The Status and Dynamics of Change of Top Management Team (TMT) Demographics and Capabilities in German Large Firms Between 1997-2002: A Theoretical Exploration and Extension of the Upper Echelon Perspective

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The President:

Prof. Dr. Peter Gomez
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Martin Birkner
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<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
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<tbody>
<tr>
<td>CEO</td>
<td>CHIEF EXECUTIVE OFFICER</td>
</tr>
<tr>
<td>CFO</td>
<td>CHIEF FINANCIAL OFFICER</td>
</tr>
<tr>
<td>DFSTS</td>
<td>DIVERSITY IN FOREIGN SALES/TOTAL SALES</td>
</tr>
<tr>
<td>FETE</td>
<td>FOREIGN EMPLOYEES/TOTAL EMPLOYEES</td>
</tr>
<tr>
<td>FSTS</td>
<td>FOREIGN SALES/TOTAL SALES</td>
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<tr>
<td>MBA</td>
<td>MASTER OF BUSINESS ADMINISTRATION</td>
</tr>
<tr>
<td>MNC</td>
<td>MULTI-NATIONAL CORPORATION</td>
</tr>
<tr>
<td>OLS</td>
<td>ORDINARY LEAST SQUARE TECHNIQUE</td>
</tr>
<tr>
<td>ROS</td>
<td>RETURN ON SALES</td>
</tr>
<tr>
<td>SIC</td>
<td>STANDARD INDUSTRY CLASSIFICATION</td>
</tr>
<tr>
<td>STDV</td>
<td>STANDARD DEVIATION</td>
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<td>TMT</td>
<td>TOP MANAGEMENT TEAM</td>
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1 Introduction

1.1 The Lack of Quantitative and Theoretical Understanding of German TMT Demographics

At the end of the year 2003, the Financial Times Deutschland started a series on German top managers, announcing they would present a list of the Top 100 German managers in large German companies in the following month (Lambrecht 2003). The alleged occasion for this series of articles is a generation change that, according to the Financial Times Deutschland, has been taking place in German “upper echelons” (Hambrick and Mason 1984) within the last couple of years. It is argued that not only do younger managers take over the management of German top companies, but also a change in management style can be observed.

Furthermore it is argued that the old traditional German Model called “Rheinischer Kapitalismus” which is based on consent within management and organization is replaced by a more innovative, conflict-oriented and shareholder-value creating management style of Anglo-Saxon nature. The article puts forth that this new manager generation is characterized by different demographic backgrounds of individual members than former management generations. Reasons for this different demographic outlook of individual members of German top management teams (TMT) are: younger age, more extensive international business experience and the increasing dominance of the MBA (Master of Business Administration) as educational background of German top managers. In the years to come, this demographic change in the upper echelons of German top companies is predicted to gain even more speed.

The article sheds light on an interesting and important phenomenon of the German economy. However, it neither provides any quantitative evidence on the overall patterns of demographic composition of German TMTs, nor does it explain what really drives the change in TMT demographics in large German corporations. It stays on a level of only observing singular cases from a qualitative perspective and cannot provide any support for its claims to validity for large German corporations on a more general and quantitative basis.

Actually, at present there is no comprehensive quantitative source, descriptive or analytic investigation into the status and development of demographics in German TMTs. First, it is not known what the actual overall patterns look like in the demographic composition of German TMT in large German firms and whether there are specific
organizational patterns that are responsible for the composition of German TMTs. The only study looking at this issue with a focus on the international composition of TMT is the work of Ruigrok, van der Linde et al. (1999). Looking at a data set of 1995 and managers from six countries they identify patterns that underlie certain compositions also of German TMTs. Second, it is not known what informs the change in these TMT demographic patterns in Germany over a period of time. In sum, the phenomenon of patterns and demographic change in German TMTs in a longitudinal perspective is neither comprehensively researched nor fully understood at present.

This state of lack of knowledge, research and analysis in this field of enquiry is quite surprising and astonishing. As previous research in the tradition of the upper echelon perspective clearly has shown, it is important to understand TMT demography. TMT demographics can be taken as a proxy for TMT capabilities and their impact on organizational results (Carpenter and Fredrickson 2001). Furthermore, the German economy is one of the largest in the world and the TMT is a crucial resource for a firm’s success. As Carpenter (2002) puts it in the words of Barnard:

"... (top management) teams are essential to the specialized work of maintaining the organization in operation." (Carpenter 2002, citing Barnard 1938:215)

A TMT scans and interprets information, makes strategic choices and monitors the results of these choices (Bluedorn, Johnson et al. 1994). It provides operational steering and strategic vision to the company it serves. It is a critical strategic resource, which contributes to the distinctive competitiveness and success of a firm (Teece and Pisano 1996; Freiling 2001).

In sum, it seems that at present there is no comprehensive view available on the managers, TMTs and TMT capabilities that are important for the success of a great number of internationally operating large German firms.

### 1.2 The Objectives and Theoretical Foundations of This Thesis

It is my purpose in this thesis to throw some light on this as yet un-researched phenomenon. Therefore this thesis pursues three main objectives. First, I need to describe the level (status) and the dynamics of change in German TMT demographics over time. Second, I have to provide for explanations of these level effects. This explanation has to go beyond current American-based theory, which is not sufficient to provide comprehensive explanation for the specific German context of corporate governance and managerial behavior. Third, for the sake of explaining the change effects at present no theory is available at all. This makes it necessary for me to integrate several
existing theories into an analytical frame, which can be utilized to understand the
dynamics of TMT change in the context of the German economy.

1.2.1 Objective One: Create an Understanding of Level and Change in German TMT Demographics

First, it is the objective of this dissertation to understand the level (status) and change of
patterns of TMT demographics, the resulting TMT capabilities and the relevance of
these patterns and change in large German corporations over a larger period of time.
The non-existence of a quantitative longitudinal base and an overall understanding of
this issue in the German context and the importance of the TMT for the success of large
corporations stated above underlines the relevance of this endeavor. I propose to
develop an extensive and quite comprehensive view on the TMT demographic patterns
and change in German large firms which can be of use for practitioners making staffing
decisions. This is to be brought about by highlighting prevailing trends and issues of
importance, which can be derived from research in this area previously done in other
countries. There are two main issues I want to understand: the level and the change
effects. First, regarding “level-effects” I want to research the composition of TMTs in
German large firms at a given point of time. This concerns the creation of an
understanding of the demographics and capabilities of German TMTs in a statistically
relevant number of large German firms. Second, at the core of my research is an
understanding of the dynamics of change in German TMT demographics. Here, I want
to generate a statistically relevant view of the dynamics of change that engender the
specific established levels of TMT demographics and identify important drivers in these
dynamics.

1.2.2 Objective Two: Test and Extend the “Upper Echelon Perspective” - Level Effects

The second objective of this thesis concerns the theoretical strand of strategic
management theory. In order to reach the first objective of providing an understanding
of the dynamics in level and change of German TMT demographics in large firms, I
propose to employ hypothesis-driven quantitative approach. The hypotheses to be
applied will be based mainly on TMT research done in the US-American context of
strategic management theory, which has a strong foundation in the “upper echelon
perspective” (Hambrick and Mason 1984) and thus provides a solid base to research
German TMTs. It is the upper echelon perspective that puts the action of TMT and
managers in the focus of research and makes it relevant for organizational outcomes. A
key proposition of upper echelon perspective allows the researcher to derive conclusions
from the demographic composition of a TMT concerning its capabilities and its ability to successfully manage and steer a firm.

1.2.2.1 A Brief Glance at TMT Demographics and Capabilities

In the upper echelon perspective, the relation between the demographic traits of the individual TMT member and the resulting capabilities of the whole TMT is called the “congruence assumption” (Lawrence 1997; Miller, Kets de Vries et al. 1982) or “proxy assumption”. A certain average level of demographic composition, diversity in demographic composition or structural outlook of a TMT results in certain abilities of a TMT. For instance, a higher average in organizational tenure of TMTs is taken as a proxy for strong coherence and social cohesion of a TMT (Michel and Hambrick 1992), which results in the capability of the TMT to achieve quicker and easier decisions. On the other hand, this bears the danger of group-think as managers have worked together in the same business environment of one firm for a long time. A high diversity level in TMT nationality is taken as an indicator of high creativity in problem-solution as the TMT can draw from a variety of cultural backgrounds and biographies. This, however, may also result in higher conflict potential in the TMT, as managers with diverse backgrounds have to find efficient ways of cooperation and problem solving. And, as a final example, the smaller size of TMT may result in faster decision-making as fewer opinions and view-points have to be considered, but this may also lead to less creative decisions as fewer experiences and backgrounds are available to the TMTs to come to a conclusion.

TMT capabilities that can be described by average levels, diversity in demographics and structural TMT indicators include the usage of information-scanning practices (Garg, Walters et al. 2003; cf. Goshal (unpublished doctoral thesis) in Bluedorn, Johnson et al. 1994), different frames of reference (Riordan and Vandenberg 1994) for problem solution and the ability of the TMT to identify opportunities, crises and threats to an organization (Meyer, Nakane et al. 1989). Also, creativity and innovation (Wiersma and Bantel 1992), the ability to overcome information overload, complexity and domestic myopia created by complex business environments (Carpenter and Fredrickson 2001) and the networking capacity of individual TMT members with the external world (Athanassiou 1999) are important management capabilities, which can be analytically described by the demographic composition of TMTs. Finally, these capabilities encompass the ability of the TMT to work together, provide the company with the
required level of social cohesion (Michel and Hambrick 1992) and conflict at the top to foster ingenuity and creativity in the TMT (Carpenter and Fredrickson 2001).

Ultimately, a relation can be established between TMT demographic composition, TMT capabilities and organizational results (Hambrick and Mason 1984; Murray 1989; Eisenhard and Schoonhoven 1990). For example, Finkelstein and Hambrick (1990) found out in a statistically significant way that managers’ decisions and actions are of great importance for firm performance in the fast-moving computer industry. In brief, the upper echelon perspective provides for a theoretical framework that allows for connecting the demographic outlook of TMT to its capabilities and organizational outcomes.

1.2.2.2 TMT Demographics, TMT Capabilities and Strategic Positioning as a Base

To explore level and change effects of TMT demographics in the context of large German firms, I use the upper echelon perspective and will also focus on of the latest developments in this research area. Latest upper echelon research centers on the investigation of the relation between the patterns of TMT demographics, resulting capabilities and, as a new feature, the strategic positioning of US-American firms as well (Carpenter and Fredrickson 2001). As a major supporter of this latest trend in research, Carpenter (2002) argues that so far there are only few exceptions in upper echelon research that integrate contextual organizational themes into their research of status and impact of TMT demographics:

"... a striking feature of upper echelon studies... is the tendency to de-contextualize top management teams - that is, not account for the idiosyncratic nature of each firm’s strategy and the social structure of the TMT. This is surprising because one of the hallmarks of strategy research is that relationships are typically contingent (...), and there is ample behavioral and social psychological research to suggest that any link between TMT demographics characteristics and substantial outcome will likely be affected by a top team’s situation." (Carpenter 2002:275-276)

This idea of organizational contextual relevance will be an important basis for attaining the objective of researching and explaining German TMT demographics. The central argument of this strand of research is that different organizational environments or the strategic positioning of a firm require a different demographic composition of the TMT with different capabilities of the TMT in order to make the firm successful.

It was Hambrick and Mason (1984) who first suggested that demographic status, actions and performance of TMTs must be put in perspective of the organizational environment. In this respect, strategic positioning of a firm can be understood as an
indicator or proxy of the characteristics of the organizational environment such as complexity to be managed by the TMT (Carpenter 2002). This also means that a TMT demographic composition and resulting TMT capabilities that are beneficial to the firm in one strategic context may be of disadvantage in another strategic context. For example, it is argued that a firm that moves in a highly internationalized organizational environment requires a TMT that has innovative and creative problem solution capabilities in order to master the challenges arising from the complex environment of a highly international strategic posture. Research has shown, however, that such capabilities are provided by diversity in the demographic background of a TMT fostering ingenuity and creativity but also enhancing the likelihood of conflict in the TMT (Carpenter and Fredrickson 2001). There is also evidence from US-American research that firms that are highly diversified and thus have a highly diversified strategic posture require a high level of social cohesion at the top, which is rather provided by homogeneity in TMT demographics at the cost of demographic diversity (Michel and Hambrick 1992). Generally, the basic ratio behind the link between organizational environment and TMT demographic composition is that a certain degree of environmental complexity requires a certain level of demographic diversity or homogeneity reflecting also on the capabilities of the TMT. This level of diversity or homogeneity can be established through a variety of TMT demographic traits such as the previously mentioned international experience of TMT members (Carpenter and Sander 1998), country of origin of the TMT members/TMT nationality (Hambrick, Davison et al. 1998), diversity in age (Knight, Pearce et al. 1999) or educational and functional background (Bunderson and Sutcliffe 2002; Bunderson 2003) and diversity in previous management experience (Avery, Tonidandel et al. 2003).

I will use these findings concerning internationalization and diversification in the organizational environment as well as the underlying theoretical framework of the upper echelon perspective, in order to formulate my hypotheses with respect to the level and change of German TMT demographics, diversity and homogeneity in these patterns and resulting TMT capabilities. This also means that I am going to test in a comprehensive manner the applicability of theoretical research and quantitative results generated in the context of the USA against the background of another large economy, thus also scrutinizing the question of the general validity of US centered upper echelon research.
1.2.2.3 First Adjustments and Extensions to the Upper Echelon Perspective

In using this theoretical strand, I have to consider some specific factors resulting from the German environment of this study.

First, I have to consider that the demographic compositions in non-US environments may have a different relation to organizational environments. Executives from other countries may vary in their perception and actions based on different underlying cultural factors (Carpenter and Fredrickson 2001), as culturally diverse (TMT) groups tend to use different frames of reference (Riordan and Vandenberg 1994), display different information scanning practices (Goshal (unpublished doctoral thesis) in Bluedorn, Johnson et al. 1994) and differ in interpretation of crisis and threat to an organization (Meyer, Nakane et al. 1989). I will accommodate this in the hypothesis-building by including the specific situation of German TMT with respect to German management culture and corporate governance structure.

Second, in order to understand level effects in TMT German demographics I also must take a more complex view of the strategic positioning of firms. As became evident from the above examples, the combination of different organizational environments raises interesting questions with respect to an integrated view of the impact of the level of diversification and internationalization on TMT demographic compositions and required capabilities of German TMTs. This view is even more applicable to German firms as the descriptive findings of my research indicate that large German firms face particular challenges both from diversification and internationalization. In this respect, Hoopes (1999:278) notes:

"... the interaction of product diversification and geographic diversification does have a significant influence on performance. Additionally, Hitt et al. (1997) find that product diversification moderates the relationship between geographic diversification and performance; they find geographic diversification positively influences performance in firms that are highly product diversified. It seems clear that studying geographic diversification and product diversification together is important."

There is a variety of large German firms that have a high degree of internationalization and, at the same time, a distinct level of diversification (e.g. DaimlerChrysler AG or BASF AG). So far, US-American studies looking at organizational context and TMT demographics to the greater extent only focus on one key aspect of strategic posture. The reason for this is that although Hambrick and Mason (1984) already highlighted the importance of organizational context in analyzing TMT demographics, there has only recently been a surge in integrating contextual factors in the analysis of TMT demographics. This direction is comparatively new to the field of TMT demographics,
and further research is required. In my hypothesis-building, I will accommodate this need and create hypotheses that make predictions with respect to German TMT demographics, TMT capabilities and a combined strategic posture of internationalization and diversification.

1.2.3 Objective Three: Extend the “Upper Echelon Perspective” - Change Effects

The third major objective of the hypothesis-building of this dissertation is also to generate an understanding of the dynamics of change in German TMT's demographics between 1997 and 2002, as I also want to understand how specific levels of TMT demographics come about. The issue of change is also an important one in the practice of TMT operations. Boeker (1997:152) argues:

“... that executive change, in particular, change in a company’s chief executive and top management team, is an important mechanism for overcoming inertia and political resistance (Ocasio, 1993).”

In this case, the theoretical thinking already developed in the American context is of less help to derive hypotheses for the German business environment. There is very little descriptive or analytical research looking at change dynamics of TMT demographics, TMT capabilities and TMT organizational context in a longitudinal manner. In American research, dynamics of change in TMT demographics have been very seldom investigated, and in the German context no analysis of this type has been undertaken as yet. The reason for this is that due to their cross-sectional design most US studies looking at TMT composition do not allow for incorporating change in the strategic posture of a firm and, ultimately, resulting differences in performance. As one leading study notes, today's research does not allow for

“questioning the circumstances surrounding how and when changes in governance arrangements lead, lag or evenly pace (other) changes” (Sanders and Carpenter 1998:174; Hambrick and Mason 1984; Finkelstein and Hambrick 1990; Boekker 1997)

Accordingly, authors such as Sanders and Carpenter (1998) call for research that empirically looks at the reinforcing interaction between strategic posture mix and TMT composition. In the same vein, Pitcher and Smith (2001) or Boekker (1997) argue that an understanding of this issue is crucial.

Organizational change is an important issue not only in the upper echelon perspective but also in management theory (Pettigrew, Woodmann et al. 2001) and in more specific strands such as the resource-based view of the firm (Eisenhard and Martin 2000) or the knowledge-based view of the firm (Krogh and Grand 2002). In all these approaches,
there is a need for a more comprehensive understanding of the concept of change and development of critical resources, organizational structures or knowledge systems to sustain competitiveness of a firm over time.

By looking at the issue of change in German demographic TMT change and strategic posture in a longitudinal view between 1997 and 2002, I will lay the foundation for a more profound understanding of the interactions between organizational environment and internal firm resources such as the TMT and also of its impact on organizational change. In my hypothesis-building approach, I will not only discuss how changes in the strategic posture of a firm interact with the demographic composition of TMTs over time, but I will also include other factors that are of importance regarding complementary theoretical approaches. These factors include the occurrence of CEO change, changes in shareholder structure, changes in size or change in the performance level of a firm. To my knowledge, it is the first time in strategic management theory that these factors are integrated in an analysis of change with respect to TMT demographics and strategic positioning over time.

1.2.4 Summary of Objectives

In sum, this dissertation will not only produce quantitative evidence concerning the demographic and capability development of German TMTs between 1997 and 2002. With respect to the level effects, it will also extend the upper echelon perspective by investigating the relation between TMT demographics and a mix of strategic postures in the German context. Concerning the change effects it will develop the upper echelon research by presenting a theoretical concept of change and quantitative analysis of the development TMT demographics over time. This may lay the base for further quantitative upper echelon research that is capable of handling the complexity of actual business environments such as a combination of internationalization and diversification, but can also give advice to practitioners of how demographic traits of TMTs interact and how they result in different TMT capabilities.

This thesis will be of immediate value to practitioners for selecting and developing the top management team with respect to the specific strategic positioning of the firm in the German context. The study will uncover Germany-specific relational patterns between TMT composition and strategy posture mix that are more prevalent than others and can provide examples for German supervisory boards when thinking about TMT composition and staffing a TMT. Addressing this issue of practical applicability, Pitcher and Smith (2001) asked TMT researchers to develop a sound and coherent position,
giving clear indications in what context which type of TMT demographic composition is important with respect to the successful development of a firm.

1.3 Methodology and Quantitative Data Used in this Study

To research level and change effects in German TMT demographics, I will employ a hypothesis-driven approach which will build upon the briefly discussed upper echelon perspective and theoretical extensions of it.

For researching my hypotheses on level effects, I will use fixed effect regression models, including data on German TMT demographics from 72 large German firms between 1997-2002, as well as internationalization data, diversification data and data on firm size, annual effects (dummy variable for each year) and industry membership (manufacturing yes/no) covering each year of the same period. The usage of fixed effect models covering a timeframe of 6 years will increase the statistical robustness of the results considerably, as I base my findings on a larger pool of data and can account for firm-specific effects as well as year-specific effects over time. Such robustness is required in analyzing pooled data

“since the data are independent across firms but not within firms.” (Carpenter 2002:278)

This statistical design is superior to the common designs in TMT research, which regard only a limited timeframe in a cross-sectional design. This does not allow for controlling of yearly effects. In using this design, I follow Carpenter (2002) who also uses a pooled data approach.

For researching my hypotheses on change effects, I will employ an ordinary least square regression technique (OLS). In contrast to the analysis of level effects, the analysis will be based on calculated data of change between the years within the frame of 1997-2002. Change data used include data on TMT demographics, data on internationalization posture and diversification data, data on CEO change, data on shareholder structure and firm performance as well as data on changes in size and data on industry membership.

1.4 Structure of the Thesis

This dissertation is divided into six main parts (without the first section number one – this introduction). The second section is titled “Theoretical Base, Strategic Positioning and Usage of Demographic Traits”. It explores the theory strand of the upper echelon perspective, which provides the basis for my argument. The initial discussion will highlight the notion of average levels of TMT demographics, diversity in TMT
demographics and structural TMT demographic indicators such as TMT size. It will look at the question by what theoretical assumptions it is possible to link TMT demographic averages and diversity in TMT demographics to TMT capabilities.

In the next section of “Hypotheses Building: TMT Demographics and Strategic Posture in Large German Companies Between 1997-2002”, I will then link TMT demographics and resulting capabilities to the strategic positioning of firms and discuss my expectations with regard to the relation between the two in the German context. The discussion covers internationalization and diversification levels of firms and also looks at the combined strategic posture encompassing the two.

The relation between TMT demographics, resulting TMT capabilities and the strategic posture of a firm will be explored by building hypotheses based on existing theoretical thought from studies in the tradition of the upper echelon perspective, by developing extensions through other theoretical constructs such as the managerial hegemony theory, and by including present German corporate governance issues. The hypotheses will enable me to both understand the status (“level effects”) and the dynamics of change in patterns of TMT demographics (“change effects”). This will enable me to draw conclusions on the resulting TMT capabilities and the relation of these factors to the strategic posture of German large firms between 1997-2002.

Hypothesis 1 looks at the relation between TMT demographic diversity and the internationalization posture of firms.

Hypothesis 2 puts this relation in the context of German issues of corporate governance and managerial behavior and, thus, refers to the German context of this study.

Hypothesis 3 then looks at the dynamics of change in the relation between TMT demographics and strategic posture over time by underlining the importance of CEO change in these dynamics. The analysis of these changes over time will also include an analysis of lag allowing for different lengths of time for the impacts predicted by the hypothesis. Apart from the change effects of internationalization posture, diversification posture and CEO change, I also include other issues in the analysis, such as changes in performance levels and changes in the shareholder structure. I propose to look at time lags of up to four years for the impact predicted by the hypothesis to take place.

Hypothesis 4 will then present my expectations with respect to the relation between diversity in TMT demographics, related TMT capabilities, and the diversification level of German firms. This also incorporates an analysis of issues concerning related diversification versus unrelated diversification.
Hypothesis 5 will then include internationalization posture and diversification posture in a more complex analysis of their relevance with respect to TMT demographics and TMT capabilities.

In the fourth section, “The Research Design, Data Collection and Analyses”, I will discuss important issues with respect to my proposed methodological approach. This includes issues such as the process of methodology and key concepts of measurement as well as a justification why certain methodological approaches have been chosen. Overall, I account for all relevant issues that strike me as necessary to make the reader aware of what methodological base I use and how I conduct the analysis of the proposed hypothesis. The first part of this section refers to the reasoning supporting my methodological choice and to the issues of data collection. The second part illustrates the operationalization of my core concepts - the measurement of the interaction patterns between TMT demographics and strategic posture mix in my data set of 72 large German firms, while the third part explores in detail how I plan to measure single variables such as internationalization, diversification or a TMT demographic trait such as team tenure. Also part of this section is an initial description of the set of 72 German large companies that forms the database for my research, including size or industry indicators. This description is presented by comparing my 72 firms to a larger set of the 200 top-listed firms in Germany in the year 2001. By drawing this comparison, however, I do not want to prove any generalizability of my findings to this larger group of companies. Rather the comparison serves to illustrate the bias of my data set towards larger and largest German firms.

In the fifth and sixth section - “Descriptive Results” and “Analytical Results” - I will then present the results of the analysis. The section on the descriptive results will present the descriptive statistics, such as development of the strategic posture mix of the firms in my data set between 1997-2003 or trends in development of TMT demographics for the same set of firms and time span. The section on analytical results will answer the questions raised by my hypotheses in the third conceptual section by detailing the results from the hypotheses analysis.

In the seventh section of this dissertation, “Discussion, Limitations and Interpretation of results”, I will discuss my findings presented in the previous section on analytical results. This discussion will cover an analysis of the impact of my findings on the upper echelon perspective and the theoretical base used for the hypothesis-building. I will discuss identified necessary extensions of the available theoretical thought and also highlight the consequence for the practice of management of TMT demographics in large German
firms. This last section will also address limitations of my thesis and present avenues for further research in the research area of the upper echelon perspective. It will put my analytical results and the consequences for practice and theory of TMT demographics in the perspective of the limitations which are inherent in my proposed scope of hypothesis-building and the chosen analytical and methodological concepts.
2 Theoretical Base, Strategic Positioning and Usage of Demographic Traits

Academic works that look at the impact of managers on organizations usually adhere to four basic tenets of TMT research and the upper echelon perspective (Hambrick and Mason 1984). First, the core argument of these tenets is that organizations are a reflection of their top managers. Second, it is argued that the combined characteristics and resulting capabilities of the top management team counts more than characteristics of a single member. Third, TMT demographic characteristics such as tenure, functional background and education can be used as proxies for more elusive psychological team processes, member traits and TMT capabilities. Fourth, based on these assumptions a relation can be established between TMT demographic composition and organizational results or performance (Hambrick and Mason 1984; Murray 1989; Eisenhard and Schoonhoven 1990). For instance, Bantel and Jackson (1989) established that diversity in functional experience enables TMT to develop more innovative strategies, while Hambrick, Cho and Chen (1996) found that diversity in functional backgrounds is positively related to a higher level of aggressiveness in answering competitive moves of the competition.

2.1 The Basics of the Upper Echelon Perspective

Pfeffer originally introduced the rationale for a link between TMT demography and organizational results or performance. He was not satisfied with the status of demographic research then current and introduced the field of organizational demographic composites as a new area of study. Since then, organizational demography stands for

"the study of the composition of a social entity in terms of its members' attributes." (Lawrence 1997:2)

Pfeffer argues that

"demography is an important, causal variable that affects a number of intervening variables and processes and, through them, a number of organizational outcomes." (Smith, Smith et al. 1994:412)

It is foremost the demographic compositional aspect that distinguishes Pfeffer's approach from previous demographic concepts. It was then used by Hambrick and Mason (1984) in the "upper echelon perspective" to describe a cognitive base of a TMT
Compositional demographic traits are certainly rough surrogates for subjective concepts such as group conflict, group ingenuity, or group creativity (Michel and Hambrick 1992), which influence the performance of teams and the ability to successfully manage a company. As demographic proxies, however, they are useful for measuring constructs that are otherwise almost impossible to measure or are prone to unreliable measurement. TMT demographic traits are not only directly observable and thus more reliable and valid replicable measures, but they also produce a simpler, more parsimonious model of human behavior and interaction within the respective TMT. It is this parsimony and simplicity in implementation as research design, which makes Pfeffer’s demographic research agenda so attractive for researchers who want to understand the role a TMT plays within a firm. It promises reduction in measurement of complex subjective interactions between top managers within a specific TMT to a few easily observed demographic variables, which in turn can be linked to TMT performance and organizational outcome. In this respect, Finkelstein and Hambrick (1996) argue that the relative demographic heterogeneity or diversity in TMT demographics may have an effect on firm performance through its implication for TMT team behavior and team performance.

Building on this simplicity the upper echelon perspective enables researchers to aggregate on team level the individual demographic traits of team members such as age, tenure, or functional, cultural, and educational background and by this describe the TMT in terms of demographic outlook. A specific TMT’s demographic outlook is then to

“be taken as an indicating proxy for TMT’s subjective analytical concepts such as members’ functional skill set, socio-cognitive diversity set, psychological processes between the TMT members and the breadth of their social and professional ties.” (Finkelstein and Hambrick in Carpenter and Fredrickson 2001:534)

This is also described as the “cognitive base” which holds the


This proxy description of group processes and group interactions by defining the TMT’s cognitive base is then used to draw conclusions on specific abilities of the TMT, such as problem solution capacity, cognitive capacity, emotional conflict capacity, communication fluency, direct interaction capability, and symbolic power (Ruigrok and Wagner 2001; Carpenter and Fredrickson 2001). In turn, these factors influence tacit
knowledge exchange within the team, knowledge flows between the team members (Smith, Smith et al. 1994), speed of decision (Athanassiou and Nigh 1999), substantiality of decision (Bantel 1993), level of team cohesion, commitment to group norms and goals, socialization (Smith, Smith et al. 1994), communication with the outside and information dissemination (Athanassiou and Nigh 1999), justification of past actions and improvement orientation (Westphal and Fredrickson 2001). TMT demographic composition and team behavior may also be significant not only for the working of the team but also for team content output, e.g. understood in terms of foreign market entry decisions (Carpenter and Fredrickson 2001) or decisions for international cooperations or other content decisions.

I will also base my thesis on the assumptions of the upper echelon perspective. I assume that managers have a pivotal role in shaping the destiny of corporations. I also use TMT demographics to describe the cognitive base of TMTs and make assumptions about resulting capabilities of TMTs. In the following part, I will further discuss the issue of TMTs and their impact on organizational outcome, and highlight the importance of organizational context in researching the impact of TMTs on organizational results. This will include the introduction of strategic positioning of a firm as an aspect that plays a vital role in my objective of understanding the development of level and change effects of TMT demographics in large German firms between 1997-2002.

2.2 The Link between TMT Demographic Composition, Strategic Posture and Performance

So far I have explored the basics of the upper echelon perspective and explained why the upper echelon perspective is a very attractive concept to researchers interested in TMT demographics. However, the initial attractiveness of the original upper echelon perspective also consisted of the link it suggested between the unit of analysis – the TMT – and firm performance or other firm outcomes such as strategic change (Wally and Becerra 2001; Wiersma and Bantel 1992), strategic posture (Carpenter and Fredrickson 2001), or innovation capabilities.

However, research investigating the most attractive link - only to firm performance - proved to be disappointing. The conclusions from this research with respect to a direct link between TMT demographics and financial firm performance was that there is little comprehensive evidence for a direct link but only scattered results that would support both a positive link yet also evidence against it (Dalton, Daily et al. 1998). Due to these
mixed results, West and Schwenk (1996:571) were even heralding the end of the research stream by arguing that

“pursuing this line of inquiry further will yield results inconsistent at best and fruitless at worst.”

It was not possible to conclusively establish a connection between a given degree of TMT demographic heterogeneity or level of demographic traits with firm performance. Two major flaws in linking TMT demographics to firm performance were highlighted: First, the ignorance of processes and factors that may work within the link of TMT demographics and firm performance (Smith, Smith et al. 1994), and second, the influence the specific organizational context may have on the work of TMTs and their ability to influence firm performance (Keck 1997).

Addressing the processes and factors that are ignored by the upper echelon perspective, Lawrence (1997) pinpoints the major weakness of the TMT research in the congruence assumption and the resulting “black box” concept that contains many intervening social or psychological processes within the working of a TMT. As discussed above, in the early phase of TMT research intervening subjective processes were assumed to account only for little variance in performance and were assumed to have already been sufficiently reflected in the choice of demographic variable selection through the proxy assumption. It was even considered as counterproductive to further investigate intervening or contextual variables, as this would mean to embarking on an infinite “regress of reductionism” (Pfeffer in Priem and Lyon 1999:950). After all, it was foremost the simplicity and parsimony which made the upper echelon such an interesting research concept. Lawrence (1997) challenged the simple and parsimonious underlying theoretical assumption of the linear and unidirectional links between input of demographic variables and output variables of team or organizational performance and proposed that the links are rather dynamic and recursive. In addition, Lawrence questions the wisdom of establishing results based on empirical research without the direct, concrete analysis of the intervening mechanisms and processes such as the psychological interactions between executives. This criticism was taken up in more detailed research of the intervening processes and contextual factors in the relations between TMT demographics and firm performance (e.g. Smith, Smith et al. 1994). These studies look at factors influencing the relationship between demography and performance and show great promise towards explaining the nature of the relationship between demography, performance, and contingency factors (e.g. Goll, Sambharaya et al. 2001; Smith, Smith et al. 1994; Eisenhard and Schoonhoven 1990; Murray 1989). A
specific example for such a study is the work of Bunderson (2003) who looks into the impact of TMT functional backgrounds and its relation to involvement of top managers in the workflow process contingent upon the centralization of power in the TMT (also compare Knight, Pearce et al. (1999) on TMT group processes and strategic consensus).

With respect to the role of context, Pettigrew (1992) argues that most TMT studies so far ignored the importance of organizational context when studying managerial elite groups. In a similar way, Carpenter (2002) also suggests that neglecting important moderating or intervening contextual variables may cause inconsistency in the results obtained from TMT research. At the core of this critique is the realization that certain team structures and demographics have a certain pattern of benefits and costs, which may weigh differently with respect to organizational outcome in differing organizational environments (Keck and Tushman 1993). Taking up this critique, a variety of TMT studies included environmental aspects in their analysis and found that higher levels of firm performance can be expected in case of a good fit between TMT demographic composition and contextual factors (Bluedorn, Johnson et al. 1994).

Already Hambrick and Mason (1984) underlined the importance of organizational context in the research of TMT demographics. They clearly indicate their assumption that TMT demography effects on performance level and strategic choice can be expected to be strongest under conditions of high uncertainty. Based on the Carnegie School's behavioral theory of the firm, uncertainty is seen as a precondition for demographic effects (cf. Finkelstein and Hambrick 1990). They argue that decisions under uncertainty are

"the outcome of behavioral factors rather than a mechanical quest for economical optimization" (Hambrick and Mason 1984 in Carpenter and Fredrickson 2001:536).

Developing this idea further into the concept of "managerial discretion", Hambrick and Finkelstein (Finkelstein and Hambrick 1990; Hambrick and Finkelstein 1987) argue that the ability of the CEO and the TMT to influence firm performance and organizational outcome very much relies on three aspects: the task environment, the organization, and the demographics characteristics of the TMT or CEO. Putting the task environment in practice, Carpenter and Fredrickson (2001) found that environmental uncertainty moderates TMT demographic variables with respect to global strategic posture.

In TMT research environmental complexity of organizations has been conceptualized in a variety of different ways. Keck (1997) lists environmental turbulence (e.g. Eisenhard and Schoonhoven 1990; Michel and Hambrick 1992), environmental munificence, and high velocity environments, and gives examples for each. Addressing a further
dimension of organizational context, Chatmann, Polzer et al. (1998) report that advantages and disadvantages of demographic heterogeneity depend on the context of organizational culture expressed in individualism vs. collectivism (Wagner 1995). Also, strategic posture of a firm has been taken as proxy for environmental complexity in which firms operate (Carpenter 2002). Within TMT research, strategic posture has been understood in two ways: first, there is international diversification (Carpenter and Fredrickson 2001; Carpenter, Sanders et al. 2001; Ruigrok and Wagner 2001) and, second, there is the degree of product diversification (Michel and Hambrick 1992, Westphal and Fredrickson 2001).

It is this introduction of strategic positioning as an indicator of complexity in the organizational environment, which is of interest for my discussion and objectives of this thesis. Besides the basic assumptions of the upper echelon perspective, the notion of organizational context and strategic positioning is the second theoretical pillar this thesis is based on. I will look in detail at the two key aspects of strategic positioning and examine the role strategic posture of international and product diversification plays with respect to the demographics of German TMTs between 1997-2002 in large firms. I am aware that the notion of strategy is more comprehensive than these two key aspects and address these limitations in the final section on conceptual limitations of this study.

So far, I have discussed the basic assumptions of the upper echelon perspective and the important role of strategic positioning in further understanding TMT demographics and TMT capabilities. A further important theoretical pillar this work will use is the specific usage of TMT demographic traits and how they relate to TMT capabilities. This will be explored in the following part of this section.

2.3 Average Level, Diversity and Structural Effects in Upper Echelon Research

In TMT research, demographics of a team are commonly described as level of a certain demographic dimension or by discussing the diversity/ heterogeneity of a team in a given demographic dimension. A second very common trait to TMT demographic research is, as already touched upon in my initial discussion of environmental context, to highlight that a certain demographic average level or diversity may also have positive or negative effects on TMT capabilities and performance. In this respect, Bunderson and Sutcliffe (2002:880) argue that

“given the patterns of results (with respect to diversity in TMT demographics - ann. of author) team researchers have concluded that functional diversity is a double-edged sword, in that it has
positive implications in some contexts and for some process or performance variables but negative implications in other contexts and for other process of performance variables."

In the following, I illustrate the aspects of level and diversity effects and also discuss which advantages and disadvantages TMT demographics may have for TMT capabilities. I do this because in this dissertation I also use level and diversity measures and make predictions about resulting relations of TMT demographics with respect to the strategic posture of large German firms between 1997-2002. Finally, I will also briefly explore the structural indicator of TMT size as a proxy for TMT capabilities.

2.3.1 Average (Level) TMT Demographic Effects and Resulting TMT Demographic Capabilities

An example of level effects in TMT demographic research is the usage of average company tenure of a TMT as a proxy for TMT capabilities. Michel and Hambrick (1992) take the level of average company tenure of TMT members as an indication of social cohesiveness and explain relations between diversification and performance. Fredrickson and Iaquinto (1989) refer to Thompson and argue that the higher the firm tenure of TMTs, the more socialized into its particular way of acting the members become and the higher is the degree of social cohesiveness displayed by the overall team. Moreover, they argue that it seems to be reasonable to assume

"that as time passes and firms do experience turmoil, executives are increasingly socialized, the TMT remains intact and the firm grows." (Fredrickson and Iaquinto 1989:536)

A top management team that has a high average company tenure is assumed to have a high degree of social cohesion (Michel and Hambrick 1992) and a high level of consent in decision-making. The team arrives fast at decisions without major frictions. In this issue Westphal and Fredrickson (2001:1115) refer to Salancik and Pfeffer and argue that also within the realm of strategic setting and the process of setting the strategy managers over time become

"socialized into belief systems that endorse the corporate strategy through direct social influence from other members of the TMT and larger organizations."

The longer-tenured a director is, the higher is the likeliness that a director believes in the value, norms and content of the strategy. Long-term managers are likely to have been fully socialized into the firm’s overall belief system. Also, the more often a director was required to justify a certain strategic position over time, the more they come to believe in its validity (Westphal and Fredrickson 2001).

Of course, the high level in TMT average organizational tenure bears the danger of group-think (Bantel and Jackson 1989) as external views and impressions are increasingly
excluded from the long-tenured team. Referring to Tushmann and Romanelli, Fredrickson and Iaquinto (1989) suggest that volume and diversity of information processed by groups get limited over time as routine and commitment to established practices increase. By referring to general literature on groups, they argue that with increasing stable, continuous membership managers become isolated from critical information sources. As a result, decisions may be taken quickly but lack in quality and relevance.

