

How Stable is Stable?

An Empirical Study based on the Miles and Snow Model

Contact Information:

Karlsruher Institut für Technologie (KIT)

Institut für Angewandte Betriebswirtschaftslehre und Unternehmensführung (IBU)

Postadresse:

Institut für Unternehmensführung
Prof. Hagen Lindstädt
Kaiserstr. 89

76133 Karlsruhe

Autoren:

KERSTIN FEHRE

Kerstin.Fehre@kit.edu

Tel.: +49 (0) 721 608 – 447 43

Fax: +49 (0) 721 608 – 460 46

HAGEN LINDSTÄDT

Hagen.Lindstaedt@kit.edu

Tel.: +49 (0) 721 608 – 434 31

Fax: +49 (0) 721 608 – 460 46

ANDREAS SCHIFFELHOLZ

Andreas.Schiffelholz@kit.edu

Tel.: +49 (0) 173 576 35 43

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Abstract:

The decision regarding a company's strategy is one of the most analyzed decisions in management research. While studies vary in their focus, covering causes and consequences of strategic changes, several questions remain unanswered. In order to analyze causes many studies focus on change in comparison to persistence. Different directions of change have mostly been left out of consideration. Additionally, the influence of path dependency on the probability of change is often neglected by empirical research. In order to focus on these aspects we test the effect on different directions of change of three areas of influence – changes in TMT characteristics, internal organizational context, and external environment. Potential effects of path dependency are taken into account by an event history analysis approach analyzing longitudinal data from 1,304 company years of German HDAX companies (2002-2011). Employing the Miles & Snow strategic types allows us to contribute to the research on this framework. Our results suggest that changes to Defender are often caused by internal factors such as company age and weak performance, whereas changes to Prospector are triggered by new CEOs and environmental conditions. Furthermore, signs of path dependency are identified, showing decreasing probability of change for strategic phases with long duration.

INTRODUCTION

The decision for or against strategic change is one of the most crucial decisions for any company. While the general influence of strategic decisions on a firm's performance is beyond controversy, the benefit of strategic changes in general and the optimal pace of such change is widely discussed (Klarner and Raisch, 2013). On the one hand Parnell's (1994) results indicate advantages in performance for companies with strategic persistence, on the other hand there are studies (e.g. Zajac, Kraatz, and Bresser, 2000) indicating that too much strategic persistence may cause weaker performance. Klarner and Raisch (2013) argue that the need for strategic persistence on the one hand and change on the other hand lead to what they call the change-stability paradoxon. Some researchers argue for a high pace of change to fight inertia (Burgelman and Grove, 2007; Hannan and Freeman, 1977) and to develop a change routine

(Cyert and March, 1963; King and Tucci, 2002). Others point out that a lack of stability can lead to managerial overload and time compression diseconomies (Dierickx and Cool, 1989; Huber, 1991) and therefore worsen firm performance as organizational routines cannot emerge (Levitt and March, 1988). This concurrent necessity of change and stability creates the organizational paradox (Farjoun, 2010; Leana and Barry, 2000; March, 1991).

According to the strategic choice theory (Child, 1972) the decision regarding a strategic change is a deterministic choice made by the leaders of the company – often referred to as the Top Management Team (TMT). Ocasio (Ocasio, 1997), developing an attention based view of the firm, argues, that these decisions depend on the issues and solutions the TMT and specifically the CEO focuses its attention on. There are three areas significant enough to prompt a strategic change (Hutzschenreuter, Kleindienst, and Greger, 2012; Papadakis, Lioukas, and Chambers, 1998; Schneider and de Meyer, 1991) due to an attentional change of the TMT: First, the characteristics of the TMT itself and especially changes of these characteristics, second, changes in the internal organizational context, and finally changes in the external environment of the company.

A dimension, which is often left out of consideration when analyzing the factors influencing strategic change, is the particular direction of change. Most studies either focus solely on strategic change versus persistence in general, and do not consider the direction of change (Boecker, 1997; Haynes and Hillman, 2010), or analyze only one predefined direction (Cho and Hambrick, 2006; Kraatz and Zajac, 2001).

While the influence of the duration of the current strategic phase on the probability of change is an effect that has been discussed for a long time (Hambrick, 1983; Miles and Snow, 1978) and was recently revisited by research in the context of path dependency (Sydow,

Schreyögg, and Koch, 2009; Schreyögg and Sydow, 2011), the effect is often left out of consideration when influencing factors of strategic change are analyzed.

Many studies focus on one area of influencing factors. For example, two thirds of recent studies concentrate on the change of the CEO, which is an important change in the characteristics of the TMT, and its influence on strategic change but neglect the effects of the organizational and environmental context (Hutzschenreuter, Kleindienst, and Greger, 2012, *p.* 742). On the other hand there are studies excluding company years with CEO change from the sample when analyzing reasons for strategic change (e.g. He, Lai, and Chen, 2012). When including the environmental component, researchers are often focusing on industry-specific effects such as shocks (e.g. deregulation in airline industry; Cho and Hambrick, 2006) or specific industry characteristics (Datta, Rajagopalan, and Zhang, 2003; Nadkarni and Narayanan, 2007), while the influence of the macroeconomic climate is often neglected (Ma and Karri, 2009).

Addressing the research gaps worked out above, this study highlights the hitherto underappreciated effect of direction-dependence when it comes to influencing factors of strategic change, analyzing a variety of different factors while controlling for effects of duration. This leads us to the research question pursued in our empirical analysis: Considering effects of duration, how do the effects of different influencing factors of strategic change differ in dependency of the direction of strategic change?

The contribution of our study is threefold. Our main focus is to shed light on the direction-dependence of the triggers of strategic change. We act on the assumption that there are three distinct types of effects when it comes to influencing factors on different types of strategic changes. There are factors acting as catalysts or preventer of strategic changes independent from the direction of the strategic change, others have opposite effects depending on the direction of

strategic change or influence only one type of change. This will provide us with a better understanding of the reasons for or against strategic change and add another perspective to the change-stability-paradoxon.

Our second contribution is to take into account durational effects and their influence on strategic change. We consider the length of the current strategic phase, thus explicitly incorporating potential effects of duration such as path dependency (Sydow, Schreyögg, and Koch, 2009) into our analysis.

