Top Management Team Diversity: 
A Multilevel Exploration of Antecedents and Consequences

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St. Gallen, January 22, 2007

The president:

Prof. Ernst Mohr, PhD
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you were born. Vinie for taking such good care of me. And to the man who turned my life upside down and reminded me what happiness is… Because life took a different meaning when shared with you, Bo.

Sabina
Abstract

Research on executive effects on organizational level outcomes is abundant; yet the question of whether diversity in managerial backgrounds has positive or negative effects on corporate performance still remains open. This dissertation pays careful attention to issues of levels and, by applying multilevel theoretical reasoning and analytical methodology, provides some new insights into the controversial relationship. In addition, it moves away from diversity as a general construct and conceptualizes TMT heterogeneity as a multi-dimensional construct by differentiating between various diversity dimensions in terms of their antecedents and consequences. Furthermore, this dissertation identifies a new relevant dimension of TMT heterogeneity, namely, TMT internationalization and tests its construct validity as well as causal relationships with firm internationalization and corporate performance. The theoretical framework of this thesis draws upon upper echelons, team diversity and firm internationalization theories. The empirical analysis is conducted on a longitudinal dataset of all Swiss publicly listed companies (n=165) over a five year period (2000-2004) and utilizes a number of different analytical techniques. Panel data analysis suggests that industry membership, organizational complexity pertaining to firm strategy, CEO tenure and notably heterogeneity of the board are important antecedents of TMT diversity. Hierarchical linear model tests provide evidence that TMT nationality and international experience diversity have a positive impact on corporate performance. The empirical findings further support a positive main effect of team tenure and a positive interaction effect between nationality diversity and TMT tenure on corporate performance. Structural equation model analysis confirms that CEO level and TMT level nationality diversity and international experience are two important dimensions of TMT internationalization, which, while associated with certain costs in terms of process losses and high remuneration, has positive overall effects on performance, mediated through compensation and firm internationalization.
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<td>ANOVA</td>
<td>Analysis of Variance</td>
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<tr>
<td>CEO</td>
<td>Chief Executive Officer</td>
</tr>
<tr>
<td>CFI</td>
<td>Comparative Fit Index</td>
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<tr>
<td>DOI</td>
<td>Degree of Internationalization</td>
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<tr>
<td>EU</td>
<td>European Union</td>
</tr>
<tr>
<td>FATA</td>
<td>Foreign Assets to Total Assets</td>
</tr>
<tr>
<td>FETE</td>
<td>Foreign Employees to Total Employees</td>
</tr>
<tr>
<td>FSTS</td>
<td>Foreign Sales to Total Sales</td>
</tr>
<tr>
<td>FGLS</td>
<td>Feasible Generalized Least Squares</td>
</tr>
<tr>
<td>GLS</td>
<td>Generalized Least Squares</td>
</tr>
<tr>
<td>ICC</td>
<td>Interclass Correlation Coefficient</td>
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<tr>
<td>IPO</td>
<td>Initial Public Offering</td>
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<td>HLM</td>
<td>Hierarchical Linear Model</td>
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<tr>
<td>REML</td>
<td>Restricted Maximum Likelihood</td>
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<tr>
<td>LM</td>
<td>Lagrange Multiplier</td>
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<tr>
<td>ML</td>
<td>Maximum Likelihood</td>
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<tr>
<td>MNC</td>
<td>Multinational Corporation</td>
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<td>MSEM</td>
<td>Multilevel Structural Equation Modeling</td>
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<tr>
<td>NFI</td>
<td>Normed Fit Index</td>
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<tr>
<td>NNFI</td>
<td>Normalized Norm Fit Index</td>
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<tr>
<td>NYSE</td>
<td>New York Stock Exchange</td>
</tr>
<tr>
<td>OLS</td>
<td>Ordinary Least Square</td>
</tr>
<tr>
<td>ROA</td>
<td>Return on Assets</td>
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<tr>
<td>RIND</td>
<td>Return Index</td>
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<tr>
<td>RMSEA</td>
<td>Root Mean Square Error of Approximation</td>
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<tr>
<td>SD</td>
<td>Standard Deviation</td>
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<tr>
<td>SEM</td>
<td>Structural Equation Modeling</td>
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<tr>
<td>SWX</td>
<td>Swiss Stock Exchange</td>
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<tr>
<td>TMT</td>
<td>Top Management Team</td>
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<td>UE</td>
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1 Introduction