Other examples where the level of a specific demographic trait is of importance include the average international work experience of TMTs. Carpenter, Sanders et al. (2001) take the level of international work experience of CEOs (Chief Operating Officer) in US MNCs (Multi-National Corporations) and analyzes how global posture and other TMT’s international experience modify the relationship between CEO international experience and firm performance (Carpenter 2002)

These examples of the capability impact of average TMT demographics have in common that they link an average level of a demographic trait such as organizational tenure to TMT behavior, via the assumption that a certain level of a group-specific demographic phenomenon allows conclusions with respect to the abilities of the TMT as a whole. It is not the tenure of the individual member that is the unit of analysis, but the average level of tenure the overall team displays which is of importance for the analysis.

2.3.2 Diversity TMT Demographic Effects and Resulting TMT Demographic Capabilities

Another way of using demographic variables in order to come to conclusions about a TMT’s capabilities is to assess the degree of diversity the team displays in its demographic dimensions. A team composition displaying high group heterogeneity (e.g. diversity in the TMT cognitive base expressed through heterogeneity in age or nationality) has been found to be associated with high levels of creativity and innovation (Wiersma and Bantel 1992) and might be suitable to help a TMT to

“overcome information overload, complexity and domestic myopia created by complex business environments.” (Carpenter and Fredrickson 2001:534)

Diversity in TMT educational and functional background and diverse viewpoints, e.g. on knowledge structures on different markets held by managers (McNamara, Luce et al. 2002) and an ability to challenge and be challenged will lead to originality and creativity (Chatmann, Polzer et al. 1998) in TMT problem-solution capacity, more aggressive response to competitive threats (Hambrick, Cho & Chen 1996), high quality decision-making (Bantel 1993), the increased capability of scanning the environment for
information, and interpretation of possible action alternatives (Hambrick and Mason 1984). Exploring the mechanism behind this, Westphal and Fredrickson (2001) argue that with the accumulation of experience individuals develop a more subtle understanding of the world characterized by complex and less schematic knowledge structures and an increased information capacity of the individual. In turn, this leads to efficient information-processing and more accurate predictions, e.g. with respect to a firm’s position in a specific strategic setting (Westphal and Fredrickson 2001).

On the other hand, increased heterogeneity in the TMT demographic base may lead to higher conflict potential between the TMT members or less informal communication (Smith, Smith et al. 1994, cf. Keck 1997). Hambrick, Cho et al. (1996) showed that TMT heterogeneity will slow an organization’s ability to execute actions (1996), and Murray (1989) argues that in non-turbulent environments heterogeneity may negatively affect performance as it results in lacking cohesion. He explains that heterogeneity results in less commitment to group goals and values. Summing up a variety of studies on the topic, Carpenter and Fredrickson (2001:535) put forward that moderate levels of diversity in TMT demographics may be beneficial, while “excessive diversity” in the TMT cognitive base

“may lead to interpersonal conflict and communication break down.”

For instance, excessive demographic diversity at the top of a highly diversified company may be harmful, as argued by an examination of Michel and Hambrick (1992). Although the overall results of this study were disappointing, they were able to show how for highly related diversifiers it is of advantage to have a more social, cohesive and integrative TMT to give the diversified firm base a more coherent and integrative leadership at the top. Also, in stable environments a higher level of consent at the top is productive, whereas in dynamic conditions more heterogeneity may be helpful. Accordingly, Hambrick, Cho and Chen (1996) found a positive link between heterogeneous TMT and firm performance in the rather turbulent and thus more complex airline industry. Basically, diversity/heterogeneity in demographics is one of the most

“robust and reliable social psychological findings.” (Barsade, Ward et al. 2000:805)

People who are equal on various demographic attributes rather tend to affiliate with each other and prefer people with similar traits. As Bunderson and Sutcliffe (2002:881) put it:
“researchers interested in understanding the relationship between team diversity (of whatever type) and team processes or performance often invoke social categorization theory to support their arguments or explain their findings. Social categorization theory suggests that individuals seek to maintain high-esteem by defining themselves in ways that lead to favourable social comparisons. Individuals place themselves in social groups (defined in terms of age, background, status, and so forth) and then attribute positive characteristics to their own group...”

Murray (1989:127) writes that

“... individuals similar in age are moulded by a similar environment and tend to emerge with similar values. Individuals who have shared similar educational experiences, or who come from similar occupational backgrounds are likely to have similar sets of values”

These “similarity attraction effects” produce a positive impact on team performance. People who are less equal rather engage in conflict, which, however, if managed well, may result in creative and innovative decision-making and team results. The right level of diversity in TMT demographics provides the total TMT with a particular capability of processing information and problem-solving capacity, which may differ from team to team depending on the underlying skill-set, cognitions and social ties of the members.

2.3.3 Structural TMT Demographic Effects and Resulting TMT Demographic Capabilities

With respect to TMT size and its impact on TMT capabilities Sanders and Carpenter (1998) argue that the size of a TMT is of relevance, for instance a larger TMT allows for more diverse backgrounds in managers’ curricula vitae. On the other hand, a rising size of the TMT goes along with a slower problem-solution capability as more TMT members participate in decision-making. TMT size is a TMT demographic trait which is distinctive from TMT average of diversity effects, and thus will be included as a separate trait in the analysis of dynamics of change in German TMT teams of large firms.

At the end of the discussion of context, process, average demographics, diversity in demographics, and structural indicators, I briefly want to give an overview of particular studies that looked at these issues in TMT upper research. The following chart focuses on studies that do look at contextual and process issues in TMT research as these two issues have been found to be of great importance in understanding TMT demographics, TMT capability and the role of context and process.
2.4 Summary of the Section on the Theoretical Foundations of this Thesis

In this section, I discussed the three main theoretical pillars this work is based on. First, this work follows the basic assumptions of the upper echelon perspective, which embraces the relevance of managers and TMTs as an important subject matter within strategic management thought in understanding the working and performance of organizations and firms. Second, I acknowledge the importance of organizational context in TMT research. I want to research the issue of development of demographics in large German companies between 1997-2002 by looking at strategic positioning of those firms and make predictions with respect to the demographic composition of German TMTs. And third, I use the understanding of level (average) effects, diversity/heterogeneity effects, and TMT structural effects as well as the resulting TMT capabilities to describe the demographic appearances of German TMTs. Based on these three pillars, in the following section I am going develop the key hypotheses which will help me to explore the development of German TMTs in large firms between 1997-2002.

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### Chart 1: Summary of Selected Works in the Upper Echelon Perspective With a Focus on Context or Process

<table>
<thead>
<tr>
<th>Study</th>
<th>Context/TMT Process</th>
<th>Demographics</th>
<th>Data</th>
<th>Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>Peyrefitte, Faull et al. (2002)</td>
<td>TMT context</td>
<td>International experience</td>
<td>N=100 U.S. American companies from four industries</td>
<td>Management experience in a firm has a vital role in determining the degree of internationalization US firms with significant international operations tend to have a higher share of internationally experienced TMT members</td>
</tr>
<tr>
<td>Bauders and Satiraffe (2002)</td>
<td>TMT context</td>
<td>Functional diversity</td>
<td>N=44 TMT in Fortune 100 consumer product companies</td>
<td>Functional diversity has a negative impact on team information sharing and unit performance</td>
</tr>
<tr>
<td>Carpenter (2002)</td>
<td>TMT context</td>
<td>Education, Work experience, TMT tenure</td>
<td>N=38 TMT in S &amp; P industrial index</td>
<td>Functional diversity has a negative impact on team information sharing and unit performance</td>
</tr>
<tr>
<td>Peasgood, Coyle et al. (1999)</td>
<td>TMT context</td>
<td>Functional diversity, Structural diversity</td>
<td>N=76 TMT in high technology industries</td>
<td>Functional diversity has a negative impact on team information sharing and unit performance</td>
</tr>
<tr>
<td>Coll. Sambharya et al. (1999)</td>
<td>TMT process</td>
<td>Four measures of TMT diversity (functional and educational diversity, age, organizational tenure, employment diversity (tenure))</td>
<td>Data from 1986-1997</td>
<td>Functional diversity has a negative impact on team information sharing and unit performance</td>
</tr>
<tr>
<td>Population, Landon et al. (1994)</td>
<td>TMT context</td>
<td>Personality, task attitudes, need for achievement</td>
<td>N=12 TMT in the manufacturing industry</td>
<td>Intrapersonal diversity has a positive impact on information sharing and unit performance</td>
</tr>
<tr>
<td>Hombach, Cho and Chen (2004)</td>
<td>TMT context</td>
<td>High diversity in TMT demographic teams enables more aggressive competitive response (focus on airline industry)</td>
<td>N=12 TMT in the airline industry</td>
<td>High diversity in TMT demographic teams enables more aggressive competitive response (focus on airline industry)</td>
</tr>
<tr>
<td>Michel and Hombach (1992)</td>
<td>TMT context</td>
<td>Organizational tenure, Diversity TMT tenure, Functional diversity, Core functional expertise</td>
<td>N=134 TMT in the airline industry</td>
<td>High diversification posture (related constraint/vertex) is strongly associated with TMT with high social cohesion (measured by organizational tenure)</td>
</tr>
</tbody>
</table>
3 Hypotheses Building: TMT Demographics and Strategic Posture in large German Companies between 1997-2002

It is central to my dissertation to explore the development of TMT demographics in large German companies between 1997-2002 and, in order to do this, to apply and develop the theoretical thought of the upper echelon perspective by adequate hypothesis-building. Before exploring the relation between TMT demographics and strategic positioning, I want to clearly indicate what a TMT in the German context is. This is of particular relevance as in contrast to Anglo-Saxon countries firms listed in Germany usually do display a two-tier corporate governance system.

Generally, researchers have used a variety of different methods to arrive at a definition of a “TMT”. Constructs used include top-level executives (Murray 1989) or positions such as vice-president or higher (Michel and Hambrick 1992) and also the directly questioning of the CEO to nominate the persons they see as belonging to the TMT (Eisenhardt and Schoonhoven 1990; Smith, Smith et al. 1994). In the German context, both TMT and a supervisory board are unambiguously defined as the “Geschäftsführung” which incorporates a CEO (“Vorsitzender/ Sprecher”) and members (“Vorstandsmitglieder”). Not considered here is the extended TMT (“erweiterte Geschäftsführung”). It is this definition I will use in the following development of my hypotheses.

I will begin this section on hypothesis-building with a brief exploration of the organizational context of German firms by looking at the development of internationalization posture. Based on this and the upper echelon perspective, I will formulate a hypothesis with respect to German firms between 1997-2002. This I will then further develop by integrating Germany specific issues of corporate governance and managerial behavior in order to make hypothesis predictions with respect to dynamics of change in German TMT demographics. Subsequently, I will explore organizational context as described by diversification posture and its relation to TMT demographics and an integrated view of combined strategic positioning looking at internationalization posture and diversification posture. The results of this exercise will then enable me to explain level and change effects in German TMT demographics between 1997-2002.
3.1 Exploration of Internationalization Posture: Advantages and Disadvantages

It is one of the basic assumptions in international management research that expanding business activities to other countries may hold considerable advantages for firms, but also bears the risks of serious costs and failure (Vermeulen and Barkema 2002; Berry 2001; Hamel and Prahalad 1995; Han and Lee 1998; Johansson and Vahlne 1977; Johansson and Vahlne 1990, Newbert and Contractor (unpublished); Whitelock 2002). A brief discussion of these advantages and disadvantages will help to understand why from an increasing level of internationalization a higher degree of complexity will result and what this means with respect to expectations of TMT demographic composition and resulting TMT capabilities.

Internationalization can be defined as expanding business activities into geographic locations that are new to the firm (Hitt, Hoskisson et al. 1994) or further developing existing business activities outside the home market to a new level. Especially for Germany the internationalization of businesses is of particular relevance. Since the 1980s, German firms have clearly responded to globalization by internationalization of their businesses, as can be seen by looking at the rise of foreign direct investment (Randlesome 2000) or at the continuous rise and high level of the German trading surplus (OECD 2003). In a study by Birkner and Seelhofer (unpublished paper) German large firms (Top 100) show a relatively high average DOI (Degree of Internationalisation) of 53% in 2002. The DOI measures the share of revenues that are generated by German firms outside the German home market (FSTS - Foreign Sales as of Total Sales). More than half of the revenue of large German firms in 2002 is already being generated in international markets. A growing trend does not only manifest itself in generating of revenues from internationalization but also in the internationalization of production systems (OECD 2003) of German companies. Both quickly develop indicating that German firms increasingly invest in foreign countries and build global integrated production systems outside the home country.

The key benefit of internationalization put forth in research is the realization of superior economic rents that arise from increasing degrees of internationalization. In his analysis of Fortune 500 companies, Vernon (1964) showed that MNCs earn a higher return on sales and higher post-tax return on assets than non-MNCs (Grant 1997; Lu and Beamish 2001). These factors and the fact that investors may profit from an already internationally diversified portfolio may also contribute to a higher market value of...
MNCs as compared to those of only national or less internationalized firms (Reuer and Leiblein 2000). Furthermore, it is assumed that increasing internationalization of a firm contributes to erecting entry barriers for potential competitors on an international level and thus makes the assumed superior economic rents more sustainable (Annavarjula and Beldona 2000; Grant 1997). These key benefits of internationalization seem to result from greater flexibility (Reuer and Leiblein 2000, 2000; Benvignati 1987; Errunza and Senbet 1981; Meza and Ploeg 1987), scale and cost advantages (Benvignati 1987; Al-Obaidan and Scully 1995), and superior production, marketing, management and supply activities (Benvignati 1987; Denis, Denis et al. 2002), superior innovation capabilities on a global scale (Hitt, Hoskisson et al. 1994), and an investment premium investors may be willing to pay for a globally diversified firm (Denis, Denis et al. 2002).

The major downside of internationalization is the costs that might result from it (Ruigrok and Wagner 2003; Al-Obaidan and Scully 1995). Other negative factors are reduced control of management through owners as the organization grows too complex (Morck and Yeung, 1991) or problems of joint control in the case of international joint ventures (Reuer & Leiblein, 2000). Key drivers for internationalization costs include increased organizational complexity resulting from the need for additional administrative systems to manage culturally distinct markets and highly diverse human resources, and non-trivial coordination costs through an increased need for coordination and control (Sanders and Carpenter 1998; Al-Obaidan and Scully 1995; Grant 1987; Gomes and Ramaswamy 1999). Increased organizational complexity is due to the fact that with increasing multi-nationality, firms move in heterogeneous cultural, institutional and more competitive environments and need to coordinate and integrate their geographically dispersed resources (Sanders and Carpenter, 1998). Physical distance, linguistic and cultural differences in management and behavior, legal barriers, and different technological norms can make internationalization a costly experience (Grant 1987). Finally, the organizations have to adjust their home market orientated mental maps to the international outlook of the business (Vermeulen and Barkema 2002). The arising organizational complexity and the increased costs resulting from it also depend on the destination of investment and the particular path of internationalization (Ruigrok and Wagner 2001; Agarwal 1995; Vermeulen and Barkema 2002). Expansion in culturally more distant markets results in high initial complexity and higher costs than developing business in an environment that is similar to that of a company's home market in terms of language and culture. Other factors influencing the cost of internationalization are intensity of competition in the target country, geographical distance, and the level of
economic and business development of the target country as compared to the home country.

3.2 The Internationalization of the Firm: What TMT Demographics? (Hypothesis 1)

The above discussion underlines that internationalization is a complex and risky undertaking for an organization that bears major risks but also holds promises of considerable improvement of organizational outcomes and performance. An important success factor to master this rising complexity is to have a TMT in place that can deal with the challenges and realize the expected performance improvements. Hitt, Hoskisson et al. (1994) argue that internationally diversified firms display a high degree of managerial complexity (Sanders and Carpenter 1998) and information asymmetries and, therefore, are very difficult to manage. It is difficult for the TMT to achieve global integration and local responsiveness across the internationally diversified firm at the same time.

The appropriate degree of demographic composition in the TMT depends on the development of context and resulting organizational complexity at a given time. The degree of internationalization posture can be taken as an indicator of such a complex environment. The more markets, cultures and regions are covered by a business system and the more revenue is created in foreign markets the more complex the environment of an organization is assumed to be (Carpenter and Fredrickson 2001). In order to generate superior performance from this degree of internationalization a firm needs to match its degree of internationalization posture with the appropriate configuration of organizational design elements such as the demographic composition of its TMT.

According to Hitt, Hoskisson et al. (1994), the degree to what extent this complexity can be mastered for the good of superior performance depends on managerial capability at the top. They suggest to extend top management skills to manage an internationally diversified firm by building culturally diverse TMTs. Barlet and Ghoshal describe this as a “transnational capability” (in Hitt, Hoskisson et al. 1994:301). The reasons why, for example, a higher degree of diversity in TMT demographics may be beneficial in case of more complex environments and how this diversity equips the TMT with superior capabilities to master the challenges I already discussed in the previous section. Of course, it could also be argued that this higher complexity resulting from the degree of internationalization can be reflected by a TMT that boosts a lower average organizational tenure, as this can also be taken as a proxy for a higher level of creativity and problem
solution capability in a TMT. Finally, having the right capabilities at the top of the internationalized firm is also likely to increase trust and perception of procedural justice among a firm’s product and geographic managers by showing that the TMT is able and willing to take competing interest into account when allocating resources (Carpenter and Fredrickson 2001).

Supporting the argument of a match between higher diversity in TMT demographics and internationalization posture, Wagner (2001) defines an ideal TMT level of diversity for both MNCs displaying a low DOI and displaying a high DOI. Based on these landmarks he finds that superior performance from internationalization of a firm is contingent on the match between the level of demographic diversity in TMT composition and DOI (as a measure of complexity in the environment) of a firm. Looking at strategic decision processes this notion of match is also supported by Fredrickson and Iaquinto (1989:51), who argue that

“there is no need to change a firm’s strategic decision-making process if it is appropriate for the firm’s environment, if the firm is performing well, and if the environment does not change.”

The fit between TMT demographics and internationalization posture has been examined in a variety of different ways. Demographic variables researched in this respect include TMT size (Sanders and Carpenter 1998), average organizational/team tenure (Fredrickson and Iaquinto 1989), diversity in TMT functional specification, diversity in TMT educational level, average international work experience (Carpenter, Sanders et al. 2001), diversity in TMT nationality (Ruigrok and Wagner 2001; Elron 1997, Hambrick, Davidson et al. 1998:182, Fayerweather 1982), cultural heterogeneity and knowledge network density (Athanassiou and Nigh 1999). Wagner (2001) shows that cultural diversity in tune with DOI in the TMT can have a positive effect on the performance. Carpenter, Sanders et al. (2001) researched international work experience of CEOs in MNCs. They found that the impact of international work experience of CEOs is greatest when combined with a TMT that also has international work experience in firms with expansive global strategic posture. MNCs do profit from a strong CEO who has gained extensive work experience in other countries. In line with Wagner (2001), they also argue that the positive effect of CEO international experience within the internationalization-performance relationship depends on the right match to strategic posture, mode of entry and fit with the specific resource base. Looking at the likelihood of firms of being highly global, Carpenter and Fredrickson (2001) found that TMTs with a diverse outlook in terms of scope of experience, heterogeneity of educational backgrounds, and heterogeneity in firm tenure might be best equipped to manage the complexities arising
from internationalization. By examining the relation of internationalization and the TMT international business advice network density Athanassiou and Nigh (1999), find that within the TMT demand for knowledge of international business rises with increasing internationalization and that TMT members more extensively share their knowledge on international business developments.

In sum, there is overwhelming support from those studies for a match between the degree of internationalization posture and appropriate capabilities a TMT requires to master the arising challenges. These findings will be used to formulate my first hypotheses with respect to development of TMT demographics in German large firms between 1997-2002. The following hypothesis is suggested

Hypothesis 1: German top management teams between 1997-2002 show a demographic composition (average and diversity measures) and resulting TMT capabilities that correlate to the degree of internationalization positioning of the firms.

In my analytical section, I will test this hypothesis for the demographic traits of diversity in TMT nationality, average level or TMT organizational tenure, average level of international work experience, diversity in TMT age structure, diversity in TMT previous management experience and diversity in TMT functional background.

3.3 The Internationalization of the Firm - What TMT Demographics in the German Context? (Hypothesis 2)

It has been shown that there is a sound theoretical reasoning based on empirical findings why a rising level of diversity in TMT demographics or adequate levels of average TMT demographics may go along with a rising level of internationalization. Due to the more diversified cognitive base and higher creative potential, a diverse TMT is assumed to produce superior results in environments with high task complexity, higher velocity of change, and high uncertainty as presented by a high degree of internationalization (Pitcher et al 2001; Carpenter and Fredrickson 2001; Eisenhard and Schoonhoven 1990; Athanassiou and Nigh 1999).

The findings of the US-American studies and the German study of Ruigrok and Wagner (2001) clearly indicate that the composition of the whole TMT does matter for organizational outcomes and performance, and thus supervisory boards and TMTs can be expected by owners and other stakeholders of a firm to manage the TMT as a resource and to pay close attention to the management composition of the TMT relation to the level of internationalization posture.
However, when proposing my Hypothesis 1 I have to keep in mind that the majority of studies presented were done in an US-American context and one has to consider that at the base of the used upper echelon perspective there lies the danger to “hail” or “glorify” the behavior of top managers (Cannella and Monroe 1997:214) or board members. The danger lurks in the non-reflected assumption that top managers rather act for the communitarian interest than for their own interests. Also, especially in the German case there is reason for considering the “rational man” as well, who, if one believes agency theory, is only motivated by self-interest. Agents only follow personal utility functions through personal reward maximization or reduction of personal idiosyncratic risk functions (Aggarwal and Samwick 2003). There is no room for a more communitarian orientated view of people’s actions and relations possibly provoking results that economically may put the individual at disadvantage, but provide benefits for the overall good of the company or for the other employees of the firm (Denis, Denis et al. 1999). This is important in the context of my discussion, because including the “rational” self-utility orientated view opens up an entirely new dimension of factors in explaining the development of TMT demographics and its relations to internationalization posture in large German companies between 1997-2002.

In the first place, this means that in my reasoning I also have to tie in the interests and perspectives of the members of the TMT as well as the power position the TMT (or the CEO) has in the overall corporate governance structure compared to the supervisory board. Following a rational perspective, I assume that top managers can be seen as calculating self maximizers who respond strongly to monetary incentives and work hard to evade administrative control.” (Henderson and Fredrickson 2001:113)

The above reasoning leading up to Hypothesis 1 for a match between TMT demographics, resulting capabilities and internationalization posture would hold true under certain conditions. Supervisory board and top management must support TMT compositional changes and perceives compositional aspects of TMT demographics as an integral part of a firm’s strategic development serving the higher good of companies, shareholders, and employees. In this sense, appropriate demographic succession in a TMT would help to communicate to the external and internal world that now an adjusted TMT equipped with the right skills directs the firm (Ginsberg and Abrahamson 2003). The theoretical framework upper echelon perspective would expect this to happen, as at its base is the non-reflected and implicit usage of a benevolent management view (Cannella and Monroe 1997).
In contrast, empirical evidence across the last ten years from Germany prevalently identifies managerial behavior that does not follow the lines of such a benevolent view (Sheilfer and Vishny 1997). At the end of the 1990s, German top management was said to be notoriously conservative and slow to change. Change processes were assumed not to be fast, regardless of whether this concerned management culture or competencies (Randlesome 2000). There are also doubts about the supervisory board’s role in the practice of properly supervising German TMTs. Bloch and Groth (1998:315) even talk about a “conspiracy of silence in the supervisory and management boards of large German corporations.” They argue that the supervisory board representing the shareholders (and other interest groups) has the task to monitor the management. This includes the right to hire and fire management and, of course, also to ensure that the TMT has the right capabilities to successfully manage the company. Unfortunately, so the authors, tough decisions like firing of TMT members are only seldom taken and people “are nice to each other”. There is a tendency to defer controversial decisions and slacken the board’s decision-making process, which leads to slow and wrong decision-making. As an example, the frequently-quoted development towards a knowledge-based firm may serve. It is widely accepted that an important key to success in the global economy is knowledge and appropriate knowledge management. However, in mid-1995 the German innovation rate dropped considerably compared to other industrial states (Bloch and Groth 1998). This was also due to a lack of ingenuity and calculated risk attitude in German upper echelons. If the global economy, however, requires knowledge and innovation, German top management teams must change/be changed in demographic outlook to adequately respond to these requirements and meet the demands of investors. Also, in more general terms, the control the board has over the executive TMT is rather focused on “financial control”. Usually, board members monitor the financial performance, while strategic control is rather reserved for executives (Westphal and Fredrickson 2001). This indicates that the board’s understanding of strategic business objectives is likely to be not comprehensive enough to promote adequate compositional change with respect to developments in the strategic posture mix.

It is, however, not only the inadequate role of the supervisory boards in German corporate governance that requires me to put Hypothesis 1 in relation to a further theoretical discussion. First, especially higher levels of cultural diversity (e.g. through a higher degree of internationalization in the TMT) resulting from a change towards more
diverse composition may cause intra-group and inter-group emotional conflict within the TMT (Ruigrok and Wagner 2001) and reduce the strategic coherence (Pitcher and Smith 2001) and strategic consensus (Knight, Pearce et al 1999) within the TMT. Established TMT members can be afraid of this or do not tolerate diverse attitudes and beliefs (Pitcher and Smith 2001), and, as a result, fiercely oppose change. This turn is supported by the view on similarity-attraction bias. This framework would hold that board members favor new CEOs or TMT members that are similar in outlook to their own demographic traits (Westphal and Fredrickson 2001). Second, established TMT members may be concerned about job security (Ellstrand, Tihanyi et al. 2002) and loss of power through adjustments in the demographic structure of the TMT.

Attitudes, fears, and opposition of the TMT become especially relevant for the analysis when the TMT is in a powerful and dominant position as proposed by my brief discussion of the role of the supervisory board in the German context. Such a dominance of the TMT in the corporate governance structure is theoretically covered by managerial hegemony theory. Managerial hegemony theory puts forward that the board has a rather passive role and is governed by executive managers. In this view, the governing board lacks knowledge about firm issues, depends on top executives for information (Colesa, Williams et al. 2001), and has a weak position to control and steer the TMT. In hegemonic management theory, supervisory board members may be subject to attribution bias that makes it difficult to distinguish between contextual and personal reasons for TMT performance and accordingly control the TMT or change TMT demography by individual TMT replacements. Top managers might engage in

"impression management behaviors that shifts responsibility for results, alters perception of the manager’s abilities and maximizes a manager’s indispensability." (Cannella and Monroe 1997:216)

Finally, mixed results from a study of the relation between international posture and demographic composition of US MNCs (Wally and Becerra 2001) can also be interpreted in such a way that composition of TMT demographics is not governed by the needs of strategic posture mix. Contradictory to their expectations (and contradictory also to my expectation in Hypothesis one) Wally and Becerra found no link between DOI and international experience of managers.

Taking into account the above discussion on limitations applying to my Hypothesis 1, I propose that the assumed adjustments in TMT composition to the demands of strategic posture of internationalization takes place in a way that is less disruptive and addresses the fears and worries of German top managers above described. I argue with a hierarchy
of demographic indicators when discussing demographic compositions of TMTs and its relation to complexity in the environment. This hierarchy can be understood in a way that in the German context there are preferred demographic compositions of TMTs and less preferred demographic compositions to achieve a certain capability effect in the TMT.

I have shown in my previous section that creativity and ingenuity in the capability of the TMT problem-solving can be reached through demographic TMT diversity or certain TMT average levels of different demographic traits. For example, the required capabilities of managing complexity arising from internationalization may be achieved through a high level of diversity in international background of the TMT, but may also be achieved through a low average organizational tenure, as both may result in higher creativity, albeit through different psychological mechanisms and concepts hidden in the proxy assumption of the discussed theoretical upper echelon process. The former adds creativity through different experiences of TMT members in cultural backgrounds or nationalities. The latter would be taken as a proxy for less group-think and less influence of a firm’s dominant logic in a TMT as well as higher diversity in professional experience also in other companies, and also would be seen as an indicator of a more flexible, controversial and innovative TMT. Although they appear similar in their results of higher creativity and faster problem resolution processes, in my view they are different in their impact on the TMT. Following the line of argument presented above, I assume that adding an international member is far more difficult, challenging and disruptive than adding a member that is less culturally different than the existing members of the TMT and has a lower organizational tenure.

The context of this study provides a unique opportunity to further explore this line of thought through a hypothesis-driven quantitative analysis, as Germany is surrounded by countries that can be considered as culturally close, such as Austria or the German speaking part of Switzerland, as, for example, the same language is spoken in these countries. Taking up my above example again, I would argue in an adjustment of Hypothesis 1 that rising levels of demographic diversity in German TMT fuelled through an increasing amount of international members in German TMT between 1997-2002 are mainly driven through new members from those culturally close countries. I argue that including those three countries due to their cultural similarity as one analytical group (“Germanic language group”) will result in the non-significance of rising levels of diversity in internationalization of German TMT in relation to rising levels of internationalization posture.
Such a result would support my argument that the required diversity in TMT demographic composition in Germany is achieved within other demographic factors like average organizational tenure, but not through a real diversity in internationalization of TMT, as this would prove to be too disruptive and alien to present German management culture. Thus, the following hypothesis is suggested:

Hypothesis 2: In case of the relationship between internationalization posture of firms and internationalization of TMT, the result in hypothesis one expected will not be achieved if culturally close countries such as Austria and Switzerland are included into the analysis as one Germanic language group

3.4 Interaction between TMT Demographics and Environmental Context: Change Effects

So far, I have discussed the relation between strategic posture of internationalization and TMT demographics at one given point of time and proposed hypotheses that help me to understand what the demographics of German TMTs between 1997–2002 in large companies may look like with respect to diversity and average measures. The second major contribution of this work will be to look at change effects between factors of strategic positioning and TMT demographics over time. I will build hypotheses that explore the interaction pattern between these aspects in the time span between 1997-2002. This will considerably extend the upper echelon perspective, as the major focus of this research stream so far lies on cross-sectional analysis and does not provide any support in understanding the dynamics of change in TMT demographics in a longitudinal view.

3.4.1 The “Adaptive Understanding” of Change

Of course, in existing upper echelon perspective there is always an implicit understanding of the causality between organizational environmental factors such as strategic positioning, TMT demographics and resulting TMT capabilities. First, there is the “adaptive” understanding of the causality between strategic posture and TMT composition (e.g. Cannella and Lubatkin 1993). This view holds that TMT composition has to be re-configured to the needs of the firm’s strategy if this is, for instance, caused by environmental pressures (Keck and Tushman 1993) or needs for change in strategic posture (Sanders and Carpenter 1998). One reason, for example, to hire a new CEO is the board’s intention to induce change required by a specific strategic posture. Implicitly,
in this view the choice of top executives is clearly determined by the requirements of
corporate strategies. Sanders and Carpenter (1998) found significant effects of a firm’s
degree of internationalization on its internal governance characteristics, including the
size of a TMT or CEO’s pay level and pay structure. Carpenter and Fredrickson (2001)
found that diversity in TMT demographic background is positively linked to the global
posture of a firm and contingent upon uncertainty in the environment. Michel and
Hambrick (1992) show that diversification drives the composition of top management
teams. They also identify preferable compositions for internationalized or diversified
companies, which may lead to superior firm performance as described in the section
above. Hillmann, Cannella et al. (2000) discuss how the composition of a board (e.g.
inside vs. outside directors) is adaptive to deregulated or regulated environments, and
show that in a regulated environment replacements for board members are more likely
to be insiders. The actual implicit causality in the discussed relationships is usually not
questioned or discussed.

3.4.2 TMT as Driver in Changes of Context

Second, there is the research agenda exploring the reverse relationship link between
TMT demographic composition and organizational outcome and performance. Studies
have found that longer tenured teams are rather prone to follow persistent strategies
orientated towards central tendencies within an industry (Finkelstein and Hambrick
1990). Shorter tenured teams have a higher propensity for driving corporate strategic
change (Wiersma and Bantel 1992; Boekker 1997). Recruiting of a new CEO from
outside the organization results in the firm following a new strategic direction that was
prevalent in the CEO’s previous firm (Westphal and Fredrickson 2001). Also, changes in
TMT demographic characteristics such as team tenure are associated with increased
comprehensiveness in strategic decision-making (Fredrickson and Iaquinto 1989).
Carpenter and Fredrickson (2001) suggest that

“firms are most likely to have expansive global strategic postures when they are led by top
managers who have diverse network ties, skills and worldview, that typically accompany
demographic heterogeneity.” (Carpenter and Fredrickson 2001:535)

3.4.3 The Adaptive and the “Drive” Perspective: An Assessment with Respect to Causality

In both research streams, issues of causality in the relationships between TMT
demographics and context are not deeply questioned nor explicitly mentioned. The
reason for this is that most studies looking at TMT composition, due to their cross-sectional design, do not allow, as one leading study notes, for such issues or

“(for) questioning the circumstances surrounding how and when changes in governance arrangements lead, lag or evenly pace (other) changes.” (Sanders and Carpenter 1998:174; cf. Hambrick and Mason 1984; Finkelstein and Hambrick 1990; cf. Boekker 1997)

Accordingly, authors such as Sanders and Carpenter (1998) call for research that empirically looks at the reinforcing interaction between strategic posture mix and TMT composition. In the same vein, Pitcher and Smith (2001) or Boekker (1997) argue that an understanding of this issue is crucial.

Keck and Tushman’s (1993) study of the development of the executive context and executive team structure addresses some of these issues. In their view, organizations evolve through relatively long periods of incremental change only interrupted by rapid periods of reorientation in strategic posture. The reorientation does involve new strategies and implementation of staff, new structures, and control systems. They lead to a new period of incremental or convergent change as well as unfold in the settings of a firm’s previous strategic posture and resulting periods of incremental change (the “Punctuated equilibrium Model”). The nature of the TMT composition follows these patterns and is adjusted to the needs of organizational change. Keck and Tushman (1993) call this resetting the executive team clock. In their single-industry study, they looked at US cement firms between 1900 and 1986 and were able to show that organizational and environmental changes do have important consequences for the structure and composition of executive teams over time. Executive teams become less seasoned and more diverse when their context changes sharply. In the in-between periods of incremental change executive teams show a stable structure, homogeneity, and higher tenure. The study did not look at a specific interaction pattern between strategic posture and TMT composition but rather distinguished between times of stability and change and identified corresponding changes in TMT composition. Pitcher and Smith (2001) generated further insights into the interactive development of TMTs and strategic posture over time. In their longitudinal qualitative study on a 20-billion-US$ financial service firm they were able to find support for the basic theoretical tenets of upper echelon perspective of TMT demographic relevance for outcomes, and showed how TMT changes over time can have a dramatic impact on a firm’s performance. In sum, to my knowledge, a quantitative discussion and analysis looking at the interaction between TMT demographics and organizational environment so far does not exist. Such
a discussion of the possible nature of the interaction patterns I want to introduce now for the German case.

3.4.4 Interaction between TMT Demographics and Strategic Positioning: The German Case

When discussing my theoretical suggestions for the analysis of change in demographic variables and external strategic environment in the German context, it is vital to include the role of the supervisory board in this discussion. After all,

“regardless whether it is a monistic or dual Board, it has to review and, where appropriate, approve the financial objectives, major strategies and plans of the corporations and also among others to select, regularly evaluate, and, if necessary, replace the Chief executive officer.” (US Business Roundtable in Monks 2001:169; cf. “Strategic Board” in Sison and Kleiner 2001)

The role of supervisory boards in firms has in recent years increasingly gained in importance. It was at the beginning of the 1990s when large institutional shareholders, legislators and other stakeholders of a corporation began to look at the supervisory boards to provide a more independent review of corporate performance, direction and strategy but also control of the top management team. This is reflected in Dale Hanson’s (CalPERS CEO) statement:

“We are no longer into CEO bashing, we are now into director bashing.” (Monks 2001:141)

In this respect, Ruigrok and Wagner (2001) argue that given the importance of foresighted action and selection, boards of directors must ensure that TMT composition adequately reflects the current and future strategic needs with respect to a company’s customer base as well as employee and investor community. Of course, this control function is not only confined to compositional aspects but other issues such as incentives and monitoring the TMT. Colesa, Williams et al. (2001) suggest that CEO incentive systems used by supervisory boards must cover measures such as performance contingent pay, CEO stockholdings, or a combination of both. A supervisory board’s organizational monitoring system includes three types of systems: leadership structure, the stock ownership of members of the board, and the composition of the board of directors.

Also for the German case, from the perspective of an alignment of strategic posture and TMT demographics this means that there are interested groups within companies that must ensure that TMT demographics are managed in time for the good of the company. It is the supervisory board’s role to ensure that the TMT demographics can provide the
TMT capabilities, which are required to master the challenges of the business environment and shape the business environment to the advantage of the firm.

Taking the theoretical stance of the upper echelon perspective with its “benevolent man” at its base, one could expect that the supervisory board manages TMT demographics in a way that the TMT demographic structures are adjusted shortly before or right in time to changes in the strategic posture in order to achieve a suitable level of diversity in the face of rising level of environmental complexity. If this holds true, I can anticipate that change in the strategic posture mix is closely preceded or instantaneously accompanied by adequate changes in the demographic composition to timely reach the desired level of heterogeneity or homogeneity in TMT demographic composition. A premature change in demographics as well as a delayed adjustment of demographics would result in performance loss of the company due to a misfit between TMT demographics and strategic posture mix. Also the resource-based view would expect that the TMT is managed through foresighted action by the supervisory board. In this respect, Leonard-Barton (1995) would expect that the skill-set of TMT members is carefully managed to promote organizational change and foster success.

However, already in my discussion leading up to Hypothesis 2 I pointed out limitations to the benevolent view of the management of TMT demographics regarding development in the organizational environment and the necessity to consider “hegemony management theory” in the context of German corporate governance issues. Similarly, following managerial hegemonic theory one could argue that in contrast to the assumption of an anticipating or timely match of TMT demographics and environmental context the above discussion would suggest that changes in TMT fall behind or “lag” behind changes in strategic posture as the TMT may be reluctant to change and other players in the corporate governance structure such as the supervisory board is in no position or not willing to enforce adequate changes in the context to the strategic posture mix. It may even happen that changes in TMT demographics do not relate to changes in the environmental context at all, as

“... inertia, momentum or simply habit... ” (Fredrickson and Iaquinto 1989:518)

in organizations are responsible for only limited modest and incremental organizational change and also change in TMT demographics. The degree of possible inertia in the interaction between demographic composition and strategic posture mix has not been researched yet, although findings of Fredrickson and Iaquinto (1989) on the interaction between comprehensiveness of strategy of a firm and TMT compositional aspects such
as executive-team tenure (but also organizational size) show how relatively little change has happened in strategic comprehensiveness of decision-making over time.

