
Position-specific knowledge, new CEO learning and firm performance

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Abstract: Building on organisational learning theory and CEO-strategy fit research, we introduce the concept of position-specific knowledge of a new CEO and explore its impact on the learning process that new CEOs go through after taking office and on firm performance during their early tenure. We empirically test this concept using a sample of 59 CEO succession events that occurred between 1987 and 2002 in 48 of the largest publicly listed companies in Germany. Results show that position-specific knowledge of new CEOs indeed has an influence on firm performance during the early tenure of a CEO. Thus, we conclude that organisational learning theory and position-specific knowledge of new CEOs offer a promising lens for executive succession research and that they deserve further attention.

Keywords: CEO-strategy fit, organisational learning theory, CEO learning, demographic experiences, firm performance.

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1 Introduction

In this paper, we address the mutual learning process that new CEOs – as well as the organisations which they lead – need to go through at the beginning of their tenure to better understand the “ropes to skip and the ropes to know” (Boal and Hooijberg, 2000, p.520). Past research has shown that this initial learning process lasts for about two and a half years (Gabarro, 1987). So far, however, very few studies in the field of executive succession have specifically addressed this learning process during the early tenure of newly appointed CEOs and its performance implications. This is surprising as failed learning processes potentially have negative performance effects and might lead to the early dismissal of the CEO, as the example of Leo Apotheker at Hewlett-Packard showed (Menn, 2011).

The few empirical studies, which have addressed new CEO learning so far (Zhang and Rajagopalan, 2004; Rowe et al., 2005), have mainly concentrated on the timing of the learning process in the context of a succession event. They conclude that the learning process should ideally begin even before a new CEO actually takes charge, e.g. through relay succession (Zhang and Rajagopalan, 2004). Additionally, the influence of firm-specific knowledge, i.e. an insider status, of the new CEO on the duration of the learning process and on firm performance has been analysed in several studies. Nevertheless, these studies have not come to consistent results concerning the performance effects of inside or outside succession (e.g. Davidson et al., 2002; Huson et al., 2004; Helfat and Bailey, 2005; Rhim et al., 2006; Karaevli, 2007).

In this study, we introduce another type of knowledge into the discussion on new CEO learning, which we term ‘position-specific knowledge’. We define ‘position-specific knowledge’ as prior experiences which help the new CEO to become familiar with the requirements of his or her new position more quickly. As the major task of a CEO relates to setting the strategic direction of the company, we measure ‘position-specific knowledge’ as a fit between selected characteristics of the CEO and the company’s strategic posture (Donaldson and Lorsch, 1983; Gupta, 1984; Goold and Campbell, 1987; Gupta, 1988).

The general relevance of this type of knowledge has first been highlighted in another literature stream, CEO-strategy fit research (Gupta, 1984; Gupta and Govindarajan, 1984; Thomas et al., 1991; Thomas and Ramaswamy, 1996; Beal and Yasai-Ardekani, 2000; Entrialgo, 2002). Studies from this field have shown that specific demographic experiences of a CEO generally lead to a preference for specific strategy types and that following these preferences has positive performance effects (Gupta and Govindarajan, 1984; Thomas et al., 1991; Thomas and Ramaswamy, 1996; Beal and Yasai-Ardekani, 2000; Entrialgo, 2002).

In this paper, building on organisational learning theory as well as on CEO-strategy fit research, we argue that position-specific knowledge reduces the learning need of a new CEO. Thus, position-specific knowledge has a positive impact on firm performance during the early tenure of a CEO. This positive effect prevails until CEOs with lesser position-specific knowledge have caught up. An empirical analysis on a sample of 59 CEOs who took office between 1987 and 2002 in 48 of the largest publicly listed companies in Germany yields support for our reasoning.

With our study we contribute to research on new CEO learning and firm performance in two ways: first, we emphasise the importance of a learning perspective in analysing firm performance during the early tenure of new CEOs. Second, we combine new CEO research with CEO-strategy fit research and highlight a new type of knowledge – position-specific knowledge. This type of knowledge has not been analysed in the context of new CEO learning yet, but possesses, as our results show, an important impact on firm performance during the early tenure of a CEO. Thus, we emphasise that the analysis of new CEO knowledge needs to go beyond the traditional focus on firm-specific knowledge and incorporate also other types of knowledge.

2 Theory

A change in the CEO office generally constitutes a disruptive event for a company and is – dependent on the mandate of the new CEO – accompanied by more or less strong strategic change (Hambrick and Fukutomi, 1991; Boal and Hooijberg, 2000). Crossan et al. (1999) have developed an organisational learning theory that conceptualises a learning process which forms the basis of successful strategic change and which is applicable in the context of new CEO learning (Rowe et al., 2005).

Crossan et al. (1999) have proposed a four-phase learning process that combines individual as well as organisational learning. According to this process, learning requires ‘intuiting’, ‘interpreting’, ‘integrating’ and ‘institutionalising’. Intuiting takes place on the individual, i.e. on the new CEO level. It is the ‘preconscious recognition of the pattern and/or possibilities inherent in a personal stream of experience’ (Weick, 1995, p.25). Thus, in the intuiting phase a new leader – unconsciously and based on personal experience – develops an idea about the future direction in which he or she plans to lead the company. As part of the interpreting phase, this idea is explained to others. Main aim of this process step is to further develop the idea and to convince the organisation of it. The integrating phase is then directed at developing a common understanding and at coordinating action within the organisation, while in the institutionalising phase the main task is to make sure that the intended behaviour becomes embedded in the organisation (Crossan et al., 1999).

Very few empirical studies have used organisational learning theory in the context of CEO succession (Zhang and Rajagopalan, 2004; Rowe et al., 2005), and those that do have mainly focused on the timing of the learning process during a succession event. Zhang and Rajagopalan (2004) have shown, for example, that relay succession in the CEO position has a positive effect on post-succession performance because relay successors are able to start their learning process prior to taking office. In a similar study, Rowe et al. (2005) have shown that between-season succession events in the position of a coach or general manager of National Hockey League teams has more positive performance effects than within-season succession because the new coaches or general managers are given more time to initiate a learning process before the next championship game begins.

Other studies have addressed the question whether firm-specific knowledge of the new CEO can reduce the overall duration of the learning process (Kesner and Sebor, 1994). In this context, inside successors are generally assumed to require a shorter learning phase, thus ensuring better post-succession performance. Empirical studies, however, have not come to consistent results on the performance effects of inside or outside succession (e.g. Davidson et al., 2002; Huson et al., 2004; Helfat and Bailey, 2005; Rhim et al., 2006; Karaevli, 2007). This lack of clear results gives reason to believe that it is not only firm-specific knowledge that is relevant in order to explain why some new CEOs manage to go through their learning process faster and achieve better firm performance during their early tenure than others. In this paper, we make a first step towards a more comprehensive analysis of the relevant knowledge base of a new CEO and specifically address one type of knowledge which we term 'position-specific knowledge'.