1.1 Practical Relevance of the Project

The ongoing globalization process has dramatically changed the business landscape and the society in which we live. On a daily basis, we encounter, socialize and work with people of different nationalities originating from various regions around the world. The trend towards increasing diversity in the workplace has drawn significant attention among researchers and practitioners in the United States over the past few decades (Earley & Gibson, 2002). Lately, the enduring process of European integration and the enlargement of the European Union (EU) pose significant challenges related to managing the increasing diversity in European societies. In the business world, in particular, the transnational mobility leads to high degrees of multicultural diversity in the workplace (European Commission, 2005).

In addition to the widely acknowledged increase in the workforce national diversity, a recent trend, particularly within the European business community, is the growing number of foreign nationals hired at the top echelons of their organizations (Heijltjes, Olie & Glunk, 2003; Ruigrok, Owscharov & Greve, 2005). The importance of having top managers, who know and understand the logic and dynamics of the firm’s foreign markets and global business environment has been discussed by both practitioners and researchers (Bartlett & Ghoshal, 1989; Luo, 2005). More than thirty years ago, Perlmutter and Heenan (1974) suggested the use of foreign nationals as top managers. Recently, the US Conference Board published a study reporting that successful global companies have multinational top management (Berman, 1997).

Research on multicultural teams, however, suggests that national diversity has mixed effects for team effectiveness and performance. Diversity in national origin is associated with diversity in values, cognitions and experiences that generate broader knowledge bases and different perspectives within the team (Cox, Lobel & McLeod, 1991; McLeod & Lobel, 1992; Watson, Kumar & Michaelsen, 1993). At the same time, multinational teams often experience process losses due to communication difficulties and affective conflict (Earley & Moskowski, 2000; Elron, 1997). Given the significant influence that top managers have on their organizations (Finkelstein & Hambrick, 1996), the question of how national diversity in top management teams will influence their choices and performance is a particular important one. This is due to the facts that first, managerial choices are believed to be not completely rational but rather influenced by the psychological make-up and background characteristics of
managers (Hambrick & Mason, 1984); and second, TMT processes have a significant influence on firm strategic choices and performance (Amazon, 1996).

1.2 Academic Relevance of the Dissertation

It sounds plausible that if executives are coming from different backgrounds and bring along different knowledge, experiences and perspectives, the quality of decision-making and subsequently firm choices will improve. Yet, this is not always the case in practice. Previous top management team research fails to provide consistent evidence for the positive effects of diversity (Carpenter, Geletkanycz & Sanders, 2004; Finkelstein & Hambrick, 1996; Pettigrew, 1992). Some authors argue that the inconclusive results are due to omitting important mediating variables such as team processes (Lawrence, 1997; Pettigrew, 1992; Priem, Lyon & Dess, 1999). Others suggest that the relationship between diversity and performance is not linear but curvilinear (Lau & Murnighan, 1999; Richard, Barnett, Dwyer & Chadwick, 2004). Several scholars predict that the effects of diversity depend on the environment in which top management teams operate, with homogeneous teams being more successful in stable environments and heterogeneous teams being advantageous in environments characterized by high complexity and uncertainty (Carpenter, 2002; Keck, 1997).