For analyzing change in German TMT demographics, I want to further extend my argument of managerial hegemony theory as relevant for the development of German TMTs within my timeframe of analysis and introduce the notion of “power-structures” as important for understanding the dynamics of change between TMT demographics and organizational environment. At the core of this discussion is the assumption that the German TMT is in a powerful position within the German corporate governance structure, and that only enforced, disruptive and radical change can break up this strong position. I argue that as long as German TMT remain unchallenged in their powerful position evolutionary change in harmony with levels of strategic positioning will not take place in German TMT demographics as the self-interested behavior of top managers pictured by agency and hegemonic theory will prevail.

3.5 The Relevance of Power Structure in Researching Change in German TMT Demographics (Hypothesis 3)

Boekker (1997) argues that change in CEO and top management team composition must be seen as an important mechanism for overcoming inertia and political resistance. This hints at a power perspective in looking at changes of TMT demographics. Power in context of TMT is understood as the capacity of managers to exert their will and influence organizational outcomes (Finkelstein 1992). Power has already been introduced into the study of TMT demographics in previous studies. Analyzing the influence certain TMT members have based on their function and contingent upon the strategic market environment, Hambrick (1981) found that power was related to an executive’s functional situation depending on the major strategic requirements resulting from the type of a business environment (hospital, college, insurance companies). He argues

“that the centrality of a function is a determinant of its power. Accordingly we could reason that general managers, who typically span and integrate a variety of functions at the boundaries of the organization and who are not directly involved in the mainstream tasks, have low centrality and power.” (Hambrick 1981:267)

Finkelstein proposes a choice of power dimensions (Finkelstein 1992): prestige power, structural power, expert power, and ownership power. CEOs (Vorstandsvorsitzender) usually wield a high level of structural power and also have a high degree of expert power. Research stresses the centrality of the CEO himself/herself and the CEO position with respect to shaping and steering the TMT and defining the power position.
of the TMT in the overall corporate governance structure of a firm. As the CEO not only takes a central role within the TMT, but also is central to the interaction with the supervisory board, a CEO change provides a good opportunity to interrupt existing power patterns and dominant coalitions in the TMT and also induce change in TMT demographics.

The CEO change is an opportunity where the working of hegemonic management theory as proposed above is challenged (cf. Westphal and Fredrickson 2001) and can be overcome:

"CEO succession certainly increases the dynamics of a TMT team and perhaps also impacts on the composition and structure of a board." (Ward, Bishop & Sonnenfeld in Shen and Cannella 2002:1198)

The supervisory board can cause CEO succession when the firm does not live up to the performance objectives of shareholders or in case of retirement. With respect to possible control the board has over the TMT, some studies using the agency perspective also found that other specific factors may influence the degree of control the boards execute, e.g. in that case the board has strong incentives to act in the interest of the shareholders resulting from poor strategic control mechanisms or high free cash flow (Westphal and Fredrickson 2001). To hire a new CEO is a very frequent decision if a company shows low performance levels in subsequent years. Usually such changes prove to be very disruptive for the working of the TMT (Auchterlone 2003). Westphal and Fredrickson (2001:1131) argue that

"the departure of a CEO may leave a power vacuum that enables board members to assert their strategic preferences by selecting CEOs from outside the organization who have experience with strategy that board members favour."

It may also not only be the supervisory board that actively uses the CEO change to break up TMT power structures. The new CEO may use the time of CEO change to overcome the above-described inertia for demographic change within the team and drive change along the lines of his or her ideas.

Central to my argument is the suggestion that CEO change induces a power vacuum in established leadership and governance structures, presenting a golden opportunity to change TMT demographics according to the requirements of the strategic environment. It is not the timely match between TMT demographics and strategic environment that could be derived from the upper echelon perspective or the resource-based-view that governs change in TMT demographics. It is rather the opportunity arising from CEO change leaving a power vacuum that enables change in TMT demographics towards
higher degree of diversity. Thus, I present the following hypothesis with respect to change in TMT demographics in German large companies between 1997-2002:

Hypothesis 3a: Changes in TMT demographics leading to higher diversity traits in TMT demographics or corresponding average TMT demographic only occur in years of a CEO change

Based on my discussion above, I also do not think that the development of strategic positioning has an impact on TMT demographics with a time lag. There is no evolutionary development of TMT demographics corresponding to the development of the strategic positioning of a firm:

Hypothesis 3b: There is neither a correlation between changes in strategic positioning of a firm and adequate changes in TMT demographics in the same year nor a correlation between changes in strategic positioning of a firm in a previous year and adequate changes in TMT demographics in the following year

3.6 Complexity of Product Diversification: Related and Unrelated Diversification

Another way to approach the strategic posture of a firm is the level of product diversification. Also, a specific level of product diversification has certain requirements towards TMT demographics and resulting TMT capabilities. Again, following the approach I applied to internationalization positioning of firms I will discuss the issues of diversification in a similar manner.

In general, product diversification refers to expansion into product markets new to a firm (Hitt, Hoskisson et al. 1994). The firm expands into products or product lines that have no market interaction (technically, having zero cross price elasticity) with any of the firm’s existing products (Rumelt 1982). One can distinguish between related and unrelated diversification (Palepu 1985). The notion of related and unrelated diversification originates from the work of Rumelt (1982). Not very satisfied with the existing measures of diversification based on product groups, he developed a new framework for analyzing diversification of a firm. According to him, firms do not only differ in the extent they diversify, but also in the type of diversification strategy they follow (Rumelt 1982). By introducing his 4-type system of diversification, it was he who was first able to show a positive effect between diversification and firm performance. Thus, he advanced the understanding of diversification as compared to until then
inconclusive findings of the industrial organization strand. The 4-type system encompasses (1) unrelated business diversification, (2) related-linked firms, (3) related-constrained firms, and (4) vertically integrated firms.

Firms displaying unrelated business diversification are conglomerates of different business units, which are generally autonomous from one another. Coordination between the units is restricted to financial issues (Michel and Hambrick 1992). There is no strategic business relation between the business units. Related diversification describes the expansion into new business areas, which are relatively close to the core business. Rumelt differentiates between “related-linked firms” and “related-constrained firms”. The former describes a firm where the business units have some tangible relation to one another, e.g. where knowledge from one unit can be used in another unit of the firm. The latter describes diversification around a common technological core, production process or expertise (Michel and Hambrick 1992). Finally, vertically integrated firms cover a variety of value-creating activities along the value chain of a specific product or service, for instance, such as excavating and mining metals, metal processing and selling of metal fabrics.

An important aspect of Rumelt’s understanding of diversification is that measuring the level of diversification is not only considering market interactions but also production factors. Accordingly, related diversification can be further described by a movement into new product areas where the firm can use established technologies (technological spill-over), use existing innovation capabilities (exploration spill-over), develop vertically in the value chain of delivering an existing product (vertical integration), marketing and sales knowledge from existing products, or has products that are complementary (product complementarity (compare Pearce in Nguyen, Seror et al. 1990:413)). In contrast, unrelated diversification is the move into new product areas where there is also no relation on the production factor side with the existing business. It is a conglomerate diversification strategy assembling a variety of different businesses under the roof of one company.

Diversification has been a popular strategy notably among European, US, Japanese firms and firms in other parts of the industrialized world in the 70s and 80s (Hitt, Hoskisson et al. 1994). However, due to the unsatisfactory results with respect to firm performance and market evaluation through investors, recent years have witnessed a focus on core business activities or activities that are more closely related to it. For instance, among US corporations, industrial product diversification has not been as popular since the end-of the eighties anymore (Denis, Denis et al. 2002). Nevertheless, in a 1993 study of Mayer
and Whittington (2003) it becomes clear that compared with 1983 diversification levels has further developed.

Chart 2: Diversification Strategies Amongst European Firms 1983 and 1993

<table>
<thead>
<tr>
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<tbody>
<tr>
<td>Undiversified</td>
<td>42.6</td>
<td>39.6</td>
<td>35.3</td>
<td>22.2</td>
<td>27.4</td>
<td>16.4</td>
</tr>
<tr>
<td>Related-Constrained</td>
<td>31.5</td>
<td>37.7</td>
<td>35.3</td>
<td>33.3</td>
<td>32.9</td>
<td>38.8</td>
</tr>
<tr>
<td>Related-Linked</td>
<td>9.3</td>
<td>7.5</td>
<td>11.8</td>
<td>20.4</td>
<td>21.9</td>
<td>17.9</td>
</tr>
<tr>
<td>Unrelated</td>
<td>14.8</td>
<td>15.1</td>
<td>17.6</td>
<td>24.1</td>
<td>16.4</td>
<td>25.4</td>
</tr>
<tr>
<td>Number of firms</td>
<td>54</td>
<td>54</td>
<td>51</td>
<td>60</td>
<td>73</td>
<td>67</td>
</tr>
</tbody>
</table>

Source: Mayer and Whittington 2003

This Chart indicates that until 1993 in Germany in all different types of diversification the approximate level of diversification was either kept or even rose. The percentage of firms that did not diversify at all decreased considerably and the overall diversification level (the sum of diversification types) increased. However, since then there has been in Germany a trend towards a focus on core businesses, meaning that the amount of unrelated diversified firms is diminishing. Now, this can only be illustrated by examples, as, to my knowledge, quantitative studies showing this are not available. Examples of this include ThyssenKrupp AG, which after the merger spun off businesses, which were too far away from the core business of metallurgy and trade in metals/metal fabrics. Also similarly, the merger of Viag AG and Veba AG was followed by a increasing focus on related business areas. In my descriptive section of this thesis I will support the claim of stagnant diversification levels of German firms by the results of my quantitative research.

3.6.1 Product Diversification: Advantages and Disadvantages

Since diversification is a topic of interest for management researchers from different areas such as industrial organization economics or the resource-based-view of the firm, research has to utilize many different perspectives on the advantages and disadvantages
of diversification. In the following, I will give an overview of these advantages and disadvantages, as this will give an indication of the capability a TMT needs to successfully manage diversification. For a more detailed view on advantages and disadvantages see the work of Denis, Denis et al. (2002) or Park (2002).

A major advantage of product diversification commonly suggested is the realization of economics of scope and scale across core resources (Rumelt 1982; Geringer, Tallman et al. 2000). Economies of scale describe the cross-fertilizing between old and new product areas on the production factor side. In this respect Rumelt even argues that companies that can realize the maximum economics of scale and scope based on a single product line would not further diversify. Economies of scale may be realized across product areas through transfer of general management skills across all products (Palepu 1985). Other advantages include market power effects, risk reduction effects (Kim, Hwang et al. 1993), and learning effects (Geringer, Tallman et al. 2000) or, in case of unrelated diversification, the departure from low profitability industries (Delios and Beamish 1999). A diversified firm is in a position to keep market force by cross-subsidizing, predatory pricing, reciprocity in selling and buying, and by erecting barriers to market entry. Another advantage is the so-called information loss - the ability of a diversified firm to conceal the profitability of its individual business segments (Palepu 1985) and by thus making it difficult for potential competitors to pick lucrative market segments. A further advantage of product diversification includes spread of risk of failure across several different product areas (Hoskisson and Hitt 1990) resulting in higher stability of product profitability. Financial advantages include internal market efficiencies that, for instance, allow managers to use cash from slow growing business segments to generate growth in new dynamic segments (Denis 2002). Furthermore, diversification may result in learning effects on the organizational level to the extent that all firm levels, including the TMT, learn how to move in a more complex organizational environment.

Research literature sees a major disadvantage of product diversification in the increasing complexity of the resulting organization, which is not only more difficult to manage but also, especially in the case of unrelated diversification, results in higher administrative burdens (Geringer, Tallman et al. 2000). Management of these diversified firms is more demanding than operations of a single-product firm in one industry. The need to derive synergies from interdependent businesses (in the case of related diversification) asks for superior integrative capabilities on the one hand, but also a deep and profound business understanding of both the old product area and the new product area. To make it more complex, these synergies may also consist of not easily detectable inimitable and
intangible factors, that produce competitive advantage and are complex and difficult in management. Especially unrelated diversification may be acquired at the cost of the TMT losing strategic control over the conglomerate and being limited to financial control. In this case, TMT members do not understand the different business segments in a way necessary for efficient and effective strategic steering. Information asymmetries created by operating multiple diverse businesses may furthermore increase the complexity of manageability. Also, there is an argument from agency theory maintaining that the managerial incentive for product diversification stems from an agency problem. Top managers reduce their employment risk by diversifying the firm into new product areas, as this reduces the risk of firm failure (this, however, is being disputed by Lane, Cannella et al. 1999) and consequently they may get better compensation packages and gain in prestige and power (Denis, Denis et al. 2002; Denis, Denis et al. 1999; Aggarwal and Samwick 2003). Highly diversified firms invest less in R & D and thus become less innovative. A focusing of R & D spending is not possible anymore, and the shift towards financial control lowers the readiness to take risks in product innovation (Hitt, Hoskisson et al. 1994). Finally, diversification of a firm goes along with a diversification discount on firm value (Mansi and Reeb 2002), due to partly inefficient investment policies (Denis, Denis et al. 2002).

### 3.7 Product Diversification: What TMT Demographics (Hypothesis 4)

Research literature argues that the actions and outlook of the top management are crucial in the relation between product diversification and performance (Michel and Hambrick 1992). Henderson and Fredrickson (2001) examine how a firm’s diversification strategy, technology and structure positively contribute to the coordination needs within its top management team. Hitt, Hoskisson et al. (1994) illustrate that the main reason for the unsatisfactory overall performance results of product diversification lies in the high degree of challenges the management faces in related and unrelated diversified companies. Palepu argues that economies of scale may be realized across products and management also through the ability to transfer general management skills across products (Palepu 1985).

I argue that the requirements concerning the demographic composition of TMT to successfully manage diversification differ between the development of a diversification strategy – the phase where new product areas, partners and performance/synergy potentials are evaluated – and the implementation/operation of a diversification strategy. Ginsberg (1990) argues that for the initial process of diversification a cognitively
complex (heterogenic) TMT is useful, as it is more able to detect competitive advantages of diversification such as intangible relationships among businesses or generic similarities between the businesses. This is confirmed by findings from a study Henderson and Fredrickson (1996) conducted on the relation between information-processing demands and level of CEO cash compensation. Related diversification puts higher information processing demands on TMT members, and thus the market responds with higher cash compensation compared to CEOs of unrelated conglomerate diversifiers. The study did not look at the overall demographic compensation of the TMT. Also, a high level of discussion and low consensus of socio-cognitive complex teams is more likely to contribute in finding a creative approach towards building the new core business (Ginsberg 1990) than the consensus culture usually attributed to a TMT with a rather less diverse outlook in its demographic structure.

However, in line with Michel and Hambrick (1992), Ginsberg also argues that already during the implementation phase the ambiguity, creativity and dissent of heterogeneous and cognitively complex TMTs is rather contra-productive when implementing or operating the diversified business. Through consensus and quicker decision-making TMTs with a lower socio-cognitive profile are more effective in executing diversification recommendations and running the business. Analyzing in detail the requirements operating a diversified firm has on TMT demographics, Michel and Hambrick (1992) looked at two types of relationships: a set of descriptive links between diversification and TMT demographics, and a prescriptive link between TMT composition and firm performance. They follow Rumelt in the assumption that the interdependence between business units from unrelated to related diversification increases, and discuss two major points with respect to the relation between product diversification, TMT demographics and firm performance. They argue that increasing diversification tends to be accompanied by a higher degree of interdependence between the business units, which in turn require increasing social cohesion in the top management team to successfully manage the interdependence between the differing units and to establish a corporate-wide operating knowledge base. With respect to performance they suggest that firms that do not match type and degree of diversification and the resulting interdependence between the business units with the required degree of social cohesion in the TMT will experience lower performance than firms that do achieve this.

Unrelated firms face almost no interdependence between the units. The coordination task the management has focuses almost exclusively on financial management and allocation, control and consolidation. A strategic coordination of the business units does
not take place - social cohesion in the top management team is not necessary as, for instance, there are no synergies to be realized and the business unit managers run the operative business. Related firms already experience a higher degree of interdependence between the business units. In related-linked firms the need for social cohesion at the top is, however, lower than in related-constrained companies. In the former, corporate management plays some role to integrate the businesses. Major required integration such as the usage of a core function (e.g. a production plant) is done through coordination between the business units. In the latter, where diversification is built around one core process or knowledge, however, the top management must be concerned with realizing the synergies across the business units and master the higher degree of interdependence through

"orchestrating the diffusion and sharing of the firm's core resource across the full array of business units." (Michel and Hambrick 1992)

Although there are differences in requirements of management resulting from both types of related diversification, I integrate them in one category of "related diversifiers". This is supported by Henderson and Fredrickson (2001:100) who put forward that generally related diversification requires top executives

"to take an active role in resolving reciprocal interdependencies, coordinating resource exchanges and leveraging core competencies across business areas", in short, to provide cohesion at the top of a business driven by differing business units and interests. The highest degree of interdependence can be found in vertically integrated business structures. The whole value creation process spread across several units needs to be directed from the top. Correspondingly, this highest degree of interdependence asks for the highest degree of cohesion in the TMT (Michel and Hambrick 1992).

The results of Michel and Hambrick's study were mixed. Yet, the overall proposition that companies following different diversification strategies require different top management team characteristics along the lines just discussed to perform well was confirmed. Based on this, similar to the part on internationalization of a business (Hypothesis 1), I propose the following with respect to level effects of diversification/related diversification and TMT demographics in large German firms between 1997-2002:
Hypothesis 4a: The higher the level of a firm’s overall diversification the higher is the social cohesion of the TMT team expressed by low diversity in TMT demographics or corresponding average TMT demographics.

Hypothesis 4b: The higher the level of a firm’s level of unrelated diversification the lower is the social cohesion of the TMT team expressed by high diversity in TMT demographics or corresponding average TMT demographics.

In regard to the analysis of change between level of diversification and TMT, I follow the same argument as presented in the case of internationalization and will not further elaborate this here. Changes in diversification levels in the previous or the same year do not influence TMT demographics, although studies indicate that rising diversification levels make a higher degree of social cohesion in the TMT desirable. Again, it is argued that it is not developments in the organizational environment which cause change, but the break-up of power structures as indicated by a CEO change.

What remains to be explored is an integrative contextual view of my two measures of internationalization and diversification posture with respect to the required demographic traits and capabilities of German TMTs. As it has been shown by now both developments - internationalization and diversification - have been important developments in the strategic positioning of German firms in recent years and have produced conflicting requirements towards TMT demographics and capabilities. Thus, I need to take the usage of strategic positioning in upper echelon perspective to research the level effects of demographics to the next level and integrate both aspects of strategic positioning in one effort of hypothesis-building.

3.8 Internationalization and Diversification: Comments on a Joint Perspective (Hypothesis 5)

Since the middle of the 1990s there has been a trend in strategic management literature to look at an integrative view of internationalization and diversification postures and draw conclusion about performance. The rationale is that both trends are important enough to individually have an impact on firm performance (Delios and Beamish 1999) and consequently should be looked at in an integrative manner. Also, in practice of international business, there is a trend to extend the geographic spread of the core business lines into new markets abroad (Hitt, Hoskisson et al. 1994) and dispose of the business units that are not related to the core business. This does not imply that companies only focus on one single product line - they rather focus on related
diversification along international lines. Literature shows that this developing of core business functions along international lines and downscaling of other more distant product lines and activities can be of advantage for a firm (Qian 2002). Geringer, Tallman et al. (2000) argue that multinational firms that stay in their core product lines as they spread into new markets would seem able to lever at least some of their unique capabilities in any national market, despite the need to adjust to local factors. Kwang, Hwang et al. (1989) show that firms diversifying internationally along their core capabilities (related diversification) show greater profit stability than firms that follow a path of unrelated diversification.

There is variety of examples of this trend in the German context, for instance, the development of German E.on AG since the merger between Viag and Veba in 2000\(^1\). Until mid-of 2003 E.on AG sold business units that were too distant from the core business of energy production, distribution and services. This included the packaging division Gerresheimer Glas, communication provider Viag AG, steel trader Klöckner & CO, and Gelsenwasser AG, a German water firm. Former Veba Oil was exchanged against BP’s shares in Ruhrgas AG, the market leader in German gas import and distribution, in which E.on now holds 100% of shares. After reducing the scope of business and focusing to the core activities of energy production, distribution and services, E.on internationally diversified within the firm’s core competencies by the acquisition of British energy provider Powergen. Latest moves in this direction as of summer 2003 include strategic plans to take over Swedish energy provider Graninge SA. Other examples are RWE AG, another German utility company, or DaimlerChrysler AG which sold its aerospace divisions and merged with US-American Chrysler Corporation. Unfortunately, to date there is as yet no quantitative evidence which would show to what extent this phenomenon has general validity for the German economy at the beginning of the new century.

This development raises interesting questions with respect to the requirements of TMT demographics of firms that integrate internationalization and diversification. The adequate composition in the context of such a strategic posture mix is certainly of importance, as - despite the missing quantitative evidence - there is a variety of important examples where this related diversification combined with international expansion can be observed in the German context.

\(^1\) The following data are taken from Handelsblatt 08.08.2003, page 2
On the one hand, the management of highly internationalized firms is assumed to require a higher degree of heterogeneity/diversity in its TMT cognitive base, as the environment is complex and dynamic. On the other hand, literature argues that in order to reap the benefits from a related diversification strategy characterized through high interdependence between the business units, the TMT needs to display social cohesion, thus rather asking for homogeneity in its cognitive base.

I base my hypotheses for an integrated view of strategic posture mix of internationalization/diversification and TMT demographics on the assumption that diversification has an overriding effect on internationalization in regard to the impact on TMT demographics. Due to the lack of quantitative evidence, I assume - based on the anecdotal evidence of selected German firms above - that most firms that have a certain degree of diversification started this respective business line in their home countries. They already had a certain diversified business base before they internationalized their business. Thus, the integrative capacity is also still more pre-eminent in TMT demographics. Also, a highly internationalized and highly diversified firm faces the same integrative problems requiring social cohesion at the top as a firm that is not very internationalized and highly diversified. One could argue that this kind of company requires a even higher social cohesion at the top and lower diversity in the TMT as through the internationalization the base of the business is even more scattered. Thus, I propose the following hypotheses:

Hypothesis 5a: In highly diversified firms, increasing levels of internationalization are not associated with rising levels of TMT demographic diversity

Hypothesis 5b: In low diversified firms, increasing levels of internationalization are associated with rising levels of TMT demographic diversity

The integration of both internationalization posture and diversification posture in one analytical Model looking at TMT demographics has not been done before in this way. To my knowledge, the integration of various strategic postures as continuous measures in one integrated model, is new to the upper echelon perspective. Thus, the theoretical support with respect to expectations of TMT demographics I can provide for my hypotheses at present is weak. I am aware of this fact, but also believe that the quantitative analysis I provide to research the above aspect of strategic positioning and TMT demographics will open the way for further, more detailed research in this important area of upper echelon research.
3.9 Summary: The Five Hypotheses of this Thesis

In this section, it was my intention to present two types of hypotheses. First, I presented hypotheses that are based on existing theory of the upper echelon perspective to help me to understand the level of German TMT demographics in large firms between 1997-2002. Second, I discussed hypotheses that showed the need to extend the upper echelon perspective in order to apply it to a German context, introduce the notion of change, and enable it to include more integrative and complex constructs of strategic positioning. The following Chart briefly sums up the hypotheses presented and gives an explanation of their purpose.

Chart 3: Summary of the Five Hypotheses of this Thesis to Research Level and Change Effects in German TMT Demographics between 1997-2002

<table>
<thead>
<tr>
<th>Hypotheses</th>
<th>Objectives</th>
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| Hypothesis 1: German top management teams between 1995-2002 show a demographic composition (average and diversity measures) and resulting TMT capabilities that correlate to the degree of internationalization positioning of the firms | explores the status of German TMT demographic composition with respect to the requirements of strategic posture (internationalization) for large German firms between 1997-2002
examines the general validity of work done previously in this field |
| Hypothesis 2: In case of the relationship between internationalization posture of firms and internationalization of TMT the result expected in hypothesis 1 will not be achieved if culturally close countries such as Austria and Switzerland are included into the analysis as one German-speaking language group | examines aspects specific for the German business environment such as the likelihood of cultural diversity in TMT on demographic factors that are less prone to destroy a TMT working and are less alien to German culture
extends upper echelon perspective by further developing its use in an non-American business environment |
| Hypothesis 3a: Changes in TMT demographics leading to higher diversity in TMT demographics or corresponding average TMT demographic only occur in years of a CEO change | examines the role of change in strategic posture and the change in power structures (e.g. signified through CEO change) with respect to change in TMT demographics in large firms between 1997-2002
introduces a view on the interaction patterns between strategic posture and other important factors with respect to TMT demographics in the theoretical strand of the upper echelon perspective
adds a concept of change to the upper echelon perspective |
| Hypothesis 3b: There is neither a correlation between changes in strategic positioning of a firm and adequate changes in TMT demographics in the same year nor a correlation between changes in strategic positioning of a firm in a previous year and adequate changes in TMT demographics in the following year | examines the status of German TMT demographic composition with respect to the requirements of strategic posture (internationalization) for large German firms between 1997-2002
examines the general validity of work done previously in this field |
| Hypothesis 4a: The higher the level of a firm’s overall diversification the higher the social cohesion of the TMT team expressed by low diversity in TMT demographics or corresponding average TMT demographics | explores the status of German TMT demographic composition with respect to the requirements of strategic posture (internationalization) for large German firms between 1997-2002
examines the general validity of work done previously in this field |
| Hypothesis 4b: The higher the level of a firm’s level of unrelated diversification the lower the social cohesion of the TMT team expressed by high diversity in TMT demographics or corresponding average TMT demographics | explores the status of German TMT demographic composition with respect to the requirements of strategic posture (internationalization) for large German firms between 1997-2002
examines the general validity of work done previously in this field |
| Hypothesis 5a: In highly diversified firms rising levels of internationalization are not associated with rising levels of TMT demographic diversity | explores the status of German TMT demographic composition with respect to the requirements of strategic postures (internationalization) for large German firms between 1997-2002
examines the general validity of work done previously in this field |
| Hypothesis 5b: In firms of low diversification rising levels of internationalization is associated with rising levels of TMT demographic diversity | explores the status of German TMT demographic composition with respect to the requirements of strategic posture (internationalization) for large German firms between 1997-2002
examines the general validity of work done previously in this field |

By this process of hypothesis-building, I both want to understand and account for an empirically measurable phenomenon of the development of German TMT demographics between 1997-2002 and also want to contribute to the theoretical body of upper echelon perspective. In the discussion section of this work, I will then evaluate in detail to what extent I was able to reach those aspired goals.
4 The Research Design, Data Collection and Analysis

4.1 The Choice of Research Design and Data Collection Approach

In this section, I will discuss the overall research design that fits the research objectives and hypotheses outlined in the previous section. First, I will discuss issues important for choosing the appropriate research design, such as quantitative or qualitative approaches. Second, I explore the appropriateness of different data collection approaches. Finally, based on the previous two discussions, I explain the research design and data collection approaches I regard as particularly suitable for my research questions.

The objective of the research design is to provide a description of the analysis process of the subject matter by discussing methodological issues and key analytical concepts. It illustrates how the hypothetical relations between major concepts such as the link between TMT demography and strategic positioning are operationalized, and further explores the predictive character of the concepts (Ketchen, Thomas et al. 1993). Such a research design includes a description of methods of data collection, concepts of data analysis/evaluation, and the reporting of results (Drongelen 2001; Black 1999; Eisenhardt 1989a). It can be inductive or deductive in outlook, quantitative or qualitative in analysis and result, or can even employ a multi-method approach (Black 1999a).

In the following, I will discuss which research designs are available and how viable they are for the research topic and its propositions here outlined. The discussion will touch upon qualitative versus quantitative knowledge generation, inductive versus deductive approaches, and single-methods versus multi-methods. Looking at relevant literature on methodology (e.g. Black 1999; Miles and Hubmann 1994; Snow and Thomas 1994; Jick 1979; Yin 1989), these categories reflect “strategic” decisions in the research process that need to be considered first and discussed to increase the validity of a research project. Following these strategic decisions in developing the research design are then rather “operative” decisions concerning the research design, for instance, including decisions on data collection such as archival analysis, case study, and sample analysis (Drongelen 2001; Yin 1989), but also a description of the specific demographic variables and measures of strategic positioning I plan to use. Logically separating the decision on inductive/deductive approach, quantitative/qualitative and single methods/multi-methods from the operative follow-on decision on research designs is arbitrary (Drongelen 2001; Yin 1994). However, it is a conscious separation, as thinking about
these “dichotomies” helps in finally settling on a research strategy design more comfortably and conducting the research process with higher scientific validity. The variety of possible research designs looking at design, data collection, analysis/evaluation and reporting range from non-empirical to empirical approaches (Black 1999) and are potentially huge. The focus here will be on a discussion of empirical approaches, as these stand for the scientific leg of knowledge generation.

4.1.1 Deduction/Induction, Quantitative/Qualitative, Single Method/Multi Method Design as possible Options for Research

Black (1999:9) argues that

“deduction means that one can explain, or deduce an explanation, by matching a specific situation to a more general one - in other words the circumstances fit the theory.”

Inductive approaches start from a general observation or empirical procedures. They try to identify general patterns and then draw conclusions with respect to a specific question. The two methods can be differentiated as “hypothesis testing” (deductive) and “hypothesis generating” (inductive) (Roth 1993:63, cf. Wacker 1998:372-375 on analytical versus empirical research). In one of its most extreme forms, “grounded theory” inductive approaches are even used to generate whole “theories” (Roth 1993:63), which are usable in everyday settings and try to predict change in ongoing social realities. As Ketchen, Thomas et al. (1993) argue, both approaches can yield different results when looking at the same topic. Thus, each must be carefully selected against research objectives and proposed research questions.

Within the empirical realm in business studies, both quantitative approaches (Black 1999a; Black 1999; Roth 1993; Krathwohl 1985; Wacker 1998) and qualitative approaches (Miles and Hubmann 1994, Yin 1989, Roth 1993, Krathwohl 1985, Wacker 1998) are used. Quantitative approaches focus rather on predictive hypothesis testing of variable relation (Roth 1993) and generation of generalizable findings based on parsimonious quantitative (“numerical”) data. The method employed is of rigid scientific character, using statistical tools such as multi-variate analysis to generate findings and patterns out of a massive amount of information on variables and possible relationship. The objective is to explain relations between variables through identification of causalities or correlation (Wacker 1998). Longitudinal comparative analysis is also possible by covering data points from different years and applying adequate panel data analysis. The key strengths of this approach include parsimony, making complex real world patterns out of a great amount of data visible, replicability by other researchers
through usage of standardized statistical tools, and strong predictive power within limits of chosen sample and proposed relationships. As shown in previous sections, this type of analysis is very often used in upper echelon research. Overall data collection encompasses demographic traits of TMT, operative and market based financial performance indicators, and data on relevant contextual factors or other organizational outcomes. The majority of the studies employ cross-sectional analysis techniques. Longitudinal panel analysis techniques are rather seldom used in upper echelon research. One example of this is the previously reviewed work of Keck and Tushman (1993).

In contrast to quantitative methods, qualitative ones rely on rich, rather “textual” data used to generate a deep understanding of single instances, processes or cases. Usually, data are generated very close to the studied subject (Miles and Hubmann 1994). The methods employed, e.g. cases studies, are less rigid than quantitative analysis and may change or be manipulated during the research process (Drongelen 2001) to fit in new findings. This leads to problems in scientific rigor, and often the results found in one study cannot be replicated and used in further research by other researchers due to very specific bias the researcher applied in method. Some authors, however, try to introduce academic rigor in qualitative research as well by focusing on scientific validity of their study (Black 1999). The data generated are rich in insight on single cases, but not generalizable to a wider population through basic tenets discovered in samples. Longitudinal qualitative analysis is also possible. In contrast to quantitative approaches, qualitative longitudinal analysis requires the researcher to closely accompany the research project over time. Crucial advantages of qualitatively orientated research include generation of a deep and rich understanding of the subject matter. It is also an excellent base to develop propositions for hypothesis testing. An example of this is the briefly discussed study of Pitcher and Smith (2001).

The major distinction between both methods can be expressed in the dichotomy of rigor versus relevance (Black 1999). Which approach - qualitative or quantitative - one chooses depends on the research objectives a scientific study has. A good method to come to a decision here is proved by Yin (1989). She subdivides the research question into different “w-” questions, such as why, what, and how many. “How many” and “what” rather target descriptive/explorative research objectives, while “what” serves for research objectives of explanative character. When “how many/what” (descriptive/explorative) is asked, Yin recommends a “longitudinal archival analysis”, while a case study is proposed to answer questions of “why”. The latter rather calls for a
carefully designed qualitative case study, while the former questions rather can be answered through quantitative analysis.

The complexity of coming to terms with the research design is further increased through the debate in science as to what extent quantitative and qualitative approaches can be combined to research a puzzle with higher scientific validity and general relevance, meaning external validity (Snow and Thomas 1994). At the heart of the debate is whether both methods through differing epistemological underpinnings generate incommensurable types of knowledge and whether they cannot or can be combined (Sullivan 1991, Maanen 1979). Qualitative research, for instance, rather flows from an epistemological stance which rejects the notion of quantitative research that there is one true reality, which can be discovered independently of inquiry (Dachler 2000), while quantitative research usually is in search for commonly valid laws on how reality can be observed and how it functions.

The debate is ongoing, and regardless of objections, the multi-method approaches are further promoted, e.g. through triangulation (Scandura and Williams 2000; Snow and Thomas 1994; Sullivan 1991). Scandura and Williams (2000), by comparing 732 articles published in Administrative Science Quarterly, Academy of Management Journal and Journal of Management between 1985-87 and 1995-97 note that in order to publish in the three top tier journals of business studies, researchers increasingly use triangulation. In my view, however, I do not assume that multi-method approaches, such as triangulation, enhance scientific external validity of research. After all, why should the usage of multi-methods reduce biased views in method and data collection? By combining two biased methods, one does not necessarily generate a non-biased, more generalizable and valid view. Thus, objective (external) scientific validity is not necessarily enhanced as Scandura and Williams (2000) argue.

However, voicing these doubts is not to say that there is no value in multi-method approaches for this thesis. First, looking at a subject matter from different methodological perspectives can certainly generate a more holistic view (but not necessarily a more valid one). In this respect, Yin (1994:97) argues that

"... multiple sources of evidence... allows the investigator... to address a broader range of historical, attitudinal, and observational issues... in this manner construct validity can be addressed."

Second, application of triangulation within one methodological approach in the sense of "within triangulation" (Jick 1979) holds considerable value for the quality of the analysis. This can be achieved by using multiple scales or indices focused on one construct in a
quantitative study, making researchers more confident about precision of their results. I follow this recommendation in my research by using a variety of complementary sources for data on TMT demographics and data on strategic positioning. Finally, among the multi-methods, the complementary purpose model stressing the holistic view holds most value for analysis. The model posits

“[...] that each method is to carry out a different but complementary function.” (Snow and Thomas 1994:473)

This means that two different methods are employed to answer differing research questions, which, however, serve the solution of one specific puzzle.

In sum, the possibility to use multi-methods as briefly described above, e.g. “within triangulation” or complementary usage of methods, will also be taken into consideration for the design of the research strategy employed. Furthermore, the thought of “within triangulation” through more precise and varied measures has already been considered with research areas of interest for my research, e.g. by Sullivan (1994), in introducing a composite measure for internationalization posture. In this study I will also use different measures for a certain phenomenon in order to put the results on a sound quantitative base, e.g. by looking at both the overall degree of internationalization (FSTS) and the geographic spread of international activities of a firm (DFSTS) to measure the analytical construct of internationalization posture.

4.1.2 The Design Of Data Collection: Archival Analysis, Case Study, or Sample Study

Not only strategic decisions have to be made with respect to appropriate research designs. On a more operative level, it also has to be decided what approach and sources can be used to get the required data or observations for the proposed study. In the following, the value of archival analysis, case study and sampling for this purpose is discussed, as these mainly have been used in TMT research so far. Not covered are, for example, experiment, action research or evaluation (Drongelen 2001). Experimental forms of data collection methods (Roth 1993) are not further explored here, as in my view the proposed topic of development of TMT demographics in large German firms between 1997-2002 cannot be simulated in a highly controlled artificial environment.

Archival analysis or secondary research can encompass both qualitative information (textual, pictures) and quantitative data (statistical, numerical). Archival records can encompass service and organizational records, survey data, maps, lists, graphs, and personal data (Yin 1989). Archival research has the character of secondary research, that is the researcher has not directly observed the phenomena described in the record. Thus,
the researcher has to be careful when using these secondary data. In order to ensure scientific validity, one has to be clear about the circumstances under which the record was produced, to what specific audience it was addressed, and what purpose it served (Yin 1989). An impressive sheet of numbers must not necessarily be correct and accurate. A distinctive advantage of archival analysis is that information regularly is comparatively easy to obtain. Through modern information technology and digital availability it can be processed easily and without transfer errors (e.g. from research notes to a statistical program).

A case study is an empirical inquiry, which focuses on a contemporary phenomenon within its real life context (Yin 1994). Thus, in contrast to archival research the researcher directly engages with objects or persons under study. Yin adds two more criteria for a case study: first, a phenomenon examined in a case study must not be fully distinguishable from its context, and multiple sources of evidence shall be used. The objective of a case study is to develop deep and meaningful insights by limiting the cases under study but focusing on a high number of variables and other knowledge within each case study (Wacker 1998). More specifically, case studies can serve a variety of research purposes and applications: explorative (explain the complex causal links in real life settings too complex to be captured by surveys), descriptive (for the real life context in which an intervention has occurred), illustrative (e.g. by illustrating an evaluative report or findings), and finally explorative when the phenomenon under scrutiny has no clear detectable result.

The knowledge generated from cases studies can be of qualitative or quantitative nature (Yin 1989). However, case studies are rather used to produce rich and in-depth knowledge on few cases than to collect a few variables across a large set of cases (see the statistics on usage generated by Drongelen 2001). Case studies support internal validity due to their rich understanding of the case rather than external validity (general validity). A major problem with case studies apart from considerations of validity is the availability of data, as researchers usually need to go into organizations and explore the real life settings. For my research, case studies have no relevance, as I want to come to conclusions about the management of TMT demographics with respect to strategic posture in a large set of companies over a period of time and generated findings which help to understand the research issue across the full set of firms examined.