In order to define what 'position-specific knowledge' of a new CEO is, the major tasks of this position have to be identified. CEO researchers predominantly argue that the main task of a CEO relates to setting the strategic direction of the company (Donaldson and Lorsch, 1983; Gupta, 1984; Goold and Campbell, 1987; Gupta, 1988). Thus, position-specific knowledge can be defined as those experiences that help the new CEO to better deal with the current and future strategic posture of the company. Such knowledge and experiences speed up the learning process which the CEO and the organisation have to go through. Specifically, they help the new CEO to – in the intuiting phase – more quickly understand the opportunities that the current strategic posture of the company offers, to develop and share – in the interpreting phase – ideas about the future direction of the company, to coordinate – in the integrating phase – the actions of all organisational members in the intended direction, and finally – in the institutionalising phase – to make sure that these actions become routinised (Rowe et al., 2005). Crossan et al. (1999) argue that especially the (subconscious) perception of the opportunities inherent in the current strategic posture of the company depends very much on past experiences and acquired knowledge of the new CEO. Thus, new CEOs who, due to their past experiences, are more familiar with the current strategic posture of their company are likely to come to clear ideas about its future direction more quickly.

Studies from CEO-strategy fit research support this view. This research stream argues that certain demographic experiences of the CEO lead to a preference for a specific strategic posture. Large companies, which are the focus of this study, define strategic posture mainly by the type of diversification strategy that the company follows (Goold and Campbell, 1987; Hill et al., 1992). CEOs with a background in, for example, engineering have been found to have a predisposition for a more focused diversification strategy whereas CEOs with a background in the social sciences rather prefer a more conglomerate diversification strategy (e.g. Tyler and Steensma, 1998; Bertrand and Schoar, 2003). Several empirical studies from the CEO-strategy fit field have shown that CEOs, over time, attempt to realise their preferred strategic posture. Additionally, these studies have come to the conclusion that companies that align their strategic posture to the CEO's preferences and experiences, i.e. create a fit between CEO experiences and the strategic posture of the company, show a higher firm performance (Gupta and

Govindarajan, 1984; Hambrick and Mason, 1984; Govindarajan, 1989; Reed and Reed, 1989; Thomas et al., 1991; Michel and Hambrick, 1992; Thomas and Ramaswamy, 1996; Guthrie and Datta, 1998; Beal and Yasai-Ardekani, 2000; Entrialgo, 2002; Strandholm et al., 2004).

In this paper, we adapt CEO-strategy fit research to new CEO learning. Our central hypothesis is that the existence of position-specific knowledge of a new CEO, i.e. a fit between characteristics of the new CEO and the company's strategy at the time of succession, leads to a shorter learning process and has a positive effect on firm performance during the early tenure of the new CEO. This general hypothesis is specified in the following.

3 Hypotheses

Prior studies from the CEO-strategy fit area as well as from upper echelons research have identified four types of CEO experiences that are particularly relevant in combination with the diversification posture of a company. These experiences are CEO educational specialisation, CEO educational level, CEO functional specialisation and CEO industry specialisation (e.g. Reed and Reed, 1989; Michel and Hambrick, 1992; Wiersema and Bantel, 1992; Finkelstein et al., 2009). Thus, we propose that these demographic experiences and their fit with the diversification posture of the company form important components of the position-specific knowledge of a new CEO and separately as well as combined have a positive effect on the learning process that new CEOs need to go through.

3.1 Educational specialisation

Various empirical studies indicate that the type of education that a top manager has completed possesses an impact on the way in which he or she thinks, acts and decides, even if this education dates back a large number of years (Schein, 1967; Byrne, 1984; Hitt and Tyler, 1991). In this context, researchers normally distinguish two different types of educational specialisation – a background in engineering or the natural sciences on the one hand and a background in business, law or other social sciences and humanities on the other hand.

Top managers with an educational background in engineering or the natural sciences often involve themselves more deeply in operational issues of their company (Graumann, 2004). Empirical research also shows that they tend to stay closer to their core business (Tyler and Steensma, 1998). Top managers with a background in business, law or other social sciences, in contrast, tend to put greater emphasis on the 'global picture' and are able to deal with more complex organisational structures (Fondas and Wiersema, 1997; Bertrand and Schoar, 2003).

Thus, new CEOs with a background in engineering or the natural sciences experience a faster learning process in less diversified companies since their background enables them to more quickly adapt to challenges in these companies where a stronger operative engagement of top managers is necessary to realise synergies on the product or process

levels (Michel and Hambrick, 1992; Barker and Mueller, 2002). In highly diversified companies, in contrast, new CEOs with a background in business, law or other social sciences and humanities get more easily acquainted with the company's strategic posture.

Hypothesis 1: A position-specific knowledge fit between a new CEO's educational background and firm strategy has a positive effect on firm performance during the early tenure of the CEO.

3.2 Educational level

Empirical studies show that the level of education that a top manager reaches has an impact on the cognitive complexity that this manager is able to deal with (Wiersema and Bantel, 1992; Palmer and Barber, 2001). Thomas et al. (1991), for example, have found that a higher average educational level among a company's top management team leads to a stronger diversification into new product lines – not only because the top management team is able to deal with greater cognitive complexity, but also because it is more inclined to concentrate on the big picture instead of paying particular attention to the operational issues of the company. Thus, a new CEO with a high educational level experiences a faster learning process during the early tenure in highly diversified companies. In less diversified companies, in contrast, decision making is often more centralised so that a stronger involvement of the CEO in the operational issues of the company is necessary (Hill et al., 1992; Chu, 2001). CEOs with less complex and less academic approaches should be better able to meet these requirements. This means that CEOs with lower educational levels learn faster in these types of companies.

Hypothesis 2: A position-specific knowledge fit between a new CEO's educational level and firm strategy has a positive effect on firm performance during the early tenure of the CEO.