In addition we cover a variety of influences on strategic change, analyzing factors from all three areas of influence – the characteristics of the TMT itself, the organizational context, and the external environment (Schneider and de Meyer, 1991) – while basing our analysis on a sample of companies from a variety of different industries to receive more generalizable results (Hutzschenreuter, Kleindienst, and Greger, 2012, *p.* 744). Not focusing on one particular industry and their specific shocks (e.g. Cho and Hambrick, 2006; Kraatz and Zajac, 2001; Zajac and Shortell, 1989), but having a cross-industrial focus, enables us to analyze the often overlooked factor (Ma and Karri, 2009) of the macroeconomic climate, while explicitly not neglecting the importance of industry effects. The empirical analysis of our study is based on a panel data sample covering the German HDAX from 2002 to 2011, the equivalent of 1,304 company years. By choosing a longitudinal approach we are able to take into account the duration of the current strategic phase and also to investigate the influence of the macroeconomic climate over a whole economic cycle. In order to test the influence of different factors on the probability of strategic change this study is based on the Miles and Snow model (Miles *et al.*, 1978). The framework is recognized as one of the most influential theories in the field of strategic management for over 30 years (Hambrick, 2003) and – despite its relevance being

challenged (Desarbo *et al.*, 2005; 2006) – its staying power did not suffer (Cho and Hambrick, 2006; Fiss, 2011; Kabanoff and Brown, 2008). The use of the strategic types from the Miles and Snow framework allows us to orientate towards a comprehensive change in corporate level strategy rather than a minor adjustment in one aspect of business. A content analysis approach is used in order to assign the company years to one of the strategic types, according to the thematic focus of the CEO's letter to the shareholder. This way, we are able to identify the intended strategic change itself, responding to the criticism that many studies focus solely on observable financial changes as assumed outcomes of strategic changes (Hutzschenreuter, Kleindienst, and Greger, 2012, *p.* 749). These observable outcomes – although easily available – can be polluted by effects other than strategic changes and therefore do not always allow reliable conclusions regarding actual changes in strategy.

This paper is organized as follows: the next section reviews literature and develops our hypotheses. We then introduce our methodology as well as the variables used in this paper, discussing briefly the advantages of Computer-Aided Text Analysis (CATA) of letters to the shareholder to identify strategic types of companies, and follow with our empirical analysis and findings. We conclude with a discussion of our findings.

THEORY AND HYPOTHESES

Attentional change as indicator of strategic change

Following Cho, Hambrick (2006) and consistent with other studies on attentional orientation (e.g. Kabanoff and Brown, 2008), we assume that the decisions of top managers are made in an informational environment too complex to be fully captured (Cyert and March, 1963; Mintzberg, 1973). In order to handle this overload the decision makers filter the information from their environment to focus on the – in their view – relevant information. For this filtering an

information processing sequence is used. While there are conceptions of the sequence which separate it into three distinguishable steps – attention, interpretation and action – (Corner, Kinicki, and Keats, 1994; Daft and Weick, 1984; Dutton and Jackson, 1987), Ocasio (1997) follows the argumentation that the first two stages are inseparable and therefore encoding is part of the attentional processing (LaBerge, 1995; Weick, 1979). He defines attention as ‘the noticing, encoding, interpreting, and focusing of time and effort by organizational decision-makers on both (a) issues (...) and (b) answers’ (Ocasio, 1997, *p. 189*). The areas of the informational environment the top managers focus their attention on, contribute substantially to the decision regarding the strategy of a company (Cho and Hambrick, 2006). Following this argumentation, attentional change is a prerequisite and often used as an equivalent of (cognitive) strategic change (Kabanoff and Brown, 2008).

Different directions of strategic change

Although there is a large, almost infinite variety of elements the TMT could possibly focus on, only a small number of configurations is feasible in any industry according to former research (Doty, Glick, and Huber, 1993; Kabanoff and Brown, 2008; Ketchen, Thomas, and Snow, 1993). As shown by Kabanoff and Brown (2008) the strategic types identified by Miles and Snow (Miles and Snow, 1978) are broadly aligned with these configurations.

The Miles and Snow framework (Miles *et al.*, 1978) with its three strategic archetypes is a very comprehensive and well specified strategy concept. Especially the two extreme strategic types – namely the Defender and the Prospector – do have very distinct attentional foci, both covering a wide variety of relevant strategic topics dealing with the issues of the entrepreneurial, the engineering and the administrative problem. While Defender companies focus on internal efficiency combined with a low level of external scanning, the more market and growth oriented

Prospector companies steer their attention towards a broader external domain, focusing on internal process flexibility (Kabanoff and Brown, 2008). Thus changes between those strategy types are no small adjustments in one area of a company's strategic configuration, but a profound change of the strategy and the mindset of a company.

With strategic types varying this widely, not only in their attentional focus, but also in their objectives and even their definition of success (Hambrick, 1983), a sole distinction between strategic change and strategic persistence is not sufficient. In fact the motivation to change the strategic type and thus the events that trigger such a change are expected to differ depending on the direction of the strategic change. Catalysts for a change from Defender to Prospector could also be a catalysts for changes from Prospector to Defender in some cases, but might be a preventer of this type of change in others.

Direction-dependent impact of influences on strategic change

Most prior research chooses one of two ways of analyzing strategic change. There are studies solely emphasizing the extent of change or the stability of a strategy without taking into account the direction of this change (Boecker, 1997; Haynes and Hillman, 2010; Kelly and Amburgey, 1991). A second research stream focuses only one specific direction of change, mostly as a reaction on a (industry-specific) shock (e.g. Cho and Hambrick, 2006). Studies differentiating between directions of strategic change and doing a direction-dependent analysis are rare and are often simplifying, only taking into account directly opposed effects (Zajac, Kraatz, and Bresser, 2000).

----- *Insert Figure 1 here.* -----

In order to take a closer look on the direction-dependent differences in causes of strategic change a theoretic framework of potential relationships is needed. We believe, that there are various possible effect relationships between an influencing factor and two opposing types of strategic change, as illustrated in figure 1. The first and simplest effect relationship is *independence from the direction of change*. These effects facilitate or hamper strategic changes in general. A second effect relationship is a relationship with *opposed effects*. These effects change the overall setting in a way that favors one of the strategy types, facilitating changes in one direction, while hampering changes in the opposite direction. Lastly there are influencing factors *affecting one direction of change*, but not having an effect on the other direction of change.

In order to obtain a better understanding of these different types of causal relationships and the reasoning behind a specific direction of strategic change, we will not only analyze the influencing factors for strategic changes in general but also differentiate between different directions of changes – namely from Defender to Prospector as well as from Prospector to Defender. In order to do this we will cover catalysts and preventers of changes forming the context of strategic decisions: changes in the characteristics of the TMT, internal organizational factors, and the external environmental context (Hutzschenreuter, Kleindienst, and Greger, 2012; Papadakis, Lioukas, and Chambers, 1998; Schneider and de Meyer, 1991).