Sample survey is certainly the best-known source of primary data collection in the social sciences in general (Baker 2001). Conducting a survey covers definition, analysis and reporting on traits of a certain population based on a representative or non-
representative sample drawn from this population. Information on this sample usually is
gathered by questionnaires in face-to-face or telephone interviews. Key objectives of a
survey can encompass both understanding of a certain aspect of the population but also
predicting some aspects of the population’s behavior. Thus, depending on design
surveys can produce rather interpretative, qualitative information, such as opinions
within the population examined or quantitative information being used for hypothesis
testing and prediction. Results of a survey can cover attitudes, images, decisions, needs,
behavior, lifestyle, affiliations or demographics. There are several advantages to survey
research. First, it can provide both qualitative and quantitative information on one
research topic by using just one tool, thus reducing investment in research and
enhancing the construct validity of results. Second, it can economically provide a great
deal of information from a large sample and it conforms to the specifications of science:
 it is logical, deterministic, general, parsimonious and specific (Baker 2001). A major
disadvantage is the accessibility and availability of data due to unwillingness to provide
information, time constraints and confidentiality of data. Secondly, in analyses of
companies it might be extremely difficult to actually identify the correct person in the
organization that holds knowledge and experience for subject under study. Knowledge
usually tends to be spread across a range of people in the organization. Finally, a major
problem is that the questioning process through assumptions on the side of the
respondent or through the data collection method employed (e.g. internet) may distort
the results (Baker 2001). Again, for my purpose sample research has no relevance. The
data required are hard to obtain through sample research as long as publicly available
accounts of the data are in existence (newspapers, articles, company reports). It rather
annoys staff in firms to be asked to fill out long columns of data knowing that the
researchers could easily have obtained the TMT data themselves through secondary and
archival data.

4.2 The Research Design of Our Study

In this study, I will employ a deductive hypothesis-based approach using a longitudinal
quantitative study design, covering firm and demographic data on large German firms
from 1997-2002. I use the deductive approach, as sufficient knowledge has been
generated for deductive hypothesis testing in previous studies in the US-American
context of strategic management theory. I can use the already developed base of
knowledge on TMT demographics and the relation to the strategic posture of a firm to
make hypothesis-based predictions for TMTs in the context of large firms in Germany.
Black (1999a) makes the existence of such as base of knowledge a major pre-requisite for a deductive approach. It has already been shown that since the introduction of the “upper echelon perspective” a variety of research results has been generated, supplying knowledge on a variety of propositions such as reasons for certain demographic conditions, links to firm performance and other organizational outcomes and knowledge on possible contingency relationships. Upper echelon TMT research has predominantly employed deductive approaches. However, the basic concepts for the deductive approach have their roots in extensive socio-psychological research that allows for hypothesis-building based on sound and accepted results. For instance, as already argued the impact of diversity/heterogeneity in demographics is one of the most “robust and reliable social psychological findings.” (Barsade, Ward et al. 2000:805)

To provide the data I require when testing my hypotheses, I will use archival analysis for data collection. The data collected will cover data for 72 listed German firms (Base: 2001) on internationalization, diversification and performance, data on the shareholder-structure and relevant TMT demographic compositional data. Data sources include electronic databases such as Datastream International, company reports, web sites and publications on German demographic TMT member data such as Munzinger Archive. In single cases where the company record is not accurate or not fully clear, e.g. on nationality of a member, a clarifying email or phone conversation in the sense of “within triangulation” were necessary. Following Black (1999), backing up unclear data in this way enhances construct validity.

The focus on archival data in my research has the drawback that qualitatively rich data on interactions and working of the TMT cannot be covered here. This is a general problem in TMT research using archival data. Hambrick, Cho and Chen (1996:681), for example, write that because their analysis on heterogeneity and TMT was based on archival data they were unable “to gain an in-depth understanding of the actual processes of competitive decision-making in the firms they studied.”

There is certainly a need to go beyond archival and demographic analysis in TMT research. What is required is more direct research into board and top team processes. The limitations of this call for qualitative enquiry are potentially high. A major hindrance is that it is extremely hard to gain first hand data and observations on the working of TMTs as this would require the researcher to follow a TMT directly in their daily operations. This, of course, is extremely hard to realize. There is a series of obstacles to
overcome, ranging from confidentiality of issues that are discussed in boardrooms to the unwillingness of TMT members to be observed in their daily work and the sheer impossibility to generate these data for a high number of companies. After all, upper echelon researchers chose the demographic option because it is a way to overcome the restricted access to TMT data and makes the examination of an important factor in strategic business studies possible. Nevertheless, I agree with Pettigrew that

"the data access difficulties in this area need to be overcome...(…) in order to produce a better understanding of the mediation effect of process in the input to outcome relationship for these teams." (Pettigrew quoted in Higgs and Dulewicz 1998:47)

In sum, I believe that the combination of a hypotheses-driven deductive approach and archival data collection is the best way not only to understand the development of TMT demographics, TMT capabilities in large German companies between 1997 – 2002 and their relation to firm’s strategic positioning, but also to extend the upper echelon perspective along the theoretical lines discussed above by, for instance, including a concept of change. A next step in sharpening my understanding of level and change effects in TMT demographics with respect to strategic posture of German firms is then including qualitative case studies to further examine how strategic posture of firms and the composition of TMT as well as resulting TMT capabilities interact over time in selected cases of the analysis.

4.3 Issues of Data Collection of TMT Demographics in German Firms 1997-2002

4.3.1 Included and Excluded Data Records

I collected data for 72 Germany companies including data on (1) demographic outlook of the TMT per year, (2) strategic posture mix data including internationalization and diversification data, (3) performance data including market and account based measures, and (4) further data such as company size, shareholder structure or indicators of the level of performance.

Originally I planned to have data for the top 150 listed Germany firms in the year 2001, but due to data restrictions applied and difficulties in obtaining such data in the German context I finally used data on 72 German firms. Apart from non-availability of demographic data (z.b. Münchner Rück Aktiengesellschaft) or cases where the age of the firms was too low resulting in too few data points per firm (e.g. Deutsche Börse AG) over the full time span (1997-2002), I also applied restrictive factors to establish a data
set that fits the needs of the analysis. Thus, I excluded companies identified as non-operational holding structures or companies that have rather the characteristics of business units of another firm such as ABB Deutschland or FPB Holding. I excluded such records, as I require TMTs that have an operational responsibility for the overall strategic positioning of the firms in the sample.

The longitudinal scope encompassed data for each company and year from 1997 to 2002. Data were collected in company-specific fiscal years and then standardized to the calendar year (cf. Shen and Cannella 2002). For instance, the fiscal year 1998/1999 was always attributed to the year 1998. For 52 of these 72 companies, there is a complete TMT demographic record across the longitudinal scope of time. In the case of the remaining 20 companies, there are at maximum two TMT accounts missing.

In contrast to most other studies on TMT demographics, I deliberately included the full range of industries in the sample. Thus, no company has been excluded based on reason of their industry membership. On a theoretical basis, it did not seem viable to develop an argument at this point of time why in certain industries the relation between TMT demographics and strategic posture mix shall differ. As a consequence a choice of a certain industry as a focus of this research could not be justified. After all, one objective of this work is to research the development of TMT demographics in the largest German companies between 1997-2002. Nevertheless, in this study design I check for industry effects and, if existent, will discuss them in the descriptive section of this thesis.

I did not exclude firms that had gone through a merger, acquired a firm or were sold off to another firm with results for the demographic composition. In case of a merger, I identified the firm whose TMT remained dominant in number after the merger. In case of an even distribution of both previous TMT members in the TMT of the merged firm I applied the rule that the firm where the CEO originated from was the dominant firm in this merger. After identifying the dominant firm, I only included the TMT demographic data, strategic posture, performance data and other data from this dominant firm in my longitudinal plot of the time before the merger. In cases such as Daimler-Benz AG and Chrysler merging to DaimlerChrysler, this is an obvious choice. I identified Mercedes-Benz as the dominant partner and included relevant data of 1997 of Daimler Benz AG only. In the case of Veba AG and Viag AG merging to E.ON AG, it is less obvious as the TMT continued with a double CEO for a while and both were within the Top 20 listed companies in Germany before the merger. The following Chart details the decisions taken over time on mergers/acquisitions in my data set. As an indication of the
date of the merger the availability of the first joint annual report with a merged/changed TMT team was taken.

Chart 4: Decisions Taken on Merger/Acquisitions: Dominant Firms for Data Collection

<table>
<thead>
<tr>
<th>Company (2001)</th>
<th>Year</th>
<th>Merged Firms</th>
<th>Dominant Firm &amp; Reasoning</th>
</tr>
</thead>
<tbody>
<tr>
<td>Daimler Chrysler</td>
<td>1998</td>
<td>Daimler Benz AG (FRG), Chrysler Corporation (USA)</td>
<td>In this merger data of Daimler Benz before the merger have been included as development of TMT shows in the following years indicate that Daimler Chrysler is the dominant firm</td>
</tr>
<tr>
<td>E.on</td>
<td>2000</td>
<td>VEBA AG, Viatel AG</td>
<td>In this merger data of VEBA AG before the merger have been included as development of TMT shows in the following years indicate that VEBA AG is the dominant firm although in the initial phase there was a double CEO posting</td>
</tr>
<tr>
<td>ERGO</td>
<td>1997</td>
<td>Victoria, DASS, MEAG, Hamburg Mannheim AG, DKV</td>
<td>ERGO is an operative holding structure which integrates several German insurance companies. Data available on ERGO include 1997.</td>
</tr>
<tr>
<td>ENBW</td>
<td>1997</td>
<td>Badenwerk AG, Energie Versorgung Schwaben AG</td>
<td>Data available on ENBW include 1997 which has been merged August 1997 dating back to 1.1.1997</td>
</tr>
<tr>
<td>ThyssenKrupp AG</td>
<td>1999</td>
<td>Thyssen AG, Krupp AG</td>
<td>Based on TMT after the merger Krupp has been selected as the dominant firm and, accordingly, data of Krupp have been used before the merger</td>
</tr>
<tr>
<td>KarstadtQuelle AG</td>
<td>1999</td>
<td>Karstadt AG (FRG), Quelle AG</td>
<td>Based on TMT after the merger Quelle has been selected as the dominant firm and, accordingly, data of Quelle have been used before the merger</td>
</tr>
<tr>
<td>AdidasSalomon AG</td>
<td>1997</td>
<td>Adidas (FRG), Salomon (USA)</td>
<td>Adidas acquires Salomon group. Dominant firm is Adidas</td>
</tr>
</tbody>
</table>

I also did not exclude firms that have a major shareholder such as Audi AG has in VW AG. The rationale for including these firms is that these TMTs of these firms have operational responsibility for their business and, thus, the requirements of TMT demographic composition regarding strategic positioning also applies to these firms.

4.3.2 Characteristics of Collected Data of 72 Companies

In the following I briefly describe the set of 72 companies to give an idea of the size and scope of these firms. I will do this by comparing these firms to a set of the top 200 German listed companies in the year 2001 - my basis year for analysis. All the firms in my set of 72 firms belong into this group of 200 top-listed German firms of 2001, however, by comparing them I do not claim comparability and generalizability of the results found in the analysis of 72 companies to the larger group of 200. I do not propose to generalize my findings to a greater population, as I am yet not in a position to present an overall comprehensive model of influencing factors on the relation between TMT demographics and strategic posture mix. At this point of time, the results remain confined in validity to the group of 72 companies.
As this table shows, compared to the top 200 listed firms in 2001 the companies in my collected data set clearly represent the large German companies, indicated by both average in sales and average in assets. Also, the firms in my data set generate a considerable amount of sales in the overall group (77%). Thus, the sample supports my objective to look at the largest German firms.

A further comparison between the sample and the larger group of 200 companies reveals further differences (see next Chart no 6). The majority of firms in the sample is active on markets of cyclical consumer goods (34%), while in the larger group of top 200 only 19% are active in this segment. This segment includes manufacturers of cars such as DaimlerChrysler AG, BMW AG or Audi AG, but also other consumer-good producers such as sports manufacturer Adidas-Salomon AG or luxury-goods producer Douglas Holding. The second biggest segment in my data set are the industrials (17%), while in the larger group of top 200 about 26% of the firms are active in this segment. Included in this segment are firms such as construction firm Hochtief AG, transportation firm Stinnes AG, or steel and metal fabric producer/ trader ThyssenKrupp AG. At third place in my data set are technology firms with a share of about 15%. In the larger group, this segment comprises about 11%. Included in this group are firms such as Siemens AG or SAP AG, but also smaller firms such as LionBioscience AG. Financials take only a share of 11% in my data set, whereas the share in the larger data set with 22% is much bigger.

In my data set, financial firms include major German banks such as Deutsche Bank AG.
or Dresdner Bank, major German insurances such as Allianz AG but also financial service firms such as AMD AG.

Chart 6: Classification of Firms following Dow Jones Market Segment Indicator (2001)

Looking from an industry perspective at the larger set of companies and the 72 companies in the data set, the picture evolves as described by Chart 7. It becomes obvious that in my set of 72 companies the share of manufacturing companies is much higher than in the larger group of 200 firms.

Chart 7: Classification of Firms following SIC Industry Classification (2001)
Together with firms in industries such as Transport, Energy and Communication, they make up almost 70% of all firms in my data set, followed by firms active in the area of finance and insurance, which make up another 13% of firms. In sum, compared to a larger group of German firms my group of firms clearly has a bias towards large firms that are active on consumer markets and industry goods, with the majority of firms being manufacturers. Consequently, the descriptive and analytical results of this thesis also apply only to this group of firms.

4.4 Sources of Data and Process of Data Collection: Basis for a Sound and Valid Data Base

The already mentioned before the objective of the data collection process of this study was to create a single data base which provides me with the necessary longitudinal data (1997-2002) on (1) demographic outlook of the TMT per year, (2) strategic posture mix data including internationalization and diversification data, and (3) further data such as company size, shareholder structure or performance data of firms.

4.4.1 Source for Demographic TMT Data of Large German Firms 1997-2002

As mentioned already earlier, information on demographics of TMTs not only in Germany is hard to obtain, as companies are not obliged by regulation to give comprehensive demographic information on their TMT and there is a reluctance to publish this information or give access to the board room. Also, in a German context, demographic information is considered as belonging to the personal sphere of a person and, thus, is handled with the air of confidentiality even if no consequences of liability for the TMT and board members would result from a scientific use of the demographic information. Recently, this situation has slightly improved for two reasons: First, since 1997 listed companies are obliged to publish ad-hoc information which is likely to influence the stock price. Included in this required information is hiring and firing of top executives. Although the regulation does not require giving detailed demographic information on the TMT members, companies tend to add information on team and company tenure. Second, since the discussion on corporate governance issues started at the end of the 1990s, also in Germany, companies have developed a higher degree of awareness of the issues of information transparency and started to add demographic information on TMTs to their web sites and company reports. As touched upon before, a sound and transparent data collection process contributes to the scientific validity of a study. In ideal case there would be one coherent data source
for each data section such as demographic data or strategic posture data where all data can be drawn from one single source, minimizing the likelihood of bias, interpretation and understanding errors, or simple but devastating typing mistakes in compiling the data into one database.

Due to reasons of difficult data availability for compiling the required TMT demographic information database, I was forced to use several scattered data sources on TMT demographics, as in a variety of instances a comprehensive source was not available. To minimize the likelihood of errors, I established a process in which I would start extracting information from sources that provided the larger part of demographic data and filled in missing data through supplementary sources. Also, I cross-checked the information provided by different sources against each other and corrected information where contradictions became obvious. Usually, databases and homepages proved to be quite comprehensive sources, while newspaper articles rather provided singular data points. Second, data collection was done by only one person following a fixed scheme, thus minimizing the risk of error through different interpretations of data.

As central sources for data on TMT demography, I used company web-sites to access current data, the Who is Who Edition in European Business and Industry or Munzinger Archive databases. Latest demographics data on current TMTs obtained from companies’ web sites are usually reliable, of high quality and very comprehensive (covering a full TMT for the present situation), as in the best case it comes as complete CV documents. Encyclopedias on demographic data such as Who is Who Edition in European Business and Industry are also very useful sources for relevant demographic data. The advantage of these editions is that they also provide historical data of TMT members that are not employed anymore. However, the records are not always complete, and, of course, there is no guarantee that a full TMT of a given specific year is covered. One the other side, for instance, “nationality” as a specific category is usually given thus eliminating the fuzziness in taking place of birth and CV development as a proxy for nationality.

Furthermore, I used company reports and newspaper articles, for retrieving both current and historical accounts on TMT members. Web pages and company reports, I also found to be very useful sources of precise demographic data on TMTs, although the standards for publication in company reports differ considerably from one another. This is not only true for companies’ web sites but also for sites of institutions or organization where the TMT member in question holds an important position.
After I had collected all available data from these sources, I proceeded to a review of relevant newspapers, journals and other company announcements (e.g. ad-hoc publications) to fill in the gap of missing data and check the validity of data already compiled. Press releases and articles are also a good source for demographic information on TMTs. This category of sources includes press releases, articles in local and national newspapers, anniversary or memorial/jubilee notes or announcements of conferences where demographic data on the speaker/presenter are given. However, the information may also be considerably more scattered across different articles and documents. There is little likelihood to come across a single source that provides all the necessary data for a complete record. To set up a complete record is tedious work and requires patchwork skill. In some instances, it takes a long time to hunt down one specific aspect of demographic information (such as age or organizational tenure) or to clarify contradictions in demographic data of a single TMT member. Also, some demographic traits can be easier obtained through one type of sources than others. With appropriate patience, age or team tenure as well as nationality but also educational and functional background can be obtained in an comparatively easy manner. Especially functional background and nationality are readily available, as functional development is described in a qualitative way and country of origin is usually mentioned in case the TMT member is of non-German origin.

In addition to this process, I undertook two final steps to complete missing TMT demographic data. First, I identified 360 TMT members out of a total of 997 managers whose records were incomplete or missing. These I assigned to an external research company on the understanding to contact companies and retrieve the CVs where possible. This resulted in another 158 records for managers. The remaining records where scanned for completeness in the different variable dimensions and the completeness of all records of the related TMT for each year between 1997 and 2002. In a last step I directly contacted the companies for specific missing demographic information on current or former TMT member, which again increased the completeness of my database. Firms where there were more than 2 CVs not available across the total time span or where too little information on single variables was in existence, I had to exclude from my data set which finally resulted in my final set of 72 companies.

The data collection process for the demographic data was split into two phases. First, I identified the TMT size and name of TMT members for each year between 1997 and 2002, using as source Hoppenstedt Database Grossunternehmen. In case on doubts
about the validity of data, for instance, when there was a drastic changes in TMT size I directly checked the information with accounts from company reports. In a second step, I then collected the necessary TMT demographic data from the sources mentioned above. General data collected included name, surname, gender, age, educational and functional background, additional education (MBA), company tenure, TMT tenure, nationality, international work experience, consulting experience and overall experience in TMT (including previous experience in other firms). In the analysis I did not use all of these data; however, for future research I thought it useful to also collect all the data I could get in one major effort. I want to close this part of the discussion on the research process and sources with the following

Chart 8: Sources Used For TMT Demographic Data and Evaluation of Sources

<table>
<thead>
<tr>
<th>Source</th>
<th>Evaluation</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Company Websites</td>
<td>Good</td>
<td>- Good source for current data on TMT's as most of the larger firms do publish demographic data by now - Usually contains complete CV's - Limited historical data available</td>
</tr>
<tr>
<td>Company Reports</td>
<td>Satisfactory</td>
<td>- Most company reports do only contain scattered information on TMT demographics. Usually work related items such as tenure can be obtained</td>
</tr>
<tr>
<td>Press Search</td>
<td>Satisfactory</td>
<td>- Includes newspapers and company notifications and covers historical data as well - Information is very scattered and requires rigid interpretation scheme</td>
</tr>
<tr>
<td>Agency</td>
<td>Good</td>
<td>- Agencies such as &quot;Who is Who&quot; have privileged access to firms due to their well known brand in the area of compiling demographic information. They are able to obtain data from firms usually not accessible and are able to provide historical data. - Definition of required data needs to be very specific to ensure good data quality delivered by agency</td>
</tr>
<tr>
<td>Direct Company Access</td>
<td>Poor</td>
<td>- Firms are not ready to hand out detailed demographic data on direct request for research purposes due to confidentiality reasons - 5 out of 6 firms denied request</td>
</tr>
<tr>
<td>Databases (Munzing, Who is Who Int.)</td>
<td>Good</td>
<td>- Rich data - but not all data are available</td>
</tr>
</tbody>
</table>

Chart 8 that sums up key sources for demographic data collection and gives a brief evaluation of the quality of the source. I hope this will be of value for other researchers looking into quantitative research of German TMT demographics.

4.4.2 Sources of Data of Strategic Positioning and Other Data of German Firms 1997-2002

Important sources for the further required longitudinal data on internationalization and diversification, performance and other firm specific data were both company reports (1997-2002) and the Thomson Analytics Database. In a first step, the required data were researched and downloaded from Thomson Analytics using Datastream and Worldscope for obtaining the data. In a second step, missing data and data errors were corrected by using the company reports from 1997-2002. Obvious jumps and jolts in
internationalization and diversification in the data drawn from Thomson Analytics were specifically cross-checked with company records from company reports or historical information provided on company web-sites. Only for ownership and shareholder data I did use a further source in addition to company reports. These data were obtained from Hoppenstedt Database of Large German Corporations and from yearly issues of Germany's Top 500 published yearly by Frankfurter Allgemeine Zeitung. Only for the data on the measure of complexity in internationalization posture, as well as for the data on overall diversification, related and unrelated diversification, I exclusively used the company reports between 1997-2002.

4.5 Measures of Strategic Positioning, Demographics and Control Variables

In the following part of this methodological section, I will describe the definitions and calculations used to collect the data and to arrive at my TMT demographic measures, strategic posture indicators and other indicators, which were used in the analysis of the previously proposed hypotheses.

4.5.1 Measures of Strategic Positioning - International Diversification

Carpenter and Fredrickson (2001) suggest a composite measure to gauge the degree of internationalization of firms. They compile three independent measures of internationalization into a variation of Sullivan’s composite index to measure the internationalization posture of a firm. This comprises foreign sales as of total sales (FSTS), foreign production measured by foreign assets as part of overall assets (FATA), and a third dimension which they call “geographic diversity” including the different geographical zones in which a firm is active. The higher the number of the overall composite measure is, the higher the overall degree of internationalization is assumed to be.

A composite index to measure the overall internationalization posture of a firm would be of great advantage also in the German context, as it adds robustness to the analysis (Carpenter and Fredrickson 2001). However, in the German context of my data collection process I have fewer possibilities to build such a composite measure. The major reason for this is the non-availability of data on foreign assets and data on foreign employees to total employees, which both could be used in addition to FSTS to build a composite measure. These data are impossible to obtain across the full time span (1997-2002) for all my 72 companies. Especially in older company reports, foreign assets and foreign employees are not reported or firms are not willing to provide this information.
An inclusion of the available data, e.g. on foreign employees, would have resulted in reducing the number of firms in the data set by 9 firms, leaving me a data set of 63 firms. In case of foreign assets, the corresponding number would have been even smaller. The data on FETE I will include in the descriptive analysis to draw comparisons but will exclude it in the analytical part. Thus, in my research for the first grouping of the strategic posture mix I rely on the simple measure of internationalization (FSTS) for the international strategic positioning:

\[
FSTS = \frac{FS_{year}}{TS_{year}}
\]

\(FSTS = \) Degree of Internationalization; \(FS = \) Foreign Sales; \(TS = \) Total Sales

Although I was not able to build a composite measure of internationalization, I introduce a further measure to approach the environmental complexity created by the strategic positioning of internationalization. Following Carpenter and Fredrickson (2001) I argue that it is not only important to understand the overall degree of internationalization, but also the spread of international sales across different geographical regions. The complexity of international posture for the TMTs of firms rises with more evenly distributed sources for international sales across several geographical regions. Compared to only one foreign region that may contribute fully to the generated FSTS, a higher spread requires the TMT to accommodate a greater variety of different market aspects and challenges. Looking only at FSTS does not capture this complexity arising from a higher spread of international sales. Thus, I suggest to include a further measure for internationalization based on the entropy measure, which includes the diversity spread of international sales across different regions:

\[
DFSTS = \sum_{i=1}^{n} p_i \log_2 \left( \frac{1}{p_i} \right)
\]

\(DFSTS = \) Diversity in foreign sales; \(p_i = \) percentage of sales in \(i\)th geographical region

4.5.2 Measures of Strategic Positioning - Product Diversification

Since Rumelt’s study on related and non-related diversifiers, a variety of measures for diversification has been proposed in strategic management studies (Chatterjee and Blocher 1992). As it was based on relatedness of products, markets and technologies Rumelt’s measure was an advance compared to the bare product count based measures that were used before (Varadarajan and Ramanujam 1987). Further developments of the measurement of diversification include a very frequently used measure - the entropy
measure, which will be at the core of the measurement of diversification posture in this thesis.

The entropy measure takes into account the number of product areas in which a firm operates and the weight of segments compared to overall sales (Palepu 1985; Westphal and Fredrickson 2001; Delios and Beamish 1999). It has also been found to have a good construct validity compared to other measures (Hoskisson and Hitt 1990). Classification of industry is done on the level of 4-digit SIC codes (Standard Industry Code). The indicator measures the firm’s total dispersion across different business segments. Zero entropy implies perfect specialization, while maximum entropy indicates maximum diversification:

$$ DT = \sum_{i=1}^{n} p_i \log_2 \left( \frac{1}{p_i} \right) $$

($$DT = \text{Total Diversification}; P_i = \text{proportion of a firm’s total sales or production in the industry I}; n = \text{number of segments}$$)

Further, we can split up the entropy measure of DT into a related (DR) and unrelated (DU) component, where $DT = DR + DU$ (Palepu 1985; Hall 1995). This requires to aggregate the 4-digit SIC level into 2-digit SIC industry groups in order to generate a view on related and unrelated aspects of a firm’s overall diversification. Then, the overall diversification level of a firm can be decomposed into between-group diversification at the 2-digit SIC level and the average within-group diversification at the 4-digit level. In advantage to Rumelt’s categorical measures of relatedness and un-relatedness, this further development of the entropy measures is simple, easy to compute, objective and replicable. I operationalize related diversification as

$$ DR = \sum_{j=1}^{M} DR_j P_j $$

($$DR_j = \text{diversification within industry groups}; M = \text{the number of industry groups which the n industry segments are aggregated into}; n \text{ must equal/ or be bigger than } M; P_j = \text{the proportion of the firm’s total sales within the J^{th} industry group}; 2\text{-digit SIC level defines industry groups}$$)
The operationalization of unrelated diversification is as follows:

\[ DU = \sum_{j=1}^{M} P_j \ln \left( \frac{1}{P_j} \right) \]

(M = the number of industry groups; \( P_j \) = the proportion of the firm’s total sales within \( j \)-th industry group)

4.5.3 Measures: The Specific Demographic TMT Traits of this Study

Several authors have discussed a variety of TMT demographic traits in the context of internationalization, diversification and the upper echelon perspective in general. Traits discussed include (1) nationality, (2) scope of international work experience, (3) TMT tenure, (4) company tenure, (5) functional background and educational background heterogeneity, (6) age, and (7) previous management experience. In addition to these demographic traits, structural indicators such as TMT size were analyzed as well. In the following, I will briefly discuss these traits to illustrate the usage of demographics in TMT research and to give an overview of the operationalization of these demographic traits in my thesis.

In an upper echelon demographic analysis, the demographic unit is the entirety of the TMT. Nevertheless, it is the attributes of the individual TMT members, which are collected in the data collection process and then are aggregated in demographic indicators for TMT capabilities on the team level. The study of these individual member attributes usually falls into three areas (Lawrence 1997): First, there are attributes that describe immutable characteristics such as age, gender, and ethnicity or nationality. Second, there are attributes that describe the individuals’ relationship with organizations (e.g. organizational tenure or functional area); finally, attributes that identify the individuals’ position with society such as marital status. In the analysis, I focus on the immutable and organization related characteristics and, in addition to this, on the structural indicator of TMT size.

4.5.4 Level and Heterogeneity in TMT Demographic Variables

The demographic composition and its relation to strategic posture and performance can be studied in descriptive terms of traits (mean level) and proxies for TMT cognitive diversity (heterogeneity) (Sambharya 1996; Boekker 1997; Pitcher and Smith 2001; Goll, Sambharaya et al. 2001) with respect to the above-mentioned TMT demographic traits.
This distinction is important, as each separate analysis may lead to a specific result concerning a demographic trait and its relation to TMT capabilities.

For measuring diversity in quantitative measures (e.g. age), I always use the coefficient of the mean (standard deviation divided by the mean). The coefficient measure of the mean is commonly used to capture heterogeneity in demographic studies (Michel and Hambrick 1992). For measuring diversity in categorical variables (e.g. nationality), I propose to use Blau’s indicators of heterogeneity (Carpenter and Fredrickson 2001). In the following, I discuss the specific demographic traits of TMT and the operationalization for each demographic trait by either applying the averaging or heterogeneity methodology.

4.5.4.1 The Operationalization of TMT Nationality

For measuring diversity in categorical variables such as nationality, I follow Carpenter and Fredrickson (2001) who suggest to use Blau’s heterogeneity index. Including nationality type in a categorical way such as German, British or American in this measure enables me to derive a more detailed understanding of TMT nationality diversity/heterogeneity compared to the usage of the mean level of foreigners on a TMT. The index is calculated as follows:

\[
\text{Diversity}_{\text{Nationality}} = 1 - \sum (P_i)^2
\]

(Pi is the percentage of individuals in the ith category)

A TMT member is regarded as foreign when his or her nationality (Ruigrok, Linde et al. 1999) differs from the firm’s “nationality” which is defined by the country where the headquarter is based. Holders of double passports with one matching the firm’s “nationality” are assessed by their specific CV and will be grouped accordingly.

To look at the national background of TMT members is an obvious choice when examining the role of demographics and the relation to the strategic posture of firms, such as the internationalization posture of German firms. The socialization and upbringing in different cultures and national backgrounds of top managers makes a TMT with different nationalities diverse in the composition of its demographic cognitive base. The underlying key demographic factors making “nationality” a distinctive concept of impact on team capabilities and team performance include values, cognitive schema, demeanour and language (Hambrick, Davidson et al. 1998; for “language” also see Harvey and Novicevic 2001). There is a variety of factors determining why a member of a specific nation exhibits the expected behavior. To these factors, for instance, belong
how typical of the nation the person’s experiences have been, the amount of international life experiences, or e.g. the experience of an education outside the home country. Hambrick, Davidson et al. (1998:184) note

“... it will be the rare person who does not possess considerable traces of nationality in his or her psychological make-up and behavior... even education abroad does not fully erase these specific traits as it is shown in Laurent’s study of seasoned, internationally experienced executives.”

Similarly, Glunk, Heijltjes et al. (2001) argue that nationality has a significant effect on the functioning and composition of a top management team for several reasons. Managerial attitudes, values and beliefs are functions of national cultures. Managers from different countries have been exposed to different experiences, cognitive filters, mindsets and values. This influences the way in which managers interact, how they behave under certain conditions, and, of course, who finally becomes a top manager in a certain country. If one further takes into consideration that in TMT strategic decisions, intuition, tacit knowledge and experience are major forces (Bennett 1998), the abilities added by diverse nationalities become even more important. Different national origins of TMT members may also equip the TMT with ties and networks into business critical geographic markets (Athanassiou and Nigh 1999) which fosters trust in the firm in these markets and eases interactions with national government agencies, suppliers and partners.

4.5.4.2 The Operationalization of TMT International Experience

I calculate TMT international experience as the total number of years spent on professional assignments abroad (excluding internships or studies). I use a mean measure to aggregate the average international experience level per year per TMT. Generally, in doing so I follow the approach of Peyrefitte, Fadil et al. (2002). In contrast to their approach, in this measure I only consider the foreign work experience of TMT members originating from Germany. This makes the trait of TMT international experiences a further indicator detailing the internationalization of TMTs on top of the measurement of the TMT nationality diversity measure discussed above. The exclusive focus on only German TMT members establish TMT international experience as a distinctive analytical concept for TMT capabilities which is clearly distinguished from diversity in TMT nationality.

International experience is also an obvious choice for a thesis considering demographic variables in the context of internationalization posture (Carpenter and Fredrickson 2001; Peyrefitte, Fadil et al. 2002), as - similar to the already discussed TMT diversity in
nationality - it adds a cross-cultural component and heterogeneity to the outlook of German TMT demographics. A crucial study in this area is, for instance, the work of Reuber and Fischer (1997) on international experience of TMT (see also the “tacit knowledge” perspective on TMT of Athanassiou and Nigh (1999) and the importance of TMT international experience in driving a firm’s internationalization of Tihanyi, Ellstrand et al. (2000) or the cognitive perspective reflected in Hambrick, Davidson et al. (1998)).

In its effect on a TMT’s cognitive base and capabilities, international experience certainly can be compared to the demographic construct of nationality, although in a less strong manner and with a different weight. Certainly, international work experience provides a member of a TMT with valuable insights into different cultures, new working styles and cultures. However, an understanding and insights in cultures similar to that of natives will be gained only after a very long time. Nevertheless, international work experience broadens the skill set of top managers and adds to the capability to move in complex strategic environments. More importantly, it also equips TMTs with networks and ties to foreign markets or even to strategically important firm subsidiaries in these specific countries. For example, the majority of Volkswagen’s TMT in 2003 had served some time on the executive board of VW South America, which is an important market for VW and its Spanish daughter SEAT.

4.5.4.3 The Operationalization of TMT Team Tenure and TMT Organizational Tenure

The demographic traits of team tenure and company tenure and their impact on capabilities of a team were already discussed as examples in the above section on the upper echelon perspective. Thus, I do not further go into detail here but briefly sum up the above examples. A high average tenure of teams or similar experiences in an organization is associated with high team cohesion and quick and unanimous decision-making.

But also bears the danger of group-think and exclusion of insights and differing opinions from the decision process of TMTs. In highly internationalized environments characterized by high complexity, this may have a negative impact on performance, but may be beneficial in a context of high levels of overall diversification where social cohesion at the top is required. In the research of Michel and Hambrick (1992) on diversification, social cohesion was measured by TMT average firm tenure and TMT firm tenure heterogeneity. As already argued above, a key to the link between tenure and social cohesion is that a long time spent together in the same team indicates a good
knowledge of each other and similar experiences which can be taken as proxies to equal values, ideas, cognitive maps and the subscription to a firm's dominant logic (Prahalad and Bettis 1986).

In my initial data set, I collected two types of tenure - organizational and TMT tenure. A correlation analysis between average TMT team tenure and average TMT company tenure showed a relatively high correlation (Correlation >0.4). To ensure statistical validity and ensure the independence of my independent variables from one another, I excluded team tenure from the analysis model (see below). The reason for opting to exclude team tenure is mainly that previous studies used company tenure (e.g. Michel and Hambrick 1992) and I followed this approach. TMT organizational tenure is measured by the number of years the executive has spent with the organization which he/she now belongs to the TMT. I use an average measure to aggregate the individual value to an average organizational tenure level per year per TMT, and relate this average measure to the proposed indicators of strategic positioning.

4.5.4.4 The Operationalization of Functional and Educational Background

Diversity in functional background captures the range of skill sets and network resources available to TMTs (Carpenter 2002; Ancona & Caldwell in Carpenter and Fredrickson 2001). Bunderson and Sutcliffe (2002:876) argue with respect to inclusion of functional background that

"this approach to conceptualizing functional diversity rests on the assumption that each member brings a specific functional perspective to the team, a perspective gained through experience that is typically weighted toward a particular function... The extent to which the dominant functions of a team’s members are evenly distributed across all of the relevant functions is viewed as an indication of the team’s breadth and balance of knowledge and expertise relating to running all aspects of an organization."

Functional background refers to the actual career track of a TMT member. It describes the functional skills and positions in which the member has worked during most of his/her career. Possible categories include e.g. Marketing and Sales, Finance and Controlling, Production, R & D, and Administrative & General Management, etc..

The educational background of TMT members describes the focus of pre-work career of top managers. Wiersma and Bantel (1992) categorize educational background as in the arts, the sciences, engineering, business and economics, or law. A further dimension of educational background is the level of educational degree achieved and how TMTs vary in the composition of members with different educational degrees. In the German context, it is important to notice that there are some TMT members who followed a
specifically German educational track of “Betriebslehre” (apprenticeship) combined with “Berufsschule” (Vocational School). Possible educational degrees include: having no specific educational degree, apprenticeship, Bachelor’s degree, a Master’s degree, a LLM, or, finally, a Ph.D. In the analysis of the data set, both functional and educational backgrounds showed a high correlation to one another. Thus, I excluded the educational background from my analytical analysis. This high correlation may be taken as an indication how tightly interwoven education and functional career track in Germany still are. For measuring diversity in functional background I use “Blau’s Index of Heterogeneity” already discussed, which I also use for an indication of diversity in national backgrounds of TMTs. This is to say that I measure the distribution of functional trades across the team members. I do not follow the road of also measuring the presence of broad or narrow functional specialists as done by Bunderson and Sutcliffe (2002).

4.5.5 The Operationalization of TMT Age and Previous TMT Experience

The age of a TMT member is measured in terms of full years between date of birth and respective date of membership in a TMT. Months have not been taken into account and have been rounded to full years. I use the proposed diversity measure (coefficient of the mean) to aggregate the individual value to a diversity measure on TMT level. In the theoretical section I already made reference to the reason why I include age in this study. There I outlined why a certain diversity structure in age of a TMT leads to a rather creative or innovative team, whereas it might also foster conflict within the team and, thus might lower team performance (Goll, Sambharya et al. 2001).

In the analysis, I also included the demographic trait of diversity in previous TMT management experience, as previous management experience certainly is an important demographic trait when looking at the demographic compositions of TMT:

“... many organizations continue to place a great deal of emphasis on individuals’ previous work experience when selecting managers and leaders, such that individuals with limited experience are less likely to be selected for formal leadership positions.” (Avery, Tonidandel et al. 2003:673)

Previous management experience I include as a heterogeneity measure in the analysis, as it specifically looks at the diversity of TMTs in a relevant field – the duration of previous management experience TMT members had. This demographic trait, I argue, has a similar effect as diversity in age structure. TMT members that have already spent a longer time in the upper echelons are more complacent but may also be more placental
and less innovative than TMT members who are just at the beginning of their career. TMTs with only little previous TMT experience may be more eager to prove themselves, develop innovative ideas to distinguish themselves from the established ways of running a business, but may also be more insecure and less dominant in pushing through their own ideas and ways. A high level of diversity in this trait may equip the TMT with a combination of seasoned and experienced but also active and pushy TMT members.

4.5.6 The Operationalization of TMT Size

As already outlined, Sanders and Carpenter (1998) refer to the size of a TMT by arguing that the size may be an important factor in predicting TMT capabilities, as a larger TMT allows for more room of diverse members. On the other hand, a greater size of a TMT is associated with slower decision-making processes and more conflict, which in turn may lead to negative performance in highly complex and fast moving environments (Hambrick, Cho et al. 1996). This again illustrates the trade-off between advantages and disadvantages firms face when trying to match the demographic composition of a TMT to the level of complexity in their organizational environments. I will include the yearly TMT size as a simple count measure in my change analysis of the relation between TMT demographics and the strategic positioning of German large firms between 1997-2002.

