AND MANAGERIAL COMPENSATION

Social influence theories emphasize that management may frequently attempt to influence board members, involving a variety of interpersonal mechanisms ranging from anchoring and persuasion to ingratiation and intimidation (e.g., Belliveau *et al.*, 1996; Maitlis, 2004; Westphal,

1998). Such interpersonal influence attempts may be particularly effective in determining CEO compensation, a fundamentally ambiguous task (Liden and Mitchell, 1988; March, 1984; Pfeffer, 1981; Westphal, 1998). With a high CEO self-interest in compensation and a considerable range of justifiable outcomes, it seems likely that social influence effects play a significant role in the setting of compensation levels.

To study such interpersonal influence effects, a small number of previous studies have examined how demographic and social similarity between CEOs and directors affects compensation levels. Generally, this research has assumed that similarity will be associated with higher managerial compensation, while dissimilarity will have the opposite effect. For example, Westphal and Zajac (1995) find that greater similarity between the CEO and the board as measured by a composite index of CEO/board similarity on age, insider status, functional experience, and educational background results in both greater total compensation and less contingent (at risk) compensation. Using another composite measure combining similarity in functional and educational backgrounds, age, and insider status, Belliveau *et al.* (1996) likewise examined similarity's effect on CEO pay but failed to find a significant effect, suggesting that more research is needed to understand the link between CEO/board similarity and CEO compensation.

One potential reason for these inconclusive findings may be that the previous studies used measures of absolute similarity. Instead, it seems plausible that it is the *relative* rather than absolute levels of demographic variables that affect the similarity–compensation link. As Belliveau *et al.* (1996) show in related analyses of status similarity, differences may not work in a symmetric fashion, especially if they relate to ordinal characteristics. For example, if status presents social capital that the CEO can employ when bargaining for greater compensation, then one would expect *positive* status differentials for CEOs (i.e., having greater status relative to the board) to result in greater compensation, not negative status differentials. This implies that mere similarity in status would likely not show a significant effect, since equal levels of status would neutralize each other and would likely not affect the outcome. In this study, I therefore examine the effect of relative differences vs. absolute levels of

educational attainment and tenure, the two most important and frequently examined human capital measures (Geletkanycz, Boyd, and Finkelstein, 2001; Hill and Phan, 1991; Hogan and McPheters, 1980).

I focus on differences between the CEO and the chairperson as the most important actors for the firm's governance and also those who will be leading the compensation review and who have the greatest ability to affect decision making by using their formal and informal authority positions to set the agenda for meetings and to frame decisions (Belliveau *et al.*, 1996; Pfeffer, 1992). This relationship between the CEO and the board chair has been identified as a linchpin of successful corporate governance (e.g. Cadbury, 1992; Demb and Neubauer, 1992; Roberts and Stiles, 1999). While overall board composition is clearly also relevant, it is this pivotal relationship that tends to set the tone, and the balance of power in this dyad is particularly important (Roberts and Stiles, 1999), a point also illustrated by the classic statement that 'the chair runs the board while the CEO runs the company.'

Furthermore, there is reason to believe that in Germany the relationship between the CEO and board chair is particularly important. First, the chairman's position in the German system of governance is further strengthened by its principle of co-determination. Under this principle, the supervisory board of large German firms is usually made up in equal parts of shareholder and employee representatives, and separate meetings of both benches before important board decisions are common practice. Because shareholder representatives are frequently concerned that employee representatives may disclose sensitive information about the firm, they often seek informal rather than formal contacts, a process that weakens the position of the ordinary supervisory board member and strengthens the position of the chair (Tüngler, 2000: 238). Furthermore, there is a strong influence of both the CEO and chair of the supervisory board on the selection of new supervisory board members (Tüngler, 2000: 241), which likewise strengthens the role of both positions (Wade *et al.*, 1990; Westphal and Zajac, 1995). For these reasons, the characteristics of CEO and supervisory board chair should be particularly relevant for setting executive compensation in German firms.

### Relative demographic differences and the importance of context

Prior research on executive characteristics has connected educational level with an individual's cognitive ability and skill (Guthrie, Grimm, and Smith, 1991; Schroeder, Driver, and Streufert, 1967) and leadership style (Pinder and Pinto, 1974), while other studies have suggested that the level of education affects strategic decision making (e.g., Hambrick and Mason, 1984; Wiersema and Bantel, 1992). Social identity theory (Tajfel and Turner, 1986) suggests that differences in educational levels provide an important and salient basis for self-identification (Tsui, Egan, and O'Reilly, 1992; Westphal and Zajac, 1995). While educational differences between the CEO and directors thus present an influential factor in the compensation setting process, such differences may be even more important in the German context for two reasons. First, the effect of educational differences between German managers is likely to be enhanced by its relation to social background. As shown by Hartmann and Kopp (2001), social background continues to be a significant factor in gaining a university education in Germany, and higher educational attainment is considerably more often found among those from an upper class background, rather than among those from middle or working class backgrounds. If 'society is comprised of social categories which stand in power and status relation to one another' (Hogg and Abrams, 1988: 14), then higher educational level, especially in Germany, will likely be an important source of greater social status. Second, educational degrees or other formal credentials are generally more important to occupational status in Germany than in the United States (e.g., Krymkowski, 1991), and differences in educational status are thus likely to have a stronger effect on managerial compensation in the German context.

These arguments suggest that relative differences in education level between the CEO and the supervisory board chair will likely affect the process of setting managerial compensation. If the CEO's level of education is relatively high *vis-à-vis* the board chair, the chair may be more likely to defer to the CEO's knowledge and status, leading to higher levels of compensation. Alternatively, if the CEO's education level is relatively low as compared to the board chair, then the chair may devalue the CEO's ability and may be much

less willing to defer to demands for higher pay. These arguments suggest the following hypothesis regarding differences in educational attainment:

*Hypothesis 1: CEOs with higher levels of education than their board chairs should command relatively higher levels of compensation, while CEOs with lower levels of education than their board chairs should command relatively lower levels of compensation.*