3.3 Functional specialisation

Functional background contributes to position-specific knowledge because managers acquire knowledge and perfect their abilities in part through their work experience (Bailey and Helfat, 2003). Different empirical studies indicate that the functional area in which a top manager has spent most time before being promoted to a management position possesses an impact on his or her thinking, acting and decision-making behaviour (Dearborn and Simon, 1958; Waller et al., 1995). Jensen and Zajac (2004) as well as Palmer and Barber (2001) have found, for example, that top managers with a background in supporting or administrative functions, like finance or accounting, more strongly associate themselves with diversification and acquisition activities. Thus, such managers should go faster through the initial learning process of a newly appointed CEO in highly diversified companies, since activities like portfolio design and portfolio management reflect the main tasks of top managers in such companies. A background in primary functions like operations, marketing or sales, in contrast, leads to a faster learning process in less diversified companies, because these companies require more

operative involvement from top management to realise synergies on the product and process levels (Michel and Hambrick, 1992; Strandholm et al., 2004). Thus, the selection of a new CEO with a functional background in primary functions like operations, marketing or sales should have a positive effect on firm performance in less diversified companies.

Hypothesis 3: A position-specific knowledge fit between a new CEO's functional background and firm strategy has a positive effect on firm performance during the early tenure of the CEO.

3.4 Industry specialisation

Several empirical studies indicate that the level of industry-specific knowledge that a new CEO brings to his or her new position determines how well he or she is able to deal with the different types of diversification posture of the company (Hitt and Tyler, 1991). In less diversified firms, top managers are usually more involved in strategic and operative matters at the business unit level. Therefore, industry-specific experience of the new CEO is beneficial to get acquainted with the requirements of the new position quickly (Gupta, 1984). In highly diversified firms, which operate in a number of different industry environments, in contrast, the main task of top managers is to design and manage the portfolio of businesses. In this case, top managers with a strong industry specialisation run the risk of being more selectively focused on the area of their specialisation, which may lead to inappropriate decisions for other areas (Starbuck and Milliken, 1988; Hitt and Tyler, 1991). Therefore, new CEOs with experience in only one industry are likely to learn faster and contribute to higher firm performance in less diversified companies, whereas experience in a number of different industries speeds up the learning process in highly diversified companies.

Hypothesis 4: A position-specific knowledge fit between a new CEO's industry specialisation and firm strategy has a positive effect on firm performance during the early tenure of the CEO.

3.5 Overall fit

The first four hypotheses reflect performance effects of the four single components of a new CEO's position-specific knowledge. Van de Ven and Drazin (1985) argue that drawing on these components individually incorporates the risk of leaving more complex contingency relations between them undiscovered. Specifically, it is possible that the single components of a new CEO's position-specific knowledge interact among each other and form a complex system of multiple contingencies. A finance specialist, for example, with an educational background in business and experience in multiple industries may bring relevant position-specific knowledge to and thus learn faster in a highly diversified company even though he or she does not have the high educational level that would be desirable for new CEOs of such a company. Therefore, we regard it as necessary to include a general measure of position-specific knowledge into the

analysis which takes into account the overall fit between the diversification posture of the company and all four above-mentioned experience attributes of the new CEO (Van de Ven and Drazin, 1985; Thomas and Ramaswamy, 1996). We propose that this general position-specific knowledge has a positive effect on the speed at which new CEOs learn as well as on the performance during the early tenure of the CEO.

Hypothesis 5: A general position-specific knowledge fit between a new CEO's demographic experiences and firm strategy has a positive effect on firm performance during the early tenure of the CEO.

3.6 Time effects

We argue that position-specific knowledge reflected in a fit between a new CEO's experience and the company's diversification posture decreases the learning need and speeds up the learning process that new CEOs have to go through after taking charge. Accordingly, we expect that the existence of position-specific knowledge leads to higher firm performance during the early tenure compared to CEOs without such knowledge. It is unlikely, however, that this superior performance occurs immediately, i.e. in the first year, after the succession event, because even CEOs with relevant position-specific knowledge have to go through a learning process first (Zajac, 1990; Michel and Hambrick, 1992). Additionally, we expect that the performance effect of position-specific knowledge disappears over time as other CEOs with less position-specific knowledge also learn and catch up. Gabarro (1987) found that in general the initial learning process of a newly appointed CEO lasts for about two and a half years before learning becomes more incremental. This means that performance differences should become marginal towards the end of the early tenure of a new CEO.

Hypothesis 6: The positive performance effect of position-specific knowledge of a new CEO builds up during the CEO's early tenure and then becomes more marginal.

4 Research design

4.1 Sample selection

We empirically tested the relationship between position-specific knowledge of a new CEO and firm performance during the early tenure on the basis of a sample of large German companies. For the purpose of sample selection, we compiled a listing of Germany's largest publicly listed companies. We used large and publicly listed companies because a public listing in most cases ensures sufficient data access. Eighty companies were listed in the main German stock market indices DAX and MDAX in 2005. These 80 companies formed the basis for sample selection. From this number we excluded, in a first step, all companies in the financial services sector as well as those companies which undertook their IPO after 2002 in order to ensure comparability of results. In the remaining 57 companies we identified 105 CEO succession events between 1987 and 2002. Of these 105 CEOs, 25 remained in office for less than two years. We

excluded them from the analysis because long-term effects of fit could not be analysed for them. In four cases jointly held CEO positions occurred which could not be considered either. Last but not least, we excluded 17 cases from the sample due to incomplete data. Finally, a sample of 59 CEO succession events in 48 companies resulted and formed the basis for the analysis. For data collection we used the databases Munzinger Online, Who is Who and Osiris as well as annual reports of the companies in the sample. An overview of the sample can be found in Appendix A.

4.2 *Definition and measurement of variables*

- 1 *Firm performance*: We measured firm performance using accounting-based performance indicators (Shen and Cannella, 2002). Precisely, we computed Return on Assets (ROA) for the year of appointment of a new CEO (t_0) as well as for the four following years (t_1 – t_4). While accounting-based performance measures have some disadvantages, ROA is a commonly used measure in management research (Michel and Hambrick, 1992; Guthrie and Datta, 1998; Bigley and Wiersema, 2002) and specifically in CEO research (Zajac, 1990; Shen and Cannella, 2002; Helfat and Bailey, 2005). The main advantage of this measure is that the necessary accounting data is publicly available. To calculate ROA, we used earnings before tax to eliminate effects from varying corporate tax rates in Germany. Additionally, we made adjustments for the general economic situation by subtracting the sample-average ROA from the company-specific ROA in each particular calendar year. In accordance with Gabarro's (1987), observation that the learning phase of a new CEO lasts for about two and a half years, we used the average adjusted ROA for a period of three years after the succession event (t_1 – t_3) as the principal measure of performance. Findings of Bailey and Helfat (2003) support this approach as they state that the consequences of any disruption caused by the succession event should be most noticeable in the first years of the tenure of a new CEO. This means that the initial performance advantage of a new CEO with relevant position-specific knowledge should disappear after about three years. For our time-lagged models, we also used ROA in t_0 and t_4 .
- 2 *Corporate strategy*: We defined corporate strategy as the diversification posture of a company. In order to measure diversification posture, we used the entropy index developed by Jacquemin and Berry (1979). While this index has its weaknesses, it is still widely applied in empirical research. Additionally, no alternative measure with as consistently high validity and equally good data access has been developed so far (Markides, 2002; Robins and Wiersema, 2003). In order to compute the entropy index, we used segment sales reported by the companies in the sample. This procedure seemed to be reasonable since segment sales which companies define themselves are believed to better express their strategic orientation than, for example, a classification of their businesses according to NACE or SIC codes (Ramanujam and Varadarajan, 1989; Hoskisson et al., 1993). For each company in the sample, we computed the entropy index for the year in which a new CEO had taken charge (t_0) as well as for the following three years (t_1 – t_3). In order to determine