Another possible explanation for the lack of empirical support for the positive effects of diversity is that in the context of upper echelons research, diversity is conceptualized as a general construct exhibiting uniform effects regardless of particular dimensions to which it is empirically applied. Research typically makes no distinction at the theoretical level between different diversity dimensions, such as sex, age, functional diversity, tenure, etc. Most diversity dimensions in the upper echelons context are expected to lead to the same consequences, to offer the same advantages, and to have similar negative effects. Jackson (1992: 368) argued that whereas in the context of theory a general construct of diversity might be useful, it is important to decompose the construct to the level of single attributes. Similarly, Cannella and Holocomb (2005: 215) suggest that when applied to upper echelons research the heterogeneity assumption naturally leads to questions about what exact heterogeneity dimensions are relevant and how they influence team decisions.

The notion of multi-dimensional diversity (Jackson, Joshi & Erhardt, 2003) not only distinguishes between different diversity dimensions but also challenges the assumption that their different effects are independent of each other. The existing practice to empirically test and discuss findings about different diversity dimensions,
included in a single study separately, is based on the assumption that the effects of each type of diversity are independent of the presence of other types of diversity (Jackson & Joshi, 2004). Yet, empirical research indicates that this is not the case (Pelled, Eisenhardt & Xin, 1999; Stahl, Maznevski, Voigt & Jonsen, 2006). For instance, it is well conceivable that the degree to which a foreigner will be integrated in - and contribute to - a team will depend on the level of international experience of the other team members. Similarly, the actual contribution of a female team member to decision-making may well depend on the degree of her similarity to male team members in terms of education and functional background and professional experiences. In the governance field, authors examine simultaneously multiple dimensions of board members profiles in order to assess their potential contributions to strategic decision-making (Hillman, Cannella & Harris, 2002; Hillman, Cannella & Paetzold, 2000). Similarly, in their recent review of the upper echelons stream, Carpenter, Geletkanycz and Sanders (2004) urge researchers to regard top managers as a "bundle" of attributes and study the interactions between the various dimensions of their personalities in order to understand their combined and cumulative effects on organizational decisions.

This dissertation attempts to apply the notion of multi-dimensional diversity to the context of top management teams. The rationale for this choice is the belief that previous inconclusive findings of upper echelons diversity research might be due to the failure to theoretically conceptualize and empirically investigate different dimensions of diversity simultaneously.

Another line of criticism of previous upper echelons research that may explain the inconclusive findings regarding diversity effects is its de-contextualization. In the group diversity field, the influence of context on the consequences of team diversity is widely acknowledged. Jackson, Joshi and Erhardt (2003) emphasize the increasing need to study the role of context in shaping the effects of diversity. Nkomo and Cox (1999) suggest that diversity is embedded in a number of different levels of contexts, namely; group, organizational and societal contexts. Furthermore, Lau and Murnighan (1999) criticize diversity research for relying on an assumption that all diversity aspects are equally important, whereas in reality certain characteristics can be more or less salient depending on the context (Krammer, 1991).

Multilevel theory and analysis is one of the traditional approaches to study contextual effects (Klein & Kozlowski, 2000). Despite the multilevel character of most phenomena of interest for behavioral and social sciences, past research has often failed to address it adequately (Snijders & Bosker, 1999). Yet, explicit multilevel
modeling, with clear distinctions between levels of theory and with hypotheses defined at each level as well as across levels, is increasingly encountered in research (Raudenbush & Bryk, 2002).

Recently, researchers initiated a discussion about the inherent multilevel nature of upper echelons research resulting in a call for theoretically sound multilevel development of the field (Cannella & Holocomb, 2005; Carpenter, 2005). This dissertation takes on the challenging task of paying careful attention to issues of level in theory and analysis in the context of upper echelons diversity based on the understanding that level of theory, measurement and statistical analysis need to be congruent (Klein, Dansereau & Hall, 1994). A multilevel approach to the phenomenon of TMT diversity contributes to advancing the current state of theory as well as illuminating the role of context in understanding the effects of upper echelons diversity.