Furthermore, this main effect of such demographic differences is likely to be contingent on the context in which it is set. Specifically, the effect of CEO status on a particular demographic characteristic will be greater in the presence of demographic similarity on a related characteristic. For example, differences in educational attainment will be particularly salient if both the CEO and board chair share the same educational specialization but the CEO has a more prestigious degree within that specialty. Educational specialization has been shown to significantly influence strategic decision making among executives, shaping perspectives and outlooks (Hitt and Tyler, 1991; Wiersema and Bantel, 1992). Having the same educational specialization may therefore highlight similarities and create 'language compatibility' (March and Simon, 1958; Tsui and O'Reilly, 1989). This similarity should enhance the effect of educational attainment; differences in educational level should be particularly glaring if both CEO and chair of the board share the same specialization. On the other hand, educational differences should be less consequential if CEO and board chair come from quite different backgrounds, since such domain differences make comparisons more difficult. In sum, this suggests the following hypothesis:

*Hypothesis 2: Differences in education levels between CEO and board chair will have a stronger effect on managerial compensation if board chair and CEO share the same educational specialization.*

The above arguments thus present a refinement of existing theory that has primarily focused on main effects of demographic similarity. However, note that this refinement relates to the interaction between an ordinal characteristic **A** (such as education, work experience, or rank) where some categories are almost universally considered

higher than others, and a nominal characteristic **B** (such as specialization, profession, or functional background) that is sufficiently related so that having **B** allows for a better appreciation of **A**. This scope condition needs to be recognized when applying the above argument to other contexts.

The second human capital measure examined here relates to differences in tenure between CEO and board chair. Previous research has advanced a variety of reasons why top executives may become more influential with tenure. Human capital theories point to the value of 'on-the-job' training and the acquisition of firm-specific expertise (Hogan and McPheters, 1980), while sociopolitical theories tend to highlight the tendency of CEOs to increase their power by gaining familiarity with the firm's resources and control systems (e.g., Hill and Phan 1991; Singh and Harianto, 1989b; Zald, 1970) and by populating the board with sympathetic appointees (e.g., Finkelstein and Hambrick, 1989; Fredrickson, Hambrick, and Baumrin, 1988; Wade *et al.*, 1990). Both arguments, however, suggest the same outcome: longer CEO tenure should result in higher compensation.

Yet, results have frequently failed to support this link between CEO tenure and compensation (e.g., Belliveau *et al.*, 1996; Geletkanycz *et al.*, 2001; Hambrick and Finkelstein, 1995; O'Reilly, Main, and Crystal, 1988). To further assess the tenure-compensation link, I again utilize a relative measure of CEO tenure. A number of studies on the adoption of anti-takeover provisions (Singh and Harianto, 1989a, 1989b; Sundaramurthy, 1996; Wade *et al.*, 1990) and executive selection and succession (Westphal and Zajac, 1995; Zajac and Westphal, 1996) have pointed to the effectiveness of relative measures of CEO tenure *vis-à-vis* the board, and it therefore seems appropriate to suggest that a relative tenure measure may similarly show a more robust effect on compensation levels. If CEO tenure is comparatively long, then the board chair may feel less expert and may be more likely to defer to the CEO's demands for higher compensation (Singh and Harianto, 1989a; Wade *et al.*, 1990). On the other hand, if it is the board chair's tenure that is long relative to the CEO's, the chair should have accumulated considerable influence and expert knowledge to be less deferential in compensation issues. This suggests the following hypothesis:

*Hypothesis 3: CEOs with greater tenure than their board chair should command relatively higher levels of managerial compensation, while CEOs with shorter tenure than their board chair should command relatively lower levels of managerial compensation.*

### Role empathy

The previous discussion has examined similarity along human capital measures. However, it seems appropriate to expand similarity between executives and the board to also include similar experiences. Having occupied the same position within an organization should strongly affect how an individual evaluates performance in that position. While the German corporate governance system legally prohibits the CEO from also being the chair of the supervisory board, retiring CEOs in Germany frequently join the supervisory board and often become their chairs (e.g., Prigge, 1998), particularly if their tenure has been marked by positive firm performance. Having a former CEO and thus a firm insider as the chair of the supervisory board may significantly affect executive compensation, as a former CEO may exhibit what may be called *role empathy*—a form of similarity attraction. Previous research in social psychology has suggested that perspective taking is likely to motivate empathy arousal (Batson *et al.*, 1997; Pettigrew, 1997). Having experienced the demands of the CEO position and the problems of dealing with the board, such chairs should be more likely to empathize with the current CEO and should therefore be willing to approve relatively higher levels of managerial compensation. Support for this argument also comes from a study by Westphal and Zajac (1997), who point to norms of mutual support between CEOs and fellow CEO-directors. For example, their findings indicate that top executives with sympathetic CEO-directors on their boards enjoyed greater protection from increased board independence and contingent compensation. In sum, these arguments suggest the following hypothesis about a main effect between role empathy and compensation in German firms:

*Hypothesis 4: Having a former CEO as board chair is positively related to managerial compensation.*

However, a chair's experience with the CEO's position and the resulting role empathy may lose their salience if the chair is under scrutiny from powerful shareholders that have incentives to monitor both the board and top management team. Previous research suggests that executive pay mechanisms will differ in the presence of major shareholders that exert vigilance (e.g., Gomez-Mejia, Tosi, and Hinkin, 1987; Hambrick and Finkelstein, 1995; O'Reilly *et al.*, 1988). The effect of role empathy should therefore be of greater relevance in manager-controlled firms, while tighter scrutiny by the owners should prevent an empathy bonus in owner-controlled firms. Furthermore, this contingent effect of ownership should be particularly relevant in the German context, where firms tend to exhibit considerably higher levels of ownership concentration as compared to U.S. firms (e.g., La Porta, Lopez-de-Silanes, and Shleifer, 1999). In Germany, ownership control should therefore be especially likely to moderate the main effect of similar experiences between the CEO and chair, suggesting the following hypothesis:

*Hypothesis 5: The effect of having a former CEO as board chair will be weaker for firms with higher ownership concentrations.*

### Reciprocity

In addition to social influence effects based on demographic and role similarities, managerial pay may also be affected by norms of reciprocity relating to compensation itself. So far, only a few studies have examined the relationship between director and executive compensation. For example, O'Reilly *et al.* (1988) argue that, given considerable uncertainty about the appropriate levels of executive remuneration, directors may anchor their judgment by comparing the CEO's salary to their own. Directors that receive higher levels of compensation at their home companies should therefore be more willing to approve higher levels of executive compensation at a focal company. However, apart from comparison effects, there may be a more direct link between director and executive compensation. Specifically, theoretical arguments about the norm of reciprocity (Gouldner, 1960; Westphal, 1998) imply that by invoking this norm, management may be able to extract greater pay raises from boards that themselves have received a pay raise. This line of thought is also supported

by anecdotal evidence from the business press that high levels of compensation create stronger ties between executives and directors (e.g., *Business-Week*, 1991: 94; *New York Times*, 1996: F1), suggesting a positive relationship between director and executive compensation (Boyd, 1994). Accordingly, directors who themselves have received an increase in their compensation may be more willing to go along with a pay raise for management.