high, medium and low levels of diversification which were needed to measure fit, we ranked the 59 CEOs in the sample according to the entropy index values of their companies in the year of the succession event (t_0) and divided them up into three groups of (almost) equal size. Accordingly, cut-offs were done after CEOs no. 19 and 37. The respective entropy index values for the cut-offs were 1.01 and 1.30 with values ranging from 0 to 2.59 and with a mean of 1.13. We chose three groups to get to a more fine-grained group distribution and to achieve clearer results for high and low levels of diversification. The degree of diversification served as the basis for group distribution.

- 3 *Position-specific knowledge*: We measured position-specific knowledge as a fit between four characteristics of the new CEO and the company's strategic posture. For this purpose, we used the interaction as well as the systems approach of fit (Van den Ven and Drazin, 1985). First, building on the interaction approach, we analysed the performance effects of a fit between the four CEO characteristics and diversification posture individually. Then, following the systems approach, we explored the simultaneous fit between all four CEO attributes and corporate strategy (Thomas et al., 1991; Thomas and Ramaswamy, 1996; Entrialgo, 2002). In all cases, we measured fit in two steps: first, we coded the four CEO characteristics into one of three categories. Each categorisation was done by three independent coders, and intercoder reliability reached 85.5%. Then, as the actual measure of fit, we created a dummy variable which took on the value of 1 if the parameter value of the respective CEO characteristic conformed to the diversification posture of the company. In all cases, we measured fit in the year of the succession event (t_0).
- 4 *Position-specific knowledge related to educational specialisation*: In order to determine the fit between educational specialisation and diversification posture, we identified, in a first step, the dominant type of higher education for all CEOs in the sample and classified it into one of the categories 'business, law, other social sciences and humanities', 'natural sciences and engineering' as well as a combination of the first two categories. Then, we created a dummy variable which took on the parameter value of 1, if the educational specialisation of the CEO matched the diversification posture of the respective company as specified in hypothesis 1.
- 5 *Position-specific knowledge related to education level*: In Germany, most CEOs of large companies hold a university degree equivalent to a master's degree. Many CEOs have even received doctoral degrees. We therefore coded the educational level of the CEOs in the sample into one of the categories 'no academic degree', 'bachelor or master degree' as well as 'doctoral degree'. Then, we created a dummy variable which took on the parameter value of 1, if the educational level of the CEO matched the diversification posture of the respective company as specified in hypothesis 2.
- 6 *Position-specific knowledge related to functional specialisation*: In order to determine the fit between functional specialisation and diversification posture, we identified, in a first step, the functional area in which the new CEO had spent most time before assuming a management position and classified it into one of the

categories ‘finance, accounting, law and administration’ and ‘R&D, production, marketing and sales’ as well as ‘other functional specialisations’. Then, we created a dummy variable which took on the parameter value of 1, if the functional specialisation of the CEO matched the diversification posture of the respective company as specified in hypothesis 3.

- 7 *Position-specific knowledge related to industry specialisation:* We coded industry specialisation of the CEOs in the sample on the basis of the number of changes between industries which the CEOs had undertaken before taking charge. We measured industry changes by classifying all companies which the CEOs had gone through during their career into industry segments. The allocation to industry segments followed the classification of Deutsche Börse (2005). Since on average, the CEOs in the sample had experience in between one and two industries, we used these two numbers as cut-off points. Thus, we classified all CEOs into one of the three categories ‘single industry specialisation’, ‘specialisation in two industries’ and ‘multiple industry specialisation’. Then, we created a dummy variable which took on the parameter value of 1, if the industry specialisation of the CEO matched the diversification posture of the respective company as specified in hypothesis 4.
- 8 *General position-specific knowledge:* Different approaches have been suggested in the literature in order to measure the overall fit between different variables (Van de Ven and Drazin, 1985; Venkatraman and Prescott, 1990; Miller, 1991). In the present study, we follow an approach that has been developed by Thomas and Ramaswamy (1996). They code fit as a dichotomous variable taking on the value of 1 if four of the five variables for which they determined a fit showed a match. We adapted this approach for the purposes of the present study. Specifically, we created a dummy variable which took on the value of 1, if three of the four single fit variables revealed a fit.
- 9 *Control variables:* In addition to the five variables that express the position-specific knowledge of a new CEO, we integrated six other variables – company size, pre-succession performance, company growth, strategic change, CEO company tenure and the reason for CEO turnover – as controls because several studies have shown that these variables impact firm performance during the early tenure of a new CEO (Finkelstein et al., 2009). We used the following measures to assess the controls:
 - *Company size:* We included company size as a control variable because of its effect on managerial discretion (Hambrick and Finkelstein, 1987; Bailey and Helfat, 2003). In order to measure company size, we computed the logarithm of the company’s revenues in the year of the succession event (t_0). Logarithmic values seemed appropriate to account for the fact that differences in size become less relevant the larger a company gets (Michel and Hambrick, 1992; Thomas and Ramaswamy, 1996).
 - *Pre-succession performance:* For pre-succession performance several other studies have reported a positive relationship with firm performance during the early tenure of the new CEO (Shen and Cannella, 2002; Zhang and Rajagopalan, 2004). We measured pre-succession performance as the average ROA of the two years preceding the succession event (t_{-2} – t_{-1}).