Effects of time and their influence on strategic change

There are two separate effects of time within a company (Schreyögg and Kliesch-Eberl, 2007) that are important influential factors when it comes to strategic change. On the one hand there is the duration of the current strategic phase, which can lead to a increasing degree of path dependency and thus also hinder strategic change (Sydow, Schreyögg, and Koch, 2009). On the

other hand there is the effect of aging of the company in general, which arguably leads to structural inertia (Hannan and Freeman, 1984, *p.157*).

When pursuing a specific strategy, managerial values, attitudes and resources become more and more geared towards the current strategic type such that changes are rare and painful, requiring a fundamental reshaping of the organization, its people and processes (Hambrick, 1983; Miles and Snow, 1978). According to Sydow *et al.* (2009) – applying the initially technology-centric theory of path dependency (Arthur, 1989; David, 1985) to organizations – this could narrow the scope of action and – in its most extreme form – could even leading to a lock-in effect of a cognitive, normative, or resource-based nature (Giddens 1984), which is difficult to overcome. Thus we propose the following:

Hypothesis 1A. The longer a specific company is following a specific strategy the lower is the probability of strategic change

But not only the length of the current strategic phase, also the age of an organization in general has an influence on its capability of strategic change. Hannan and Freeman (1984) state that structural inertia is increasing monotonically with age, generating resistance to change. Empirical tests of this assumption differ. While there is evidence that it holds true for older companies (Kelly and Amburgey, 1991) other studies looking at younger organizations show conflicting results (Baum, 1990; Singh, Tucker, and & Meinhard, 1988). Therefore we formulate the following hypothesis:

Hypothesis 1B. The older a company the lower is the probability of strategic change in general

Partially in contrast to the former hypothesis, there is evidence that company age negatively influences the willingness of the organization to expand and take risks (Desai, 2008),

that could be interpreted not so much in a lower probability of change in general, but more in a change from the more expansion focused Prospector strategy to the more prudent and risk-averse Defender strategy.

Hypothesis 1C. *The older a company is the higher is the probability of strategic change from Prospector to Defender*

Changes in the characteristics of decision makers and their influence on strategic change

Being the focus of the upper-echelon theory (Hambrick and Mason, 1984), the attentional orientation is seen as property of the TMT, which is the strategic decision making unit of a company (Cho and Hambrick, 2006). Hence a change in the characteristics of the TMT, e.g. through a change of its composition, can have a significant influence on its attentional orientation. Through his formal and symbolic power (Gupta, 1988) and his close link to a company's strategy (Jensen and Zajac, 2004) as well his impact on the composition of the TMT in general the CEO exerts a distinct influence (Papadakis and Barwise, 2002), making a change on the CEO position an important catalyst for strategic change (Gordon, 2000; Hutzschenreuter, Kleindienst, and Greger, 2012; Zúñiga-Vicente, de La Fuente-Sabaté, and Suárez-González, 2005).

Not only the change of the CEO per se, but also the nature of CEO succession, has a substantial influence on strategic change (Tushman, Newman, and Romanelli, 1986). Wiersema, (1992) argues that external CEOs bring a new cognitive view into the company while not being committed to prior courses of action and shows that there is a significant difference between successors from inside and outside. In addition, the indirect effect of top management turnover is stronger when the CEO is from outside due to the missing social ties within the company

(Kesner and Dalton, 1994). Following those researchers, we propose the following for strategic changes in general:

Hypothesis 2A. A new CEO is increasing the probability of a strategic change in general, with outsider succession leading to significantly more changes in strategy than insider succession

The arguments above in combination with the greater willingness and ability of an external CEO to make unpleasant and painful decisions needed to change a Prospector company to the more cost reduction and productivity focused Defender strategy, such as e.g. the divestment of poorly performing business units (Shimizu and Hitt, 2005), give reason to expect similar results when it comes to changes from Prospector to Defender specifically.

Hypothesis 2B. Outsider CEO succession is leading to significantly more changes from Prospector to Defender than insider CEO succession

We also expect CEO succession to be a major catalyst when it comes to changes from Defender to Prospector, but we do not expect a significant difference between internal and external succession. While a lot of hard decisions are necessary to change a company from Prospector to Defender, presumably improving probability of strategic changes when a new external CEO without social ties within the company is taking control, the change into the opposite direction does not seem to be as painful to the organization. This being said, we propose the following:

Hypothesis 2C. There is no significant difference between new internal and external CEOs when it comes to a strategic change from Defender to Prospector

Performance and its influence on strategic change

Even without a change in the TMT composition, there are factors of internal organizational context strong enough to trigger strategic change or to hamper it. Besides the already discussed effects of time, the actual performance of a company is another important area of internal organizational effects. On the one hand many studies have shown a general hampering effect of good performance on strategic change (Audia, Locke, and Smith, 2000; Miller and Chen, 1994; Rusetski and Lim, 2011). While most studies hold complacency of the TMT responsible for this effect, Rusetzki *et al.* argue ‘that competitive success prompts an increased sense of responsibility in managers, causing them to assume a defensive attitude and to concentrate on preserving the status quo instead of becoming complacent’ (Rusetski and Lim, 2011, *p.* 501). On the other hand the catalyzing influence of bad performance on strategic change is widely acknowledged in our field of research (Greve, 1998; Lant and Montgomery, 1987; Lant, Milliken, and Batra, 1992).

In our study we are focusing on two aspects of performance – top-line growth as well as bottom-line profitability. Given the fact that Defenders are oriented towards productivity and cost reduction, whereas Prospectors focus on new products, growth and the gain of market share (Hambrick, 1983; Kabanoff and Brown, 2008), we argue that bad profitability does not lead to a change of strategy in general, but will increase the probability of change from the risky and expansion focused Prospector strategy (Hambrick, 1983) to the prudence focused Defender strategy (Hambrick, 1983). Defenders on the other hand will not change towards the Prospector strategy, but even increase their effort regarding productivity and cost reduction, to increase profitability.

Hypothesis 3A. *Declining company profitability leads to a higher probability of strategic change from Prospector to Defender*

In contrast, when facing declining sales, there is a stimulus to change to the more risk oriented Prospector strategy, which has advantages in growth over the Defender strategy (Hambrick, 1983; Parnell and Wright, 1993), while companies already pursuing the Prospector strategy, will remain in this strategy, even strengthening their effort to increase sales growth.

Hypothesis 3B. *Declining company sales leads to a higher probability of strategic change from Defender to Prospector*

The macroeconomic situation and its influence on strategic change

As stated by Ma and Karri (2009) – one of the few works analyzing the influence of the macroeconomic climate on strategic change – the central assumptions of the strategic choice perspective (Andrews, 1971; Child, 1972) is that organizations seek to adapt to environmental changes to maintain an organization environment fit, with strategic choice being the main link between the organization and its environment (Miles and Snow, 1978). Shortell and Zajac (1990) show in their analysis that the choice of strategic type depends on the market situation the organization operates in. The Prospector strategy is more common in a growth market, whereas in markets with low growth companies tend to prefer the more cautious Defender strategy.