When testing this association between board and management compensation, the cross-sectional data used in most prior research lead to problems establishing causality (O'Reilly *et al.*, 1988: 269). For example, high levels of compensation for both board members and executives may be driven by third factors, such as a generous compensation policy for both directors and managers in order to compete for talent in both labor markets. Thus, even with the inclusion of controls such as firm size, the correlation between high levels of director and executive compensation may in fact be spurious in cross-sectional data. As a result, O'Reilly *et al.* (1988) have called for different data and additional testing regarding the relationship between board and managerial compensation.

The current study thus extends prior research on this relationship in two ways. First, I directly test reciprocity arguments suggesting that increases in board compensation will subsequently lead to increases in executive compensation and provide evidence about the applicability of such arguments in a different institutional context. Second, I offer a more rigorous test of this relationship by using longitudinal data that control for firm-specific effects, thereby allowing much stronger conclusions about the nature of the causal relationship. In sum, arguments about social influence effects due to the norm of reciprocity suggest the following hypothesis:

*Hypothesis 6: Increases in board compensation will have a positive effect on managerial compensation.*

## DATA AND METHODS

The current study uses a longitudinal research design to examine changes in managerial compensation from 1990 to 2000. The sample consists of the 108 largest public German corporations as measured by market capitalization and sales in

1990, accounting for over 80 percent of the total capitalization of the German stock market in 1990 and representing firms from a variety of industries.

Financial and ownership data were obtained from *Worldscope*, while data on educational background and age of CEO and Chair of the Supervisory Board came from *Leitende Männer und Frauen der deutschen Wirtschaft*, a directory of German executives published by Hoppenstedt Verlag, various years. This source was supplemented by information from *Bloomberg Professional*, *Lexis-Nexis*, *ABI/Inform*, and from the firms' annual reports. Data on tenure were collected from the annual reports and from various issues of *Major Companies of Europe*, published by Graham and Trotman, an annual directory of European companies that lists the CEO and Chair of the Supervisory Board for German companies. Data on managerial and board compensation were collected from the firms' annual reports.

### Dependent variable

The dependent variable was the log of the average compensation of top management team members, measured in thousands of DM. German company law does not require the reporting of individual compensation packages or their components, and individual-level data are unfortunately unavailable (cf. Schwalbach, 2001; Schwalbach and Grasshoff, 1997). However, previous research has successfully used average TMT compensation for German companies (e.g., Elston and Goldberg, 2003; Schwalbach and Grasshoff, 1997), and there is considerable reason to believe that average TMT compensation is highly correlated with CEO compensation and will be influenced by the relationship between CEO and supervisory board chair. First, the link between CEO compensation and the compensation of other management team members is much closer in the German context where compensation differentials between management members tend to be much smaller than in American firms (Elston and Goldberg, 2003). Furthermore, as mentioned previously, the CEO-board chair relationship is particularly important in the German context due to co-determination and the central role of CEO and board chair in the selection of new board members, suggesting that this relationship will figure prominently in the determination of executive compensation.

I also conducted additional analyses to examine the link between CEO compensation and average TMT compensation. While data on individual CEO pay are not available for the time period I examine here, a number of the largest German publicly traded corporations have recently begun to make this information available. Of the 30 companies that form the German DAX index, 11 companies released information about individual CEO compensation in 2004, while 21 companies did so in 2005. These new compensation data were collected and published by DSW, a leading German investor association,<sup>1</sup> thus allowing me to empirically examine the correlations between CEO compensation and average TMT compensation.

I calculated the correlations between CEO compensation and average TMT compensation in four different samples. First, I used the full sample of all DAX firms for 2003 and 2004 ( $N = 60$ ). This sample includes both firms that officially released individual CEO compensation data and firms for which DSW researchers calculated estimates. Second, I only used the sub-sample of DAX firms that officially released CEO compensation figures, excluding the DSW estimates ( $N = 32$ ). Third, I only used the sub-sample of DAX firms that were also part of my own sample of the largest German firms from 1990 to 2000 ( $N = 44$ ). And finally, I only used those firms that both officially released CEO compensation figures and that were also included in my own sample of firms ( $N = 24$ ).

The results suggest very high correlations between CEO compensation and average TMT, with Pearson's correlation coefficients ranging between 0.935 and 0.949 for the four samples. The resulting  $R^2$  values are likewise very high, indicating that average TMT compensation accounts for between 87 and 90 percent of the variation in CEO compensation. The correlations found here are also much higher than that of 0.50 found by Carpenter and Sanders (2004) for a sample of U.S. multinational companies. These results of my supplementary analysis thus strongly suggest that, at least for German firms, average TMT pay and CEO pay are so highly correlated that they may be considered essentially interchangeable measures of the same construct.

In sum, while more finely grained data would clearly be preferable and will hopefully become available in the future, both theoretical arguments and empirical evidence suggest that TMT compensation presents a useful proxy for CEO compensation in the German context and is likely to be influenced by the relationship between the CEO and board chair.

Finally, the overall lower level of compensation disclosure in Germany may in fact increase the importance of social influence effects and may make it thus more likely to detect such effects. Among German boards, there is less reliance on professional advice or formalized rules for setting executive compensation, leading a study of German managerial compensation by Amrop International to conclude that 'supervisory boards make their decisions about how much executives will earn largely based on gut feeling' (cited in *Manager Magazin*, 1995: 223; my translation). In such an environment, where secrecy allows for greater room in negotiations, social influence effects should be of much greater relevance than in an environment where exact data for peer companies are readily available.