1.3 Aim of the Study

The starting point of this dissertation was the ambition to empirically investigate the impact of national diversity in top management teams on firm choices and behavior. In the process of reviewing the relevant academic literature and conducting initial interviews with top executives from leading Swiss multinational corporations (MNCs), it became clear that in order to adequately comprehend and explore the phenomenon of top management team national diversity, three main issues need to be taken into consideration. First, it is necessary to study diversity as a multi-dimensional phenomenon where nationality is just one aspect of team heterogeneity along with others, such as age, gender, function, education, etc. Second, in order to explore the effects of upper echelons diversity, it is important to understand its antecedents. Finally, research on top management teams is inherently multilevel in nature as it involves individuals, teams, organizations and their environments. Thus, the definition of and match between theoretical and analytical levels are essential for this line of research.

The aim of this doctoral thesis is to undertake an in-depth multilevel exploration of the antecedents and consequences of diversity in top management teams in order to contribute to the development of upper echelons theory. The main research questions are as follows:

1. What are the factors that influence the composition of top management teams along multiple diversity dimensions?
2. How do different level contextual factors, such as industry characteristics, organizational and team context, influence the relationship between TMT diversity and firm performance?

3. What constitutes the construct of upper echelons internationalization and how does it relate to executive compensation, firm strategy and performance?

The following sections of the introduction are structured as follows. First, the underlying theoretical streams are presented and then the empirical setting of the study is explained. Next is a discussion of the anticipated contribution to theory and practice, followed by an outline of the structure of the dissertation and the content of the four essays.

1.4 Underlying Theoretical Perspectives

This thesis draws upon three main streams of management and organization research – strategic leadership, group effectiveness and firm internationalization theories. The main theoretical perspective is upper echelons theory (Hambrick & Mason, 1984), a strategy theory explaining differences in firm behavior and performance with managerial characteristics. Social identity theory (Turner, 1982; 1987) and in particular group diversity perspectives (Jackson, Joshi & Erhardt, 2003; Milliken & Martins, 1996; Williams & O'Reilly, 1998) are used to delve into the dynamics of top management teams and explain both antecedents and process consequences of upper echelons diversity. Finally, this dissertation utilizes firm process internationalization theory (Johanson & Vahlne, 1977) to explain the role of top management team internationalization in the process of expanding and managing firm foreign operations. The origins of both upper echelon and firm process internationalization perspectives can be traced back to the behavioral theory of the firm (Cyert & March, 1963).

1.4.1 Behavioral Theory of the Firm

The behavioral theory of the firm (Cyert & March, 1963; March & Simon, 1958) introduces sociological aspects to the economic theory of the firm and emphasizes the role of individuals. The theory regards organizations as a collection of individual members who have their own goals and aspirations. It acknowledges that organizational goals are not defined at the firm but at the individual level and are therefore often conflicting. Based on Simon’s (1947) work on behavior under conditions of uncertainty, the behavioral theory challenges the assumption that individuals have
rational motives and maximizing behavior. Instead, the behavioral theory of the firm stresses the limitations of human cognition such as bounded rationality and explains how it influences decision-making. Under conditions of uncertainty, organizational decisions are predominantly driven by problematic search, where the generation of alternatives is based on and limited to the definition of the problem. Furthermore, individuals do not always strive to maximize their utility but rather attempt to attain realistic goals (satisficing behavior). The behavioral theory of the firm emphasizes how human limitations affect firm decision-making and behavior.

1.4.2 Upper Echelons Theoretical Perspective

Upper echelons theory (Hambrick & Mason, 1984) is deeply rooted in the behavioral theory of the firm. Its main underlying assumption is that human limitations influence the perception, evaluation and decision about organizational problems and hence influence firm choices and behavior. The starting point of understanding the upper echelons perspective is March and Simon’s (1958) notion that managers bring their own set of “givens”, such as values and cognitive bases, to a decision-making situation. Thus, strategic choice is made not on the basis of an actual “real” situation, but rather on managers’ perception, a so-called “construed reality” (Sutton, 1987). This argument is congruent with the behavioral view of Cyert and March that “the variables that affect choice are those that influence the definition of a problem within the organization” (1963: 163). Similarly, Dutton, Fahey and Narayanan (1983: 310) argue that managers’ “cognitive maps” play the role of a lens through which situations are viewed. Hence, managers do not only perceive their environment, but they enact it, in that they “construct, rearrange, single out, and demolish many ‘objective’ features of their surroundings” (Weick, 1979: 164).