Based on this findings regarding industry growth we expect a similar relationship when it comes to the macroeconomic situation in general, with periods of low (or negative) macroeconomic growth favoring the change to the Defender strategy, while periods of strong economic growth are favoring the Prospector strategy and its tendency to grow into new markets.

Hypothesis 4A. *The worse the macroeconomic situation the higher is the probability of strategic change from Prospector to Defender*

Hypothesis 4B. *The better the macroeconomic situation the higher the probability of strategic change from Defender to Prospector*

Due to these opposing effects, the influence of the macroeconomic situation on strategic changes in general is much harder to assume. Although there are researchers arguing for intensified need for change in times of market decline (e.g. Rogers, 1992) to keep their companies viable, Miller and Chen (1994) show that there is a negative relationship between competitive inertia – hindering strategic actions – and market growth. Following their argumentation, we propose the following:

Hypothesis 4C. *The better the macroeconomic situation the higher the probability of strategic change in general*

RESEARCH DESIGN

Our study is based on a CATA of German letters to the shareholders analyzing the appearance of different strategic themes by utilizing a word count approach to identify the strategic Miles and Snow type of a company in a specific year. Hereinafter, we will introduce the sample, the variables, and the research design of our empirical study.

Sample and data collection

1,354 company years from 173 individual companies across ten fiscal years (2002–2011) form the initial dataset of our research. The sample consists of all companies listed in the German HDAX index during the given period. The HDAX is a summary index combining the three most important German stock indices – the DAX, the MDAX, and the TecDAX – including the 110 largest German public companies. Companies were included into the sample from the first year of their HDAX listing. Only if a company went bankrupt, lost its independence – e.g. via take-over – or did no longer publish an annual report, it was removed in the following years. So

leaving the index does not imply a removal from the sample. By keeping companies in our sample as long as possible any potential survivorship bias in our sample structure is minimized.

The initial 1,354 company years were reduced by 50 due to missing data. This includes missing annual reports as well as annual reports without the nonobligatory letter to the shareholders, leading to a sample of 1,304 company years and corresponding letters. The fact that we aim to observe strategic change requires the knowledge of the former strategic type. Thus the first observation of every company upon its inclusion in the sample is used to obtain that knowledge. Likewise every company which appeared for only one year had to be removed. The final sample includes a total of 1,131 company years.

Dependent variable

We chose *strategic change* as dependent variable for our research. Therefore we created a dummy variable, coding years with a change in strategic type compared to the previous year as ‘1’ and years with strategic persistence as ‘0’.

To define the strategic type of a company in a given year a CATA word count approach was used, analyzing the strategic themes the CEO addressed in the letters to the shareholders. This methodology was chosen for several reasons. First, as postulated by Hutzschenreuter *et al.* (2012), our aim is to identify the true intention of the CEO and his TMT when it comes to the strategy of the company and thus to intended strategic change. Therefore it is obligatory to get as close as possible to the strategic decisions shielding effects like bad implementation as well as other external effects affecting the observable results of strategic change – often measured using a company’s easy collectable financials – concealing the true strategic intentions of a company.

Second, we wanted to avoid the shortcomings of interview or survey approaches, especially the problem of severely limited repeatability over multiple periods needed in a large

scale longitudinal setting. As stated by Cho and Hambrick (2006) qualitative inference of cognitions from interviews also leads to problems of uncertain reliability and replicability while surveys often suffer from low response rates. On the contrary the content analysis is an unobtrusive technique able to handle large amount of unstructured data (Krippendorff, 2004). In combination with the regular publication and public availability of letters to the shareholders, this facilitates the longitudinal analysis of a large number of companies. Most reservations against the CATA analysis of letters to the shareholder were analyzed and invalidated in previous studies. It was shown that the CEO is directly involved in the preparation process of the letter (Amernic, Craig, and Tourish, 2007; Cho and Hambrick, 2006) and that major topics to which managers attend are included (Barr, Stimpert, and Huff, 1992; Jarvenpaa and Ives, 1990). The letter can be used as a source of non-evaluative managerial cognition (D'Aveni and MacMillan, 1990; Fiol, 1995) and the importance of specific strategic themes in a specific letter has a direct link to the subsequent actions of the companies (Bowman, 1984); (Nadkarni and Narayanan, 2007). In addition the fact that the letter is one of the most read sections in the annual report (Courtis, 1982) emphasizes its importance to external stakeholders and is one of the reasons that the letter to the shareholders is the most commonly used narrative text in management literature (Duriiau, Reger, and Pfarrer, 2007; Short *et al.*, 2010).

Based on the strategic themes identified by Kabanoff and Brown (2008), 20 dictionaries¹ – divided into prospector, defender, and neutral themes – were coded employing a bottom-up approach. An initial list of over 63,000 words occurring in the sample at least once was build.

¹ Due to the differences in the CATA methodology used – Kabanoff and Brown (2008) were using a sentence based machine-learning systematic while this study is based on a word-count approach – a minor adjustment was necessary. Two of the originally 21 dictionaries – ‘Competition’ and ‘Peer Comparison’ – were merged because of difficulties of clearly separating the themes during the test coding phase. This minor change in methodology is unproblematic because both strategic themes are classified as prospector themes.

This list was reduced to approx. 29,000 words by removing all words with only single appearance.

The first step of the coding process was an independent bottom-up coding by three coders assigning all of the approx. 29,000 words either to one of the 20 strategic categories or to an 'Others' category. While one coder was an author the other two coders (a graduate student and an undergraduate student) were blind to the purpose of the study. In this first step the pairwise intercoder reliability was between 80 and 83 percent (Cohen's Kappa between 54 and 57 percent) with only approx. 3 percent of the word being assigned to three different categories. Words that were assigned to the same category in a unisonous way were directly included into the correspondent dictionary. In a second step – following Doucet and Jehn (1997) – words, matched to a specific dictionary by two of the coders, were discussed in a workshop setting. The coders needed to convince the third coder that the word belongs into the category. If consensus was reached, the word is also added to the dictionary of this category. This leads to a total of 5,536 words being assigned to one of the 20 dictionaries. Taking the workshop process into account the pairwise intercoder reliability increases to between 84 and 89 percent (Cohen's Kappa between 67 and 75 percent).

These dictionaries were used to classify all company years into strategic types. Following Andrews *et al.* (2009) and in tradition of many studies based on the Miles and Snow framework (e.g. He, Lai, and Chen, 2012; Thomas, Litschert, and Ramaswamy, 1991) we focus on the two extreme strategic types – the Prospector and the Defender. We argue that the Analyzer category is not an independent strategic type but 'essentially an intermediate type between the prospector strategy at one extreme and the defender strategies at the other' (Ruekert and Walker, JR., 1987, *p.* 17).