- *Company growth*: Company growth has been found to increase the learning requirements for the new CEO as well as managerial discretion (Bailey and Helfat, 2003; Zhang and Rajagopalan, 2004). We calculated company growth as the Compounded Annual Growth Rate (CAGR) of company revenues in the year of the succession event (t_0) as well as in the following three years (t_1 – t_3).
- *Strategic change*: We control for strategic change because a larger degree of change also demands a higher degree of organisational learning in the integrating and institutionalising phases, thus prolonging the overall learning process of the new CEO (Crossan et al., 1999). We measured strategic change as the change in the degree of diversification of the company between the year preceding the succession event (t_{-1}) and the third year following the succession event (t_3).
- *CEO company tenure*: We have chosen CEO company tenure as a control because it reflects the firm-specific skills of the new CEO for which some studies have found a positive relationship with firm performance during the early tenure (e.g. Helfat and Bailey, 2005). We computed CEO company tenure as the number of years which the new CEO had worked for the company before actually taking charge.
- *Reason for CEO turnover*: Finally, we included the reason for CEO turnover as a control variable. Different empirical studies, particularly in the German context, give reason to believe that the consequences of CEO succession and the mandate of the new CEO depend on the reason for CEO turnover. Particularly, the question whether executive succession takes place voluntarily, involuntarily or inevitably has been shown to play an important role as a predictor of the degree of strategic change and performance. Therefore, we distinguished these three types of executive succession and their effects on strategic change in the present study (Schrader and Lüthje, 1995; Salomo, 2001; Pitcher et al., 2000). The classification of CEO succession events into the three categories involuntary, voluntary and inevitable CEO turnover was done on the basis of a content analysis of articles from the business press. Since the circumstances under which CEOs resign are a popular topic in newspapers and magazines, these sources of information seemed adequate to define the reason for CEO succession (Salomo, 2001). If no distinct indication on the type of succession could be found in the business press, the database Munzinger Online was used as an additional source of information. The actual classification of the succession events to the three categories involuntary, voluntary and inevitable CEO turnover was then based on a list of indicators designed by Schrader and Lüthje (1995) (see Appendix B). Three coders independently classified the CEO succession events based on a similar set of articles from the business press. Intercoder reliability reached 87%.

5 Results

Table 1 reports the means, standard deviations and correlations for all variables used in this study.

Table 1 Means, standard deviations and correlations

| <i>Variable</i> | <i>Mean</i> | <i>s.d.</i> | <i>1</i> | <i>2</i> | <i>3</i> | <i>4</i> | <i>5</i> | <i>6</i> | <i>7</i> | <i>8</i> | <i>9</i> | <i>10</i> | <i>11</i> |
|---|-------------|-------------|-------------------|----------|------------------|------------------|------------------|----------|----------|----------|----------|-----------|-----------|
| 1 Post-succession performance | -0.10 | 6.41 | | | | | | | | | | | |
| 2 Position-specific knowledge – general | 0.17 | 0.38 | .36** | | | | | | | | | | |
| 3 Position-specific knowledge – educational level | 0.44 | 0.50 | -.24 [†] | .33* | | | | | | | | | |
| 4 Position-specific knowledge – industry specialisation | 0.37 | 0.49 | .51*** | .31* | -.19 | | | | | | | | |
| 5 Position-specific knowledge – educational background | 0.31 | 0.46 | -.11 | .19 | .01 | -.13 | | | | | | | |
| 6 Position-specific knowledge – functional background | 0.39 | 0.49 | .27* | .57*** | -.01 | .10 | -.00 | | | | | | |
| 7 Company size | 15.53 | 1.47 | -.44*** | .01 | .36** | -.30* | .06 | -.05 | | | | | |
| 8 Pre-succession performance | 0.29 | 6.51 | .68*** | .27* | -.29* | .26 [†] | .06 | .29* | -.32** | | | | |
| 9 Company growth | 0.28 | 0.57 | .19 | .10 | -.09 | .10 | .05 | .05 | -.12 | .09 | | | |
| 10 Strategic change | 0.04 | 0.28 | -.28* | -.19 | .04 | -.20 | .22 [†] | -.08 | .01 | -.08 | .29* | | |
| 11 Company tenure of new CEO | 13.54 | 10.30 | .02 | .20 | .23 [†] | -.13 | .11 | .21 | .27* | .10 | .28* | .09 | |
| 12 Reason for CEO turnover | 1.59 | 0.98 | -.45 | .00 | .03 | .13 | -.05 | .10 | .15 | -.03 | .07 | .11 | .34** |

Note: [†] $p < .10$; * $p < .05$; ** $p < .01$; *** $p < .001$.

Table 2 presents the results of Ordinary Least Squares (OLS) regression analyses for the dependent variable average 'firm performance' during the early tenure (hypotheses 1–5). Three models were estimated: Model 1 only includes the control variables; in Model 2, the main effects of the single components of position-specific knowledge related to educational specialisation, educational level, functional background as well as industry specialisation were added. In Model 3, the main effect of the variable 'general position-specific knowledge' replaces the four variables expressing single components of position-specific knowledge. All models are significant ($p < .001$) and explain between 73% and 79% of the variance in firm performance during the early tenure. Results hardly change across different model specifications. They also remain the same if the single components of position-specific knowledge are entered individually into the regression model and if unadjusted ROAs are used as performance measures. We regard this as an indication of the robustness of our findings. For all models additional tests show that the requirements of homoscedasticity and normal distribution are met and that collinearity cannot be observed (Kleinbaum et al., 2007).

Table 2 Results of OLS analyses for post-succession performance

| | <i>Variable</i> | <i>Model 1^a</i> | <i>Model 2^a</i> | <i>Model 3^a</i> |
|-----------------------|---|----------------------------|----------------------------|----------------------------|
| <i>Controls</i> | Company size | −0.31** | −0.31** | −0.31*** |
| | Pre-succession performance | 0.61*** | 0.61*** | 0.57*** |
| | Company growth | 0.15 ^t | 0.18* | 0.17* |
| | Strategic change | −0.14 ^t | −0.09 | −0.11 |
| | Company tenure of new CEO | 0.07 | 0.02 | 0.03 |
| | Reason for CEO turnover | 0.02 | −0.03 | 0.01 |
| <i>Main effects</i> | Position-specific knowledge – general | | | 0.17* |
| | Position-specific knowledge – educational level | | 0.20** | |
| | Position-specific knowledge – industry specialisation | | 0.17* | |
| | Position-specific knowledge – educational background | | −0.06 | |
| | Position-specific knowledge – functional background | | 0.02 | |
| <i>F</i> | | 23.78*** | 18.06*** | 22.73*** |
| <i>R</i> ² | | .73 | .79 | .76 |
| ΔR^2 | | | .06* | .03* |

Notes: ^aValues are standardised regression coefficients; dependent variable: post-succession performance

^t $p < .10$; * $p < .05$; ** $p < .01$; *** $p < .001$.