Exhibit 1: Perceptual Model of Strategic Choice

In a perceptual model of strategic choice under conditions of bounded rationality, Hambrick and Mason (1984) visualize how managerial characteristics affect strategic choice in a three-stage process (see Exhibit 1). As humans have only a limited field of vision, when scanning the environment, managers cannot depict the whole complexity of a situation. In addition, due to the selective perceptions managers have, of all information available to them, only a certain part is noticed and registered. Finally, the stimuli noticed are interpreted based on a manager’s “givens”, which can be classified into two broad sets of personality attributes: psychological factors, such as values, cognitive models and other personality factors, and observable experiences, such as age, education, functional background, tenure (Finkelstein & Hambrick, 1996: 45).

A distinct feature of upper echelons theory compared to the behavioral theory of the firm is the sole focus on the upper echelons of the organizations that is the top management team. Such focus brings along the team level of analysis where individuals are regarded as team members and the theoretical and empirical unit of analysis is the team rather than the individual. Hence, top management team characteristics, such as average tendencies of the team (e.g. average age, tenure, educational level, etc.) and heterogeneity in team composition (diversity in function, educational background, etc.) are at the center of interest. Recently, however, Cannella and Holocomb (2005) criticized the theory building in the context of upper echelons research. The starting point of upper echelons argumentation is the perceptual model of strategic choice, which is at the individual level of analysis and explains how individual managers make choices. However, little attention has been paid to theorizing about how the individual perceptions come together to make the team-based decisions (Cannella & Holocomb, 2005: 204). This criticism relates to the long-acknowledged discussions of the “black box” created by the organizational demography approach (Lawrence, 1997; Preim, Lyon & Dess, 1999) and points to the need to apply group effectiveness theories in order to delve into the dynamics of top management teams. Indeed, already when initially introducing the upper echelons perspective, Hambrick and Mason stated that “it is doubtful that this research stream can progress far without greater attention to relevant literature in related fields, especially psychology and social psychology” (1984: 203).

Accordingly, this dissertation builds upon relevant literature in the fields of social and organizational psychology to advance our current understanding and theory building related to diversity in top management teams.
1.4.3 Social Identity Theory and Team Diversity Perspective

Social psychology is a discipline devoted to the understanding of human relations and interactions. Unlike sociology, it deals with human interactions from the perspective of an individual (Gergen & Gergen, 1986). Social identity theory (Turner, 1982) and its later development into social categorization theory (Tajfel, 1981; Turner, 1987) are the traditional approaches used to explain the effects of diversity. These theories suggest that people are striving towards self-esteem, which is based on both personal identity and social identity. Social identity, in turn, is determined by the groups to which a person belongs and the values shared by these groups. The theory suggests that people have a natural tendency to categorize the others in groups and to differentiate between in-groups and out-groups. The categorization process is typically based on social categories and observable characteristics, such as age, race, status, etc.

In this categorization process similarities within groups are minimized, whereas differences between groups are emphasized. Social categorization theory further suggests that people naturally tend to view in-group members positively and members of out-groups negatively (Goethals, 2003). Hence, the very act of social categorization creates discrimination (Eiser, 1986) and has negative effects on team functioning and performance. Team diversity models stemming from social identity and social categorization theory (Cohen & Bailey, 1997; Gist, Locke & Taylor, 1987; Williams & O’Reilly, 1998) typically discuss the team members’ influence on each other and issues of social facilitation, social impact and social loafing. Group development, member integration and team building processes, such as attraction and integration of group members, group identification, and norm and team development, are suggested as mechanisms to avoid the negative consequences of diversity. Moreover, processes related to group decision-making (such as group consensus, participative decision-making, alternative and information generation and group member evaluation) are suggested as important drivers of team effectiveness.