Each letter to the shareholders was analyzed using a CATA word-count approach. Based on Sabherwal and Chan's (2001) classification logic the word count results were normalized by dictionary. Ideal profiles for the Defender and Prospector type were built using the categorization of the strategic themes into Defender and Prospector themes by Kabanoff and Brown (2008). Following Govindarajan (1988), high and low values for the strategy types were operationalized as +1 and -1, respectively. Based on these values the Euclidian distance was calculated for each dictionary. The company years were classified as a Defender or Prospector company year, depending on this Euclidian distance.

Independent variables

The dummy variable *CEO change* was coded 1, if there was a change in the CEO position of the company in year t and 0 otherwise. In order to synchronize this with the coding of strategic change, this coding was done based on information from the company's annual report. Thus a CEO change was attributed to a specific year t , when it took place between the publication of the annual report of year $t-1$ and year t .

In addition we coded the variables of *external change* and *internal change* based on the previous position of the newly appointed CEO. The dummy variable *external change* was coded 1 if the new CEO was an outsider with no former tenure at the company. The dummy variable *internal change* on the other hand was set to 1 if the new CEO worked for the company prior to the change to CEO position. This coding was based on the official press release regarding the replacement as well as information from the prior annual report and professional databases (LexisNexis and WISO). The two variables *external change* and *internal change* are mutually exclusive and collectively exhaustive subcategories of the variable *CEO change*.

In order to cover the effects of CEO change on the probability of strategic change, that do not come into effect immediately after the start of the newly appointed CEO, but take some time, we further included lagged CEO change variables into our analysis.

The variable *company age* is measured in years (Boecker, 1997; Herrmann and Nadkarni, 2013) based on the founding year of the company itself or – in case of a company resulting from a merger – on the founding year of the largest predecessor.

To measure the financial performance criteria of *profitability change* and *sales growth*, data acquired from the Compustat database is used. The variable *profitability change* was calculated using the data on Return on Total Equity (RoTE), measuring the change in percentage points compared to the previous year. *Sales growth* was calculated as the change of a company's sales in percent.

As a trend indicator of the German economy as a whole – and therefore as a proxy for the macroeconomic climate in a specific year – the growth of the German Gross Domestic Product (GDP) is used. These data are collected and provided by the Federal Statistical Office of Germany.

Control variables

We included several firm characteristics as control variables. As former studies show, the size of a company is an important factor when it comes to strategic change through effects such as economies of scale and urgency to change (Chandler, 1962; Chen and Hambrick, 1995; Cho and Hambrick, 2006). We measured *company size* by a company's Total Assets (Compustat) at time t (Zajac, Kraatz, and Bresser, 2000), but log-transformed it to correct for skewed distribution (Shi and Prescott, 2011).

We also control for resource endowments by including organizational slack, which has shown to have an effect on decisions regarding strategic change (Kraatz and Zajac, 2001). Therefore we use the Current Ratio of a company (Cho and Hambrick, 2006) as a control variable, lagging it to factor in the available resources at the beginning of the relevant decision period.

Although we are working with a cross-industrial sample, we do not neglect the importance of industry specific factors, when it comes to decisions regarding strategic change (see e.g. Nadkarni and Narayanan, 2007). Therefore we included dummy variables for all industries in the sample. For this purpose we used the DAXsupersector logic, which is categorizing companies listed in the DAX indices into one of nine defined industry sectors.

Statistical Methods

To test our Hypotheses we chose discrete-time event history analysis techniques estimating a maximum likelihood logit model with the same units (companies) being observed at multiple intervals (Allison, 1984; Yamaguchi, 1991), predicting the probability of strategic change in each year. This approach is offering several advantages. First, employing a survival analysis method rather than a simple regression method enabled us to include the timing of state changes (Allison, 2012), taking into account the effect of duration on the probability of strategic change. Second, the method allowed us to account for right-censored observations of strategic phases which do not end with a strategic change. Third, the fact that discrete-time event history methods are able to handle time-dependent covariates as well as measurements based on discrete times of fairly large intervals (Allison, 2012; Yamaguchi, 1991) – which is the case with our dataset based on annual data – makes them for our purposes superior to continuous-time models, producing similar results in virtually all instances (Allison, 1984; Petersen, 1991).

Our risk set consists of the companies at risk of a strategic change each year. With strategic change being the dependent variable, each change leads to the start of a new strategy phase, allowing for multiple strategy phases per company over the history of the sample. While the start of the subsequent strategy phases is defined by the preceding change, the first strategy phase of every company in the sample is left-truncated – meaning there is no information on the precise starting point of this phase. To account for this fact, a second set of duration dummies was added, measuring the duration of all left-truncated phases starting with the point of sample entry. Due to data restrictions, we added five duration dummies for both cases – one for each of the first four years of a strategic phase plus one dummy for ‘five or more years’.

Following Allison (Allison, 1984), we conducted the discrete time event history analysis using a pooled logit model. Since many companies contribute more than one strategic phase to the sample and multiple observations for a single company are not independent, we use standard errors, which are cluster-robust on a company level (Hawk, Pacheco-De-Almeida, and Yeung, 2013).

To test the hypotheses dependent on the direction of change we split the sample into two subsamples analyzing changes from Defender to Prospector and changes from Prospector to Defender separately.

EMPIRICAL RESULTS

Table 1 reports means, standard deviations, and correlations. To check for multicollinearity among the independent variables, we also examined the variance inflation factors (VIF). The VIF range between 1.02 and 3.07, and thus there is no significant evidence of multicollinearity.²

² There is no scientific consensus regarding the critical value of VIFs indicating multicollinearity. While many researchers consider a value below 10 as being sufficient (e.g. Kennedy, 1992; Marquardt, 1970;

Figure 2 shows the univariate results of the probability of strategic change in dependence of the duration of the current strategy phase. To avoid inaccuracy, left-censored phases were not included in this analysis. Only durations of one to five years are shown, because due to our ten year sample there are not enough non-left-truncated phases with a duration of more than five years (below 5% of all phases) to get meaningful results.