## Independent variables

### *Relative education level and tenure*

Prior research on demographic similarities has mostly used absolute difference scores (Tsui and O'Reilly, 1989; Westphal and Zajac, 1997), which are computed by squaring the differences between the values for demographic variables and either using the squared term itself or its square root. Such absolute difference scores are symmetric in that they ignore the direction of the differences. In contrast, in this study I use a relative difference score, calculated as the simple difference between CEO education and board chair education, measured as five categories: (1) high school degree (*Abitur*) or less; (2) vocational university degree; (3) university degree equaling a master's degree; (4) doctoral degree; (5) professor or more than one doctoral degree. The difference score takes on positive values if the CEO's level of education is higher than that of the board chair, and negative values if it is lower than that of the board chair. Equal levels of education cancel out, resulting in a value of zero. Similarly, relative tenure was calculated as the simple difference between CEO tenure

<sup>1</sup> The executive compensation reports and tables listing the remuneration data used here can be found on the DSW website at <http://www.dsw-info.de/Surveys.266.0.html>.

and board chair tenure, measured in years. Finally, to contrast this relative with an absolute difference measure, I also estimate models using absolute (i.e., unsigned) difference scores.<sup>2</sup>

#### *Same educational specialization*

Specialization was assessed for the highest obtained university degree. I categorize executives into five educational specializations: arts, sciences, engineering, business and economics, and law (cf. Wiersema and Bantel, 1992). Presence of the same educational specialization for CEO and board chair was measured as a dummy variable.

#### *Board chair is former CEO*

This binary variable was coded as one if the board chair had at any prior time served as the firm's CEO.

#### *Ownership concentration*

Prior research on U.S. firms has tended to divide firms into externally and management-controlled using a binary measure and a cutoff point of 5 percent (e.g., Hambrick and Finkelstein, 1995; Werner, Tosi, and Gomez-Mejia, 2005). However, the German context is marked by much higher levels of ownership concentration, with shareholding of 5 percent or more being the rule rather than the exception. I therefore use a Herfindahl index as a continuous measure of ownership concentration, calculated by squaring the share each owner has of the total ownership and summing those squares.

#### *Board compensation*

This is measured as the average compensation of supervisory board members for each firm, reported

in thousands of DM. Supervisory board members are compensated equally in Germany.

#### **Control variables**

There is substantial research showing that *firm size* is a major determinant of executive pay (e.g., Cissel and Carroll, 1980). There are several reasons for this relationship, including greater demands on CEOs, greater ability to pay, and greater prestige. Since this relationship is well established, I control for size using the log of sales.<sup>3</sup> Following previous research, I also control for performance using return on equity (e.g., Belliveau *et al.*, 1996; Finkelstein and Hambrick, 1989). While stock option plans were only introduced by German companies during the middle of the observation period, the presence of such variable payment components will likely influence total cash compensation. I control for the presence of such plans using a binary variable, since information about the extent of stock incentive programs is not publicly available for German firms.

Previous research has also argued that larger boards tend to be stronger vs. management since the CEO's social influence will be diffused across more targets and larger boards are more likely to generate alternative coalitions that may challenge the CEO (Ocasio, 1994; Tanford and Penrod, 1984). Other researchers have suggested that larger boards may face collective actions problems, making them are less effective in their monitoring (Jensen, 1993; Yermack, 1996). I therefore control for board size using the number of members of the supervisory board. In Germany, there is a legally required number of board members that differs with the number of employees. German firms usually have 6 board members if they have fewer than 2000 employees, 12 board members if they have between 2000 and 10,000 employees, 16 if they have between 10,000 and 20,000 employees, and 20 for firms with more than 20,000 employees.

Since both human capital and power may influence the outcome of compensation negotiations, I also control for CEO and board chair education level, tenure, age.<sup>4</sup> When estimating models

<sup>2</sup> As an alternative to difference scores, some authors (e.g., Edwards, 1995) have argued for the use of polynomial regression. While this approach is appropriate when the goal is to model complex congruence effects, the higher-order terms used in polynomial regression are frequently difficult to interpret (Edwards, 2001). To assess the need for a polynomial approach, I estimated regression models using the form described by Edwards and Parry (1993). However, the polynomial terms were not significant, suggesting a nonlinear relationship was not an issue, and a difference score was appropriate (cf. Ferrier, Smith, and Grimm, 1999: 382). I therefore report results using difference scores since this allows for testing of the additional interaction of interest and since such scores have been used previously to assess the relationship between executives and the board (e.g., Tsui and O'Reilly, 1989; Westphal and Zajac, 1997).

<sup>3</sup> Using an alternative measure such as market capitalization leads to substantively identical results.

<sup>4</sup> As a robustness check, I also estimated additional models that included a series of dummy variable controls for the educational specialization of CEO and board chair. However, the results

using relative CEO education level and tenure, the controls for board chair education level and tenure are included as a linear combination in the relative difference score, making an additional control unnecessary. Furthermore, while research on Anglo-Saxon companies has focused on the role of CEO duality and outside directors in setting compensation levels, this is not an issue in the German context with a dual board structure, where members of a firm's management board are legally prohibited from simultaneously serving on the supervisory board. Finally, all models control for time-specific effects using year dummy variables.

### Analyses

With few exceptions, previous research on the causal mechanisms affecting executive compensation has been limited by relying on cross-sectional findings (Cordeiro and Veliyath, 2003; Schwalbach, 2001). In contrast, I use fixed-effects pooled time-series regression analysis (Allison, 1994; Johnson, 1995) to test my hypotheses. The model takes the following general form:

$$y_{it} = \beta'x_{it} + \alpha_i + \delta_t + \varepsilon_{it}, \\ t = 1, \dots, T(i), i = 1, \dots, N$$

where  $\beta'x_{it}$  denotes the variables of interest in firm  $i$  and year  $t$ ,  $\alpha_i$  is the constant effect for firm  $i$ ,  $\delta_t$  are year-specific effects, and  $\varepsilon_{it}$  is the error term. The fixed effects model is statistically equivalent to a change-score model and removes all between-firm differences, leaving only within-firm variation in executive compensation to be explained by the independent variables. The coefficients are thus not biased by any observed or unobserved unchanging firm differences, making the fixed effects model more suitable than a random effects model in situations where the observations do not constitute a random sample of a population (Hsiao, 1986; Petersen, 1993). For example, if firms have certain (uncontrolled) permanent features that influence executive compensation, such as industry-specific differences in pay or consistent increases in productivity over time, these effects are eliminated from the analyses. All independent

and control variables in the models were lagged by one year.