4.5.7 Operationalization of Change Variables: Internationalization, Diversification and CEO Change

A key objective of this work is not only to understand the level effects of TMT demographics and the strategic positioning of firms, but also to examine the interaction between the two aspects over time. Especially in Hypothesis 3 I argue that it is not changes in internationalization or diversification posture but CEO change that is of high explanatory value for changes towards diversity in TMT demographics in the context of the German economy. I analyze this by running two kind of models: (1) I relate changes in internationalization/diversification as well as discussed control variables and CEO change in a previous period (t-1) to change in TMT demographics in the subsequent period, and (2) I relate changes in internationalization/diversification and CEO change in the same period to change of TMT demographics in the same period. In addition, to further understand the issue of interaction I also calculate change models with a more extensive lag. This encompasses models with a lag of up to 3 years for an impact of changes of strategic positioning on changes of TMT demographic variables. In the extreme case, this means that I calculate the changes in strategic posture, CEO change
and further variables for the period between 1997-1998 and analyze the relation to changes in TMT demographics between the years of 2001 and 2002.

For CEO change, I applied the rule that a new CEO must have at least a 6-month tenure within the year in question to assign a CEO change to this specific year. For example, if a new CEO has been signed on in December this counts as CEO change in the following year as the old CEO governed the firm throughout the main part of the year. Further rules applied include that dissolution of a double CEO (e.g. ThyssenKrupp AG, SAP AG) counts as CEO change as the impact on the managing structure can be compared to dismissing an old CEO while it is likely to be less disruptive. Nevertheless, any dismissal of a CEO does change the power structures of the TMT and might result in TMT demographic change.

4.5.8 Control Variables in the Analysis of Level and Change Effects

In the analysis of both level effects and of change effects, I also included control variables, which may have an impact on the relation between TMT demographics and strategic posture on the one side and on change effects between the two on the other side.

In the analysis of level effects, I controlled for size and industry effects (Hambrick and Mason 1984). Both traits are commonly included in an upper echelon analysis.

In the analysis of change effects, I included control variables such as changes in ownership structure (Colesa, Williams et al. 2001), firm size (Carpenter 2002; Colesa, Williams et al. 2001; Boekker 1997), changes in performance level within the year, industry membership (Hambrick and Mason 1984) and yearly effects (Carpenter (2002) controls for “period effects”). Significant change in ownership may be a key engine in changes in TMT demographics in general as, for instance, the new majority owners are keen to gain control over the operations of a business through changes in the TMT. These changes need not always be in line with the requirements of the strategic positioning, as the new owners may not have the right candidates serving both needs of control and the requirements of strategic positioning. The importance of looking at the shareholder structure gets support from Cannella et Monroe (1997), who note that there has been some support generated for the notion that large shareholder numbers that threaten the executive directly in case of misbehavior generate better discipline.

With respect to firm size, it is assumed that larger firms display a more extensive global posture and potentially display a higher degree of diversification. Also, firm size affects the relationship between demographic composition and organizational outcomes.
(Carpenter and Fredrickson 2001; Henderson and Fredrickson 2001). For the relevance of TMT demographics and the resulting TMT capabilities the size of a firm may also be of importance. In large firms the TMT coordination needs tend to be higher and firms become more difficult to manage because the firm’s sub-units are more specialized, numerous and differentiated compared to smaller firms. As a consequence, the TMT plays a more important role in coordinating activities and managing business operations in larger firms and thus is not only important enough to be included in the analysis of the level effects but should also be present in the analysis of change.

In the case of poor performance directors seem to be more willing to disrupt the status quo and select an outsider into the team. This means that in this case large firms “are not necessarily resistant to change.” (Cannella and Lubatkin 1993:787)

Based on this, I propose to include changes in performance level as another important control factor in the analysis, as those changes might be an important driver to induce change in the composition of TMT team. Performance will be operationalized by the calculation of ROS (Return on Sales) and the changes in ROS between the years of the analysis.

In addition, I need to account for industry-specific issues in the analysis of change. Changes in TMT composition may not relate to level effects or changes in strategic positioning but rather follow an industry-specific pattern where companies follow examples set by competitors or recommended by industry organizations. Finally, for the analysis of change effects I also include a control for annual effects to further account for effects that might be specific for a year such as a general economic downturn or other global trends.

4.5.9 Analytics and Statistical Models Used for the Analysis of Level Effects

For the analysis of all level effects, I used a fixed-effects linear model for my 72 firms, covering data from each year between 1997-2002. Technically, this means the analysis averaged the firm-specific data points of strategic posture and demographic traits over the 6 years of analysis. I chose the fixed model instead of a random effects model in order to capture further firm-specific influences, which I cannot account for but which may play a role if applying the analysis to time-series data. The coverage of 6 years as well as the usage of fixed effects adds to the robustness and reliability of the results in a way, which has seldom been achieved in TMT studies.
Chart 9: Models Used to Examine the Level Effects of German TMT Demographics

**General Regression Model Used**

Dependent variable \( \text{MOD1-7} = \text{Size} + \text{Diversity in Nationality} + \text{International Experience} + \text{Age Diversity} + \text{Organisational Tenure} + \text{Diversity in Previous Mgt. Experience} + \text{Diversity in Functional Background} + \text{Firm Size} + \text{Year} + \text{Industry} \)

**Independent Variables** (Diversity & Level Measures of TMT Demographics)
- TMT Size (log)
- TMT Blau Nationality
- TMT Av. Intern. Exp (Germans)
- TMT Age Diversity, log
- TMT Av. Organ. Tenure, log
- TMT Prev. Mgt Experience Diversity, log
- TMT Blau Functional Background

**Models (Dependent variables included in Models)**
- Mod1: Entropy measure internationalization (DFSTS)
- Mod2: Foreign Sales as of Total Sales (FSTS)
- Mod3: Overall Diversification (DT)
- Mod4: Diversification in Unrelated Businesses (DU)
- Mod5: Diversification in Related Businesses (DR)
- Mod6: Entropy measure internationalization (DFST) in high diversified companies (DT > mean)
- Mod7: Entropy measure internationalization (DFST) in low diversified companies (DT < mean)

**Control Variables**
- Size (log of sales)
- Year (control for yearly specific industries)
- Industry (membership in manufacturing yes/no)

Chart 9 describes the model I use for confirming my hypotheses with respect to the hypothesized level effects between TMT demographics and strategic posture of firms. With this model and analysis I do not claim generalizability for the total of the German economy, but restrict the results to the data sample of my 72 large German companies, which, nevertheless, make up an important part of the German economy.

In the model equation I always include the following demographic variables on the right side of the model (independent variables): TMT size (log), the indicator of diversity in TMT nationality (international members in the TMT), average international experience of German TMTs, diversity in age structure (log), average organizational tenure (log), diversity in previous management experience (log), and diversity in functional backgrounds.

As control variables, I included the log of sales as an indicator of firm size, a dummy variable to capture industry-specific effects, and a dummy variable to capture year specific effects. I excluded the following demographic traits from this equation: TMT tenure, educational background and average age level. In a correlation analysis they showed a high level of correlation to the included demographic traits. In order to avoid result-influencing co-linearity effects, I excluded these demographic traits from the analysis. The following Chart 10 displays the correlation matrix between the demographic traits now included in the analysis (analysis of level effects).
A statistical analysis of each single demographic trait against all dependent variables using the same models as in the integrated approach revealed only minor differences compared to the analytical result of including all demographic traits in one model, although the R-Square (overall, within and in-between) of the individual analysis is much higher than the combined analysis. Thus, for the analysis of level effects I decided to include all TMT demographics in one model as displayed above in Chart 9.
To test for my Hypothesis 1 (level effects - internationalization posture), I include on the left side of the model my proposed measures of spread in international sales (DFSTS) and, also, in a second analysis of the same Hypothesis, the measure for overall internationalization (FSTS). The objective of the measurement of those first two models is to examine to what extent the level of diversity measures in TMT demographic traits (Blau’s Index or standard deviation/mean) and the average level of diversity (average measures) relate to the level of diversity in internationalization posture or the overall level of internationalization. To test for my Hypothesis 2, I altered Model 1 and Model 2 in such a way that the indicator of diversity in international TMT members considered TMT members from Switzerland, Austria and Germany as belonging to one group. I included this altered view on diversity in TMT nationality as indicator of internationalization of TMT and reran Model 1 and Model 2.

In models 3-5, I then exchanged the measurements for internationalization by my three measurements of diversification (DT-overall level of diversification, DR-related diversification and DU-unrelated diversification) to test for the diversification-related level effects as described in the hypotheses. With those models, I tested for my Hypothesis 3, 4 and 4a where I described the expected level effects between TMT demographics and the used diversification measures. Model 5 and Model 6 examine the relation between the degree of internationalization and diversification and corresponding TMT demographics by looking at my measure of geographic spread of international sales (DFSTS) in related and unrelated companies in relation to the development of TMT demographics.

4.5.10 Analytics and Statistical Models Used for the Analysis of Change Effects

For running the regression analysis of the change effects of internationalization, diversification CEO change and TMT demographics against each other, I uses ordinary least-square techniques (Hypothesis 3). As independent variables on the right hand side I included the change in strategic posture variables, considering internationalization and the overall diversification measure between end-of-the-current year and end-of-the-previous year. Following my Hypothesis 3, I also included CEO change as a categorical measurement on the left side. On the right side, I included 5 different models, each including the change variables of specific demographic traits. In this analysis, I only included demographic traits that showed relevance with respect to the analysis of level effects between demographic traits and strategic posture variables. Those include diversity in international TMT members, organizational tenure, previous management
experience, functional background, and TMT size. As control variables, I considered changes in firm size, changes in shareholder structure, changes in performance levels, and a dummy variable for each year and industry (membership manufacturing industry yes/no) in the analysis. I ran the same OLS analysis a second time, but now included the change variables signifying the change between the previous year and the year before that in order to test my hypothesis also with a one-year lag between changes in demographic posture and changes in TMT demographics. This I repeated with a maximum of a 4-year lag between the change variables of TMT demographics, strategic positioning of firms, CEO Change, and the described control variables.

Chart 11: Models Used to Examine the Change Effects in German TMT Demographics between 1997-2002

**General Regression Model Used**

\[ \Delta \text{Dependent variable}_{mod1-5} = \Delta \text{Internationalization} + \Delta \text{Diversification} + \Delta \text{CEO Change} + \Delta \text{Shareholder Structure} + \Delta \text{Performance level} + \Delta \text{Firm Size} + \Delta \text{Year} + \Delta \text{Industry} \]

**Independent Variables**
- Internationalization (Entropy)
- Diversification (Entropy)
- CEO Change (Categorical)

**Control Variables**
- Size (Log of Sales)
- Year
- Industry
- Shareholder structure
- Performance level

**Models (Dependents)**
- Mod1: Internationalization of TMT (Overall BlauNat)
- Mod2: Organizational Tenure (Avg. Ten)
- Mod3: Prev Mgt. Experience (Stv.)
- Mod4: Functional Background (BlauNat)
- Mod5: TMT Size
To make sure that in the analysis of change effects there is no interaction effect between the independent variables I checked the independent variables for correlation. As can be seen from the following chart there is no significant correlation between the different variables on the right side of the above equation.

**Chart 12: Correlation Matrix between Drivers of Change for the Analysis of Change Effects**

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
</tr>
</thead>
<tbody>
<tr>
<td>Changes in Internationalization</td>
<td>1.0000</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Changes in Diversification</td>
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<td>1.0000</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>CEO Change</td>
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<td>-0.0038</td>
<td>1.0000</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Changes in Firm Size</td>
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<td>0.0029</td>
<td>1.0000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Changes in Performance Level</td>
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<td>-0.0788</td>
<td>-0.0753</td>
<td>1.0000</td>
<td></td>
</tr>
<tr>
<td>Changes in Shareholders Structure</td>
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<td>-0.2777</td>
<td>-0.1210</td>
<td>-0.0245</td>
<td>-0.0025</td>
<td>1.0000</td>
</tr>
</tbody>
</table>
5 Descriptive Results

5.1 Descriptive Analysis

In the descriptive analysis of this thesis, I will explore in detail the development of my indicators of strategic positioning and TMT demographic variables in German large companies between 1997-2002. In regard to strategic posture, I will discuss the development of internationalization and diversification by displaying the individual indicators and commenting on them. For my frame of analysis between 1997-2002, this will include the development of foreign sales as of total sales (FSTS), the development of geographic diversity in international sales (DFSTS), the development of overall diversification (DT), and the development of related (DR) and unrelated diversification (DU). In the analysis, I will also include the development of foreign employees as of total employees as further indicator of the internationalization of German firms in recent years (FETE). In my data collection process I was only able to collect the FETE data for 63 companies for the time span between 1997-2002. Thus, I include it in the descriptive exercise for comparative reasons but had to exclude it from the analytical part due to data shortage.

In the second part of the descriptive analysis, I will present the development of the demographic TMT variables (TMT diversity measures, TMT averages and TMT size). In order to group them and to provide a more accessible structure for the high amount of data, I distinguish between personal background-related variables and workplace-related demographic traits. The discussed demographic traits in the range of TMT personal background-related variables include diversity in nationality, diversity in educational background and age. In the range of workplace related variables I included average international work experience, average TMT organizational tenure, diversity in TMT previous management experience, average TMT tenure, and diversity in TMT functional background.

Both major parts of this descriptive analysis - strategic posture and demographic variables - will be handled in a similar way. First, I will display the overall development in a yearly average per year, which shows the aggregated average value of my 72 firms. Second, I display industry-specific effects by a look at the development of the yearly industry average of the trait in question, and, third, I include a discussion of size-dependent effects. With respect to the pictured industry-specific effects, it is important
to keep in mind that some industries in the sample have only few firms. In the sample, “manufacturing” has 38 firms, “Utilities” has 10 firms, “Finance” has 8 firms, “Services” has 6 firms, “Retail Trade” has also 6 firms, “Communication” has 2 firms, and “Construction” also has 2 firms. Depending on the relevance of the result, I included graphs and charts to further illustrate the results and excluded charts where I did not see the value in illustrating the finding. The overall section will close with a summary of the development of strategic posture and TMT demographic traits in German large firms between 1997-2002, and a propositional statement towards TMT capabilities resulting from my descriptive results in positioning and TMT demographics. Already the results of the descriptive analysis are a milestone in German TMT research as this is the first descriptive analysis of this type covering the topic in a longitudinal way. So far, no longitudinal descriptive data on the status and development of German TMT demographics have been available.

5.1.1 Descriptive Development of Internationalization (FSTS) and Diversity in International Sales (DFSTS) between 1997-2002

Chart 13: Development of FSTS/FETE and DFSTS between 1997-2002 in Germany

Both FSTS and the measure of geographic spread of international sales (DFSTS) clearly develop towards a higher degree of foreign sales and also higher diversity in foreign sales between 1997-2002. The development of FETE (Foreign Employees as of Total
Employees) shows a similar tendency. FSTS developed from 43% in 1997 to 53% in 2002 - an increase of more than 20% since 1997. In the years between 1998 and 2000 one can notice the steepest gradient of the curve, while FSTS in later years has flattened out a bit. Nevertheless, foreign sales have become an increasingly important source for revenue generation, as the analysis reveals that the rise in FSTS is fuelled by a rise in foreign sales while the revenue from the German home market shows a less steep increase (not pictured). An analysis of the diversity/spread of international sales across different geographical regions shows that DFSTS develops from .48 to a peak in 2001 of about .53 and then decreases to about .52 in the last year of the analysis. Between 1997 and 2002, this is an increase in international sales heterogeneity of about 8%. FETE develops along the same line, rising from 29% in 1997 to 40% in 2002. This increase by about 11% of foreign employees is mainly driven by growth in the first three years of the analysis. This stands in contrast to the development of FSTS, where the growth picked up speed only in the last 3 years of the analysis. Those results can be interpreted in a way that the early period of the analysis was one where German firms grew internationally through the acquisition of foreign firms, as indicated by the structural indicator FETE. In the latter years, these acquisitions seem to start fuelling the growth of international sales, as shown in FSTS, while the speed of internationalization through acquisitions abroad flattened out.

All three indicators of internationalization show that the positioning of German firms between 1997 and 2002 has become more complex, as not only a higher degree of sales generated from foreign markets, but also different geographical regions start to increasingly contribute with the same weight to sales from abroad. In addition, companies abroad increasingly generate international sales and international shareholdings make the management tasks more complex and demanding. Thus, one could argue that German TMTs face increasing levels of management challenges resulting from this increasing importance of foreign sales and the increasing importance of a variety of geographical regions.
From Chart no.13 it becomes clear that firms from different industries significantly differ in their degree of internationalization (FSTS). Most highly internationalized firms belong to the manufacturing industry with an average of FSTS of at least 50% during the whole time between 1997-2002 and to the construction industry with an average FSTS of at least 40% across the full time span between 1997-2002. Firms from the communication industry were internationalized on a very low level in the beginning of the analysis but during the following years developed their international business and overtook the finance industry and the utilities. The latter industries belong to the least internationalized ones across the full time span. What becomes clear from this analysis is that firms from different industries face a different level of complexity through internationalization posture as the degree of internationalization differs significantly between the years and industries.

Also, an analysis of size-dependent effects on FSTS shows some interesting but not surprising results. From the following Chart 14, it is obvious that with increasing size the German firms become more internationalized. Yet it is not the largest firms that are most internationalized, but medium-sized pharmaceutical and chemical firms such as Bayer AG, Merck AG, Sued Chemie or Schering AG. The larger firms such as DaimlerChrysler AG or Siemens AG show a high average FSTS of 60% to 80%. The pharmaceutical and chemical firms, however, score an average FSTS of over 80%, which is not surprising as the most important market for these firms is in the USA.
Looking at the spread indicator of international sales (DFSTS) on an industry and size level (not pictured) produces similar results to the industry-specific view of FSTS as pictured above in Chart 13. It is again the manufacturing and the construction industry that face the highest complexity in origins of international sales, as the level of international sales is fuelled by a variety of different geographical regions. The utility and the finance industries are the branches with the least level of diversity in international sales, as their international sales are fuelled through only a few geographical areas. From this analysis, it becomes obvious that rising FSTS result in higher complexity for firms as the dependence on foreign markets increases, but also because regions in which sales are generated increases. Only few companies generated a high level of sales from only one region over the time span of analysis. This assumption is confirmed in Chart no. 15 where increasing heterogeneity/diversity in international sales (DFSTS) goes together with increasing levels of FSTS.

From Chart 15, it becomes obvious that German firms between 1997-2002 not only developed the foreign markets existing in 1997, but also undertook significant efforts to develop markets then of minor importance for their revenue generation or even expand into new markets. The main drivers for this increasing heterogeneity in international sales are growth in sales originating from the Americas and an increase in sales from the European countries between 1997 and 2002.
The development of sales from Germany does not show the same growth levels as the revenues from other geographical regions. For the firms in the sample, sales from the Americas average at 13% in 1997. They climbed to an overall level of 17.5% in 2002. This is a rise by about 30% since 1997. In the same time span, sales from Europe (without Germany) developed from 23% in 1997 to about 27% in 2002, which is at a growth rate of 17% between 1997 and 2002. Sales from Asia and other regions (such as Oceania) developed from about 7% to 9% in the same time, which is equal to a rise of about 28%. The corresponding sales figures on the German market are 57% for 1997 and respective 47% for 2002, showing the decreasing but still high importance of the German market for the companies in the sample.

One can draw the conclusion that looking that looking at the development and level of internationalization posture and the resulting complexity of the business environment certainly is not without relevance. Between 1997-2003 there was not only an overall increase in the level of internationalization, but also the origins of international sales became more diversified. In the following part of this descriptive section, I will look at the developments of diversification posture in a similar way as I did in the case of internationalization positioning of firms.
5.1.2 Descriptive Development of Diversification, Related Diversification and Unrelated Diversification in Germany between 1997-2002

Chart 17: Development of Diversification, Related and Unrelated Diversification in Germany between 1997-2002

In contrast to the development of international posture of German firms between 1997-2002, the development of diversification posture shows less change (Chart 16). For the overall degree of diversification measured by the entropy measure of diversification, it can be noted that since 1997 there was a slight decline until 2002 (left side of the Chart). Above, it was discussed that the overall measure of diversification can be split into two further measures of diversification - the related and the unrelated measurement (DT=UR+REL). After calculating the corresponding measurements for related and unrelated diversification, I was able to plot the right side of the chart where both measures of diversification are pictured.

As can be seen from this chart, a slight drop in related diversification mainly causes a slight decrease in overall diversification. Unrelated diversification is also more important as compared to related diversification in the sample of 72 German firms across all years covered in the analysis (the ratio is approximately 60-40).
An industry-specific look at the development of diversification shows a picture similarly scattered as the industry-specific view of internationalization posture. Across the full time span of the analysis, the firms in the finance industry are the firms with the lowest degree of overall diversification. The highest level of diversification can be observed in firms from the manufacturing and the utilities industry. It is also these two industries that display a decreasing level of overall diversification between 1997-2002. Clearly, diversification posture of firms depends on membership in a specific industry. From Chart 18 it also becomes clear that the level of overall diversification is also firm-size dependent, although compared to other size-dependent analyses the relation seems to be weaker. What can also be observed from this Chart are examples of highly diversified firms: from the manufacturing industry Siemens AG, BASF AG or ThyssenKrupp AG; From the utilities RWE AG and E.ON AG which can be taken as examples of two large German firms with a high degree of overall diversification.
A further look at the distinction between related and unrelated diversification (not pictured) shows a less strong relation between the two diversification measures and firm size as compared to the measurement of overall diversification (Chart 19). Unrelated diversification has a stronger positive relationship to firm size than related diversification. To the group of highly unrelated diversifiers, for instance, belong the firms Harpen AG or ThyssenKrupp AG. All these firms consist of different business units that offer only few opportunities to share the same resources or realize economies of scope. Harpen AG, for example, is active in the area of energy production and real estate. The energy business consists of regenerative energies, de-central energy supply and power plant management, while the real estate unit is a traditional real estate management business with investment, development, construction and operations of real estate. The firm started off thirty years ago as a real estate business and then developed into the energy business. Another example is ThyssenKrupp AG, which since the merger between Krupp AG and Thyssen AG has undergone considerable change. Today, ThyssenKrupp AG is active in the areas of steel, industrial goods and services. The steel business unit produces and trades all different sorts of steel in industrial volumes; within the industrial goods unit, the firm is a producer and supplier to the automotive industry, builds elevators, runs and manages large scale industrial projects.
such as plant technology development or production system planning and construction. Services include the maintenance of industrial estates, the management of large-scale construction sites and even a full service facility management. Companies that score a high level of related diversification are, for example, Henkel KgAA or BASF AG. Henkel is active in the area of laundry and home care, cosmetics and toiletries, consumer & craftsmen adhesives and Henkel technologies. On the market side, Henkel’s business areas a clustered around

“innovative solutions and intelligent products for consumers” as well as the objective to “set standards in life style, wellness, mobility and communication for end consumers.” (Henkel Website 2004)

On the factor side, Henkel research provides basic research for the product areas e.g. in the area of nano-technology, smart chemistry, or Biosciences. BASF AG is a world market leader in chemicals. Its product line comprises high-value-added chemicals, plastics, colorants and pigments, dispersions, automotive and industrial coatings, crop-protection agents, fine chemicals, oil and gas. The main part of BASF AG products is grouped around the core competence of chemical engineering (save the activities in Oil and Gas, but these are run by Wintershall AG, of which BASF AG is one of the major shareholders). Also BASF’s central research facility focuses on specialty chemicals, chemical research and engineering, as well as on polymers research. The research unit serves all business lines.

These few examples should suffice to illustrate the difference between the highly related and highly unrelated diversifiers in the German context. The unrelated diversifiers listed above run businesses that have only few things in common and management tasks are rather administrative and financial. The business units (e.g. energy and real estate) are independent. In contrast, related diversifiers display a more integrated structure between the business lines, with the business lines sharing common resources such as research and development, are grouped around a core competency and, on the market side, have a similar customer structure. Correspondingly, the integrative tasks for the BASF TMT are higher than the integrative tasks of the TMT of Harpen AG, which needs to provide less cohesion at the top.

What remains to be discussed in the descriptive part of strategic positioning is how internationalization and diversification posture relate to one another in a combined descriptive analysis. From the above analysis differences and similarities between both aspects of strategic positioning become obvious.
First, internationalization seems to be a development that was in full swing in my timeframe of analysis, while overall diversification, related diversification and unrelated diversification had already reached a certain level during the initial year of the analysis. This is the reason why little change can be observed in my measures of diversification. Only in the last years of analysis do the average diversification measures display some slight decreasing movement. From my perspective of required TMT capabilities for a specific strategic context, this is of high importance. One could argue that diversification is a complexity which firms already face for a longer time and does not go through a lot of change anymore, which would require adjustments in the TMT to foster adequate TMT capabilities. German TMT had already learnt to deal with the challenges arising from diversification and the capabilities of German TMT have been adjusted accordingly. On the other hand, the still rising level of overall internationalization of German firms can be taken as an indicator that German TMTs need to build corresponding capabilities to master the ongoing challenge of the developing internationalization positioning. Of course, this argument is based on my descriptive analysis of average annual values. In a firm-specific view, significant deviations may occur, for instance, a firm that has established a level of FSTS of 80% since the 1980s should have adjusted the TMT capabilities accordingly already at the beginning of my time frame of analysis and will also not experience much change in TMT demographics which would relate to an increasingly internationalized posture of this firm.

Second, both diversification and internationalization show size-dependent and industry-specific effects, albeit on different levels of relevance. Nevertheless this can be taken as an indicator that both size and industry are certainly important factors, which I will include in the analytical part of this thesis.

Finally, I would like to conclude this part on strategic posture with an integrated descriptive analysis of the relation between diversification and internationalization. For this purpose, Chart 19 looks at the relation between diversification and the two measures of internationalization (FSTS/DFSTS) I discussed.

As can be seen in both cases of measurement of internationalization, the data clouds are scattered very widely across Chart 19. Internationalization and diversification do not have an obvious relation to one another. This result gives a first indication of the relation between my two measures of strategic positioning - internationalization and diversification positioning. Both are independent forms of strategic positioning of large German firms.
Both are descriptions of the organizational environment of firms in the sample in their own right, and thus, both provide different challenges for the TMT and require different TMT capabilities. This supports my analytical design, where I plan to include both forms of strategic positioning as individual independent variables in the analysis of the hypotheses and include both in an integrated view of strategic positioning of large German firms.

5.1.3 Development of Change in TMT Structural Indicators 1997-2003

In the following, I will now have a closer look at the development of German TMT demographics. In case where data for the first half of 2003 were already available, I already included these data in the descriptive analysis in order to provide the latest descriptive data available.

The descriptive results for the development of change in TMT structural indicators, which are pictured below in Chart 20, clearly show that there has been a lot of change in German TMT between 1997-2003. These results are in line with the reasoning in the beginning of this dissertation that in recent years there have been considerable changes in the composition of German TMTs. The chosen indicators of change include the development of yearly amount of new TMT members, the amount of new CEOs per year, and the development of the overall size of German TMTs between 1997-2003. The development of these structural indicators already underlines that the period of my
examination is an interesting timeframe to test for the suggestions originating from the upper echelon perspective. Chart 20 displays how the structural indicators developed over time.

Chart 21: Development of TMT Member Change/CEO Change and TMT Size, Germany 1997-2003

The left side of the Chart shows the development of TMT member/CEO change in the time period between 1997-2003 in Germany. The dotted line peaked the number of changes in TMT members in 2000, when in my data set 63 new TMT members came on board of German TMTs. Taking the base of the total number of all TMT members in the year 2000, this is a change rate of about 15% of change between 2000 and 2001. It is also interesting to note that in the last years of this study the amount of change in new TMT members fell below the absolute level of new TMT members in 1997. Calculating the yearly change rate yields a rate of 16.8%, which indicates that the TMT member turnover level has even been rising in recent years although the absolute amount of TMT member changes is decreasing.

The development of CEO change over the years also indicates accelerating structural change in German top management teams. While in 1997 in the sample of firms only 3 CEO changes took place, the last two years of the sample witnessed more than 10 CEO changes. In the 1980s or early 1990s it was rather normal to have long tenured CEO and only few CEO changes. This was part of the German consent model, where top management team and supervisory board ran the firm over a longer period of time with
only a few changes in the composition of the TMT. Changes in the CEO position were really only initiated if the level of performance was repeatedly too low and below expectations or when the CEO became too old and retired. Our data clearly indicate that in recent years a drastic change in the management of German top management teams has taken place. Not only are there more CEO changes in the last years, but there is also a variety of firms that have changed their CEO more than once within the timeframe of analysis. Overall, both the rate of change in number of TMT members and of CEO change indicate that the last years provide an excellent opportunity to study TMT demographics and change in TMT demographics in the context of the German economy.

The development of the size of German TMTs between 1997-2003 also indicates that there is something happening in the management of German TMTs. My data indicate that the size of German TMT drops from about 6 members (5.8) in 1997 to 5 members (5.2) in 2003. In the company reports I analyzed for this study, I found a variety of companies announcing the intention to reorganize their corporate governance arrangements, to reduce the size of their TMT, and to build up another management level – the extended management (“Erweiterte Geschäftsführung”). This is one major explanation for the development I observed towards smaller TMT in German large firms between 1997-2003.

5.1.4 Development of TMT Personal Background Demographics 1997-2003

In this study, I collected a variety of TMT demographic indicators, including diversity in TMT nationality, diversity in educational and functional background, age level and diversity in age structure, organizational tenure and TMT tenure, international work experiences and previous TMT management experience. The following descriptive analysis clearly shows that TMT demographics since 1997 on some demographic traits move towards a higher degree of diversity and lower averages in the demographic composition of German TMTs. Other demographic traits remained rather stable during the time of the studied period. This is something particular interesting to note, as it already gives a first indication of the importance of single demographic traits in the German context and will help me to collect the relevant demographic traits for the analysis of my hypotheses.

The demographic traits of TMT can be separated into personal background-related variables such as age or origin and work place-related demographic variables (Carpenter
and Fredrickson 2001). First, I will discuss the development of personal background-related demographic variables in German TMTs between 1997-2003.

5.1.4.1 The Development in Diversity in Nationality and Diversity in Educational Background

The following Chart 21 shows the development of diversity in TMT nationality in German TMTs and the development of diversity in the educational background. TMT foreign membership is displayed by two graphs. The overall Chart shows the development of diversity, considering all nationalities as distinct parts of the analysis. The second line in the Chart named “Overall (Germanic Group)” displays the development of diversity in foreign TMT members when the three (partly) German speaking countries Switzerland, Austria and Germany are combined in one Germanic group. I present this to give a first descriptive indication of my Hypothesis 2, where I argued that in the German context it is important to look at a distinction between TMT demographics along the line of culturally close and rather distant demographic traits.

Chart 22: Development of Diversity in TMT Member Nationality and Educational Background, Germany 1997-2003

When looking at the development of diversity in TMT nationality, it becomes obvious that between 1997-2003 German TMTs clearly developed towards a higher degree of diversity in foreign TMT members. Especially until the year 2000 there is a steep rise in diversity in TMT nationality. Between 1997 and 2003 the diversity in TMT nationality rose by about 60%. German TMT demographics clearly become more diverse in this respect. Now, comparing the overall level of diversity in TMT nationality with the
overall level of diversity in TMT educational background, one can note that diversity of the former case ranges on a far lower level than diversity in the latter case. In contrast to diversity in educational background, TMT diversity in nationality displays a higher degree of growth in diversity (compare Chart 22). Nevertheless, the level of diversity in nationality in 1997 is very low and, thus, although there is an impressive growth rate in diversity, the overall level of diversity also remains comparatively low in German TMTs in the year 2003.

Chart 23: Development of Ratio of Foreign TMT as of Total TMT members Germany 1997-2003

<table>
<thead>
<tr>
<th>In %</th>
<th>1997</th>
<th>1998</th>
<th>1999</th>
<th>2000</th>
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<td>8,6</td>
<td>10,5</td>
<td>9,9</td>
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</table>

*Figures only available until 6/2003

Including the “Germanic-speaking group” in the analysis of the internationalization of TMTs, the analysis reveals that a major part of the growth in diversity in TMT nationality is driven by hiring TMT members from Switzerland and Austria. This conclusion can be derived from the development of diversity when including Swiss, German and Austrian members in one “Germanic-speaking Group”, which is pictured by the dotted line in Chart 21. Not only is the level of diversity remarkably lower when we consider the three countries as distinct parts of the analysis but also the gradient in the last years of the analysis is less steep. The latter indicates that especially in the last years of the analysis mainly hiring TMT members from Switzerland and Austria drives the growth in TMT diversity in TMT nationality. Thus, it is not surprising that those two countries take a quite prominent role when I look at the origins of TMT members in the year 1997, and even more so in the year 2003:
From this Chart, it becomes obvious that the two main countries foreign TMT members were hired from are Austria and Switzerland. Compared to 1997, both countries even gained more importance in this respect in 2003. Looking at the third biggest source country of foreign TMT members, it can be noted that the UK (in 1997) was replaced by the USA in 2003. As it was shown in the descriptive results section on development of internationalization posture (Chart 14), there is a similar rising importance for US markets in the same time-span when looking at the source of revenues from foreign markets.

In my descriptive analysis of internationalization and diversification, I also looked at industry-specific developments and firm size-dependent developments. I will follow the same path of analysis when looking at the national origins of TMT members and try to identify industry or size-specific trends. For the development of TMT educational background, I will not perform such an analysis, as there was no considerable change between 1997-2003 (Chart 21 above). The following charts display the industry-specific development in TMT diversity in nationality.
Over the years it can be observed that certain industries show a higher level of diversity in TMT nationality than others. To these industries belong manufacturing, service and communication. Especially manufacturing and service are industries that manage to establish themselves in the upper area of TMT diversity in nationality most of the years. The results as displayed for the communication industry, however, must be put in perspective against the low number of companies (3) that belong to this industry in the sample. Finance, utilities and retail rather seem to be industries that are more dominated by German TMT members than by foreigners, as over time these industries tend to score a lower yearly average diversity in TMT nationality. A first comparative glance at my descriptive industry analysis of internationalization positioning data (Chart 13) reveals that a higher TMT diversity in nationality of the TMT seems to occur in industries that also have a higher internationalization degree, as shown above in my descriptive analysis of the development of strategic positioning. However, one also should note that there is no clear leading industry when looking at internationalization of TMTs (considering the limitations I set above for the communication industry) over time.

Chart 25 looks at the firm size dependent developments of diversity in TMT nationality. There is a variety of arguments why a bigger firm may have a more internationalized TMT. Larger firms may be in a better position to attract international TMT staff as they have a better reputation, and, of course, as they tend to be more internationalized than
smaller firms and support a more professional HR (human resource) management for conducting professional searches. For the display of the size-dependent influences, I averaged the yearly total sales data (1997-2002) and the data on the yearly level of diversity in TMT nationality (1997-2002) of my firms. Finally, I plotted an estimated trend line for the relation between sales and diversity in TMT nationality. For further illustration, I added the names of companies at the extreme points.

**Chart 26: Average TMT Diversity (Nationality) and Average Firm Size (Sales) 1997-2002**

It can be seen from the Chart above that with increasing overall sales volume of a firm the TMT become more diverse in TMT nationality. Examples of this are DaimlerChrysler AG, Siemens AG or Allianz AG. However, it is also remarkably that there is variety of mid-sized firms in the sample (such as Adidas-Salomon AG or Epcos AG) that have an even higher degree of international diversity in the demographic composition of the TMT than larger firms. Thus, firm size and diversity TMT nationality certainly have a positive relation to one another, but what is the exact shape of the relationship between the two is not obvious. This I cannot explore any further here, as this would exceed the scope of the analysis. Nevertheless, the Chart above shows that it would be worthwhile to further investigate why it is also mid-sized firms that evidently show a very high degree of diversity in TMT nationality. I will include firm size as a controlling factor in the analysis of my hypotheses.
I close this first part of the discussion on personal background-related demographic variables with an exploration of diversity in the educational background of TMTs in Germany 1997-2002.

Chart 27: Educational Background of German TMT 1997 and 2003

Between 1997-2003, most TMT members have an education in Business & Engineering ("Finanz- und Wirtschaftsstudien/Wirtschaftsingenieurswesen"), followed by TMT members with an education in Engineering, and Law Studies as third most important educational background of German TMTs. Chart 21 already showed that the overall level of diversity in TMT educational background remained relatively stable over time. Chart 26 confirms this result and shows that the stability of diversity in TMT educational background between 1997 and 2003 is also based on stability in the types of TMT educational background.

Above, I already touched upon the fact that the overall diversity level of TMT educational background across the years is far higher than the maximum level of diversity in TMT nationality reached in 2003. Of course, one has to be careful to put both in a direct comparison, as both diversity measures may act upon TMT capabilities in different ways. For example, one foreign member out of four of a TMT may induce more diversity and resulting TMT capabilities and features in a TMT than having four members with individual and different educational backgrounds in the team. Also, the basic task of a TMT asks for different skills provided by different educational backgrounds in any case, whereas creating diversity in TMT nationality rather has the
character of an intentional decision, as it is not absolutely necessary. For instance, most TMTs have a CFO (Chief Financial Officer), resulting from the general requirement to have such a financial function in the TMT. This already provides most TMTs with a “natural” diversity in TMT educational background, as the inclusion of a TMT member with a educational background in finance is required.

The descriptive results on diversity in TMT educational background do not show a lot of change. From this absence cannot draw the conclusion that diversity of educational background is of no relevance for the analysis. It rather may be that diversity in educational background has already reached a certain point of saturation and has become standard over the years when thinking about the demographic composition of TMTs. In contrast to this mature development, the development in diversity in different national backgrounds is only at the beginning any may reach a status in diversity similar to the status diversity in educational background of today. In the future, a similar level of diversity in TMT nationality as displayed by educational background might be assumed as standard and will not be further questioned.

Literature discussing such issues and the differences between demographic traits and comparing specific demographic traits to one another in regard to their impact on TMT capabilities is scarce at the moment, also in the context of work done in the US. I hope that by laying the descriptive foundation of the development of TMT demographics over time in one comprehensive data collection effort I may be able to enable comparison of demographic traits in the German context.