----- *Insert Table 1 here.* -----

The results of our discrete-time event history analysis are presented in Tables 2 and 3. Table 2 comprises models including all strategic phases in general (Model 1 to 4), while Table 3 is showing the direction-specific models focusing on the change from Prospector to Defender (Model 5 to 8) and Defender to Prospector (Model 9 to 12) respectively. Model 1, 5, and 9 include the control variables as well as duration dummies and the company age. Models 2, 6, and 10 add the general CEO change variables, while Models 3, 7, and 11 split these variables into internal and external CEO changes. Models 4, 8, and 12 are the fully specified models, adding the performance variables as well as the GDP growth. Before calculating our models, all independent non-dummy variables were normalized. By doing so, we ensure comparability when evaluating the coefficients. Due to specialties in the characteristics of the financial services industry when it comes to some of our used financial ratios, companies with an industry coding of FIRE (finance, insurance, and real estate) were excluded from this analysis.

----- *Insert Figure 2 here.* -----

Neter, Wasserman, and Kutner, 1989), others state that already a value of more than five is cause for concern (Menard, 2002). Therefore we are applying the more rigorous critical value of five.

Hypothesis 1A suggests that the probability of strategic change depends on the duration of a strategic phase, with probability going down when duration is going up. Figure 2 on the one hand shows a clear long-term trend towards lower probability of change, while on the other hand having probability of change stagnating between two and four years of duration. These findings are also supported by the duration dummies of our event history analysis shown in the general models in Table 2. While the coefficients of the duration dummies for two and five or more years show significance across all general change models (in comparison to the omitted first year), dummies for year three and four are not consistently showing signs of increasing strategic persistence, with the four year dummy not even showing consistent significance in comparison to the first year. Therefore we consider Hypothesis 1A partially confirmed, with the data showing an overall trend but not being consistently significant over all time periods.

----- *Insert Table 2 here.* -----

A positive proportionality between strategic inertia and company age, as stated by Hypothesis 1B, has to be denied as the general models show the opposite effect. The probability of change rises significantly with increasing company age. This – at first glance counter intuitive – effect can be explained when analyzing direction specific changes. When reckoning changes from Defender to Prospector, the variable shows a negative coefficient close to zero. The main reason for the positive effect of age on the probability of change can be discovered by a closer examination of the changes from Prospector to Defender. In accordance with Hypothesis 1C older companies are changing significantly more often to the more risk-averse and less innovation-driven Defender strategy.

----- *Insert Table 3 here.* -----

The comparison of the results of the variables of CEO change and CEO change lagged by one year clearly indicate that a new CEO is either directly initiating a strategic change or that the CEO change does not have a significant influence on the probability of change. In the following we are therefore focusing on the influence of a CEO change in the same year.

Hypothesis 2A predicts a positive influence of a CEO change on the probability of strategic change, with outsider succession leading to significantly more change than insider succession. In Model 2 the CEO change is positively significant. When the CEO changes are divided into insider and outsider succession, outsider succession is positively significant both in Model 3 and Model 4 while insider succession does not show any significance. To ensure that probability of change was in fact higher for outsider than for insider succession we employed a one-sided Wald test, which is significant at the 95 percent level for Model 3 and Model 4. Model 7 confirms that this also holds true if we focus on changes from Prospector to Defender. While the CEO change in general is no longer significant, there is still a significance concerning outsider succession. Insider succession is not only insignificant, but has even a negative coefficient. Thus Hypothesis 2B, stating that outsider succession also leads to significantly more changes than insider succession, when focusing on changes from Prospector to Defender, is supported as well. When it comes to the probability of change from Defender to Prospector, the stronger effect of outsider compared to insider succession holds no longer true. While CEO changes in general are still significant (Model 10) – with both types of succession showing only significance in the full model (Model 12), the Wald test does not show significant differences between outsider and insider succession. This confirms Hypothesis 2C.

As predicted, the performance variables – RoTE change and sales growth – do not show significance in the general models. When examining the different directions of change separately,

there is a mixed picture. Supporting our Hypothesis 3A, declining profitability shows a significantly catalytic effect on changes from Prospector to Defender (Model 8), but does not indicate any effect on the opposite direction with a t-statistic close to zero. While Hypothesis 3B predicts a catalyst effect of declining company sales on the change from Defender to Prospector, this effect is not confirmed by our analysis. Sales growth shows no significant effect in any of our models.

Hypothesis 4A predicts a negative effect of the macroeconomic situation on the probability of changes from Prospector to Defender. This predicted catalyst effect of a weak economic climate does not hold true in our analysis, with Model 8 showing no significance and the coefficient even being positive. Hypothesis 4B argues in the opposite direction, when it comes to changes from Defender to Prospector. In Model 12 the GDP growth is positively significant for changes, supporting this hypothesis. The effect of the macroeconomic situation on strategic changes in general, tested in Model 4, shows a significant positive effect, in line with Hypothesis 4C, which predicts a higher probability in general in times of good economic climate.

In order to check the robustness of the results several checks were made. The overall model was also calculated as a probit random effects (Hawk, Pacheco-De-Almeida, and Yeung, 2013) and a logit fixed effects model. All in all the main results remained stable. Detailed results of these calculations can be provided upon request.

DISCUSSION AND IMPLICATIONS

In this paper, we study the influential effects a variety of factors has on the probability of strategic change, depending on the direction of strategic change, thereby taking into account the influence of duration effects of the current strategic phase on the strategic persistence by employing an event history approach. This study has several important theoretical implications.

The first contribution of our study is the consideration of the duration of the current strategy phase. Therefore we collected our sample with diligence to be as gapless as possible. To our knowledge this is one of the very few papers to explicitly control for effects of duration, and therefore path dependence (Sydow, Schreyögg, and Koch, 2009), when examining causes for strategic change. Yet, we do not only control for those effects, we also analyze the effects the length of such a phase has on the probability of its change. Some evidence suggests that there is an increased probability of change in the first year after adapting a specific strategic type. Between phases with duration of two to four years no differences in probability are evident, indicating that in this period the duration of the strategic phase does not have a major effect on strategic change and therefore change is mainly driven by internal and external trigger events. Strategic phases that are already in place for a longer term (five or more years) show a significant increase in rigidity when it comes to strategic change. This is additional approval for the theory that managerial values, attitudes and resources become geared towards the current strategic type so that changes become more and more painful (Hambrick, 1983; Miles and Snow, 1978). Thus strategic decisions become more and more constrained, indicating that several companies already crossed the critical juncture described by Sydow *et al.* (2009) and are on an emerging path towards organizational path dependency.

Second, we suggest to include the direction of change as an additional dimension into the strategic change literature. We argue that there are different types of direction-specific effect relationships that go from independence from the direction of change to opposite effects or solely influences on one type of change. Our findings support that idea. While e.g. an external CEO change has a catalyst effect on strategic changes independent from the direction of that change, and internal change shows – even though not significant – opposing signs depending on the

direction of change. Other variables such as company age or RoTE change do have a significant influence on probability of change in one direction, while not influencing changes in the opposite direction at all (t statistics close to 0).