## RESULTS

Descriptive statistics and zero-order correlations among the variables are presented in Table 1. For the complete observation period, executives received on average about 830,000 DM in base compensation per year, while supervisory board members received an honorarium of about 48,000 DM per year. Table 2 presents the results of the fixed-effects time-series regression models of changes in executive compensation. Model 1 presents the baseline model with control variables only. Regarding the controls, the model shows the expected performance-pay link as evidenced by the significant effect of ROE on compensation. In line with prior findings, firm size is also a significant predictor of executive pay. Interestingly, supervisory board size is a significant predictor of compensation in Models 9 and 10, with larger boards approving higher levels of executive compensation, even when controlling for firm size. This finding offers support for the argument that larger boards may in fact be weaker and less able to properly monitor management (Jensen, 1993; Yermack, 1996). Such weaker monitoring capability is likely the result of collective action problems, where larger boards find it harder to coordinate their position vs. top management and resist CEO pressure towards higher compensation.

Hypothesis 1 predicted that a positive difference in education levels between CEO and board chair would increase compensation levels, while a negative difference would decrease them. To examine this hypothesis and whether relative rather than absolute differences matter, I first enter an absolute difference score in Model 2. This score is not significant. However, the relative difference score entered in Models 3 and 4 as well as the fully specified Model 10 shows the predicted effect that education level differences in favor of the CEO lead to higher levels of executive compensation. Furthermore, the models offer support for Hypothesis 2, which posited that the effect of education level differences would be stronger if both the CEO and board chair share the same educational specialization. I display this effect graphically in Figure 1, which demonstrates that the effect of education level differences varies

remained substantively unchanged, although multicollinearity problems resulted when the full set of dummies was included. I therefore report models without these dummy variables.

Table 1. Descriptive statistics and Pearson correlation coefficients<sup>a</sup>

Variable	Mean	S.D.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1. Average TMT compensation (log)	-0.26	0.61																
2. Education level difference	0.10	1.61	0.02															
3. Tenure difference	0.19	7.31	-0.10	-0.04														
4. Board chair former CEO	0.11	0.32	0.10	-0.06	-0.11													
5. Ownership concentration	0.26	0.25	-0.35	-0.08	0.09	-0.04												
6. Board compensation ('000s DM)	0.05	0.03	0.46	0.01	-0.09	0.23	-0.29											
7. Return on equity	0.01	0.06	0.09	0.00	0.01	0.01	-0.01	0.03										
8. Sales (log)	8.29	1.30	0.51	0.09	-0.17	0.20	-0.52	0.46	0.03									
9. Board size	16.75	3.79	0.29	0.09	-0.09	-0.06	-0.36	0.06	0.01	0.52								
10. Stock option plan	0.02	0.14	0.14	-0.02	0.00	-0.02	-0.08	0.10	0.02	0.13	0.05							
11. Same degree	0.17	0.38	0.05	0.46	-0.05	0.02	-0.06	-0.07	-0.02	0.05	0.10	-0.02						
12. CEO education level	3.10	1.13	-0.01	0.62	0.01	-0.16	-0.11	0.06	0.03	0.06	0.07	-0.03	-0.11					
13. Board chair education level	3.00	1.27	-0.03	-0.72	0.06	-0.06	0.00	0.04	0.02	-0.06	-0.05	0.01	-0.69	0.10				
14. CEO tenure	6.14	6.06	-0.04	0.00	0.67	-0.13	0.07	0.01	0.00	-0.20	-0.21	-0.02	0.04	0.02	0.02			
15. Board chair tenure	5.96	5.55	0.09	0.05	-0.59	0.00	-0.04	0.12	-0.01	0.01	-0.11	-0.02	0.10	0.01	-0.06	0.21		
16. CEO age	62.08	6.05	0.24	0.06	-0.18	0.19	-0.21	0.31	-0.03	0.32	0.14	0.04	0.01	0.05	-0.04	0.14	0.38	
17. Board chair age	56.67	5.75	0.05	0.10	0.27	-0.01	-0.07	0.21	0.03	0.12	0.12	-0.03	0.18	0.01	-0.12	0.37	0.05	0.16

<sup>a</sup> n = 847. Correlations equal to or greater than 0.06 are significant at p < 0.05.

Table 2. Fixed-effects time-series regression models predicting compensation<sup>a</sup>

Independent variable	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8	Model 9	Model 10
Absolute education level difference		-0.008 (0.012)								
Relative education level difference			0.025* (0.014)	0.020 (0.014)						0.025* (0.014)
Relative educ. level difference × same educ. specialization				0.059* (0.025)						0.048* (0.025)
Absolute tenure difference					-0.001 (0.002)					
Relative tenure difference						0.007** (0.002)				0.008*** (0.002)
Board chair former CEO							-0.060 (0.044)	0.006 (0.055)		-0.004 (0.054)
Board chair former CEO × ownership concentration								-0.251* (0.129)		-0.248* (0.127)
Board compensation									2.653*** (0.531)	2.723*** (0.530)
Return on equity	0.487*** (0.131)	0.486*** (0.131)	0.487*** (0.131)	0.485*** (0.130)	0.459*** (0.132)	0.487*** (0.131)	0.487*** (0.131)	0.488*** (0.130)	0.493*** (0.129)	0.493*** (0.128)
Sales (log)	0.158*** (0.035)	0.160*** (0.035)	0.158*** (0.035)	0.159*** (0.035)	0.086*** (0.032)	0.158*** (0.035)	0.163*** (0.035)	0.162*** (0.035)	0.120*** (0.035)	0.125*** (0.035)
Same educational specialization	0.037 (0.042)	0.036 (0.042)	0.037 (0.042)	-0.063 (0.060)	0.047 (0.043)	0.037 (0.042)	0.041 (0.042)	0.040 (0.042)	0.023 (0.042)	-0.055 (0.060)
Ownership concentration	-0.061 (0.067)	-0.057 (0.068)	-0.061 (0.067)	-0.067 (0.067)	-0.028 (0.065)	-0.061 (0.067)	-0.059 (0.067)	-0.040 (0.068)	-0.093 (0.067)	-0.078 (0.067)
Board size	0.003 (0.005)	0.003 (0.005)	0.003 (0.005)	0.004 (0.005)	0.003 (0.005)	0.003 (0.005)	0.003 (0.005)	0.004 (0.005)	0.010* (0.005)	0.012* (0.005)