Model 2 shows that two of the four hypotheses regarding the influence of single components of position-specific knowledge on firm performance, namely, hypotheses 2 and 4, find support. Hypothesis 2 proposes that a fit between corporate strategy and the educational level of the new CEO has a positive effect on firm performance during the early tenure. A positive and significant coefficient for the variable 'position-specific knowledge – educational level' supports this hypothesis. In support of hypothesis 4, the

results show a positive and significant relationship between position-specific knowledge with regard to industry specialisation and firm performance. They do not show, however, a significant relationship between firm performance and position-specific knowledge based on a fit between strategy and educational specialisation or functional background. Thus, the results do not support hypotheses 1 and 3. Hypothesis 5 proposes a positive relationship between general position-specific knowledge and firm performance. Model 3 offers support for this hypothesis through a positive and significant coefficient for the variable ‘position-specific knowledge – general’. In addition to the main effects, the influences of the control variables are as follows. Pre-succession performance and company growth have a positive and significant effect on post-succession performance, while company size shows a negative and significant effect. All other control variables are insignificant.

In order to test hypothesis 6, we estimated a final set of four regression models. Hypothesis 6 proposes that the performance effect of position-specific knowledge of a new CEO changes over time. Specifically, we assume that a positive effect results early in the tenure of a new CEO and then vanishes. To test this hypothesis, we used overlapping two-year averages of firm performance during the early tenure as dependent variables, i.e. we calculated performance averages for the years t_0 and t_1 , for t_1 and t_2 , for t_2 and t_3 as well as for t_3 and t_4 . We chose two-year average performance values in order to control for potential biases in the performance figures for single years.

Table 3 shows the results of OLS regression analyses for these dependent variables. All four models include the control variables as well as the main effect of general position-specific knowledge for the four overlapping two-year periods in question. All models are significant ($p < .001$) and explain between 65% and 82% of the variance in firm performance in the four two-year periods of the early tenure of a new CEO. Again, all models remain robust if unadjusted performance values are used. For all models additional tests show that the requirements of homoscedasticity and normal distribution were met and that collinearity could not be observed (Kleinbaum et al., 2007).

Table 3 Results of OLS analyses for post-succession performance over a CEO’s early tenure

| | | <i>Model 4^a</i> | <i>Model 5^a</i> | <i>Model 6^a</i> | <i>Model 7^a</i> |
|---------------------------|---------------------------------------|--------------------------------------|--------------------------------------|--------------------------------------|--------------------------------------|
| <i>Dependent variable</i> | | <i>Avg. ROA t_0-t_1</i> | <i>Avg. ROA t_1-t_2</i> | <i>Avg. ROA t_2-t_3</i> | <i>Avg. ROA t_3-t_4</i> |
| <i>Controls</i> | Company size | -0.18* | -0.24** | -0.38*** | -0.45*** |
| | Pre-succession performance | 0.72*** | 0.59*** | 0.50*** | 0.45*** |
| | Company growth | 0.15* | 0.19* | 0.12 | 0.05 |
| | Strategic change | -0.05 | -0.10 | -0.12 | -0.17 [†] |
| | Company tenure of new CEO | 0.00 | 0.03 | 0.04 | 0.00 |
| | Reason for CEO turnover | -0.16* | -0.02 | 0.11 | 0.00 |
| <i>Main effect</i> | Position-specific knowledge – general | 0.08 | 0.17* | 0.21** | 0.12 |
| <i>F</i> | | 32.83*** | 21.02*** | 18.51*** | 10.97*** |
| <i>R</i> ² | | .82 | .74 | .72 | .65 |

Notes: ^aValues are standardised regression coefficients.

[†] $p < .10$; * $p < .05$; ** $p < .01$; *** $p < .001$.

Models 4–7 show that the performance effect of the variable ‘general position-specific knowledge’ changes over time. In the first two-year period after the succession event (t_0 and t_1) no significant effect of this variable on firm performance can be observed. In the second and third two-year periods (t_1 and t_2 as well as t_2 and t_3) significant and positive coefficients result. In the fourth two-year period (t_3 and t_4) the significant effect of the variable ‘general position-specific knowledge’ vanishes again. Thus, the results of the present study also grant support for hypothesis 6.

6 Discussion and interpretation

Only recently and only in very few studies has organisational learning theory been applied to new CEO learning and to firm performance during the early tenure of a new CEO (Giambatista et al., 2005; Rowe et al., 2005). Organisational learning theory puts particular emphasis on the knowledge that new CEOs bring to their position. Empirical studies in this field have so far predominantly considered the performance effects of one specific aspect of the knowledge base of a new CEO, namely firm-specific knowledge, by investigating the performance consequences of insider compared to outsider succession. Overall, these studies do not come to consistent results (e.g. Davidson et al., 2002; Huson et al., 2004; Helfat and Bailey, 2005; Rhim et al., 2006; Karaevli, 2007). Other aspects of the knowledge base, that a new CEO brings to the job, have not been addressed empirically yet. Thus, this is the first study that considers the effect of position-specific knowledge of a new CEO on firm performance during the early tenure.

Drawing on CEO-strategy fit research (Gupta, 1984; Gupta and Govindarajan, 1984; Thomas et al., 1991; Thomas and Ramaswamy, 1996; Beal and Yasai-Ardekani, 2000; Entrialgo, 2002), we argue that position-specific knowledge of a new CEO, measured as a fit between corporate strategy and selected experiences of the new CEO, speeds up the learning process that new CEOs have to go through and positively influences firm performance during their early tenure in office. Overall, we find quite consistent results, confirming four of our six hypotheses. These findings indicate that (a) a learning perspective is useful as a theoretical framework for studying performance effects during the early tenure of a new CEO and that (b) position-specific knowledge of a new CEO deserves further attention in this context.

6.1 Organisational learning theory as a theoretical framework for studying performance consequences during the early tenure of a new CEO

Research on the performance effects of CEO turnover has developed into one of the most important research streams within the executive succession field over the last 40 years (Kesner and Sebra, 1994; Giambatista et al., 2005). Initially, three conflicting hypotheses have been brought forward as a theoretical guideline for research in this field – the common sense, the vicious circle and the ritual scapegoat hypotheses. The common sense hypothesis proposes a positive relationship between CEO succession and company performance because the successor is assumed to bring in new perspectives and expertise and to overcome deficits of the predecessor (Allen et al., 1979; Pfeffer, 1983). The vicious circle hypothesis, in contrast, posits a negative relationship between CEO succession and performance because the departure of a senior manager is believed to further disrupt a struggling organisation (Grusky, 1963). Finally, the ritual scapegoat

hypothesis proposes that executive succession is only a symbolic act that has no effect on post-succession performance (Gamson and Scotch, 1964). In empirical research, no consistent support for either one of these hypotheses has been found (e.g. Alexander and Lee, 1996; Wiersema, 2002; Giambatista, 2004; Huson et al., 2004; Rowe et al., 2005).