Third, the consideration of the GDP as an important factor of external environment did provide thought-provoking results. While, as hypothesized, the probability of changes towards the more risk-seeking Prospector type is increased by a favorable macroeconomic climate, a low GDP does not lead to an increased probability of changes toward the more prudent Defender strategy. Instead the companies seem to have a tendency to adhere to their strategy, shying away from the risks affiliated with strategic changes. This leads towards low rates of strategic change in general.

Overall, by taking into account the direction of change as well as a variety of influences on these changes we are also able to shed additional light on the Miles and Snow framework (Miles and Snow, 1978). We show that changes from Prospector to Defender are mainly driven by changes in the TMT with outsider succession as well as internal organizational context. CEO changes with outsider succession play a significant role as catalyst for changes from Prospector to Defender, leading to more changes than the insignificant CEO changes with insider succession. The result regarding RoTE development indicates that bad profitability leads to a significant rethinking in Prospector companies, driving it to become a more internally focused and cost prudent Defender. In addition the older a Prospector company gets, the likelier it is to change to the Defender strategy, losing its flexibility, innovativeness and outside focus.

On the other hand findings of our study suggest that changes from Defender to Prospector are primarily caused by changes in TMT in general as well as the external environment. CEO changes in general are a significant catalyst of change, independently from the type of succession.

There is no significant difference between outsider and insider succession. A favorable development of the external environment, such as an increase in the GDP, results in a significant increase of probability of change from Defender to Prospector and thus to a more external and innovation oriented strategy. This is in line with Zajac and Shortel (1989), who show that an external shift, which favors a Prospector strategy, leads to an increase in strategic changes from Defender to Prospector. As hypothesized we do not find a significant connection between the development of the RoTE and the probability of change from Defender to Prospector, but the internal effect of poor development of sales also does not show an influence on changes from Defender to Prospector, which might provide an indication that sales growth is not mandatory to employ a successful Defender strategy. Another reason might be that changes to the externally oriented Prospector strategy are driven by external environmental chances rather than internal measures of company success.

We would like to acknowledge some limitations of this study, which, in turn, suggest interesting avenues for future research. First, while covering all three areas influencing decisions for strategic change, we only covered a small selection of many possible variables per area, not covering every section of this area. For example changes of other members of the TMT or specific attributes of the new CEO (other than his status as a company insider or outsider) or internal organizational context components such as a change in ownership structure or organizational complexity could be interesting sections to be included into a broader set of variables to be tested for their direction-dependent influence on strategic change.

Second, there are limitations due to the composition of our research sample. The problem of left-truncation concerning the first strategy phase of every company limits the possibilities of analysis of the effects of long duration of strategic phases on the probability of strategic change.

Narrowing down the problem of left-truncation in combination with including a broader set of companies could lead to a more robust result for this type of analysis. This is not an easy undertaking, especially when using a CATA approach, for which digitally processible letters to the shareholders are needed for every company year.

Another limitation of our sample, especially with respect to the effects of the macroeconomic climate, is the fact, that only companies from one country (Germany) are included. Therefore we measure, strictly speaking, only the effect of the German GDP on German companies. These results might not be generalizable to companies in other states and testing the influence of the macroeconomic climate by building a multi-state sample could help to verify our results, while highlighting country specific differences.

Finally, we want to encourage fellow researchers to make use of the tools of CATA, when analyzing companies for strategic change. Using CATA is a good opportunity to analyze the attention and therefore the intention of the CEO, moving away from a pure observable change view and closer towards a more intention based view. The fact that our CATA is based on documents in German language can be seen as analytical weakness. It can, however, also be seen as call to put the CATA analysis on a more robust basis by using its tools in a variety of different languages.

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FIGURES AND TABLES

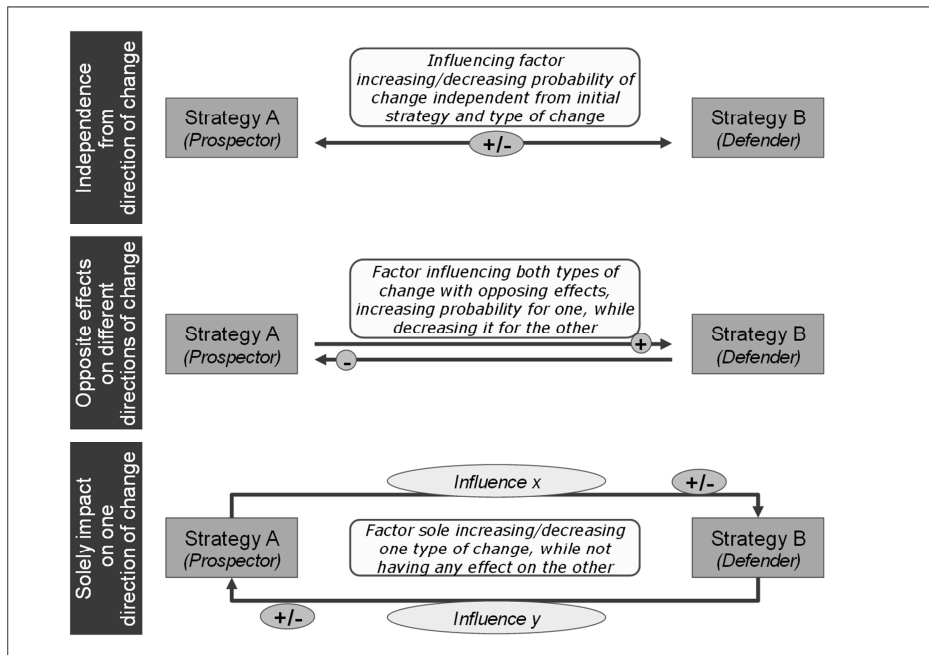


Figure 1. Direction-dependent impact of influences on strategic change

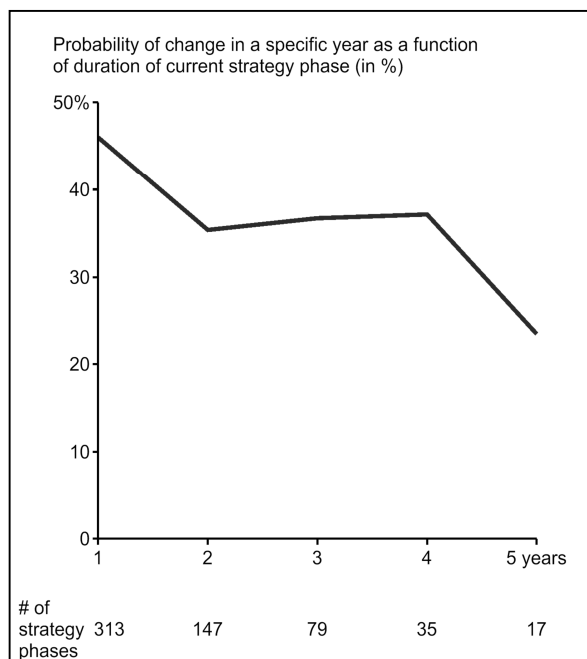


Figure 2. Probability of change as function of duration of current strategy phase