(continued overleaf)

Table 2. (Continued)

Independent variable	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8	Model 9	Model 10
Stock option plan	0.105 (0.065)	0.108 (0.066)	0.105 (0.065)	0.098 (0.065)	0.128* (0.062)	0.105 (0.065)	0.100 (0.065)	0.107 (0.065)	0.096 (0.064)	0.090 (0.064)
CEO education level	0.003 (0.012)	0.001 (0.012)	-0.023 (0.020)	-0.030 (0.020)	0.005 (0.012)	0.003 (0.012)	0.003 (0.012)	0.004 (0.012)	0.003 (0.012)	-0.031 (0.020)
Board chair education level	-0.025 (0.014)	-0.029 (0.015)			-0.018 (0.015)	-0.025 (0.014)	-0.022 (0.014)	-0.024 (0.014)	-0.031* (0.014)	
CEO tenure	0.004* (0.002)	0.004 (0.002)	0.004* (0.002)	0.005* (0.002)	0.002 (0.002)	-0.003 (0.003)	0.004 (0.002)	0.004 (0.002)	0.005* (0.002)	-0.004 (0.003)
Board chair tenure	-0.007** (0.002)	-0.007** (0.002)	-0.007** (0.002)	-0.007** (0.002)	-0.008** (0.002)		-0.008** (0.003)	-0.007** (0.003)	-0.007** (0.002)	
CEO age	0.003 (0.002)	0.003 (0.002)	0.003 (0.002)	0.002 (0.002)	0.004 (0.002)	0.003 (0.002)	0.003 (0.002)	0.003 (0.002)	0.001 (0.002)	0.001 (0.002)
Board chair age	0.005* (0.002)	0.005* (0.002)	0.005* (0.002)	0.006* (0.002)	0.007** (0.002)	0.005* (0.002)	0.006* (0.003)	0.006* (0.003)	0.004 (0.002)	0.005* (0.002)
Constant	-1.871*** (0.332)	-1.860*** (0.333)	-1.871*** (0.332)	-1.874*** (0.331)	-1.464*** (0.319)	-1.871*** (0.332)	-1.955*** (0.337)	-1.960*** (0.337)	-1.629*** (0.330)	-1.726*** (0.333)

\*  $n = 847$ ; \*  $p \leq 0.05$ ; \*\*  $p \leq 0.01$ ; \*\*\*  $p \leq 0.001$ ; significance tests are one-tailed for directional hypotheses and two-tailed for control variables.

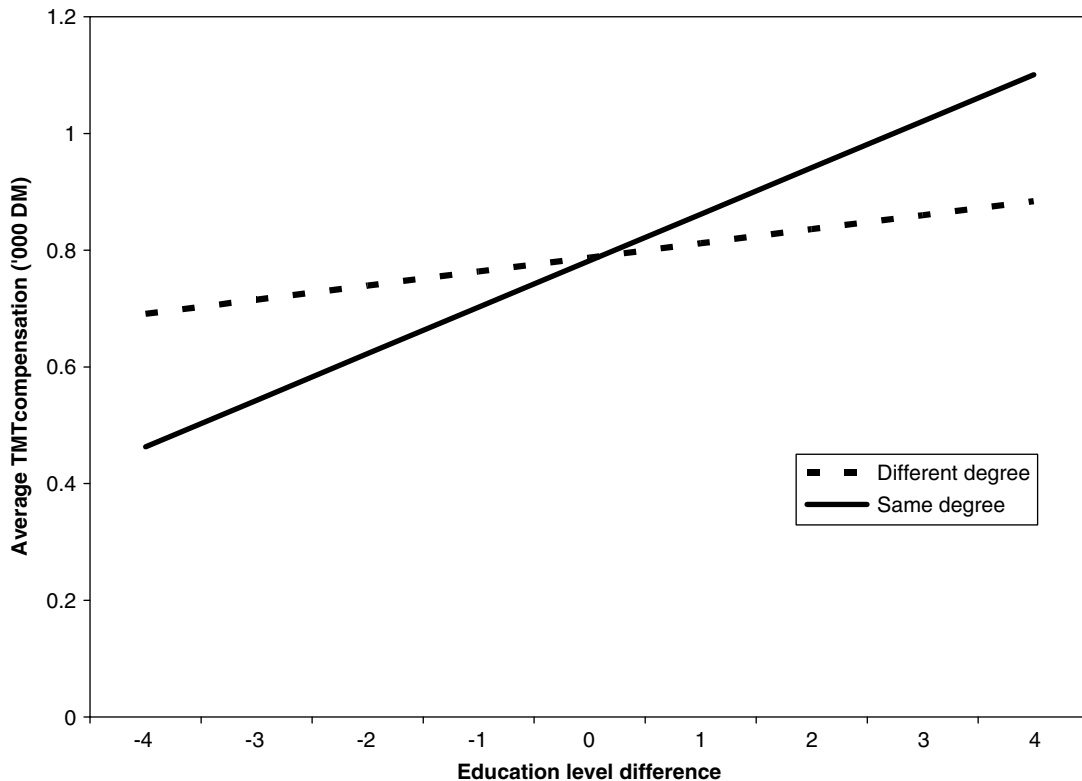


Figure 1. Interaction between education level differences and same degree

significantly depending on shared specialization. If both CEO and board share received their degree in the same field, then this amplifies the importance of educational differences, making both favorable and unfavorable comparisons much more salient in the determination of CEO compensation.

Results in Table 2 also suggest strong support for tenure differences between the CEO and board chair, as posited by Hypothesis 3. Again, an absolute difference score is not significant, as shown in Model 5. However, the relative difference score entered in Model 6 and the fully specified Model 10 does show the expected positive effect for tenure differences in favor of the CEO. These results thus offer support for the hypothesis and also show the use of employing a relative rather than absolute similarity/difference measure for these variables.