5.1.4.2 The Development of Age Level and Diversity in Age

The average TMT age and diversity in the age structure of TMTs has already been discussed previously as a possible indicator of TMT capabilities. First, TMTs that have a lower average age level are associated with higher degree of innovation and entrepreneurship. Second, diversity in the age structure – e.g. combining rather seasoned staff of older age with younger TMT members is also taken as an indicator of innovation capacity. High diversity in the TMT age structure signals a higher degree of innovation, but may also result in higher conflict potential in the TMT, as TMT members with a different set of personal life experiences from different generations work together in one team. Thus, the result of diversity in TMT age structure is again not unequivocal. With rising diversity in the TMT age structure, teams become more innovative, but also may lose overall problem-solving capacity, as the level of conflict rises as well.
Overall, the average age of German TMTs dropped from its peak in 1998 at about 53 years to its lowest point at about 51.5 years in 2002. At the beginning of 2003 the average TMT age rose again. Although there is a drop in the average age, the change on this level of analysis (average age of TMT per year) seems to be almost irrelevant, as the average seems to have only dropped by about 1.5 years maximum, which is a reduction by less than 3% over the full time period covering the years from 1997-2003. Based on the indicator of age, there is only a slight change towards younger and more dynamic TMTs noticeable. An analysis on industry level did not identify any specific industry that would show a significantly different development. This latter analysis is not pictured, as the yearly average age level per industry tends to be very close to the overall yearly average age level.

On the other side, the changes in diversity in TMT age structure as pictured on the right side of Chart 27 seems to be of higher significance. Over the full period of the analysis, diversity in TMT age structure rose by about 14%. Between 1997-2003 German TMTs developed towards a greater diversity in age structure. As there is more change happening on the side of age diversity it is worthwhile to further explore this change on industry level and firm size level.
Compared to the development of TMT diversity nationality, an industry-specific analysis of the development of diversity in TMT age structure of German TMT shows that the companies with high diversity in age structure are not the same which showed diversity in TMT nationality. In the case of diversity in TMT age structure, it is mainly the retail industry, banking and financing as well as the service industry that display a high average of TMT diversity in age structure over the full time period. It is also interesting to note that industries that in years prior to 2002 displayed a lower degree of diversity seem to catch up in 2002 as the gap between the industries narrows over the time-span of analysis. Also, a firm-size dependent analysis of TMT age structure reveals differences to TMT diversity in internationalization (Chart 29). With a rising total size of a company, the level of diversity in TMT age structure seems to decline. This result stands in contrast to the size-dependent effects of diversity in TMT nationality. One explanation for this could be that for smaller firms it is far easier to achieve diversity in age structure than through different nationalities, as foreign managers need to be offered attractive packages and superior future development possibilities in order to convince them to move to a new position abroad. Small firms are in a less favorable position to offer those kinds of rewards than larger firms.
One could speculate that thus it is rather the larger firms that can afford a more balanced approach with respect to TMT demographic management, also employing the mean of diversity in TMT nationality. They can afford a broad base of TMT diversity fuelled through a variety of diversity measures, each adding its distinct value to the capabilities of the TMT. This is a fascinating line for further research.

5.1.5 Development of TMT Workplace Related Demographics 1997-2003

In the following part of this section, I turn to the workplace-related demographic variables, which can be used to capture German TMT demographics and capabilities. These include the average level of TMT international work experience, diversity in TMT previous management experience, average TMT organizational tenure, average TMT team tenure, and diversity in TMT functional background. Again, in my analytical section I will not use all of these factors, as some of them showed a relatively high correlation to one another. In order to avoid interaction effects between the independent variables in my model, I excluded one of the traits of the pairs that showed too high a correlation to one another. Nevertheless, all demographic traits I researched will be included in the descriptive section as one objective of this section is to give a complete overview over the development of TMT demographics in large German firms between 1997-2003.
5.1.5.1 Previous Management Experience and International Work Experience

For international work experience, I suggested above to use the average international work experience of German TMT members while for previous management experience I will use a diversity measure covering all TMT members. A higher average international work experience can be taken as a proxy for more flexibility and ingenuity, as the German TMT members have been exposed to a greater variety of cultural backgrounds, management styles, and problem-solution approaches. Higher diversity in previous management experience may indicate more openness to new management styles and deviations from well-established management practices, as the TMT is more willing to experiment and make their own experiences with different approaches. TMT previous management experiences include all TMT experience in previous firms plus the experiences TMT members have in the TMT of their employer per year.

As can be seen from Chart 31, diversity in previous management experience was relatively stable over the first years of the analysis and then considerably dropped in the last two years by about 10%. In contrast to this, the average of previous top management experience stays quite stable at about 10 years of previous experience over the full time span of the analysis (not pictured here). My interpretation of this result is that retiring managers with long experience in top management and managers with very little experience in management are replaced by managers with a medium level of TMT experience, lowering the diversity in previous experience but keeping the average stable over time. In terms of management capabilities, this can be taken as an indication that German TMTs in the period of analysis become less creative and ingenious but also less conflict-prone without moving away too far from the required average level of experience of top managers of about 10 years.

The development of overall international work experience of TMTs (dotted line on the right side of Chart 30) shows a different picture. Between 1997-2003, the average international experience of German TMT rose by 19% to about 3 years of average international experience of TMT members. However, when looking at this overall figure, one needs to keep in mind that the international experience of foreign TMT members still is included in this figure. Thus, it is not very surprising that developments similar to the rise of diversity in TMT nationality can be observed.
The two TMT demographic traits diversity in TMT nationality and average TMT international work experience can be compared to one another, as both demographic indicators aim at the same capability. Both want to add flexibility, innovation, and ingenuity to TMT by contributing a component of diversity in cultural background to the TMT. Certainly being born, growing up, and working for a long time in a specific country results in a deeper understanding of the cultural background (diversity in TMT nationality) than just having worked there for a few years (average TMT international work experience). On the other hand, international work experience of German TMT members might be a less disruptive way of adding the desired capabilities to the TMT. Both try to add a distinctive diversity resulting from heterogeneity in different cultural backgrounds.

The second line in Chart 30 shows the development of the TMT average international work experience of the German TMT members only. It does make sense to separate German members from foreign members, as by this the international work experience (of now only the German TMT members) becomes a distinct tool to create diversity in different cultural backgrounds compared to diversity in TMT nationality. Conducting this analysis, a different picture evolves as compared to the inclusion of foreign TMT members and their international experience. The development of international work experience of only German TMT members remains stable between the extreme values.
of 1.26 years (1997) and 1.4 years (1999). The final value of 2003 is 1.33 years of international work experience of German TMT members. Thus, across the full time span in international work experience of German TMT members there is almost no degree of change.

The industry-specific development of international work experience of TMT (German members) also shows an interesting pattern, especially if compared with the indicators of diversity in nationality (Chart 24).

Chart 32: TMT Average TMT International TMT Work Experience, Germany 1997-2002
(German Members)

The comparison between diversity in TMT nationality (Chart 24) and average international work experience of German TMT members (Chart 31) may be taken as an indicator how in different industries both demographic traits are managed to create a certain level of diversity in cultural backgrounds. As I excluded foreign TMT members from my measurement of average TMT international experience, this comparison becomes possible and meaningful because both can be treated as separate tools of TMT demographics to foster certain TMT capabilities.

In the manufacturing industry, both demographic traits are taken as a means to achieve diversity in a TMT, while in the finance industry only a higher level of average international work experience of German TMT members is favored to create diversity in cultural backgrounds. Our companies in the service industry provide an interesting case: Since 1997 there has been a comparatively high level of diversity in international TMT
members; however, cultural diversity in international experience of German TMT members only developed since 1997 towards the high level it achieved in 2002. Another extreme case in the sample companies is the construction industry. Here, it seems that German TMT members do not need to have experiences in foreign countries. Diversity is exclusively created through the inclusion of foreign TMT members. In sum, two main ways how diversity in different cultural backgrounds is created can be identified: First, there is the exclusive integration of foreign TMT members. Second, there is the simultaneously created diversity in international experience of German TMT members and inclusion of foreign staff. Both aim at the same target in diversity, but the resulting differences for TMT processes and capabilities make those two demographic traits an interesting starting point to study the impact of TMT demographics on TMT processes and results. There is a variety of questions to be answered, for instance: Is there arguably less diversity in cultural background added if only international experience of German TMT? Another question related to this is: Is this outbalanced by the fact that the inclusion of German TMT may add less reason for friction and conflict resulting from high international cultural diversity? What is the best way to achieve cultural diversity in a given specific setting? Unfortunately, this line of analysis cannot be followed up here but certainly provides potential for future research. Overall, it is also noticeable that with respect to industry effects of international work experience of German TMT members, there are clearly differences, ranging from the construction firms in the sample, which show zero international work experience, to service firms, which on average show more than 2 years of international work experience of German TMTs in the year 2002.

The firm size-dependent effects of TMT international work experience are similar to the corresponding effects of diversity in TMT nationality (Chart 25). My analysis shows that the larger the firm, the higher the average number of years of international work experience of German TMT members on the team seems to be. However, there are also differences. Foremost, compared to diversity in TMT nationality it is a different kind of mid-sized firm that fuels this development. In the case of international work experience, it is mainly chemical or pharmaceutical firms such as BASF AG, Bayer AG or Merck AG where the German members have a high degree of international experience. This does not come as a surprise, as in the chemical and pharmaceutical market the US market plays a vital role, and it is almost impossible to get hired for elevated management positions without having worked in these markets.
5.1.5.2 Average Organizational Tenure and Average TMT Tenure

As discussed above, both demographic indicators “average organizational tenure” and “average TMT tenure” can be taken as proxies for coherence and consent as well as indicators of dissent and conflict in TMT. TMTs with a high average organizational tenure tend to provide cohesion at the top, as all TMT members have been brought up in the same firm, have experienced the same firm culture over a longer period, and know how “things” work in this specific firm. On the other hand, those teams are more likely to fall prey to the dominant logic of a firm, which makes them blind to external developments and less open to new approaches and change required by market developments. TMTs that have a higher average TMT tenure also are more prone to fall prey to group-think possibly excluding necessary innovative ideas and changes for the sake of established TMT processes and consent. TMT scanning activities and problem-solution capacities follow established patterns and run the risk of ignoring good business opportunities or business-critical developments. On the other hand, teams with a higher degree of average TMT tenure are able to come to a decision more quickly than teams with lower tenure. Teams with lower TMT tenure are more prone to conflict as there has been less time available for the team to develop towards group-think, and common rules and procedures to manage conflicts. This may result in longer decision times and less
cohesion at the top, but also in more comprehensive and ingenious decision-making as more conflicting views and ideas have been included in the decision process.

Chart 34: Development of Average TMT Organizational Tenure and TMT Team Tenure, Germany 1997-2003

Chart 33 pictures the development of the average TMT organizational tenure and the average TMT tenure. Especially in the case of organizational tenure as shown on the left side of the Chart a steep decline from 15.3 years to 13.4 years can be noted for the period between 1997-2003. The average TMT tenure dropped less strongly from about 6.6 years to 6.2 years in the same period. The sharp decline in TMT average organizational tenure indicates that German firms increasingly hire TMT members from outside the firm and that careers resulting in a TMT position increasingly become shorter. Taking up the discussion of average organizational tenure as a proxy for TMT capabilities again, this can also be taken as an indication that German TMTs develop towards less cohesion and more creative conflict-prone demographic composition. This is supported by the development of average TMT tenure as shown in Chart 33. The decreasing level of average TMT tenure reflects the rising level of new TMT members coming on board of German TMTs ever faster. This also results from the rising pressure to deliver the performance which shareholders and stakeholders expect from the TMT. TMT are given less time to perform before supervisory board and shareholders step in and bring on new members to the TMT.
Looking at the industry-specific differences in average TMT organizational tenure (Chart 34), it becomes clear that there are significant differences between the industries. Across the full time span it is the communication firms that have by far the lowest TMT organizational tenure. Again, it is important to keep in mind that the overall number of firms from this industry in the sample is comparatively low. Between 1997 and 2002, the average organizational tenure of communication firms rose from 4.7 years (1997) to 5.2 years (2002), displaying only a low level of change. The telecom industry in Germany is a relatively young and dynamic industry with mobile communications and media developing into the most important revenue sources. It does make sense in these dynamic and consumer-orientated industries to have a TMT that is capable of innovative and ingenious decision-making as expected from a team with low organizational tenure.

It is interesting to note that all the other industries remain relatively stable in terms of TMT average organizational tenure (between 11-15.5 years). Only during the last years of the analysis the majority of the industries seem to be moving from higher tenured teams towards lower tenured ones. The firms in the construction industry are also remarkable. In this case, a drop from an average TMT tenure of 18.8 years in 1997 to an average of 10.2 years in 2002 can be recorded. It is quite surprising that firms in a rather conservative industry such as the construction industry with less virulent market dynamics than, for instance, the consumer good industry, feel the need to establish TMTs with lower average organizational tenure, reflecting the need to break up...
established firm-specific lines of thought in the TMT. On the other hand, the German construction industry has gone through difficult times, with increasingly low cost competition also on the German home market. It may be the case that these recent developments highlighted the need for new and more innovative problem-solution TMT capabilities, which could not be found within the own firm and TMTs with a high average organizational tenure.

Chart 36: Average TMT Organizational Tenure and Average TMT Firm Size (Sales), Germany 1997-2002

From the above Chart 35 it becomes obvious that larger firms have TMTs with a higher average organizational tenure. Intuitively this makes sense, as larger firms are more likely to have a more complex organizational structure and, as has been shown before, also have a higher degree of diversification. This makes it essential for the TMT to have a higher average organizational tenure resulting in a deep and thorough knowledge of the more complex larger firm. On the other hand, I observed in the industry comparison that there is a tendency towards lower tenured teams in most of the industries. It is an interesting question where the balance is in regard to the different demands towards TMT organizational tenure and TMT capabilities. On the one hand, the higher ingenuity in problem-solving capacity (lower tenured teams) seems to be the trend (Chart 32); on the other hand, large corporations generally seem to need higher tenured teams (Chart 35). In the analytical section of this work, I will examine the relation between TMT average organizational tenure and degree of firm diversification in more detail.
Two cases are particularly remarkable in the German context of average organizational tenure. First, although DaimlerChrysler AG developed from a merger between Chrysler and DaimlerBenz AG it scores a high average of TMT organizational tenure. The reason for this is that in this case I also counted the organizational tenure of the TMT of the Chrysler Corporation as relevant. I justify this approach with the sheer size of the merger. Although it can be doubted to what extent the merger was a “merger amongst equals”, the size of the Chrysler business is so substantial that average TMT organizational experience in Chrysler seems relevant enough to be included in the specific measure of average organizational TMT tenure. Second, although Deutsche Telekom AG belongs to the largest firms in Germany, it scores a low average TMT organizational tenure of about 8.4 years between 1997 and 2002. This I already explained above by discussing the special case of communication companies.

The next Chart 36 (next page) explores the firm size-dependent effects on TMT tenure. In Chart 33 I highlighted that there is only a slight decrease to be noticed in the average TMT tenure per year. An analysis of industry-specific effects showed that there are no significant industry-specific deviations to be found. Thus, I do not display and discuss this issue in a more detailed manner. In contrast, the analysis of the size-dependent effects of TMT tenure (Chart 36) is quite surprising compared to the other demographics and their size dependent effects. It seems that in Germany larger firms have lower TMT tenured teams than firms smaller in size. It may be that expectations from stakeholders and shareholders towards TMT of larger German firms are higher than the expectations towards smaller companies. The higher expectation and the higher exposure to the public to which TMT of larger firms are subject may result in higher pressure to perform in a shorter time span before TMT members are exchanged. This, however, may only be one part of the explanation. Others may be that being at the top of a large German enterprise confronts the TMT members with a higher stress and challenge level. TMT members can stand the stress and management requirements posed by a large corporation less well than in the case of a smaller corporation.

What remains to be discussed with respect to work-related variables is the development of the functional background of German TMTs between 1997-2002. Similar to diversity in TMT nationality or diversity in TMT educational background diversity, TMT functional background can be taken as an indicator of the capabilities of the TMT. Looking at the development of TMT diversity in functional background (not pictured), it is interesting to note that the level of diversity ranges in a similar area as TMT diversity in educational background (diversity in educational background ranges from 0.45 - 0.5
on the Blau-index (1997-2003)). Also, the development over time seems to follow a similar pattern, with a rise in the early years between 1997-1999 and a decline in the following years. A relation between the two demographic traits can be expected, as certain functional tasks require a certain educational background. For instance, there is a clear relation between the financial function (CFO) and the corresponding formal educational background of the CFOs in economics. The similar level and development of both over time may be taken as an indicator that the careers leading up to a TMT function in Germany are still rather straight. Cross entries, for instance a TMT member with an arts background taking on the CFO function, is very rare.

Chart 37: Average TMT Tenure and Average Firm Size (Sales), Germany 1997-2002

In both 1997 and 2003, the dominant functional experience German TMT members have is General Management & Administrative, followed by Production & Development, Finance & Controlling, and, last, Marketing & Sales (not pictured here). Through the years, there has been only little change. The positions of the different functional backgrounds remain the same. Only Finance & Controlling, and Production & Development gained some ground, while Marketing & Sales lost ground. In sum, the changes between the years are not significant. A quite different picture evolves when we look at industry-specific and size-dependent effects with respect to TMT functional diversity (Chart 37 and 38).
While in the case of diversity in educational background the industry-specific averages were grouped closely around the overall annual average (not pictured), the industry-specific averages of diversity in functional background are far more widely scattered, as shown in the Chart 37 below.

Chart 38: Industry-Specific Average TMT Functional Background (Blau), Germany 1997-2002

Across all years, the companies in the retail industry show the lowest average diversity in functional background (Blau indicator at about 0.2), while utilities and the firms in the communication industry show an average functional background diversity of over 0.6. Compared to all the other industry-specific diversity averages in TMT demographics, this is the highest spread I found so far in my descriptive analysis of TMT demographics. More than in the case of diversity in TMT educational background, this may reflect on the specific needs an industry has with respect to TMT functions and capabilities. This is also supported by the relative stability, which the industries show over time in regard to diversity in functional background.

The analysis of size-dependent effects does reveal that again it is the larger firms that seem to have a higher degree of diversity in TMT functional backgrounds than the smaller firms. This seems logical, as larger firms tend to be more diversified and have more functions in the TMT to fulfill. Also, TMTs of larger firms tend to be larger in size, which may also allow for more room of more diverse functional backgrounds.
5.1.6 Concluding Remarks on Strategic Posture, Personal Background-Related and Workplace Related Demographics

In this closing part of the descriptive analysis section I want to sum up both the development of strategic posture (internationalization/diversification) and the development of the discussed demographic traits.

The international posture variables foreign sales/total sales (FSTS) and also the diversity measure of internationalization (DFSTS) indicated a rising internationalization level of the German firms in the data set between 1997-2002. The level of overall internationalization (FSTS) increased to 53% in the year of 2002. Also, DFSTS showed a significant increase in heterogeneity of international sales sources. In 1997, the European countries were the major source for international revenue while the US gained in importance as a source for international sales between 1997-2002. This allows for the conclusion that the international posture of the firms in the sample developed towards a higher complexity, as not only a higher percentage of sales is generated by foreign markets but also the diversity of the origin of international sales has increased since 1997. More markets, customers, products and production units have to be managed on a global scale without losing track of the specific success factors of the different global region. From this, I can formulate the expectation towards the development of German TMT that these teams become more diverse and ingenious in order to meet the
expectations of the rising complexity in the environment. On the other hand, this expectation means that German TMTs can also be expected to be more conflict-prone and that the consent model in the TMTs will lose influence. A different picture evolves when looking at the development of diversification posture. The overall diversification measure remained relatively stable over the first years of the analysis, and only in the last two years a slight decrease in overall diversification can be recorded. This decrease is mainly fuelled by a drop in the level of my indicator for related diversification. The German firms in the sample seem to have settled already on a certain level of diversification and, in contrast to internationalization, no high level of change can be recorded within my time frame of analysis anymore. Although there is less change in the development of my diversification measures, this result is very relevant for my thesis as the level of diversification posture reached nevertheless requires a certain TMT demographic composition at the top. In my analytical section I will further look at this aspect by my Hypotheses 5a and 5b. It will be interesting to see whether the saturation status reached in diversification posture is of relevance for the composition of TMT demographic in context of the German economy. If my hypotheses hold true, German firms should have had enough time to react to their specific level of diversification with a corresponding demographic mixture in their TMT ensuring social cohesion at the top.

I also presented a detailed and comprehensive descriptive analysis of the development of German TMT demographics in large firms between 1997-2003. The Chart 40 gives a summary of the issues discussed.

The chart shows that there is a clear distinction between demographics that show positive or negative changes and others that have reached a certain level of diversity and, thus, remained relatively stable over the period of the analysis. To the variables that show a considerable level of change over time belong the demographic traits of diversity in TMT nationality, diversity in age structure, and level of organizational tenure. Translating these developments into proxies for TMT capabilities, one could argue that on average the TMT of the firms in the sample tend to be equipped with a higher problem-solving capability and other capabilities that result from increased levels of diversity in different backgrounds. A more detailed view also revealed that a majority of the management talent from abroad is hired from Austria and Switzerland. The lower average TMT tenure results in less influence of a firm’s specific dominant logic and may encourage the TMT to follow new paths and more easily explore new and unconventional ways in decision-making processes and content of decisions. The
increase in diversity of age structure may contribute to a more innovative and fruitful exchange between older and younger managers, resulting in innovative and more ingenious problem-solving combining the view of the older and younger management generation.

On the other hand, those developments bear the danger of higher conflict in the TMT, as not only more diverse national backgrounds, views and styles need to be integrated in the problem-solving process, but also younger and older management generations have to compromise what will be the best way to run the company in future and to work in the TMT. The lower organizational tenure may further aggravate this as managers have served less time together in the same company and had less time to develop a common ground in management style and problem-solving. This higher conflict potential results in less cohesion at the top, slower decision-making as many viewpoints have to be accommodated, and less stability at the top can expected. This is also indicated by lower TMT tenure and the increasing rate of change during the first years of the analysis.

Chart 40: Summary Development of TMT Demographic Variables, Germany 1997-2002

The remaining demographic variables in this study do not show a high level of change over the time in my descriptive analysis. These demographic traits include diversity in TMT educational background, average TMT age level, level of TMT international experience, diversity in TMT previous management experience, TMT tenure, and diversity in TMT educational background. Although there is not much change over time
to be observed, these demographic traits are of relevance as they may already reflect the result of a previous TMT demographic adjustment process, which has further progressed than, for instance, diversity in TMT nationality and already shows congruence with the specific organizational environment of a firm. This may also include industry and size specific effects as I showed in the analysis. This holds true for all the listed demographic traits apart from average TMT international experience. I argue that educational and functional diversity reflect the demands of the specific industry a firm operates in. They have been a function of the specific business environment for a long time already and firms had enough time to establish a certain level of diversity in those demographic traits. The level of TMT tenure and age level may be the averaged expectation one needs to have in order to serve on a German TMT. It is noticeable how relatively stable these two indicators remain over time. They may not be acknowledged as active “demographic tools”, which can be used for equipping the TMT with specific capabilities. In the case of TMT tenure it may be even counter-productive to change the TMT too often, as there is a certain lower limit of time a group of TMT members need to have together in order to become an effective TMT team. It is a different story with respect to average TMT international experience of German TMT members. One could expect that this demographic trait is more actively managed similar to diversity in TMT nationality and also shows considerably more change over time. After all, having international work experience nowadays is frequently quoted as a requirement for German managers to reach the top. A certain level of average TMT international work experience has been reached, but the level of change I detected on average stayed behind my expectations.

For my “level” hypotheses, I can now speculate about first trends with respect to the relation between strategic positioning and TMT demographics in the German context. Based on the descriptive part, one could argue that the rising level of complexity caused by rising levels of internationalization posture is accompanied by a change in TMT capabilities, which accommodates the requirements and challenges resulting from this development. Whether this is a statistically significant development will be further analyzed in the next section of this work. On the other hand, the relative stability in my measures of diversification posture over time with a slight trend to drop between 1997-2002 is not fully reflected in the development of TMT demographics, as, for instance, one indicator of TMT social cohesion, “TMT organizational tenure”, dropped rapidly.

In regard to my “change” hypotheses, only a limited estimate can be derived from the descriptive analysis, save the fact that I have noticed a good level of TMT member
change and an increasing level of CEO change in the data set which provides me with a
great opportunity to study the role of CEO change in TMT demographic
development over time in the analytical part of this thesis.
6 Analytical Results

In the following section, I will now present and discuss the results of the analyses I conducted to research the presented hypotheses. I will present the results as result tables and briefly discuss each table.

6.1 Results for Hypothesis 1: Internationalization Posture

The following Chart shows the results for the first set of hypotheses. The analysis was conducted on the basis of the models described above in section 3 of this thesis. The table presents the results of the fixed effect regression analysis I applied to my data of 72 large German companies between 1997 and 2002. The results from Models 1-5 enable me to discuss the analytical results for the respective hypotheses. With Model 1 and Model 2, I tested for Hypothesis 1 with respect to the level effects between diversity in German TMT demographics and international posture. Based on existing literature and results of analysis in the US context, I proposed for my German data set that a higher level of diversity in TMT demographics accounts positively for the variance in the level of internationalization posture. This is to say, that in the German business environment higher diversity in TMT demographics is more likely to be found in companies with a more complex environment signified by a high degree of internationalization posture. The results of Model 1 and Model 2 confirm this hypothesis in an impressive manner for some tested TMT demographic traits; for other demographic traits I cannot accept this hypothesis. The results enable me to give an indication in which specific TMT demographic trait higher diversity or adequate average levels correlate with rising complexity in the environment, in this case represented by rising levels of diversity in international posture (Model 1 - DFSTS) and overall level of internationalization (Model 2 - FSTS).

In both models, the demographic trait of diversity in TMT nationality shows a high positive and significant correlation to rising levels or rising complexity in internationalization posture. The significance level of this result is at over 95%. Of even higher significance is the trait of average organizational tenure (>99%). Not only the significance of the result for organizational tenure is at a level that shows the correctness of my Hypothesis 1 - the direction of the relationship also reflects the expectations. Lower organizational tenured teams account in a statistically significant manner for the variance in rising levels or rising complexity in internationalization posture. Lower tenured teams are less prone to group-think and tend to be more innovative – a
Chart 41: Regression Results of First Set of Hypotheses

<table>
<thead>
<tr>
<th>VARIABLES</th>
<th>Mod1</th>
<th>Mod2</th>
<th>Mod3</th>
<th>Mod4</th>
<th>Mod5</th>
<th>Mod6</th>
<th>Mod7</th>
</tr>
</thead>
<tbody>
<tr>
<td>Demographics</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Diversity TMT Intern (Blau)</td>
<td>1.4**</td>
<td>1.9**</td>
<td>-.02</td>
<td>-.44</td>
<td>.80</td>
<td>.12</td>
<td>2.7**</td>
</tr>
<tr>
<td>Intern. Exp (Germans)</td>
<td>-.01</td>
<td>-.01</td>
<td>-.01</td>
<td>-.04</td>
<td>.02</td>
<td>-.003</td>
<td>.01</td>
</tr>
<tr>
<td>Age (Stvd/Mean., log)</td>
<td>.40*</td>
<td>.34*</td>
<td>.12</td>
<td>-.12</td>
<td>.02</td>
<td>.010</td>
<td>.97**</td>
</tr>
<tr>
<td>Av. Organ. Tenure, log)</td>
<td>-.71***</td>
<td>-.62***</td>
<td>-.28*1</td>
<td>.47*</td>
<td>.07</td>
<td>-.13***</td>
<td>-.92*</td>
</tr>
<tr>
<td>Prev. Mgt Experien. Stdv/Mean, Log</td>
<td>.41**</td>
<td>.29*</td>
<td>.13</td>
<td>-.27</td>
<td>.04</td>
<td>-.01</td>
<td>.84**</td>
</tr>
<tr>
<td>Diversity Funct. Backgrou. (Blau)</td>
<td>-.27</td>
<td>.21</td>
<td>-1.7***</td>
<td>-1.0x2</td>
<td>-.06</td>
<td>.05</td>
<td>.48</td>
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<tr>
<td>Analytics</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>R2 (Overall)</td>
<td>.18</td>
<td>.20</td>
<td>.11</td>
<td>.13</td>
<td>.12</td>
<td>.13</td>
<td>.07</td>
</tr>
<tr>
<td>R2 (Within)</td>
<td>.20</td>
<td>.14</td>
<td>.11</td>
<td>.10</td>
<td>.04</td>
<td>.18</td>
<td>.30</td>
</tr>
<tr>
<td>R2 (In-Between)</td>
<td>.18</td>
<td>.15</td>
<td>.11</td>
<td>.16</td>
<td>.11</td>
<td>.11</td>
<td>.07</td>
</tr>
<tr>
<td>F</td>
<td>5.73</td>
<td>5.83</td>
<td>2.75</td>
<td>2.60</td>
<td>0.93</td>
<td>2.69</td>
<td>4.69</td>
</tr>
<tr>
<td>Effects</td>
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<td>Fixed</td>
<td>Fixed</td>
<td>Fixed</td>
<td>Fixed</td>
<td>Fixed</td>
<td>Fixed</td>
</tr>
</tbody>
</table>

*=>90%; **=>95%; ***=>99% X1=86.3%; X2=89.9%

1) Only companies included that stayed in one diversification class over time between 1997-2002

Mod1: Entropy measure internationalization (DFST)
Mod2: Foreign Sales as of Total Sales (FSTS)
Mod3: Overall Diversification (DT)
Mod4: Diversification in Unrelated Businesses (DU)
Mod5: Diversification in Related Businesses (DR)
Mod6: Entropy measure internationalization (DFST) in high diversified companies (DT >mean)
Mod7: Entropy measure internationalization (DFST) in low diversified companies (DT <mean)
capability of the German TMT which is desirable in the more complex environment of a 
highly internationalized environment. Also, the results for diversity in TMT previous 
management experience show a positive significant relationship to my measures of 
internationalization. Again, this supports the Hypothesis 1 by showing that TMT 
demographics and resulting TMT capabilities are certainly in a relationship dependent on 
the environment a company is active in. TMTs that show a higher diversity in TMT 
previous management experience also move in more complex, highly internationalized 
environments. Less significant, but still at a level of over 90%, the demographic trait of 
TMT age diversity is of relevance. Higher levels of age diversity seem to correspond to a 
higher level in complexity in the environment. German companies use the more conflict-
prone, but also more innovative character of a TMT with higher diversity in age to 
enable the TMT to master the challenges arising from the higher complexity of a more 
internationalized business environment. Average previous TMT international experience 
and diversity in TMT functional background do not show any significance in context of 
Model 1. This is in contrast to the results of Carpenter and Frederickson (2001) who 
found diversity in functional background associated with a less global posture. The result 
with respect to average TMT internationalization is quite surprising, as I argued above 
that international work experience of TMTs might be another way to foster TMT 
capabilities similar to the impact of diversity in TMT nationality without having the level 
of possible conflict in the team the latter carries.

The difference in the significant demographic diversity measures accounts for about 
20% explanatory value (R²) of the variance in the measurements of environmental 
complexity internationalization measures. A F-value of 5.73 indicates the good level of 
the statistical significance of the overall model. In sum, the results are sufficient to accept 
Hypothesis 1.

6.2 Results for Hypothesis 4: Diversification Posture

The results for measurement of a specific complexity in the environment by the overall 
diversification measurement are less good (Model 3). I intended to use this model for 
testing my Hypothesis 4 where I argue that increasing levels of social cohesion in TMT 
should be positively correlating to an increasing level of overall diversification.

This was only confirmed by the result of my measurement of diversity in TMT 
functional background. A lower degree of diversity in TMT functional backgrounds may 
be taken as a proxy for a higher level of social cohesion in a TMT. The results of the 
analysis show that there is a highly significant and negative correlation between diversity
of functional background and the overall degree of diversification as an indicator for a
specific complexity of the environment a company operates in. The significance of this
specific result is over 99%, which makes it a result with a high statistical probability. All
the other measurements of diversity or level in demographic TMT traits show no
significance in this model, which results in a lower explanatory value ($R^2=15\%$) and a
low F-value of 2.75. Including only functional background in the Model does result in a
significantly higher F-value (not pictured here).

The significance of the results with respect to TMT organizational tenure with 86.3% is
below the significance threshold of 90%. In contrast to my hypothesis, the results not
only show relatively little significance of TMT organizational tenure, but also an inverse
relationship from the one expected. Instead of a rising social coherence in the TMT
signified through a rising average level of TMT organizational tenure, an increase of
overall diversification rather goes along with declining levels of average organizational
tenure in the TMT. Although this result is below the threshold of statistical significance
and one could therefore question its validity, it is interesting to note that the results with
respect to organizational tenure show a tendency that is contradictory to my
expectations. Overall, the Hypothesis 4 is only confirmed for diversity in TMT
functional background, while it must be rejected for the remaining demographic traits in
this study.

In Hypothesis 4a, I propose to further analyze the relationship between level and
diversity of demographic composition of German TMTs and diversification by focusing
on the issue of related diversification vs. unrelated diversification. This I suggested to
analyze by using the Model 4 and Model 5 (see Chart 41). Model 5 looks at TMT
demographics and related diversification, while the Model 4 puts unrelated
diversification into perspective of the development of German TMT demographics.

With respect to my Hypothesis 4a, from Models 4 and 5 I expected that TMT which
show a high level of social cohesion through a lower degree in diversity in TMT
demographics or corresponding averages in TMT demographics are rather predominant
in companies with a high level of related diversification. As discussed above, a business
environment of related diversifiers rather asks for social cohesion at the top of a firm,
while unrelated diversifiers have less need for such social cohesion in the TMT. From
this I can expect TMT's in unrelated diversifiers to be more diverse in TMT
demographics or show averages in demographic traits that are indicators of creativity but
also of a higher conflict level.
In the analysis of the overall degree of diversification, I already discovered that demographics and diversification do not fully meet my expectations in regard to proposed complexity in the environment and corresponding TMT demographics. In this overall diversification perspective, only diversity in functional background seems to be an interesting trait. Thus, it will be interesting to see whether further differentiation into related and unrelated diversifiers produces a picture according to my expectations. As can be seen from the results of the analysis, the results are quite different from what I expected in my Hypothesis 4a. Running my model with related diversification as an indicator for the business environment does not show any statistical significance and relevance. The results of my Model 5 for related diversification show very low $R^2$ values and a very low F-value of .93, indicating the insignificance of related diversification as an important indicator of a specific business environment that has relevance for the demographic composition of German TMTs in the sample. The results of Model 4 (unrelated diversification) also show results differing from my expectations. None of the results for the different demographic traits shows a high relevance of more than 95%. Only changes in TMT average organizational tenure seem to positively account for variance on the level of unrelated diversification. This, however, happens only at a significance level of >90%. This result indicates that a higher average TMT organizational tenure is to be found in companies with a higher degree of unrelated diversification. Overall, the results of Model 4 already show a higher level of significance ($F= 2.60$) and the Model has a higher explanatory power of 13%. Nevertheless, Hypothesis 4a cannot be confirmed. The results indicate a different picture from what I could assume based on existing literature in the field of strategic management.

6.3 Results for Hypothesis 5a and 5b: Internationalization & Diversification Posture

I use the Models 6 and 7 of this first part of the analysis to analyze Hypothesis 5a and Hypothesis 5b, which look at a combination of my measures for strategic positioning and the development of TMT demographics. This kind of analysis, with its integration of two continuous measures of strategic posture (internationalization/diversification) and TMT demographics in strategic management theory, so far is scarce and I hope that I can advance the upper echelon perspective with this analysis. Model 6 analyzes the relationship between diversity in TMT demographics and internationalization in highly diversified companies while Model 7 looks at the same relation in lowly diversified companies.
The results show that in highly diversified firms a lower level of average TMT organizational tenure goes along with a rising level of internationalization. This result has a high statistical significance of over 99%. It is interesting to record this effect, as in the results for Hypothesis 4 (overall diversification posture) I could already note a quite high, but not statistically sufficient effect of diversification posture on my measurement of average TMT organizational tenure. If the level of internationalization posture now modifies this relationship, the results become statistically significant. None of the other demographic traits is of significance in this respect. It is very interesting that in contrast to the findings of Model 1 and Model 2, diversity in TMT nationality does not seem to play a role with respect to rising levels of internationalization posture in highly diversified companies. The results for diversity in TMT internationalization do not even show significance at a level close to statistical relevance. One could argue that highly diversified companies seem to acknowledge the need to foster higher creativity and less group-think by adequate composition of their TMTs, but prefer to do this by the less disruptive trait of lower average organizational tenure than by diversity in TMT nationality. Arguably, lower TMT organizational tenure may be perceived as less disruptive for the diversity of the TMT than adding a TMT member with a different national background. After all, I argued that companies with a high level of diversification also strive for a higher level of social cohesion at the top; thus fostering TMT creativity through a lower organizational tenure may be perceived as the lesser evil. The overall significance of this Model is comparatively low, with a F-value of about 2.69. However, taking this F-value in account, it shows an acceptable explanatory power of about 13% with respect to TMT demographic differences and internationalization positioning in highly diversified companies. Again, including only average TMT organizational tenure in the Model results in much more satisfactory F- and R-values (not pictured). With respect to the meaning for Hypothesis 5, the result is not fully clear-cut. On the one hand, the prediction that in highly diversified firms acting in highly internationalized environments the TMT does not show a high degree of diversity is confirmed through the non-significance of diversity in TMT nationality. On the other side, the declining level of average TMT organizational tenure with rising levels of internationalization posture indicates that in highly internationalized and highly diversified companies less cohesion is developing at the top as well. The results in Model 7 looking at the relation between TMT demographics and internationalization posture in hardly diversified companies are very interesting compared to the result just discussed for highly diversified companies acting in highly
internationalized environments. In low diversified companies, diversity in TMT demographics reacts quite differently with respect to rising levels of internationalization. Not very surprisingly, the results of Model 7 are very similar to the results of Model 1 and Model 2. Again, diversity in TMT nationality shows high statistical significance at a confidence level of over 95%. The demographic traits of diversity in TMT age structure, TMT average organizational tenure, and diversity in TMT previous management experience show the same reaction with regard to rising levels in diversity of internationalization in lowly diversified companies. Similar to the first models, the size of the firm is also of significance. In addition, also membership in the manufacturing industry plays an important role, as the industry result shows a high statistical significance. The overall significance of this last Model with a F-value of 4.69 is acceptable. The explanatory power, however, of this Model is below expectation. It accounts only for 7% explanatory power of differences in internationalization posture in lowly diversified companies. Other factors need to be included in the case of lowly diversified firms. Nevertheless, based on this result I accept my Hypothesis 6 that in lowly internationalized firms rising levels of diversity in TMT demographic composition corresponds to rising levels of internationalization posture. The differences between highly diversified and lowly diversified firms in the results from Model 6 and 7 are significant and hint at the importance of building a more complex understanding of strategic posture, its relation to TMT demographic composition and corresponding TMT capabilities. This I will further elaborate upon in the discussion section of this work.