In building on the common sense hypothesis, some studies also use resource dependence theory as the central theoretical framework for studying succession in the position of the CEO and particularly its relationship with firm performance (Hillman et al., 2009). Resource dependence theory argues that CEO turnover allows organisations to adapt itself to changing environmental conditions. Long CEO tenures or fast environmental change can cause a misalignment between the organisation and its environment which results in poor firm performance. Bringing in a new CEO, who is better able to adapt the organisation to environmental needs, then leads to positive performance effects during the early tenure. The resource dependence perspective has received empirical support with regard to the relationship between pre-succession performance and CEO succession; with regard to post-succession performance, however, evidence is mixed (e.g. Zhang, 2006).

In this paper, we have therefore introduced a learning perspective which complements the reasoning of resource dependence theory (Crossan et al., 1999). Specifically, we argue that during their early tenure new CEOs go through a four-phase learning process during which they develop an idea of how the organisation can thrive within its environment and during which they need to convince and align the organisation. If this learning process is successful, positive effects on firm performance result (Rowe et al., 2005). Organisational learning theory further posits that certain experiences and specific types of knowledge allow new CEOs to proceed through the learning process more quickly. Among these types of knowledge is position-specific knowledge. Thus, the results of our study give reason to believe that organisational learning theory offers a promising avenue for research on executive succession, particularly on the performance effects during the early tenure of a new CEO.

Even if we advocate organisational learning theory as a theoretical lens for studying consequences of executive succession, we have to stress that other perspectives might also be relevant in order to obtain a full picture of the causes for performance differences. As Hambrick and Fukutomi (1991) have highlighted, CEOs – during their early tenure – need to respond to the mandate which has been given to them by the board upon their appointment. It is well possible that initiating strategic change is an important aspect of this mandate. Implementing such strategic change then leads to more comprehensive and thus longer learning processes of the new CEO as well as of the organisation. Such a mandate for change is particularly likely, if the predecessor CEO has been released or has resigned voluntarily. Therefore, in our study, we have controlled for the level of strategic change during the first-three years of a new CEO's tenure as well as for the reason for CEO turnover. Results show a tendency towards significance ($p < .1$) for strategic change whereas the reason for CEO turnover, i.e. if the predecessor CEO was released, left voluntarily or retired, does not have any significant effect. This finding further supports the relevance of organisational learning theory in the context of CEO succession.

6.2 Relevance of position-specific knowledge for firm performance during the early tenure of a new CEO

The results of our study also suggest that the knowledge base of a CEO, that explains the speed of the learning process as well as firm performance during the early tenure, is

much more complex than postulated in earlier studies on executive succession. So far, only relay succession as well as firm-specific knowledge and their effects on post-succession performance have been studied – with mixed results (e.g. Davidson et al., 2002; Huson et al., 2004; Helfat and Bailey, 2005; Rhim et al., 2006; Karaevli, 2007). In this study, we have taken a first step towards a more fine-grained analysis of the knowledge base of new CEOs and introduced a specific type of knowledge of a new CEO – position-specific knowledge – and we have shown that this type of knowledge plays a role in explaining positive performance effects during the early tenure of a new CEO, whereas firm-specific knowledge – which we controlled for – does not.

Our results concerning the relevance of position-specific knowledge generally correspond with those of CEO-strategy fit research. Studies of Entrialgo (2002), Thomas and Ramaswamy (1996) and Thomas et al. (1991) have also come to the conclusion that a general alignment between CEO experiences and company strategy has positive performance effects. Compared to the present research, however, CEO-strategy fit research takes a different starting point. Particularly, CEO-strategy fit research asks the question if CEOs with different backgrounds prefer different strategies for their companies and if following these preferences leads to superior performance. In the present study, in contrast, the focus lies on learning advantages of new CEOs who already possess relevant position-specific knowledge on assuming office. Additionally, the present study has a clear theoretical fundament – organisational learning theory – that CEO-strategy fit research is generally lacking.

As far as the components of position-specific knowledge are concerned, we have found no effect of position-specific skills related to functional or educational background. Rather, we have obtained significant results for position-specific skills related to educational level and industry specialisation. While an effect of educational level has already been observed by past research on CEO-strategy fit (Thomas et al., 1991; Thomas and Ramaswamy, 1996; Entrialgo, 2002), the role of industry specialisation has only been considered once in this context (Michel and Hambrick, 1992). These different findings can be explained by the fact that corporate-level top managers, who are the focus of this study, are generally older than business-level managers, whom previous studies have mostly focused on. Thus, they are further away from their first socialisation in a certain functional area or study programme which renders these experiences less important. On a corporate level, more general skills like the ability to deal with complexity – expressed by educational level – or the breadth and depth of experience – reflected by industry specialisation – become important.

Thus, the results of our study give reason to believe that the components of position-specific knowledge that are relevant for explaining CEO learning as well as performance effects during the early tenure, differ among management levels. Therefore, more research on relevant components of position-specific knowledge seems necessary. At the same time, the question arises if the knowledge base of only the CEO or the top management team as a whole should be analysed in order to explain learning in the context of CEO succession. In the German management literature, it is generally acknowledged that in practice the CEO (“Vorstandsvorsitzender”) plays a dominant role and that it is predominantly the CEO who is responsible for making decision on the strategic alignment of companies (Schrader and Lühje, 1995; Leker and Salomo, 1998; Oesterle, 1999; Salomo, 2001). Therefore, focusing on CEO learning seems adequate in the context of the present study.

Overall, the main contribution of our study lies in highlighting the role of a learning perspective for studying performance effects during the early tenure of a new CEO and in advocating a more fine-grained analysis of the knowledge base of this CEO. For this purpose, we have introduced the concept of position-specific skills as one aspect of the knowledge base that eases learning and positively affects performance during the CEO's early tenure.