Hypothesis 4 predicted that board chairs who formerly served as the firm's CEO would approve relatively higher levels of CEO compensation. The regression models do not offer support for an independent main effect of having similar role experiences. However, the models do offer support for a

conditional effect as stated in Hypothesis 5, which posited that the effect of such similar experiences would depend on the presence of powerful owners with an incentive for monitoring board behavior. The interaction between differences in board chair expertise and ownership concentration is graphically shown in Figure 2. In firms that may be categorized as completely management-controlled (without at least one large block holder), CEOs receive about average levels of compensation. On the other hand, in firms categorized as essentially owner-controlled, CEOs receive significantly lower levels of compensation. These findings suggest that having a board chair who is a former CEO may carry a significant penalty, depending on context. Powerful block holders are apparently able to use the board chair's expertise as a former CEO to critically evaluate the actions of the current CEO and to support the board chair in negotiations over compensation, making such board chairs apparently much less likely to defer to demands for greater TMT pay.

Finally, the models offer support for the operation of reciprocity effects relating to board

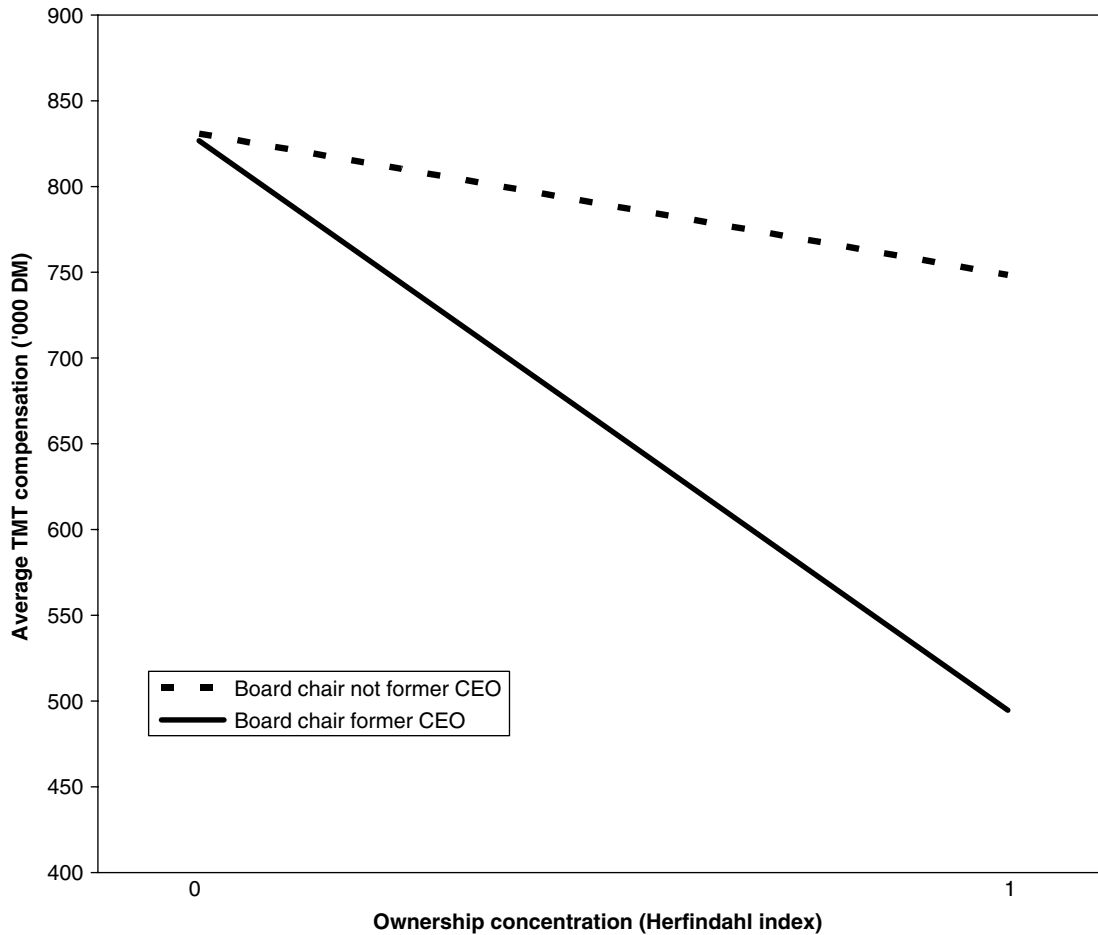


Figure 2. Interaction between ownership concentration and board chair experience

compensation. As predicted by Hypothesis 6, the results of Models 9 and 10 show a strong positive effect of board compensation on executive pay, where an additional 10,000 DM of average supervisory board compensation increases managerial compensation by roughly 3 percent.

## DISCUSSION

This study contributes to a growing body of research on the behavioral determinants of executive compensation by showing the importance of the CEO's relative position *vis-à-vis* the board. Specifically, my findings demonstrate significant effects for relative rather than absolute CEO education and tenure. While traditional human capital and resource dependence arguments hold that CEOs are likely to be compensated for their human

capital because it benefits the firm, my findings instead support a social influence perspective on TMT pay, where difference rather than similarity in human capital levels affects the relationship between the CEO and the board, pointing to the importance of relative rather than absolute standing (cf. Hambrick and Cannella, 1993).

The results of this study furthermore demonstrate the importance of context for social influence theories—it clearly matters in which context the evaluation is made. In fact, the effect of comparability can both benefit and hurt executives, as shown for the relationship between education level and specialization, where comparability increased the effect of both positive and negative education differentials. Likewise, the effect of similar experience between CEO and board chair depended importantly on whether a powerful blockholder was present, suggesting again that the operation

of social influence mechanisms is best understood as inherently contextual. These findings indicate an increased focus on interaction in addition to main effects when examining the role of social influence and comparison mechanisms. However, it also needs to be noted that while the context-dependence argument for Hypothesis 2 presents a refinement of existing theory, its scope may be somewhat limited and care needs to be taken when applying this argument to other settings. For instance, the importance of education level for executive status is likely to be particularly relevant in the German context, where formal degrees tend to be more important for executive status, and the comparability of such degrees is thus likely to show a stronger effect in general.