6.4 Results for Hypothesis 2: TMT Nationality in a German Context

In a further hypothesis, I planned to specifically look at the issue of diversity in TMT nationality in the German context of corporate governance and managerial behavior. Our previous results clearly indicated that more internationally composed TMTs are more likely to also operate in an environment of higher complexity, signified by a higher degree of FSTS and DFSTS. Our Hypothesis 2 puts forward that internationalization of TMT rather takes place by adding members from culturally close countries such as Austria or Switzerland. In order to examine this aspect I, as previously outlined, incorporated all members with a German-speaking cultural background in one analytical group for diversity in TMT nationality and reran the analysis of Model 1 and Model 2 for the demographic measurements of diversity in TMT nationality. The expectation is that if a majority of the significance of rising diversity in international members identified in
Model 1 and Model 2 is driven through members from Switzerland and Austria, this new set-up will clear the effect of Swiss and Austrian members on the diversity measure. In case I still can produce a result similar to Model 1 and Model 2, rising levels of diversity in internationalization of TMTs are actually driven by diverse cultural backgrounds others than Swiss or Austrian. The following table shows the results of inclusion of the “German-speaking group” on the left side of the Chart. Model 1 stands for inclusion of my diversity measure of internationalization (DFSTS), while Model 2 stands for the inclusion of my measure of the overall degree of internationalization (FSTS). For comparison, I also included the results from Model 1 and Model 2 (only for diversity in international TMT member).

When treating TMT member with a “German-speaking” background as one single group in the analysis of diversity in TMT nationality, the result of the analysis becomes statistically insignificant (see right side of Chart 45). Our measure of diversity in TMT nationality does not account anymore for any difference in degree or diversity in internationalization posture.

Chart 42: Results for Hypothesis Number 2 (Results Table 2)

<table>
<thead>
<tr>
<th>VARIABLES</th>
<th>Mod1 (DFSTS)</th>
<th>Mod2 (FSTS)</th>
<th>Mod1 (DFSTS)</th>
<th>Mod2 (FSTS)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Demographics</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Diversity TMT Intern (Blau)</td>
<td>1.4**</td>
<td>1.9**</td>
<td>1.2</td>
<td>1.0</td>
</tr>
<tr>
<td></td>
<td>(.64)</td>
<td>(.58)</td>
<td>(.83)</td>
<td>(.74)</td>
</tr>
<tr>
<td>Analytics</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>R2 (Overall)</td>
<td>.18</td>
<td>.20</td>
<td>.22</td>
<td>.20</td>
</tr>
<tr>
<td>R2 (Within)</td>
<td>.20</td>
<td>.14</td>
<td>.15</td>
<td>.17</td>
</tr>
<tr>
<td>R2 (In-Between)</td>
<td>.18</td>
<td>.15</td>
<td>.24</td>
<td>.21</td>
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<tr>
<td>F</td>
<td>5.73</td>
<td>5.83</td>
<td>6.48</td>
<td>7.40</td>
</tr>
<tr>
<td>Effects</td>
<td>Fixed</td>
<td>Fixed</td>
<td>Fixed</td>
<td>Fixed</td>
</tr>
</tbody>
</table>

*=>90%; **=>95%; ***=>99%

Once I include German, Austrian and Swiss members in one group, the amount of Swiss and Austrian members is high enough to change the development of my measure of diversity in TMT nationality measure in a way that diversity in TMT nationality does not rise anymore in the same way as it is the case when treating all these countries separately. It is mainly those two nationalities that drive the development towards a higher degree
of national diversity in German TMTs between 1997 and 2002 corresponding to the
development of rising internationalization posture in the same timeframe.
With this analytical part, I have shown that the amount of those members is also
statistically significant enough to change my result I produced for Hypothesis 1. Based
on this result, I can accept my Hypothesis 2, as both F-value and the value of R² are in
an acceptable range as well.

6.5 Results for Hypothesis 3: Changes in Strategic Posture and TMT
Demographics (Changes in the Same Year)
The final part of the analysis was concerned with the interaction between TMT
demographics, TMT size, organizational environment and other factors such as CEO
change over time. As previously discussed, for this I calculated change variables between
the years for my demographic indicators, change variables between the years for my
indicators of strategic posture (internationalization and diversification), and, based on
the theoretical discussion, included factors such as CEO change, but also changes in
shareholder structure in the analysis.

6.5.1 Change in TMT Demographics
In Hypothesis 3 I formulated my expectation with respect to the result of my models
that only years with a CEO change also see significant changes in TMT demographic
composition. Changes in international posture in the same year or the previous year do
not have an impact on the composition of German TMT between 1997-2002. Our
previously described results for my hypotheses showed that there is certainly a relation
between levels of strategic posture and TMT demographics. Now I argue that the way
towards this relation is not paved by TMT demographic adjustment with respect to the
requirements of strategic posture, but that the driver is a CEO change helping to break
up established power structures.
I test this hypothesis with a series of models, which evaluate change in the same year
(calculated as difference between present and previous year) in strategic posture, in CEO
change, in shareholder structure, and in performance against change in indicators of
TMT diversity in the same year. The results for my models (changes in the same year)
are as follows.
Chart 43: Results for Hypothesis Number 3 (Results Table 3) "Change Effects"

<table>
<thead>
<tr>
<th>VARIABLES</th>
<th>Mod1</th>
<th>Mod2</th>
<th>Mod3</th>
<th>Mod4</th>
<th>Mod5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Drivers for Change</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Internationalization (DFTS)</td>
<td>.03</td>
<td>-.29</td>
<td>.28</td>
<td>.000</td>
<td>-.07</td>
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<tr>
<td>Diversification (Entropy)</td>
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<td>.28</td>
<td>0.0</td>
<td>.06</td>
</tr>
<tr>
<td>CEO Change (Categorical)</td>
<td>-.01</td>
<td>-2.2***</td>
<td>-1.2***</td>
<td>-.00</td>
<td>-.63***</td>
</tr>
<tr>
<td>Shareholder structure</td>
<td>.00</td>
<td>-.02</td>
<td>.04**</td>
<td>.00</td>
<td>.00</td>
</tr>
<tr>
<td>Performance level</td>
<td>-.00</td>
<td>.09</td>
<td>-.02</td>
<td>-.00</td>
<td>.00</td>
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<td>Analytics</td>
<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>R²</td>
<td>.01</td>
<td>.10</td>
<td>.10</td>
<td>.003</td>
<td>.06</td>
</tr>
<tr>
<td>F</td>
<td>0.7</td>
<td>4.52</td>
<td>5.64</td>
<td>.01</td>
<td>2.62</td>
</tr>
</tbody>
</table>

*=>90%; **=>95%; ***=>99%
As can be seen from the results table, neither changes in internationalization/diversification posture nor CEO change nor changes in shareholder structure or performance level in the same year have an impact on changes in TMT diversity in nationality (Model 1). Also changes in size do not seem to have an influence. Overall, this first Model does not show any validity or relevance ($R^2$ and F-value).

It is a different matter with the case of the second Model (average TMT organizational tenure). The presence of a CEO change in the same year clearly accounts for change in TMT average organizational tenure. The result is statistically significant at a confidence level of over 99%. Also, F-value and value of $R^2$ are in a range that allows me to accept Hypothesis 3 in case of TMT average tenure.

However, I have to consider that the reason for this significance may be driven by two developments, which I need to separate analytically. First, it may be the case that, as discussed, a CEO change disrupts established structures and helps to restructure the TMT demographics of the overall team according to new demands. Second, it may also be that the demographic traits of the new CEO itself contribute to the measured significance of change in TMT average tenure, as companies increasingly hire outsiders for the post of CEO. Both cases reflect how CEO change is used to cause demographic change in German TMTs. To further distinguish between the two and isolate the effects of CEO change on TMT average tenure more precisely, I recalculated the Model but included the development of average TMT tenure without the tenure of the new CEO. As a consequence, the Model yields an entirely different picture. The recalculated Model shows no significance (not shown here) for CEO change on TMT levels of average tenure. Set up like this, the values for CEO change in relation to TMT average tenure are a coefficient of -0.35 and a standard deviation of about 0.56 at a confidence level of only 47%. If, as previously done, I again include the demographic data (organizational tenure) of the CEO in the equation, a CEO change again accounts for change in TMT average tenure in a significant manner with acceptable explanatory power (see results table above). This is an indication that in Germany between 1997 and 2002 the hiring of new CEO to a greater part resulted in lower average organizational tenured teams, due to the fact that the new CEO has a lower organizational tenure than the average TMT organizational tenure of the remaining team. For Hypothesis 3, however, I have to reconsider my previous judgment and have to reject the hypothesis with respect to the overall TMT average organizational tenure, as CEO change leaves the TMT average tenure of the remaining TMT unaffected. This leads to the rejection of the Hypothesis 3, as in this Hypothesis I expected more overall large-scale changes in TMT demographics.
concerning the whole TMT team triggered by CEO change than just demographic adjustments that result from the demographics of a new CEO.

Looking at the overall results of diversity in TMT previous management experience (Model 3), a similar picture evolves. In the results of Model 3 (see Chart 46) where I included diversity in previous TMT experience as an independent variable, CEO change in a statistically negative significant manner explains variation in change of TMT diversity in previous top management experience in the same year at a confidence level of over 99%. The result indicates that CEO change facilitates the development towards less diversity in TMT previous experience, as the direction is negative. When I repeat the above test but exclude the previous top management experience of the CEO, a similar picture as found in the case of TMT average tenure emerges. Also, the results for CEO change tenure become non-significant. The exact results are a coefficient of -.37 and a standard deviation .27. However, in contrast to the analysis of TMT average tenure, the confidence level of these results is already at a level of 80%. In sum, for diversity in previous management experience I cannot accept my Hypothesis 3. Again it is the case that the impact of a CEO change is limited to the specific demographic traits of the CEOs themselves. A further impact on the diversity in previous management experience of the remaining team cannot be identified, indicating that a CEO change is not significant for demographic adjustments of the overall team in this specific trait.

As can be seen from Chart 46, for the remaining demographic trait of diversity in TMT functional background there is no significance of any of the suggested drivers for demographic change. Neither changes in internationalization nor diversification posture nor changes in performance level or shareholder structure or CEO change have any relevance for changes in diversity of TMT functional background. In sum, for the Models 1-4 I must reject my Hypothesis 3, as the identified effects in case of TMT average tenure and diversity in previous top management team experience are only detectable when the demographics of the new CEO are included in the analysis. An impact of CEO change on changes of demographic traits in the rest of the team cannot be identified, indicating that CEO change is not actively used to also foster change in the demographic profile of the remaining team. What I can derive from these results is that the new CEOs coming on board of TMT of large German firms considerably contribute to the level of change in TMT demographics.
6.5.2 Change in TMT Size

A different picture evolves from my last Model 5 (Chart 46). In this Model I again try to find support for my Hypothesis 3 by including the changes in TMT size as an independent variable in the analysis. In my previous discussion, TMT size has also been identified as a factor with an impact on TMT capabilities such as speed of decision or social cohesion.

Again, it is CEO change that is the only factor that in a statistically significant manner accounts for differences in the development of TMT size. The result is at a confidence level of over 99%. The result shows that a CEO change in a specific year does go along with reduction in size of German TMTs. However, the explanatory power is at a level, which shows that the proposed Model does not account by far for all drivers in change of TMT size in Germany between the years 1997-2002. Including only change in TMT size as an independent variable, and including CEO change as well as changes in company size and industry membership on the right side of the equation, results in the same significance level for CEO change and its relation to the reduction of TMT size. The achieved F-value of this simplified Model (not pictured), however, is with 5.49 in an acceptable range. The explanatory power is with about 5% in a similar range as my more complex Model 5. Thus, in this last case of Model 5 I can accept my Hypothesis 3 as times of CEO change are actively used to reduce the size of German TMT. Yet, I have to add that the there must be a variety of other reasons for the detected development of change in TMT size of large German firms between 1997-2002.

In sum, in regard to Hypothesis 3 it seems that changes in the above-discussed drivers such as internationalization posture, diversification posture, or CEO change do not have an impact on changes in TMT demographic traits. Also, the impact of CEO change on the overall demographic structure of the TMT did show in the results as predicted. It only manifests itself in change that is directly triggered by the demographics of the new CEO and does not affect the demographic structure of the remaining TMT team in a significant way. Thus, in the case of Models 1-4 I rejected Hypothesis 3. In contrast, I was able to accept Hypothesis 3 for Model 5, which looked at changes in TMT size. Times of CEO change are actively used to reduce the size of German TMTs between 1997-2002.
<table>
<thead>
<tr>
<th>VARIABLES</th>
<th>Mod1</th>
<th>Mod2</th>
<th>Mod3</th>
<th>Mod4</th>
<th>Mod5</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Strategic Posture</strong></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Internationalization (DFSTS)</td>
<td>0.02</td>
<td>-1.2</td>
<td>0.92x1</td>
<td>-0.01</td>
<td>-0.40</td>
</tr>
<tr>
<td><strong>(Lag t-1)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Diversification (Entropy)</td>
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<td>-0.09</td>
<td>-0.66x1</td>
<td>0.01</td>
<td>-0.06</td>
</tr>
<tr>
<td><strong>(Lag t-1)</strong></td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CEO Change (Categorical)</td>
<td>-0.00</td>
<td>0.23</td>
<td>0.27</td>
<td>0.00</td>
<td>-0.20</td>
</tr>
<tr>
<td><strong>(Lag t-1)</strong></td>
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<td></td>
</tr>
<tr>
<td>Shareholder Structure</td>
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<td>0.00</td>
<td>-0.01</td>
<td>0.00</td>
<td>-0.00</td>
</tr>
<tr>
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<td></td>
<td></td>
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<tr>
<td>Performance Level</td>
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<td>0.11</td>
<td>-0.02</td>
<td>-0.00</td>
<td>0.01</td>
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<td></td>
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<tr>
<td>Analytics</td>
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</tr>
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<td>R²</td>
<td>0.05</td>
<td>0.02</td>
<td>0.02</td>
<td>0.001</td>
<td>0.02</td>
</tr>
<tr>
<td>F</td>
<td>2.06</td>
<td>0.79</td>
<td>0.89</td>
<td>0.29</td>
<td>0.35</td>
</tr>
</tbody>
</table>

** *=90%; ** *=95%; *** *=99%; x1 = > 80%
6.6 Results for Hypothesis 3: Changes in Strategic Posture and TMT Demographics (Changes in Previous Years)

As discussed in my hypotheses and methodology section, I also tested my Hypothesis 3 for the impact of a lag of a maximum of 4 years. For this, I started off with calculating the change variables for the development of strategic posture, CEO change, ownership structure and performance one year before changes in TMT demographics (one-year lag). The table on the above page shows the results.

The result of this analysis of lag is straightforward and clear: Including the changes in internationalization posture, diversification posture, CEO change, shareholder structure and performance level of a previous year in my Model (one-year lag) results in non-significance of the included independent variables of my Model.

However, it is interesting to note that compared to the “same year” Model (Chart 46) internationalization and diversification posture gain some significance in explaining variation of demographics. In the case of diversity of previous management experience, the level of confidence reaches 80%. Also, with a lag of one year changes in the size of a company cause changes in TMT diversity in internationalization in a positive manner at a high confidence level (see Model 1 - the results for size have a confidence level of over 99%). These results hint at the possibility that changes in my proposed independent variables have an impact on changes in TMT demographics with a delay of more than one year. Thus, as planned I reran my Model with lags between 2-4 years. A four-year lag is the largest lag span I can implement based on the data when I compare the changes between each single year within the analysis timeframe. A four-year lag analysis limits the number of observations to a maximum of 72, as this lag only allows for one observation of change relations per company, comparing changes in 1997/1998 to changes in 2001/2002. Especially the results for a time span of four years between CEO change and corresponding demographic variables show some interesting results, while the results for my other independent variables remain at a statistically non-significant level.
The results for CEO change and its impact with a four-year lag on TMT demographics shows statistical relevance with a value of statistical significance > 95% for diversity in TMT nationality and TMT functional background. The direction of the relationship in case of diversity of TMT nationality is positive while the direction for the relation to diversity in TMT functional background is negative. The results for TMT average organizational tenure are at a confidence level of about 90%. Looking at the R²-values of explanatory power, it becomes obvious that there must be a variety of other factors that also have an impact on the changes in my diversity measures and average measures of TMT demographics with a lag of four years. The F-values of my models also show that further improvements are required in the quality of my statistical models. It may be that for analyzing change over a longer period of time than immediate change or short-term change alternative models and theoretical foundations have to be laid in order to construct better hypotheses and models that put the time lag itself into perspective.

However, especially the results for diversity in TMT nationality and diversity in TMT functional background are encouraging to further research the mechanics of change between TMT demographics, resulting TMT capabilities, organizational context, and other important traits, such as CEO change. From the analysis of change I can already derive some interesting conclusions, which I will take up again in the discussion section of this work. First, that changes in internationalization or diversification posture, shareholder structure or performance level in a given year do not immediately (in the same year) have an impact on the demographic composition of a TMT. CEO change

<table>
<thead>
<tr>
<th>TMT Demographic Measure</th>
<th>Coeff.</th>
<th>SD</th>
<th>P&gt;1</th>
<th>R²-Value*</th>
<th>F-value*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diversity in TMT Nationality</td>
<td>.07</td>
<td>.03</td>
<td>.04</td>
<td>11%</td>
<td>2.8</td>
</tr>
<tr>
<td>TMT Av. Organisational Tenure</td>
<td>2.1</td>
<td>1.3</td>
<td>.108</td>
<td>5%</td>
<td>1.3</td>
</tr>
<tr>
<td>Diversity in TMT Experience</td>
<td>.59</td>
<td>1.0</td>
<td>.57</td>
<td>4%</td>
<td>.34</td>
</tr>
<tr>
<td>Diversity in TMT Functional Background</td>
<td>-.09</td>
<td>.04</td>
<td>.002</td>
<td>20%</td>
<td>2.11</td>
</tr>
<tr>
<td>TMT size</td>
<td>.11</td>
<td>.48</td>
<td>.81</td>
<td>5%</td>
<td>1.29</td>
</tr>
</tbody>
</table>

*Independent analysis of demographic traits
also does not immediately have an impact on the overall demographic composition of German TMTs in large firms between 1997-2002. It is not the case that the breaking up of established power structures that is outlined by existing literature in the field of strategic management immediately results in an overhaul of the demographic structure of TMTs. What I found to happen is that a new CEO change is often used to reduce the size of the TMT in the same year. This, on the other hand, gives an indication that there is something in the argument that a CEO change is used to break up established government structures. Also, it is rather the case that the choice of the new CEO itself has an impact on the demographic structure of the TMT, as shown, for instance, in the case of lower average tenure indicating that German firms in my time span of analysis increasingly tended to hire CEOs with experience outside the firm. Only after a time lag of four years did I find first (albeit weak) statistical evidence that a CEO change also has an impact on the demographic traits of the overall TMT team. It may simply take time before the new CEO also can take measures to change the demographic structure of a TMT and adapt it to the requirements of the firm.

6.7 Summary of Analytical Results

I would like to close this section on the analytical results of my work with a summary of the results.

The results for my proposed hypotheses provide a positive picture with respect to my objective for the exploration of level and the mechanics of change in TMT demographic in large German firm between 1997-2002. Hypothesis 1 and 2 were fully accepted, while Hypothesis 4 was fully rejected. Only Hypothesis 3 was rejected for the larger part of the demographic traits in my equation and was only accepted for the demographic trait of TMT size. In addition, I further developed the idea of lag through an auxiliary hypothesis and explored the duration until when a CEO change also has an impact on the overall TMT demographic structure. The results of this analysis were promising for further research in this area. Hypothesis 5 is also not fully accepted as organizational tenure showed results diverging from my expectations.
In the following discussion section of this dissertation, I will now discuss the meaning of these results for the study of TMT demographics in a German context and explore alternative development avenues for strategic management research in TMT studies resulting from this thesis.
7 Discussion and Interpretation of Results

In the introduction of this work, three major objectives were listed: The first objective was to build an understanding of the levels and dynamics of change in German TMT demographics in large firms between 1997-2002. I argued that the status of TMT demographics, resulting TMT capabilities and dynamics of change in German TMTs is a largely under-researched phenomenon. As no descriptive base and analytical reasoning comprehensively looking at German TMT exists today, the first objective of this work was to build such a base and understanding of level and change effects in German TMT demographics.

The remaining two objectives were of theoretical nature concerning the theoretical strand that is at the base of my research - the upper echelon perspective. I argued that in order to explore level and change effects in German TMT demographics as proposed in objective one I not only have to apply this theoretical strand - the upper echelon perspective - but also to extend its theoretical foundations with respect to both - level and change effects. First, the thesis was concerned with the theoretical adjustments necessary to understand the level effects in German TMT demographics. At the core of the hypotheses building was the relation between the strategic positioning of firms, and diversity in TMT demographics, and resulting TMT capabilities postulated by theory. The application of the US-American centered upper-echelon perspective and the building of hypotheses that rests upon it needs adjustment to culturally specific issues such as the status of German corporate governances and the role managers play. This required me to integrate additional theoretical thought such as managerial hegemony theory in the exercise of hypothesis-building as this additional theory seemed to be more appropriate for application in a German context. Furthermore, to comprehensively research the relation of German demographics and organizational environment I had to include a more complex view of strategic positioning in the analysis. Previous research to a large extent has only focused on the analysis of the relation between TMT demographics and organizational environment by looking at only one aspect of strategic positioning. The German case made an integration of the two aspects of strategic positioning into the analysis necessary as German firm show considerable differences in either level.
With respect to researching the level effects of demographics in a German business environment, I proposed adjustments to existing US-American theoretical thought and hypotheses building of the upper echelon perspective. In order to reach the third objective of researching the change effects in German TMT demographics, I had to introduce an additional theoretical angle, as dynamics of demographic change have seldom been quantitatively discussed and analyzed in the US-American context of the upper echelon perspective.

In the following chapter, I will now outline the meaning of the research findings with respect to the objective of this thesis, explore the limitations of this work and present recommendations for future research with respect to level and change effects in TMT demographics and the strategic environment of firms. These recommendations developed during the writing of this work, and I hope they will be useful in further expanding upper echelon research towards a theory of practical applicability.

7.1 Discussion of Results: Level and Change Effects in German TMT Demographics

Using the upper echelon perspective as a base for the exploration of the level and change effects of German TMT demographics and strategic posture between 1997-2002 has produced a series of interesting results. Generally, the results provided the convincing evidence that the basic assumptions of the upper echelon perspective with respect to TMT demography, TMT capabilities and strategic positioning of the US-American market also holds true for the German context of this analysis. By using the American-centered theory and research approaches, I was able to shed light on the status and development of German TMT demographics between 1997-2002. I was able to connect the demographic composition of a small group of individuals - the TMT -, which is usually less than 1% of the total workforce of the firms in the sample, to the status and development of issues of strategic positioning which are the results of complex and comprehensive organizational processes. It is astonishing how also in the different cultural setting and the different environment of corporate governance structure in Germany individuals– such as members of the TMT – do matter with respect to organizational outcome such as strategic positioning of internationalization and product diversification.

Although the basic assumptions of the upper echelon perspective were useful in describing and analyzing the present status of TMT demographics, the actual results of the analysis show that there are German-specific divergences which reflect on the
specific character of German TMT management and the specific setting in which the analysis was conducted. I will discuss this in the following part in which I am going to present my findings of the level effects in German TMT demographics in detail.

7.1.1 Discussion of Results: Level Effects in German TMT Demographics

I began this thesis with a brief presentation of an article, which claimed that currently there is a sea-change taking place in the demographics composition of TMTs in large German firms. As a major short-coming of this article in particular and research in strategic management in general I found that there is no general understanding of the status of the demographic composition of German TMT, and thus it is hard to judge on the level of change actually taking place.

7.1.1.1 German TMT Demographics as a Reflection of the Firms' Strategic Environment

As a first result of my thesis, a clear picture evolves what the demographic composition of German TMTs looks like today, how it has developed since 1997, and how it relates to the strategic positioning of large German firms. Correspondingly, I can now in detail also present and discuss in detail the status and development of German TMT capabilities which result from the specific demographic composition, and present a judgment as to what extent these capabilities are suitable to meet the challenges posed by the strategic environments of firms.

First, it became obvious that in general the demographic composition of German TMTs is clearly related to the strategic positioning of firms, understood as their international posture. My expectations, built on the basic assumption of the upper echelon perspective, were clearly confirmed by the statistically strong analytical results of the first hypothesis, which looked at international posture of firms. All but two demographic traits related to rising levels of international posture of firms in a way that the higher complexity of a highly internationalized environment is met by a demographic composition, which in turn enables the TMT to more flexible, ingenious and creative decision-making as required by this environment. It also seems that the demographic composition of German TMTs is managed according to the needs of the strategic positioning of the firms. Especially convincing in this respect were the results for diversity in TMT nationality and average TMT organizational tenure. German firms with a high degree of internationalization also have a highly internationalized TMT and their TMTs show a lower degree of overall average tenure, indicating a TMT less prone to
group think, and more able to meet the requirements of the internationally complex environment.

The non-existence of a correlation between TMT international experience and rising levels of firm internationalization came as a surprise to me. As presented above, the relation between the higher level of intercultural capabilities resulting from higher levels of average TMT international experience and rising levels of firm internationalization seemed to be obvious. Also, in a comparable study Peyrefitte, Fadil et al. (2002) found for the US-American market that average TMT international experience is related to rising levels of overall degree of firm internationalization. Of course, in this study I focused on the international experience of German managers in order to have a clear-cut distinction from the measurement of diversity in TMT nationality, which includes the foreign TMT members. This even makes the result more astonishing, as in today's human resource discourse international experience of employees on all levels is presented as the major prerequisite for success in the German working environment. Despite this claim, the development of international work experience of only German TMT members remains stable between the extreme values of 1.26 years (1997) and 1.4 years (1999). In both the overall descriptive and the analytical analysis, it seems that for the staffing of German TMT international experience of TMT members is not a major prerequisite yet. However, already in the descriptive part of the analysis I identified industry-specific differences in using international experience of TMT and diversity in TMT nationality as a means to create the required capabilities a firm needs to meet the challenges posed by a more complex and highly internationalized environment. The alleged difference in using TMT international experience or TMT nationality to create certain TMT capabilities hints at a phenomenon that so far has not been researched in upper echelon perspective, but is of crucial importance for making practical use of this theoretical approach, and may also require further theoretical elaboration. German firms seem to follow specific strategies in staffing their TMTs and in order to do so decide for specific demographic traits to reach the capability objective. From the descriptive research, I learnt (see page 114) that different TMT demographics such as TMT international experiences or TMT diversity in nationality are used differently to create certain TMT capabilities.

As of today, theoretical thought in the upper echelon perspective is only at the beginning in providing explanations of the mechanisms how specific demographic variables are used to create certain capabilities and how demographic traits of a TMT relate to one another. There is a lack of hypotheses-driven analytical research that takes the cognitive
base of a TMT in an inclusive manner and in detail looks at the interaction of demographic traits and their impact on organizational outcome. In my theoretical section I showed that previous research identified TMT process and organizational context as promising ways forward to develop upper echelon thought and to unravel the relation between TMT demographics, TMT capabilities and organizational outcomes. Based on the findings of the analysis, I would suggest adding a third independent dimension of research. Based on the results of this study, I recommend that besides “context” and “process” there is a need to also include “demographic interactions” in the analysis of TMT capabilities. The inclusion of this analytical category would add a dynamic aspect to the so far static and descriptive cognitive base of TMTs by opening up the possibility to look at the interaction of the TMT demographic variables amongst each other, but also include other aspects of the corporate governance system having an impact on the demographic composition of TMTs and resulting TMT capabilities. Such an inclusion would also help to resolve contradictory results found in previous studies. In their study on diversification levels and TMT demographics, Michel and Hambrick (1992) found, in contradiction to their overall result that the high interdependence of highly diversified firms goes along with low tenure homogeneity. They argue (1992:30) that this may be due to the fact that

“organizations may have the policy of staggering team membership to provide for smooth succession and high team continuity over time. Staggered teams increase tenure heterogeneity but enhance stability and provide opportunities for the mentoring and grooming of heirs.”

Also responding to contradictions in their analysis of TMT demographic diversity and international posture, Carpenter and Fredrickson (2001) try to build an argument for a distinction of “workplace related” demographic traits from other, rather naturally given traits, such as the nationality of TMT members. They argue that diversity of a TMT cannot be viewed as an “all inclusive generic concept” (Carpenter and Fredrickson 2001:542). They develop an argument that shows how diversity in “workplace related demographic variables” (such as functional or tenure-related variables) might show different behavior in relation to uncertainty in environmental context compared to other demographic traits. In low-uncertainty environments, TMTs have the time to profit from creativity in diversity of workplace related variables. Rising complexity, time pressure and urgency with high uncertainty in the environment does not leave enough time anymore to resolve the intra-group tensions resulting from the diversity in workplace related demographic traits. As a result, group conflict in work-related
differences rises and diversity in these work-related variables might become counter-productive. Unfortunately, in upper echelon perspective there does not exist research that looks quantitatively at the relations between demographic traits of TMTs and tries to figure out how they compare in achieving certain capabilities in certain organizational and culturally different environments. Usually, demographic studies cover only few demographic traits and do not have the data availability for large-scale longitudinal comparisons of demographic TMT data. However, the separation of the average tenure, the diversity in cultural background, or the average age of TMTs is artificial, as they belong to one analytical entity - the TMT and its cognitive base. It may be worthwhile to describe TMT demographics in a more integrated way that also allows for interactions between demographic traits and their specific meaning in organizationally and culturally different contexts. It may, for example, be that an older, more experienced TMT is far more capable to deal with the conflict that may arise from a high level of diversity in internationalization of TMT and, thus, shows far higher levels of creativity and problem-solving capabilities than younger teams that cannot cope with the conflicts arising from culturally diverse backgrounds.

7.1.1.2 The German “Middle-Way”: Too Much Diversity is Harmful

The above results suggest a correspondence between German TMT demographic composition, resulting TMT capabilities and demands from the strategic environment. Using the US-American study design (as done in Hypothesis 1) gives the overall impression that German TMTs are fully equipped with internationally diverse, increasingly lower-tenured teams that also show a favorable age structure resulting in all the capabilities the TMT needs to master the challenges posed by highly international environments.

However, in Hypothesis 2 I suggested amendments to this positive scenario based on the rather negative history and track record of German corporate governance, which only recently has shown signs of improvement. Surprising as the positive results for Hypothesis 1 were, the results for Hypothesis 2 were not surprising at all. In the context of large German firms, the creation of required TMT capabilities to meet the requirements of a high degree of international posture only takes place in demographic dimensions that are less disruptive to the TMT structure and cultural background. In the analysis I showed this by identifying the “German middle way” of internationalizing TMTs of large companies. When distinguishing between a “veritable”
internationalization of TMT that looks at new TMT from culturally distant countries (e.g. measured through a different language) and a culturally close internationalization of TMT, the analysis clearly shows that German TMTs in large firms between 1997-2002 have followed the path of culturally close internationalization of TMTs. It became obvious from the results of the analysis that a strong build-up of demographically diverse TMTs in the parameters of TMT nationality and corresponding capabilities actually does not take place as suggested by Hypothesis 1. It is the case that German companies follow a “middle way” by recruiting managers from culturally closer countries such as Austria and Switzerland – both countries where also German is a common language. The reasons for this - as discussed above - may include the strong position of German TMTs (as reflected in managerial hegemony theory) in the German corporate governance system and the unwillingness and fear of present TMTs to be confronted with too alien and different values in general culture and management approach. I argue that the main reason for this phenomenon is the strong position German TMTs have and their willingness to keep the German upper echelons to a certain extent bound to the German culture in order to avoid a too disruptive change in TMT demographics and, after all, to provide a certain fixed element of firm culture to counter the dissolving elements of increasing globalization of the firms’ business. However, other explanatory factors may include the non-willingness of foreign staff to move to Germany, as it is considered a non-attractive labor market or also the lacking ability of human resource departments of large firms to attract potential managers. These factors must be included in a next stage of further researching internationalization of German TMTs.

For theory and methodology of the upper echelon perspective I was able to show that the notion of diversity in demographic traits in general and diversity in TMT nationality in particular are concepts that need to be researched and conceptualized in more detail and supplemented with aspects that actually reflect on the diversity and capability creating effects of TMT demographics. Above, I identified the need to comprehensively research the interaction of demographic variables in order to further understand TMT demographics, resulting TMT capabilities and organizational context with respect to the organizational outcome. With respect to methodology it becomes obvious from the analysis that there is also a need to further understand each single demographic trait, how it does create diversity or homogeneity and which TMT capabilities result from this. In general, TMT nationality is a concept too generic and in TMT research should be supplemented with an analysis of the national origins of the TMT members to approach the actual level of diversity created by TMT nationality. Especially when trying to
internationally compare TMT demographics between different countries and how they relate to the strategic environment of firms and other firm outcome this should prove a worthwhile effort.

More importantly, the results hint at the need to extend the assumptions, which are at the base of the upper echelon perspective. The upper echelon perspective tends to “hail” or glorify top managers and thus does not leave room for rationality-based behavior and self-interest motivated behavior of managers when it comes to the composition of TMTs. This, however, - based on the specific German context - I showed to be a crucial theoretical element required to understand the relation between the composition of TMT demographics, TMT capabilities and strategic positioning of firms and organizational outcome. The upper echelon perspective must develop a more balanced view of the behavior of managers including a benevolent and a malevolent view. This would help in both cases to understand the composition of TMT demographics, but also to understand how TMT demographic traits translate into TMT capabilities. In order to do this, in the hypothesis-building I contrasted the benevolent view of managerial behavior with the rational and self-interest based behavior of managers reflected in managerial hegemony theory (and also in agency theory). It is important to keep in mind that with the choice of rationality-based managerial behavior I do not claim exclusive understanding of the working of a TMT. Though I did not hail or glorify top managers through strategic management theory (upper echelon), I also do not intend to vilify them through the rationality assumption (Cannella and Monroe 1997). I rather believe that different perspectives on the working of the TMT are different parts of the puzzle. For instance, in being an effective steward (Davis and Schoormann 1997) the managers also effectively manage their own career (Daily, Dalton et al. 2003 quoting Fama), and thus boost their economic interest if the specific firm environment rewards this. Members of TMT may assume different roles at a time (cf. Hillmann, Cannella et al. 2000). Blair and Stout (in Daily, Dalton et al. 2003:379) describe these multiple roles as “mediating hierarchs” responsible for balancing the somewhat competing interests that exist towards development and performance of a firm. It is this balanced view of managerial roles and behavior that the upper echelon perspective must actively include in the theoretical framework of linking TMT members to process, context and organizational outcome.
7.1.1.3 Strategic positioning in Germany: Diversification Rules Internationalization Posture

Based on the previous results, I was able to show that with respect to internationalization posture German TMT demographic composition clearly follows the expectation of the upper echelon perspective, although theoretical adjustments and extension were necessary. In a specifically German way (with respect to TMT nationality) and along the expectations of the upper echelon perspective (with respect to average TMT organizational tenure, diversity in TMT previous management experience and age structure), the demographic composition of German TMTs and resulting TMT capabilities reflect the demand posed by the level of international posture of firms. Yet, based on research literature and findings of the structure of the German industry I also found diversification posture of firms an important strategic positioning that has requirements towards a TMT demographic composition and resulting TMT capabilities. In my Hypothesis 4, I suggested that increasing levels of diversification (related/unrelated) should go along with a demographic composition of TMT that results in increasing levels of social cohesion at the top. The results for overall diversification and unrelated diversification indicate that only diversity in TMT functional background is a demographic indicator that is of significance when looking at the relation between TMT demographic composition and diversification posture. It appears that in the context of large German firms the expectation of TMT social cohesion in highly diversified firms is only confirmed by the increasing homogeneity in TMT functional background. All other demographic indicators (diversity measures and averages) do not show any significance in this respect. Overall, the weak results for the analysis of the relevance of diversification posture echo the weak results of Michel and Hambrick (1992), who looked at similar issues in the US-American economy.

The combination of internationalization of firms and degree of diversification of firms in a more complex view of strategic positioning proved to be of a high relevance in explaining the level of TMT demographic composition and strategic positioning of German firms. The results of the analysis (Hypothesis 5) clearly show that in highly diversified firms rising levels of internationalization posture is only associated with decreasing levels of TMT average tenure, whereas all other demographic indicators show no significance. In contrast, low diversified German firms show that increasing levels of internationalization are clearly associated with a demographic composition that results in creative, flexible problem-solving capabilities on the one hand but also in more conflict and social cohesion in the TMT on the other side. Large and highly diversified German firms appear to follow a different strategy of accommodating the TMT capability needs
of an increasingly internationalized posture in the demographic composition of their TMT. They need to accommodate both needs - the social cohesion requirements of the diversification posture and the creativity and problem-solving requirements of the internationalization posture. They achieve this by delivering the required capabilities in the TMT by adjusting only one demographic trait to the rising level of internationalization - they lower the TMT average organizational tenure, and thus decreasing the likelihood of group-think and increasing the problem-solving capabilities of the TMT. However, they avoid to drastically adjust TMT demographics to the rising demand of internationalization level, as this would be counter-productive and disruptive for the required social cohesion at the top. For instance, a rising level of TMT internationalization going along with rising levels of internationalization posture cannot be recorded in large and highly diversified firms.

On the other side, large and low diversified German firms choose more disruptive and efficient means to create the necessary TMT capabilities required by rising levels of internationalization. The demographic means chosen include diversity in TMT nationality, a higher diversity in TMT age structure, and in previous TMT management experience. These firms need to accommodate the requirements of a high diversification posture in the demographic outlook of their TMT. As they focus only on few business areas, they do not need a great deal of social cohesion at the top and can fully develop the required TMT capabilities necessary to master the challenges of rising levels of internationalization posture.

For the theory of the upper echelon perspective, these findings clearly indicate the need to develop a more comprehensive understanding in the conceptualization of strategic positioning of firms when looking at the relevance of TMT demographics, TMT capabilities, organizational context and organizational outcome. Above, I argued that the upper echelon perspective needs to develop a better understanding as to which demographic traits are used by firms to provide certain required TMT capabilities. These findings on the requirements of a more complex vision of strategic positioning unveil another dimension of this understanding. In the analysis of context in upper echelon perspective, not only a better understanding of the usage of demographic is required, but also an enhanced and more complex understanding of the requirements of a firm’s strategic positioning. Both can be used to produce more valuable advice to practitioners when staffing a TMT not only indicating the potential, but also highlighting the risk that may develop from rising levels of TMT internationalization but ignoring the needs of a highly developed diversification posture. Large German firms seem to be
aware of this danger, as the requirements of a highly developed diversification posture still dominates the requirements of increasing internationalization. A next step must now look at the financial performance impact of this behavior of German highly diversified firms. After all – as discussed above – previous research indicates that a fit between TMT demographic composition, TMT capabilities and requirements from the strategic environment leads to superior performance levels. Thus, in the light of the rising levels of internationalization in the German economy as well, the success of this particular strategy of balancing creativity and higher problem-solving capabilities while keeping levels of existing social cohesion needs to be put to the test.