Our study suffers from some limitations. First, for designing the position-specific knowledge construct, we have chosen four demographic variables which are commonly used in upper echelons research in connection with corporate strategy. Additionally, we have assessed fit on the basis of a dummy variable. Although we have taken care in designing this construct, it is possible that the four variables do not comprehensively reflect position-specific knowledge of new CEOs and that other measures of fit better reflect this knowledge. Therefore, further validation and extension of our construct in future studies is desirable. Second, we base our results on a rather small sample of only 59 CEOs from 48 companies. Therefore, a further extension of the sample would be beneficial.

7 Conclusion

The present study has shown that research on the knowledge base of new CEOs needs to go beyond the traditional insider-outsider debate that only considers firm-specific knowledge. The concept of position-specific knowledge, that has been presented in this study and that combines CEO-strategy fit research with research on new CEO learning and executive succession, offers a good starting point. Future research in this field needs to build on and expand this concept. In this context, different conceptualisations of position-specific knowledge and different variables as, for example, international work experience or experience as a managing director should be tested (e.g. Thomas and Ramaswamy, 1996; Beal and Yasai-Ardekani, 2000).

Besides avenues for further research, the present study also offers implications for corporate practice. Specifically, the results indicate that boards should consider the learning process that a new CEO but also the organisation needs to go through after a CEO succession event. If boards seek continuity for their company, they need to take measures to shorten the learning phase. Position-specific knowledge of the new CEO, i.e. a familiarity of the CEO with the current strategic posture of the company, seems helpful at this end and also ensures positive performance effects during the early tenure. If boards, in contrast, see a necessity for strategic change in their company, they need to be aware of the fact that a longer mutual learning process of the CEO as well as of the organisation results. This extended learning process is very likely to have a negative effect on firm performance during the early tenure of the CEO and is at the same time more risky. Leo Apotheker at Hewlett-Packard is a good example of the latter case. His goal to transform HP from a more hardware-driven to a more software-driven company initiated a complex mutual learning process that was unsuccessful and ended in Apotheker's dismissal in September 2011 (Menn, 2011). Thus, taking the learning process into account before appointing a new CEO might protect boards from negative surprises.

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Appendix A Sample overview

| <i>Company name</i> | <i>New CEO name</i> | <i>Year of taking charge</i> |
|--------------------------------|-------------------------------|------------------------------|
| ADIDAS-SALOMON AG | Louis-Dreyfus, Robert | 1993 |
| ADIDAS-SALOMON AG | Hainer, Herbert | 2001 |
| ALTANA AG | Trömel, Frank | 1987 |
| ALTANA AG | Schweickart, Nikolaus | 1990 |
| BASF AG | Strube, Jürgen | 1990 |
| BAYER AG | Schneider, Manfred | 1992 |
| BAYERISCHE MOTOREN WERKE AG - | Pischetsrieder, Bernd | 1993 |
| BAYERISCHE MOTOREN WERKE AG - | Milberg, Joachim | 1999 |
| BEIERSDORF AG | Kunisch, Rolf | 1994 |
| BILFINGER BERGER AG | Bodner, Herbert | 1999 |
| CELESIO AG | Oesterle, Fritz | 1999 |
| CONTINENTAL AG | von Grünberg, Hubertus | 1991 |
| CONTINENTAL AG | Wennemer, Manfred | 2001 |
| DAIMLER CHRYSLER AG | Reuter, Edzard | 1987 |
| DAIMLER CHRYSLER AG | Schrempp, Jürgen E. | 1995 |
| DEGUSSA AG | Bufe, Uwe-Ernst | 1996 |
| DEGUSSA AG | Felcht, Utz-Hellmuth | 2000 |
| DEUTSCHE LUFTHANSA AG | Weber, Jürgen | 1991 |
| DEUTSCHE POST AG | Zumwinkel, Klaus | 1995 |
| DEUTSCHE TELEKOM AG | Sommer, Ron | 1995 |
| DOUGLAS HOLDING AG | Kreke, Henning | 2001 |
| E.ON AG | Simson, Wilhelm | 1998 |
| FRAPORT AG | Bender, Wilhelm | 1993 |
| FRESENIUS AG | Krick, Gerd | 1992 |
| HEIDELBERGER DRUCKMASCHINEN AG | Schreier, Bernhard | 1999 |
| HEIDELBERGER ZEMENT AG | Hülstrunk, Rolf | 1995 |
| HENKEL KGAA | Winkhaus, Hans-Dietrich | 1992 |
| HENKEL KGAA | Lehner, Ulrich | 2000 |
| HOCHTIEF AG | Keitel, Hans-Peter | 1992 |
| HUGO BOSS AG | Littmann, Peter | 1993 |
| HUGO BOSS AG | Baldessarini, Werner | 1998 |
| IWKA AG | Fahr, Hans | 1996 |
| K+S AKTIENGESELLSCHAFT | Bethke, Ralf | 1991 |
| KARSTADT QUELLE AG | Urban, Wolfgang | 2000 |
| KRONES AG | Kronseder, Volker | 1996 |
| LINDE AG | Full, Gerhard | 1997 |
| MAN AG | Rupprecht, Rudolf | 1996 |
| MERCK KGAA | Scheuble, Bernhard | 2000 |
| METRO AG | Körber, Hans-Joachim | 1999 |
| MG TECHNOLOGIES AG | Neukirchen, Karl-Josef (Kajo) | 1993 |
| NORDDEUTSCHE AFFINERIE AG | Marnette, Werner | 1994 |
| PFLIDERER AG | Bufe, Ralf H. | 2000 |
| PROSIEBENSAT1 MEDIA AG | Rohner, Urs | 2000 |
| RHEINMETALL AG | Eberhardt, Klaus | 2000 |
| RWE AG | Kuhnt, Dietmar | 1995 |
| SALZGITTER AG | Leese, Wolfgang | 2000 |
| SAP AG | Hopp, Dietmar | 1988 |
| SCHERING AG | Vita, Giuseppe | 1989 |
| SCHERING AG | Erlen, Hubertus | 2001 |
| SIEMENS AG | von Pierer, Heinrich | 1992 |
| SUDZUCKER AG | Spettmann, Theo | 1995 |
| THYSSENKRUPP AG | Kriwet, Heinz | 1991 |
| THYSSENKRUPP AG | Schulz, Ekkehard D. | 1998 |
| TUI AG | Pieper, Ernst | 1989 |
| TUI AG | Frenzel, Michael | 1994 |
| VEBA AG | Hartmann, Ulrich | 1993 |
| VIAG AG | Obermeier, Georg | 1995 |
| VOLKSWAGEN AG | Piech, Ferdinand | 1993 |
| VOSSLOH AG | Schuchmann, Burkhard | 1994 |

Appendix B Selected indicators for different reasons of CEO turnover