Regarding the relationship between the former CEO and the successor, the current findings not so much support a theory of role empathy or friendship, but rather point to the importance of insider knowledge and expertise at the helm of the firm for properly evaluating CEO performance. In the United States, the current discussion on the role of directors has to a large extent focused on the importance of independence, and insider experience is usually seen as compromising. In contrast, the current study suggests that insider expertise may become a significant asset when coupled with greater oversight by owners, an issue that is likely to be particularly relevant in Germany, where ownership concentration is considerably higher on average than in the United States and board chairs are frequently the former CEOs of the firm. Specifically, such CEO-board chairs are likely to have greater knowledge of the firm and industry, allowing them to better control the process of setting CEO compensation. As former CEOs, such board chairs should understand the true firm- and industry-level opportunities and constraints for the current CEO, allowing the chairs to see through specious justifications for pay raises or deterring unjustified demands in the first place. However, whether this expertise of the board chair is used to the benefit of shareholders appears to depend strongly on the level of ownership concentration. If concentration is low, then the experience of such board chairs apparently does not affect CEO compensation. However, if the level of ownership concentration is relatively high, as is often the case in Germany, then it apparently assures that the insider knowledge of the board chair is used in the shareholder's interest. The current study thus

suggests a contingent role of insider status that differs depending on whether there is a powerful owner looking over the board chair's shoulder. At the same time, my findings also suggest that in the absence of such owner oversight, there is rather little benefit for German CEOs in having their predecessor at the helm of the board.

The current study also offers evidence of reciprocity effects regarding the setting of compensation, with raises in board compensation subsequently leading to higher managerial compensation. While reciprocity effects have been shown previously for other contexts (e.g., Westphal and Zajac, 1997), my findings suggest that raises for the supervisory board may present a subtle way that executives can use to influence the board. While the setting of board compensation may not be under the direct control of management, as such raises usually have to be approved by shareholders, management can frequently facilitate such raises and support them during annual shareholder meetings, thereby creating conditions in which directors will find it harder to resist managements' own requests for higher compensation.

An important goal of this study has been to show differences in how social influence processes in executive compensation may operate outside the U.S. context. Responding to calls for a greater international focus in compensation research (e.g., Barkema and Gomez-Mejia, 1998; Barkema, Geroski, and Schwabach, 1997), my research offers new evidence on how higher levels of ownership concentration or different governance structures such as laws prohibiting CEO duality may affect social influence processes. By using original data from a different context, I furthermore provide evidence on the operation of statistical relationships previously explored in the U.S. setting, such as the performance-pay link and the relationship of board size and executive compensation. My study thus also contributes to growing interest in compensation practices of German firms (e.g., Kraft and Niederprum, 1999; Tuschke and Sanders, 2003). Insights gained in this context may also reflect back on findings from the U.S. context. For example, while outside directors are currently suggested as the most effective means for monitoring executives and safeguarding shareholder interests, this study implies that there may be benefits to having insider knowledge on the board if it is possible to combine this knowledge with efficient oversight from shareholders. While

prior research on the role of ownership concentration in U.S. firms has provided mixed evidence (Elhagrasy, Harrison, and Buchholz, 1999), many of these studies have used a relatively low cut-off point of 5 percent ownership. However, truly effective monitoring may in fact require larger ownership stakes than this. Among German firms, there is considerably greater variance in ownership stakes, making it more likely to detect the actually beneficial effect of combining an insider board chair with shareholder monitoring.

Similarly, the detection of board effects seems particularly likely in the German system of corporate governance, which does not have an active external market for corporate control. In such governance systems, where the threat of takeovers is reduced or largely absent, monitoring boards tend to have greater disciplinary power (Moerland, 1995). Accordingly, data from countries such as Germany may be especially useful in studying the role of boards in governance and may offer new insights to an ongoing debate, suggesting for example that increases in board size may lead to collective action problems and weaker boards rather than diffusing the social influence of executives, as previously assumed.

By using a longitudinal design, the current study also presents a methodological advancement over previous cross-sectional analyses, allowing stronger causal inferences. The panel used here is sufficiently long enough (10 years) to allow for fairly robust parameter estimates. In contrast, cross-sectional studies that rely on a single year of data carry a much greater danger of failing to correctly estimate a relationship, or to even detect it (Bowen and Wiersema, 1999; Rumelt, 1991). Furthermore, by using a fixed-effects approach, the current study addresses the important concern of accounting for firm-specific, unchanging components. In a cross-sectional analysis, the relationship between director and executive compensation found here might perhaps also be explained by unmeasured differences in compensation policy across firms. However, the fixed-effects approach used here allows us to rule out this alternative explanation and significantly increases the generalizability of the findings (Bowen and Wiersema, 1999).

Future research should continue to examine how social influence mechanisms may operate in regard to alternative compensation mechanisms, such as

the extent of stock option plans or executive privileges. While such data are currently not available for the German business environment, they would allow for a much more detailed analysis of possible differences between fixed and variable compensation components, and how the presence of such variable components may itself affect subsequent evaluation processes by the board. Relatedly, this study has focused on the relationship between CEO and board chair. While this relationship is arguably pivotal for the effectiveness of board governance in general (Roberts and Stiles, 1999) and while there is reason to believe that this relationship is even more relevant in the German context, further research should aim to expand our understanding of how broader measures of context interact with different compensation components. As new sources of data for other members of the management and supervisory board may become available in the future, such research might also examine whether the mechanisms observed here also apply to smaller firms and expand the focus to other national contexts.

The arguments developed here about the importance of relative standing may also be brought to bear on other outcomes relevant to the CEO. An active stream of research has examined the effect of socio-political mechanisms in CEO–board relationships on the adoption of takeover defenses (e.g., Buchholtz and Ribbens, 1994; Singh and Harianto, 1989a), the selection of directors (e.g., Westphal and Zajac, 1995), and the choice of CEO successors (e.g., Zajac and Westphal, 1996). The current findings contribute to this stream of research by suggesting additional social influence mechanisms and moderators that might affect such outcomes.

In conclusion, the current study points to the importance of building theories that combine agency theory with social influence mechanisms. Previous research has shown the importance of cultural differences for the operation of agency mechanisms (e.g., Aguilera 2005; Bird and Wiersema, 1996; Pennings, 1993). If agency mechanisms are moderated by national context, then better knowledge of the situations in which evaluations take place would allow us to design more effective incentive systems for both managers and directors, confirming the assumption that approaches drawing on several theories and disciplines offer the greatest promise for future research on compensation.

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