7.1.1.4 Summary: TMT Demographics and Strategic Positioning in Germany 1997-2002

Concerning level effects of German TMT demographics between 1997-2002, this thesis produced two major contributions: first, it described the status of German TMT demographics along a variety of different parameters of demographic averages and diversity indicators, and - based on the upper echelon perspective - gave sound explanations of their relations under considering the specific German corporate governance environment and managerial behavior. As yet, such a comprehensive descriptive and analytical base in the German context did not exist and can now be used for further research in this important topic. Second, two major extensions to the upper echelon perspective were suggested: first, I identified the need to look not only at TMT context or TMT process when researching the role of TMTs in the context of large German firms. It is also important to look at the relation of the demographic traits used in the upper echelon perspective and to build a more complex picture of how they are used by firms to create certain TMT capabilities required by the strategic positioning. In this respect, I also argued that a more complex understanding of strategic positioning (e.g. the combination of internationalization and diversification) is required if upper echelon is to be of more use for practitioners. Second, the upper echelon perspective also needs to integrate a more complex view of managerial behavior in its analysis and allow for self-interest and rational behavior also when it comes to the analysis of TMT demographics and strategic positioning. Both enhancements – interaction and usage of demographic variables and a more balanced view on managerial behavior – will be of great value in further understanding the impact that TMT may have with respect to organizational outcome.
7.1.2 Discussion of Results: Change Effects in German TMT Demographics

Apart from the exploration of the level effects of TMT demographic composition, TMT capabilities and strategic positioning of firms, a major concern of my thesis on TMT demographics in the context of the German economy was the analysis of the dynamics of changes between TMT demographics and contextual factors.

7.1.2.1 German TMT Demographic Change: Saturated and Non-Saturated Demographic

The descriptive analysis already resulted in a first view on the dynamics of changes of German TMT demographics in large firms between 1997-2002. The key distinction between TMT demographics I want to introduce in the context of the status and development of German TMT demographics is the distinction of “saturated demographics” and “non-saturated demographics”. In this study of the development of German TMT demographics between 1997-2002, there is a clear distinction between demographic traits that still develop, increase or decrease in their average and diversity level, and demographics that do not develop any further and already have reached a certain level of diversity or average. To the group of the non-saturated demographic variables belong the measurements of diversity in TMT nationality, TMT age level, and TMT diversity in age structure and the level of TMT organizational tenure. To the group of saturated variables belong TMT tenure, TMT diversity in functional background, the level of previous TMT experience, the level of international experience, and diversity in TMT educational background.

The saturated demographic variables reflect capabilities that in the German case seem to be assumed necessary and already have developed across a lengthy time period exceeding the timeframe of analysis. The development of these demographics with respect to diversity had already reached a stable plateau at the beginning of the timeframe of analysis in 1997. For instance, a certain functional division of work between the TMT members, an average previous TMT management experience of about 10 years, and on average about two years in international experience (of the German members) is expected from German TMTs. Also, I was able to show that the diversity in TMT functional tasks are closely connected to diversity in TMT educational background, giving a clear indication that education and functional career track in Germany are still very closely connected.

On the other hand, there are the TMT demographic traits that still show a development towards a certain level of diversity or average level indicating that certain TMT capabilities are still being built and required to be further developed. In the German
case of the analysis it is striking that all those non-saturated demographic variables develop in a way that problem solution capabilities and ingenuity in problem-solving is further enhanced but also higher levels of conflict in the TMTs are fostered. Between 1997-2002, German TMTs clearly become more international, with about 12% of TMT members coming from foreign countries. They also develop towards a lower average of TMT organizational tenure and a higher diversity in age structure. These developments now also confirm in a quantitative way the claims by the article introduced at the beginning by showing that German TMTs move away from the model of consent dominant in the “Rheinischer Kapitalismus” and are developing towards capabilities such as more conflict-oriented and creative TMT decision-making.

7.1.2.2 Dynamics of Change in TMT Demography in Germany: Power Structures Do Matter

The major objective of the analysis of change dynamics in German TMT demographics was the analysis of the interaction between environmental factors of strategic positioning CEO change, and the development of TMT demographic composition (diversity measures/averages). After all, when German TMT demographics, resulting capabilities, and strategic positioning such as internationalization or diversification relate to one another – as shown in my discussion of the level effects – then it is reasonable to assume that aspects of strategic positioning also play a vital role in driving change in TMT demographics. However, based on my inclusion of the rational view of managerial behavior already presented in the discussion of the level effects in German TMT demographics, I took a different route in the exercise of hypothesis-building and presented a hypothesis that does not assume that aspects of strategic positioning – rising levels of internationalization posture, for instance – lead to adjustment of German TMT demographics. I rather built on existing literature researching the issues of structural power in TMT and consequently identified CEO-Change as a relevant driver of adjustments in TMT demographics in the context of German corporate governance and expected managerial behavior. The results from this approach (Hypothesis 3) were mixed. As expected, development in the strategic environment of German firms did not play a crucial role in driving the level of change identified in my descriptive analysis. Also, changes in performance level or changes in the shareholder structure could be expected to play a role in change of German TMT demographics, but did not do so.

With respect to CEO change, I was able to identify three differing effects, which shed light of the role of CEO change in the dynamics of change in German TMT demographics. First, CEO change in one year clearly resulted in a reduction of the size
of German TMTs in the same year. This can be taken as an indication that the disruption to the power structure and the working of a German TMT which comes along with a CEO change is used in Germany to also reduce the size of TMTs of large German firms. Smaller TMTs are again assumed to be quicker in decision-making. Thus, the adjustment towards smaller teams can be interpreted as a development towards meeting the requirements which are presented by the rising level of a firm’s international positioning. Second, CEO change in one year also has an impact on the demographic composition of TMTs in the same year, in the sense that the demographic profile of the new CEO reflects the requirements of the rising levels of a firm’s international positioning. However, further effects on the demographic composition of German TMTs in the same year of analysis could not be established. This is a very interesting finding, as it indicates that in a year of CEO change the remaining TMT demographic profile remains relatively stable. This is not to argue that in such a year no new TMT team members are hired, but rather that a year of CEO change, and the reduction in team size of German TMTs in one year is already a strong impact on the TMTs. As a consequence creating additional turbulence, e.g. by further increasing TMT demographic international diversity may endanger the overall function of the TMT through enhancing conflict potential resulting from different cultures and management approaches now working in a TMT. Thus, in a year of a CEO change only the TMT size is adjusted and the new CEO himself/herself itself contributes to a higher degree of diversity in the appearance of the demographic composition of German TMTs. Here it is also important to add that this contribution only occurs in case of the demographic traits of TMT organizational tenure and TMT previous management experience. An international CEO is seldom added. Based on these two identified effects I could only partly accept the hypothesis that in Germany CEO change as an indicator for breaking up a power structure is used to also change TMT demographics. Nevertheless, the relevance of the proposed role of power in corporate governance issues was supported by the results. A key finding to be derived from this is that in Germany TMT demographic change in large firms is disruptive, being driven by singular events such as CEO change, and not continuous, being driven by the gradual evolvement of organizational requirements, such as a rising level of internationalization posture. The third effect of CEO change on the dynamics of change in TMT demographics I identified in the lag of the impact of a CEO change. Although in the same year of analysis I was not able to detect any impact of a CEO change on the overall demographic structure of the TMT (without CEO), with a 4-year delay a CEO change
does show an impact on the overall TMT demographic structure of TMTs. More precisely, diversity in TMT demography is enhanced and diversity in TMT functional background is reduced in a statistically significant manner. This time period may be taken as a first approximation of a measurement of inertia when it comes to dynamics of change in German TMT demographics driven by a new CEO. It seems that new CEOs need at least 4 years before they have established themselves and can also implement changes in the TMT demographic structure. However, as already indicated in the section on the description of the analytical results, the statistical indicators of validity (especially $R^2$) show that there are further factors to be considered in explaining demographic change in the development of German TMT demographics between 1997-2002.

In sum, this thesis for the first time tries to add to the theoretical strand of the upper echelon perspective a concept of change in a quantitative manner by extending the current discussion on TMT demographics, TMT capabilities and strategic positioning of firms in a longitudinal manner and develop a relation of causality between them. The concept of change that needs to be developed in the upper echelon perspective from this is of disruptive nature. For the German context, it can already be said that drivers of change cannot be found in the gradual development of the strategic context of firms. The development of German TMT demographics is not driven by the requirements of strategic posture and the need to establish a fit between TMT capabilities and the requirements of the organizational environment. For the firms in the data set this means that by focusing on a timelier match between organizational context and TMT demographics and resulting capabilities they could gain a valuable advantage boosting their competitiveness for the good of the overall company. However, in order to achieve this they have to move away from the practice to only dare to change TMT demographics when a CEO change takes place.

It may be, however, that a different conceptualization of the development of the strategic positioning of firms taking a more disruptive view might lead to statistically more significant results. One way to do this would be, for instance, to understand the development of the strategic positioning of firms in terms of thresholds, as it may be that firms do only change the demographic composition of their TMT if the extension of strategic positioning has reached a certain level. To further develop the understanding of the concept of change within the upper echelon perspective is of high importance. Only understanding what really drives change and how change comes about, will better enable the upper echelon perspective to give to practitioners valuable and timely insights into managing the demographics of TMT for the welfare of the company.
7.1.2.3 Dynamics of Change in TMT Demography in Germany: The Role of the Board

One very specific way of adjusting the understanding of change in TMT demographic composition to the German context is the inclusion of the supervisory board in the analysis. This would help to re-conceptualize the roles between top management and supervisory board, as demanded by Daily, Dalton et al. (2003). After all, in German firms it is the supervisory board that must ensure that TMT demographic composition adequately reflects the current and forthcoming strategic needs with respect to a company’s customer base and to the employee and investor community (Ruigrok and Wagner 2001). Supporting this claim, Westphal and Fredrickson (2001:1130) argue that the

“upper echelon perspective should devote greater attention to how boards of directors may determine relationships between top management characteristics and organizational results.”

I did not integrate issues of the corporate governance structures of firms in the analysis. For instance, I do not look at the interaction between TMT and supervisory board in a way that I include the supervisory board as a unit of analysis. There is a variety of reasons for this non-inclusion of the board. First, the main objective of the thesis is to understand level and change in German TMT demographics with respect to the strategic positioning of firms. Before extending the analysis by further analytical constructs such as the supervisory board, it is important to build a sound and robust descriptive and analytical basis of German TMT demographics. Extending the analysis by also including issues of the supervisory board would have exceeded the scope of this work by far. Second, in the German context the required supervisory board data are very hard to obtain. For instance, the availability of demographic data of the representatives of the labor force on German boards through secondary sources is more than questionable. Representatives of the labor force are far less prominent outside the firm and legally there is no obligation for the firms to make the demographic data available to the public. Access to data is thus limited. Similar to TMT, supervisory boards also have been largely unwilling to become the target of direct research projects. This unwillingness can be understood considering that the increase in shareholder activism has been accompanied by an increase in shareholder lawsuits. Opening up the boardroom to academic scrutiny may enhance the risk for directors to become subject of such a lawsuit. Also, recent corporate governance codices aim at increasing the liability of directors in order to restrict insider behavior or other types of illegal behavior. This will further reduce the willingness of TMT or supervisory board members to expose themselves to unnecessary scrutiny (Daily, Dalton et al. 2003).
Nevertheless, the supervisory board does play an important role for the extension of the scope of the analysis. Thus, in the following I dedicate some space to the discussion of important theoretical issues that highlight the necessity to include German supervisory boards in the analysis.

There is a considerable amount of theoretical thought supporting this inclusion of supervisory boards in the analysis of change of German TMT demographics. From this body of theoretical thought, a variety of reasons can be given why the integration of the supervisory board may be a fruitful exercise and will enhance the explanatory power of the analysis. First, from the perspective of a resource dependency view the role of a director of a supervisory board expands beyond the control function as inherent to agency theory. Daily, Dalton et al. (2003) argue that the board of directors is perhaps the most central internal governance mechanism. Boards may function as a link to the firm’s external environment (Hillmann, Cannella et al. 2000) and as a resource for managing external dependencies, reducing environmental uncertainty, and reducing the transaction cost related to environmental interdependency. In this view, boards are in a far better position to assess the strategic situation of a firm, steer strategic development, and drive necessary implementation measures than, for example, assumed by hegemonic management theory. For instance, boards with greater structural independence may be more willing and able to remove ineffective executives prior to a crisis reaching the point of corporate bankruptcy.

Second, I only included structural power relations as an important part of the hypothesis-building on the TMT level using the concept of hegemonic management theory. However, single TMT members or individual CEOs might be in a more powerful position where they cannot not be replaced even in case of being responsible for poor performance (Cannella and Monroe 1997) or if adjustments in the strategic posture of a firm would ask for such a change. This could be the case if individual members of the TMT have longstanding and friendly relations to important members of the supervisory board or even to important shareholders. This aspect hints towards the necessity to take the analysis of supervisory board and TMT relations to a new level in order to understand dynamics of change in TMT demographics over time. This would require breaking up the core analytical groups of the TMT and the supervisory board and identify individual influential groups within the TMT and the supervisory board as well as their relation to one another.

Third, it is important to include a supervisory board in the analysis of dynamics of change as the demographic outlook of the supervisory board may also have a strong
impact on the development of German TMT demographics. Westphal and Fredrickson (2001) argue for a more nuanced understanding in the forces that drive the activities of the board. Instead of exclusively focusing on the economic drive of boards to foster shareholder value, they argue that it is equally important to consider the cognitive and demographic experiences of board members in order to understand the interaction between board and TMT. Demographic traits of the board may be of importance in determining the degree of conflict and alignment of managers (Cannella and Monroe 1997) serving on supervisory board and managers serving on the TMT. On the one hand, through demographic affinity between supervisory board and TMT a relation might be developed which overrules the necessity for TMT demographic change; on the other hand, changes in the demographic structure of German supervisory boards may cause changes in the demographic structure and composition of TMTs.

7.2 Limitations

7.2.1 Issues of Relevance and Validity in Proposed Research & Propositions

In my research of TMT demographics, TMT capabilities and their relation to the strategic positioning of large German firms between 1997-2002, I not only had to exclude the supervisory board from the analysis, but also to reduce scale and scope of my research with respect to other issues.

In my research, I used distinct theoretical backgrounds such as upper echelon theory or basic concepts from social science such as “rational managerial behavior”, for instance, as illustrated by TMT members pursuing self-interests. I also defined core issues of strategic positioning such as strategic posture mix being a combination of diversification and internationalization, and identified other factors, which are of importance for the dynamics of change in German TMT demographics, such as CEO change or changes in shareholder and performance structure. Based on existing theoretical thought, I made choices for theoretical approaches and analytical concepts I wanted to use for the exploration of German TMT demographics and their relation to the strategic positioning of firms. Of course, by making this choice I had to exclude alternative theoretical concepts and analytical approaches. From this choice certain limitations of the scope of argument in my thesis developed.

In the following, I want to address a series of limitations with respect to my choices within German TMT demographics, TMT capabilities and firms’ strategic positioning. This mainly concerns issues of construct validity (Scandura and Williams 2000, also
compare “empirical validity” in Eisenhardt 1989; Black 1999:19). Construct validity is concerned with the validity of the theoretical concept proposed. Technically speaking, it looks into the choice of variables and the relation between the variables of a concept that are proposed (Black 1999a) and ensures that the proposed concept is firmly based on sound reasoning. Key limitations I want to discuss with respect to my conceptual framework encompass the congruence assumption of upper echelon theory, the operationalization of strategic posture, and the usage of performance.

7.2.2 Construct Validity - The Congruence Assumption: Ignored Again?

As already outlined, the proxy or “congruence” assumption (Lawrence 1997) that is used in some upper echelon has a key weakness by ignoring social processes on the TMT and company levels, and by ignoring the social context in which firms operate. Daily, Dalton et al. (2003:376) quote Forbes and Milliken:

“The influence of board demography on firm performance may not be simple and direct, as many past studies presume, but rather complex and indirect. To account for this possibility, researchers must begin to explore more precise ways of studying board demography that account for the role of intervening processes.”

In my research, I explored the relation between level and change TMT demographics in the strategic positioning of firms. The focus here was clearly on the “context” issues in further developing upper echelon perspective and the understanding of the relation between TMT demographics and organizational outcomes. However, “process” issues also may play a vital role in understanding these level and change effects of German TMT demographics and strategic positioning. I want to focus the attention especially on two aspects of process I did not include in the analysis: formal corporate governance processes and TMT team processes.

Formal corporate governance and decision-making processes, which may play a crucial role in the understanding of the development of German TMT demographics, refer to the organizational structure within which the TMTs operate. For instance, there is an increasing amount of German firms that re-organize their corporate governance structure and re-conceptualize TMT responsibilities in way that they introduce an “extended TMT”. The precise role of the extended TMT in decision-making and its responsibilities may vary from firm to firm, and the magnitude of this development in re-conceptualizing corporate governance issues is yet not known. I believe, however, that an inclusion of this formal corporate governance arrangement and the demographic structure of the extended TMT has additional value for my understanding of the relation
between TMT demographic composition and strategic positioning of firms. Effectively, this would mean to break up the analytical category of the German TMT ("Geschäftsleitung") and include further managers, but also to extend the analysis by a process and task view of corporate roles and responsibilities.

A further aspect of process I did not include in the analysis is the role of TMT processes. It is this type of TMT processes which - as discussed above - were ignored by early upper echelon research in the attempt to link TMT demographic composition to firm outcome. For example, it would be interesting to include team continuity measures in the level of change over time into the analysis. Fredrickson and Iaquinto (1989) argue that continuity in team structure leads to isolation from critical resources and thus may be related to negative performance effects. New hires need not by all means change the demographic structure and thus be visible for the quantitative analysis of change. Here, quantitative analysis is easily deceived, as the same demographic outlook of the new manager as compared to the leaving manager would not be picked up in the analysis of the dynamics of change. However, integrating a new member in the TMT causes a variety of turmoil and challenges for the remainder of the TMT. After all, a new person enters the team. I only addressed this issue for CEO change, but ignored it for the remaining members of the TMT. Keck and Tushman (1993) use a measure of team fluctuation which is certainly worth to be integrated in further developments of my research. This aspect of team stability and fluctuation is an important one as

"corporate failures may unfold as downturn spirals in which executive teams are exchanged at high frequency, leaving literally no time for these teams to become effective." (Hambrick and D'Aveni in Daily, Dalton et al. 2003:378)

Finally, as this study had a quantitative outlook, I did not include qualitative indicators of TMT change. No perceptual measurements of change through survey including top managers were included (Fredrickson and Iaquinto 1989).

7.2.3 Validity Issues in My Perspective on Strategic Posture and Performance

Issues of construct validity are also relevant for the conceptualization of strategic positioning used in this thesis. The degree of internationalization and product diversification certainly are undertakings important enough in magnitude (Palich, Cardinal et al. 2000) to use them as indicators of strategic portioning of large firms, as they require the commitment of

"significant resources or set important precedents." (Fredrickson and Iaquinto 1989:517)
However, two major limitations do apply with respect to this choice of operationalization of strategic positioning. First, the strategic positioning is more complex than only to be reduced to the degree of internationalization or the level of product diversification. By integrating both in this thesis, I already developed the concept of strategic positioning used so far. However, there are also more aspects of the strategic positioning of a firm that should be included into further analysis. To those factors belong, for instance, a concept of the innovation positioning of firms, but also a view on the production strategy of firms. Internationalization and diversification positioning only address the “revenue” side of the strategic positioning of a firm. Including the two newly mentioned aspects in the concept of strategic positioning would also include the “cost & production” side in a more complex understanding of the strategic positioning of firms.

Second, it is not only necessary to extend the scope of the understanding of strategic positioning, but also to develop further individually each indicator. For instance, a comprehensive approach towards the measurement of international positioning capturing the full complexity and required management capabilities related to it would include answering the following questions: (1) Where is the company active (arenas)?; (2) What were the sequence of moves (staging)?; (3) How did the firm get there (vehicles)? and (4) What were the key success factors in the specific market to generate current revenue levels and profits (economic logic)? (Hambrick and Fredrickson 2001). In this study, I only addressed the first point. However, especially for the analysis of change and dynamics in TMT demographics and its relation to the strategic positioning of firms, the remaining points hold a potential for further understanding this issue. It may be that extending the measurement of internationalization will help to uncover dynamic relations of German TMT demographics, which the present conceptualization of internationalization cannot grasp. For instance, market entry in a foreign market depending on licensing other companies’ technologies or being driven by acquisition of an organization both have totally different requirements in regard to TMT capabilities. All entry modes are fundamental different in the way they developing internationalization posture and have different capability requirements towards the TMT of firms (Hambrick and Fredrickson 2001).

The final issue I want to discuss in this part looking at limitations of my thesis is the usage of financial firm performance and potential ways to further include financial firm performance in the analysis of level and change in German TMT demographics. So far, I included financial performance in two ways in the analysis: in an indirect way, in the
hypothesis-building I built on previous research indicating that a fit between TMT composition, resulting TMT capabilities and requirements resulting from strategic positioning is correlated to a superior financial performance level (Wagner 2001). More directly, I included changes in financial performance level between the years as a possible driver for change in TMT demographics in the analytical part of the thesis. The next steps to analyze the financial performance impact of level and change effects in German TMT demographics as well must include two aspects: First, it will be necessary to replicate the effect that a fit between TMT demographic composition, TMT capabilities and strategic positioning is related to superior levels of performance or performance growth also within the data set of large German firms. Second, it will be useful to understand how financial performance of firms relates to the revolutionary type of change I found of importance for dynamics of change in German TMT demography between 1997-2002.

7.3 Concluding Remarks

The levels and the dynamics of change in TMT demographics of large German firms between 1997-2002 and their relation to the strategic positioning of firms have been a rewarding object of study. I was able to shed light on the important but so far under-researched issues of German TMT demographics and capabilities, their status, and the dynamics of change. By using and adjusting the theoretical strand of the upper echelon perspective and including further theoretical perspectives, it was possible to develop a comprehensive descriptive and analytical base of the demographic development of German TMTs between 1997-2002 and its relation to the strategic positioning of the firms. Furthermore, by doing this it was also possible to show the applicability of the basic assumptions of the US-American focused upper echelon perspective in other business environments, extend it to fit the German business environment as well by taking into account the corporate governance and managerial issues and add a concept of TMT demographic change to the upper echelon perspective. From these findings, distinctive avenues of future research were identified to continue working on the theoretical base but, more importantly, also to develop the upper echelon perspective into a concept that also is relevant for the practice of staffing the TMTs of large German firms.

Taking a final look at the findings of this thesis creates a two faced picture of the current status of German TMT demographics and capabilities. German firms clearly have responded to the challenges of strategic development and have set up TMTs with
corresponding capabilities resulting from homogeneity or heterogeneity of the TMT’s cognitive base. However, with respect to internationalization this only holds true for firms that show a low level of diversification. Firms with a high level of diversification may reach a point where the development of their internationalization positioning will require a different TMT capability set or they may face declining levels of firm performance. Taking into consideration that the rising level of internationalization is likely to increase in strength while diversification levels of German firms will remain stable or even decrease, this point of necessary TMT demographic adjustment may come soon.

Furthermore, it seems that the active gradual management of TMT demographics in accordance with requirements of strategic positioning does not take place. German TMTs are still in a very strong position in the German corporate governance system of “Rheinischer Kapitalismus”, and TMT demographic change is only driven by strong structural impact on the TMT, such as a CEO change. This may hint towards an inability of German firms to timely manage TMT demographics and over time resulting in performance levels lower than necessary. To change this, German supervisory boards must move in a position where they can take a more active role in the management of TMT demographics and understand the TMT as a crucial firm resource in developing firm wealth and performance.

Academic work can help German supervisory boards to achieve this. More research and theoretical development of the understanding of level and change effects in German TMT demography, TMT capabilities and strategic positioning of firms is required. I hope that the results of this thesis with its descriptive and analytical findings, and its hints towards research required for the future and robust base for this.
In the descriptive analysis of different strategic posture measures (Section 5 on
outlier analysis), it became obvious that there is one very large firm in our sample.
This firm is Daimler-Chrysler with an average revenue of about 150 billion Euro.
Considering this firm size compared to the other companies in the sample,
Daimler-Chrysler is an "outlier". In a regression analysis, it may be that outliers are driving
results. In order to make sure that it is not the size Daimler-Chrysler that is mainly
responsible for the results produced in the analytical section, I excluded Daimler-Chrysler
from the analysis and ran the main model for the level and change effects. The
following charts display the results.

### Chart 47: Regression Results of First Set of Hypotheses - without Daimler-Chrysler

<table>
<thead>
<tr>
<th>VARIABLES</th>
<th>Mod1</th>
<th>Mod2</th>
<th>Mod3</th>
<th>Mod4</th>
<th>Mod5</th>
<th>Mod6</th>
<th>Mod7</th>
</tr>
</thead>
<tbody>
<tr>
<td>TMT Demographics</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Diversity TMT Intern (Blau)</td>
<td>1.6*</td>
<td>1.3**</td>
<td>-0.06</td>
<td>-0.36</td>
<td>0.91</td>
<td>0.16</td>
<td>3.7**</td>
</tr>
<tr>
<td>Intern. Exp (Germans)</td>
<td>-0.00</td>
<td>-0.00</td>
<td>-0.00</td>
<td>-0.04</td>
<td>0.02</td>
<td>-0.002</td>
<td>0.00</td>
</tr>
<tr>
<td>Age (Stvd/Mean, log)</td>
<td>0.40*</td>
<td>0.34*</td>
<td>0.12</td>
<td>-0.12</td>
<td>0.02</td>
<td>0.005</td>
<td>1.0**</td>
</tr>
<tr>
<td>Av. Organ. Tenure, log</td>
<td>-0.69***</td>
<td>-0.61***</td>
<td>-0.26***</td>
<td>0.46**</td>
<td>0.09</td>
<td>-0.13***</td>
<td>-0.99***</td>
</tr>
<tr>
<td>Prev. Mgt Experien. Stdv/Mean, Log.</td>
<td>41**</td>
<td>29**</td>
<td>13</td>
<td>-0.27</td>
<td>0.05</td>
<td>-0.01</td>
<td>96**</td>
</tr>
<tr>
<td>Diversity Funct. Backgrou. (Blau)</td>
<td>-0.30</td>
<td>0.21</td>
<td>-1.1***</td>
<td>-1.0**</td>
<td>-0.07</td>
<td>0.03</td>
<td>0.45</td>
</tr>
<tr>
<td>Analytics</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>R2 (Overall)</td>
<td>0.18</td>
<td>0.20</td>
<td>0.11</td>
<td>0.13</td>
<td>0.11</td>
<td>0.13</td>
<td>0.07</td>
</tr>
<tr>
<td>R2 (Within)</td>
<td>0.20</td>
<td>0.14</td>
<td>0.11</td>
<td>0.10</td>
<td>0.04</td>
<td>0.18</td>
<td>0.30</td>
</tr>
<tr>
<td>R2 (In-Between)</td>
<td>0.18</td>
<td>0.15</td>
<td>0.11</td>
<td>0.16</td>
<td>0.10</td>
<td>0.11</td>
<td>0.07</td>
</tr>
<tr>
<td>F</td>
<td>5.73</td>
<td>5.83</td>
<td>2.75</td>
<td>2.60</td>
<td>0.93</td>
<td>2.69</td>
<td>4.69</td>
</tr>
<tr>
<td>Effects</td>
<td>Fixed</td>
<td>Fixed</td>
<td>Fixed</td>
<td>Fixed</td>
<td>Fixed</td>
<td>Fixed</td>
<td>Fixed</td>
</tr>
</tbody>
</table>

*=>90%; **=>95%; ***=>99% X1=86.3%; X2=89.9%

1) Only companies included that stayed in one diversification class over time between 1997-2002
2) Only companies included that stayed in one diversification class over time between 1997-2002
3) Only companies included that stayed in one diversification class over time between 1997-2002
4) Only companies included that stayed in one diversification class over time between 1997-2002
5) Only companies included that stayed in one diversification class over time between 1997-2002
6) Only companies included that stayed in one diversification class over time between 1997-2002
7) Only companies included that stayed in one diversification class over time between 1997-2002
8) Only companies included that stayed in one diversification class over time between 1997-2002
9) Only companies included that stayed in one diversification class over time between 1997-2002
10) Only companies included that stayed in one diversification class over time between 1997-2002
Comparing these results with the results from the initial analysis (Chart 41), which had the data of DaimlerChrysler included, one can argue that the comparatively large size of DaimlerChrysler has no effect on the regression results for Hypothesis 1. This result confirms the robustness of the analysis. Conducting the same analysis for the analysis of change effects results in the same result:

Chart 48: Results for Hypothesis Number 3 (Results Table 3) "Change Effects" without DaimlerChrysler

<table>
<thead>
<tr>
<th>VARIABLES</th>
<th>Mod1</th>
<th>Mod2</th>
<th>Mod3</th>
<th>Mod4</th>
<th>Mod5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Demographics</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>∆Internationalization (DFTS)</td>
<td>.03</td>
<td>-.26</td>
<td>.30</td>
<td>.000</td>
<td>.02</td>
</tr>
<tr>
<td>∆Diversification (Entropy)</td>
<td>.02</td>
<td>-.77</td>
<td>.30</td>
<td>-.00</td>
<td>.13</td>
</tr>
<tr>
<td>CEO Change (Categorical)</td>
<td>-.00</td>
<td>-2.2***-1.2***-.00</td>
<td>-.62***</td>
<td></td>
<td></td>
</tr>
<tr>
<td>∆Shareholderstructure</td>
<td>.00</td>
<td>-.02</td>
<td>.04**-.00</td>
<td>.00</td>
<td></td>
</tr>
<tr>
<td>∆Performance level</td>
<td>-.00</td>
<td>.08</td>
<td>-.02</td>
<td>-.00</td>
<td>.00</td>
</tr>
<tr>
<td>Analytics</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>R²</td>
<td>.01</td>
<td>.07</td>
<td>.10</td>
<td>.003</td>
<td>.05</td>
</tr>
<tr>
<td>F</td>
<td>0.4</td>
<td>3.97</td>
<td>5.2</td>
<td>.01</td>
<td>2.75</td>
</tr>
</tbody>
</table>

*=>90%; **=>95%; ***=>99%
9 Annexe 2: Aggregation of Variables - a Step Forward for the Upper Echelon Research

Carpenter and Sanderson (1998) already proposed a more advanced view with respect to demographic variables and how they are used in the analytical approach of upper echelon perspective. They suggest an argument that shows how diversity in “workplace related demographic variables” (such as functional or tenure related variables) might show different behavior in relation to uncertainty in environmental context compared to other demographic traits (see also Bunderson and Sutcliffe (2002) on a comparative analysis of conceptualizations of TMT functional diversity). In sum, the generation of integrative TMT demographic profiles resulting in a specific set of TMT capabilities would not only advance the upper echelon perspective in their attempt to understand the role of top managers but also would be of great help for practitioners in staffing top management teams successfully. Thus I suggest the following model in which I will group the available demographic variables as follows:

Chart 49: Model Used Aggregation of Demographic Variables I

General Regression Model Used – Aggregation of Demographic Variables I

Dependent variable MOD1-7 = workplace related variables + personal background variables + structural variables

Independent Variables (Diversity & Level Measures of TMT Demographics)

Structural V ariables
TMT Size (log)

Personal Background V ariables (LOG)
TMT Blau Nationality
TMT Average Age (100-Value)
TMT Blau Functional Background

Workplace Related V ariables (LOG)
TMT Av. Intern. Exp (Germans)
TMT Prev. Mgt Experience Diversity
TMT Average Company Tenure (100-Value)

Models (Dependent variables included in Models)
Mod1: Entropy measure internationalization (DFSTS)
Mod2: Foreign Sales as of Total Sales (FSTS)
Mod3: Overall Diversification (DT)
Mod4: Diversification in Unrelated Businesses (DU)
Mod5: Diversification in Related Businesses (DR)
Mod6: Entropy measure internationalization (DFST) in high diversified companies (DT > mean)
Mod7: Entropy measure internationalization (DFST) in low diversified companies (DT < mean)

Control Variables
Size (log of sales)
Year (control for yearly specific industries)

The model is based on the first set of hypotheses I examined in my research. Again, I look at the interaction between indicators of environmental complexity such as diversity in internationalization posture or level of diversification posture. Currently there is no
research available in the upper echelon perspective that would help me to formulate hypotheses with respect to the expected behavior of the model above. This extension to the main research of this thesis thus has rather explorative character.

In addition to a workplace related view and a personal background related view I also suggest to include the size of the TMT as an indicator for TMT demographic capabilities. In order to present a meaningful analysis of the aggregated variables I measure workplace and personal background related variables in terms of diversity levels of TMT demographics. The higher the level of the aggregated values the higher is the level of diversity. In order to do this I had to transform the values of TMT organizational as a high value of organizational tenure usually is connected to TMT capabilities rather related to low diversity values in other demographic variables (see discussion above - higher levels of TMT organizational tenure may result in group think and higher influence of a firm’s dominant logic). I transformed the values of TMT average company tenure by the following: (100-AverageTenure). Through this transformation companies with a high TMT average would score less in the construction of the diversity measure for workplace related variables. The correlation analysis of the included factors looks as follows:

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Workplace Related</td>
<td>1.0000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Personal Background Related</td>
<td>0.0921</td>
<td>1.0000</td>
<td></td>
</tr>
<tr>
<td>TMT Size</td>
<td>0.3362</td>
<td>0.3863</td>
<td>1.0000</td>
</tr>
</tbody>
</table>

The correlation analysis shows that none of these results requires any exclusion of variables from the analysis due to interdependence between the independent variables. The results from the analysis are shown on the next page in chart no. 50. From the results it becomes obvious that the distinction between workplace related and personal background related variables has only minor value for the exploration of strategic posture of firms and the corresponding diversity in TMT demographics. Neither workplace related variables nor personal background related variables score a statistically significant result. However, comparing the two types of aggregated variables with one another it becomes obvious that personal background related variables usually score a significance level up to almost 88% while workplace related variables score comparatively less in terms of significance level.
### VARIABLES (LOG)

<table>
<thead>
<tr>
<th>Mod1</th>
<th>Mod2</th>
<th>Mod3</th>
<th>Mod4</th>
<th>Mod5</th>
<th>Mod6</th>
<th>Mod7</th>
</tr>
</thead>
<tbody>
<tr>
<td>TMT Aggregated Demographics</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Workplace-Related Variables</td>
<td>.00</td>
<td>-.00</td>
<td>-.00</td>
<td>-.03</td>
<td>.01</td>
<td>.00</td>
</tr>
<tr>
<td>Personal-Background Variables</td>
<td>0.45</td>
<td>.04</td>
<td>-.02</td>
<td>-.03</td>
<td>0.6</td>
<td>.01**</td>
</tr>
<tr>
<td>TMT Size</td>
<td>.14**</td>
<td>.12**</td>
<td>.14**</td>
<td>.16**</td>
<td>.03</td>
<td>-.02**</td>
</tr>
</tbody>
</table>

### Analytics (LOG)

<p>| | | | | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>R2 (Overall)</td>
<td>.20</td>
<td>.19</td>
<td>.05</td>
<td>.05</td>
<td>.07</td>
<td>.00</td>
</tr>
<tr>
<td>R2 (Within)</td>
<td>.10</td>
<td>.09</td>
<td>.08</td>
<td>.05</td>
<td>.04</td>
<td>.17</td>
</tr>
<tr>
<td>R2 (In-Between)</td>
<td>.24</td>
<td>.24</td>
<td>.06</td>
<td>.08</td>
<td>.07</td>
<td>.00</td>
</tr>
<tr>
<td>F</td>
<td>3.57</td>
<td>3.59</td>
<td>3.07</td>
<td>3.44</td>
<td>1.63</td>
<td>3.08</td>
</tr>
<tr>
<td>Effects</td>
<td>Fixed</td>
<td>Fixed</td>
<td>Fixed</td>
<td>Fixed</td>
<td>Fixed</td>
<td>Fixed**</td>
</tr>
</tbody>
</table>

'意思：90%；**=>95%；***=>99%

1) Only companies included that stayed in one diversification class over time between 1997-2002

(32>mean, 28<mean)

Model 1: Entropy measure internationalization (DFSTS)
Model 2: Foreign Sales as of Total Sales (FSTS)
Model 3: Overall Diversification (DT)
Model 4: Diversification in Unrelated Businesses (DU)
Model 5: Diversification in Related Businesses (DR)
Model 6: Entropy measure internationalization (DFST) in high diversified companies (DT >mean)
Model 7: Entropy measure internationalization (DFST) in low diversified companies (DT <mean)
Due to indication of low validity of the model constructed I ignore the results of model 6 (see e.g. the $r^2$-value of model 6). An interesting results from this analysis is that workplace related variables do not seem to have an influence at all when put together to an aggregated measure. The aggregated measure had been calculated per top management per team and thus offers the possibility that stand-alone TMT demographic traits that would suggest a dynamic, open minded or innovative team (such as low organizational tenure) is neutralized by the demographic trait of low diversity in previous management experience of this specific team. Thus, one explanation for the non-relevance of workplace related variables is that the different input variable which are used to build the aggregated measure neutralize one another in terms of their impact on higher diversity or innovative levels of the respective TMT team.

10 Annexe 3: TMT Nationality and TMT International Experience

Based on the descriptive result in section number 5 I explored the possibility that companies consciously use either the demographic trait of TMT international work experience or TMT diversity in nationality. I speculated that firms follow distinctive strategies in staffing their TMT to create the necessary diversity in the TMT that is required to manage in environmental complexities. Some firms prefer to have German members in their TMT and create diversity through high levels of international work experience of the TMT members. Others rather prefer to recruit different nationalities for their TMT members.

In the following I want to follow this line of thought a bit further. If the assumption holds true that both TMT demographic variables – international experience and TMT nationality – are distinctively used to create the necessary TMT diversity and capabilities required to meet the challenges of rising internationalization posture then the following hypothesis can be formulated.

Hypothesis 6: A high level of diversity in TMT nationality is negatively related to the level of international experience of German TMT members

The regression equation to test for this hypothesis looks as follows.

$$\text{TMT Diversity in Nationality (log)} = \text{TMT International Experience (log)} + \text{Firm Size (log)} + \text{Industry (Dummy)} + \text{Year (Dummy)}$$

The results from the conducted fixed regression analysis reject the hypothesis 6. TMT diversity in nationality is negatively but not significantly (confidence at 80%) related to TMT international experience of German TMT. The F-value for this fixed regression
analysis is at 3.39 and the R2-value is at 21%. Nevertheless the direction of the relationship is correct and with a more advanced analytical model the examination of the relationship between the two demographic variables might be analyzed more successfully.
11 Bibliography


Curriculum Vitae

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11/2001-12/2003 Doctoral Assistant, (40%), Research Institute of International Strategy, University of St. Gallen (CH)

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03/1995 Master of Arts in International Relation/Political Economy, Australian National University, Canberra

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