Table 1. Descriptive statistics and correlations

Variable	Mean	S.d.	1	2	3	4	5	6	7	8	9	10	11
1 GDP growth	1.34	(2.78)											
2 CEO change	0.14	(0.35)	0.01										
3 CEO change (lagged)	0.13	(0.33)	-0.04*	0.00									
4 External change	0.05	(0.21)	0.02	0.54*	0.01								
5 External change (lagged)	0.04	(0.19)	-0.07	-0.03	0.52*	-0.04							
6 Internal change	0.10	(0.29)	0.00	0.80*	-0.01	-0.07*	-0.01						
7 Internal change (lagged)	0.09	(0.28)	0.00	0.02	0.82*	0.04	-0.06	-0.01					
8 Sales growth	0.08	(0.25)	0.32*	-0.08*	-0.03	-0.02	-0.02	-0.07*	-0.02				
9 RoTE change	-1.81	(28.53)	0.11*	-0.11*	0.01	-0.04	0.05	-0.09*	-0.03	0.22*			
10 Company age	87.26	(67.30)	-0.02	-0.01	0.01	-0.03	-0.02	0.02	0.02	-0.08*	0.05		
11 Current ratio (lagged)	2.20	(7.08)	0.03	-0.01	-0.02	-0.01	0.00	-0.01	-0.02	-0.01	-0.05	-0.07*	
12 Total assets (log)	7.77	(1.91)	-0.01	-0.03	0.00	-0.06	-0.04	0.01	0.03	-0.06	0.04	0.38*	-0.11*

Note: Correlations with an asterisk (*) are significant at the 0.05 level.

Table 2. Results of discrete-time event history analysis of strategic change (all phases)

	Model 1	Model 2	Model 3	Model 4
GDP growth				0.144* (1.79)
CEO change		0.403** (2.16)		
CEO change (lagged)		0.148 (0.64)		
External change			0.843*** (2.62)	0.801** (2.48)
External change (lagged)			0.263 (0.78)	0.326 (0.93)
Internal change			0.187 (0.84)	0.133 (0.60)
Internal change (lagged)			0.0923 (0.34)	0.0839 (0.32)
Sales growth				-0.0885 (-0.88)
RoTE change				-0.0906 (-1.15)
Company age	0.175*** (2.84)	0.174*** (2.68)	0.178*** (2.72)	0.180*** (2.70)
Current ratio (lagged)	-0.0943** (-2.17)	-0.0905** (-2.12)	-0.0906** (-2.10)	-0.0962** (-2.48)
Total assets (log)	-0.182** (-2.12)	-0.179** (-2.07)	-0.168* (-1.95)	-0.167* (-1.93)
Year 2	-0.632*** (-2.61)	-0.630*** (-2.61)	-0.627** (-2.57)	-0.658*** (-2.67)
Year 3	-0.499* (-1.75)	-0.515* (-1.82)	-0.500* (-1.76)	-0.513* (-1.77)
Year 4	-0.624 (-1.48)	-0.609 (-1.50)	-0.633 (-1.56)	-0.694* (-1.72)
Year 5+	-1.159** (-2.30)	-1.074** (-2.12)	-1.075** (-2.13)	-1.146** (-2.25)
Duration (left-trunc.)	included	included	included	included
Industry	included	included	included	included
Constant	-0.0341 (-0.11)	-0.0970 (-0.33)	-0.0900 (-0.31)	-0.0616 (-0.21)
N	913	913	913	913
Pseudo R ²	0.044	0.048	0.050	0.055
Wald chi-square	74.23	78.88	78.33	80.84

Cluster-robust t statistics are reported in parentheses

* p<0.10 ** p<0.05 *** p<0.01

Table 3. Results of discrete-time event history analysis of strategic change (phases splitted)

Variables	Prospector to Defender						Defender to Prospector			
	Model 5	Model 6	Model 7	Model 8	Model 9	Model 10	Model 11	Model 12		
GDP growth				0.124 (1.09)					0.218* (1.70)	
CEO change	0.198 (0.67)					0.616** (2.02)				
CEO change (lagged)	0.305 (0.92)					-0.0198 (-0.06)				
External change			0.972* (1.92)	0.837* (1.68)			0.790 (1.59)		0.799* (1.65)	
External change (lagged)			0.753 (1.63)	0.822* (1.69)			-0.113 (-0.24)		-0.0846 (-0.18)	
Internal change			-0.146 (-0.40)	-0.329 (-0.84)			0.513 (1.54)		0.563* (1.67)	
Internal change (lagged)			0.0882 (0.22)	0.0189 (0.05)			0.0458 (0.11)		0.0377 (0.10)	
Sales growth				-0.177 (-1.02)					0.108 (0.72)	
RoTE change				-0.227* (-1.68)					0.00605 (0.06)	
Company age	0.306** (2.39)	0.298** (2.26)	0.312** (2.44)	0.317** (2.40)	-0.0147 (-0.15)	-0.00547 (-0.05)	-0.00529 (-0.05)		-0.00760 (-0.07)	
Current ratio (lagged)	-0.455 (-0.62)	-0.438 (-0.59)	-0.429 (-0.57)	-0.308 (-0.31)	-0.0740 (-1.59)	-0.0737 (-1.62)	-0.0749* (-1.66)		-0.0756 (-1.62)	
Total assets (log)	-0.213* (-1.74)	-0.210* (-1.70)	-0.188 (-1.52)	-0.158 (-1.26)	-0.153 (-1.17)	-0.143 (-1.09)	-0.144 (-1.09)		-0.123 (-0.91)	
Duration	included	included	included	included	included	included	included		included	
Duration (left-trunc.)	included	included	included	included	included	included	included		included	
Industry	included	included	included	included	included	included	included		included	
Constant	-0.223 (-0.47)	-0.298 (-0.62)	-0.275 (-0.58)	-0.189 (-0.40)	0.0436 (0.13)	-0.0339 (-0.10)	-0.0314 (-0.09)		-0.0674 (-0.21)	
N	496	496	496	496	417	417	417		417	
Pseudo R ²	0.075	0.077	0.084	0.098	0.051	0.059	0.060		0.069	
Wald chi-square	51.29	50.72	58.19	64.22	35.54	37.71	37.46		43.02	

Cluster-robust t statistics are reported in parentheses

* p<0.10 ** p<0.05 *** p<0.01