1.4.4 Firm Process Internationalization Theory

One of the most important aspects of firm strategy is the geographical diversification of company operations (Bartlett & Ghoshal, 1989). Two main perspectives on firm internationalization exist in the international business literature: the economic and the behavioral view. The economic perspective is largely based on transaction cost economics and explains firm internationalization strategy with profit maximization strategies (location advantages, cost advantages etc.) (Dunning, 1981). The behavioral perspective on firm internationalization (Johanson & Wiedersheim-Paul,
1975; Johanson & Vahlne, 1977) regards firm internationalization as a process where firms gradually increase their international commitment and involvement through sequential expansion of firm operations (Melin, 1992). Based on the behavioral theory of the firm, the internationalization process models emphasize the role of human limitations in making strategic choices and places experience as the focus of the theory. It further explains firm internationalization choices as sequential moves influenced by previous internationalization experience. According to the Uppsala internationalization process model, firms start by expanding to geographically and culturally close countries (with low psychic distance) and, after gaining international experience, continue gradually to expand to more distant countries and regions.

The process model, however, focuses on firm level experiences and largely ignores the role of individual level knowledge and experiences in the process of firm internationalization. By combining upper echelons, group effectiveness and firm internationalization theories this thesis aims at shedding light on how diversity in individual knowledge and experiences at the upper echelons level influences the process of firm internationalization.

1.5 Research Scope

This dissertation draws upon three main research streams: upper echelon theory from the strategy field, team diversity literature from the organization behavior field and firm process internationalization theory from the international business field. In so doing, the thesis bridges management with social psychology disciplines in the context of international organizations.

Exhibit 2: Relation to Exiting Research Streams

Source: Author.
Certain links between each of the three streams have previously been established in the literature (see Exhibit 2). Upper echelons and group effectiveness theories are often combined in order to explore the influence of the top manager’s characteristics on team decision-making (Barsade, Ward, Turner & Sonnenfeld, 2000; Knight, Pearce, Smith, Olian, Sims, Smith & Flood, 1999; Simons, Pelled & Smith, 1999; Smith, Smith, Olian, Sims, O’Bannon & Scully, 1994). The link between top management team international experience and firm internationalization has been investigated by extending the upper echelon perspective to the domain of international business (Carpenter & Frederickson, 2001; Carpenter, Sanders & Gregersen, 2001; Reuber & Fisher, 1997; Sambharya, 1996; Tihanyi, Ellstrand, Daily & Dalton, 2000). Finally, the literature on multicultural teamwork (Cox, Loed & McLeod, 1991; Earley & Gibson, 2002; Earley & Mosakowski, 2000; Ely & Thomas, 2001; Watson, Kumar & Michaelsen, 1993) bridges the streams of team diversity and international business. The unique contribution of this thesis is the combination of insights from all three different streams of research in advancing our current understanding about the antecedents and consequences of diversity in the context of top management teams.

Bridging disciplines is an enriching yet challenging task that involves understanding the history of the field, the major theoretical streams and the applied methodological approaches. This dissertation is not limited to the tradition of a single research stream and as such draws upon not only theories but also analytical techniques and methodologies from a number of disciplines. Yet, the focus remains on upper echelons theory as the main research stream to which this dissertation attempts to contribute.

1.6 Anticipated Contribution to Theory and Practice

The anticipated contributions of this dissertation to the upper echelons theoretical framework are two-fold. First, following Carpenter, Geletkanycz and Sanders’s (2004) call for regarding managers as bundles of attributes, this paper conceptualizes and empirically operationalizes diversity as a multi-dimensional construct. Particular attention is paid to the difference between managerial background characteristics and managerial experiences as well as between traditional, task-oriented aspects of top management team diversity and relations-oriented diversity attributes. Second, by drawing upon firm internationalization theories, this thesis contributes to the growing stream of research extending upper echelon theory to the international context (Sanders & Carpenter, 1998; Tihanyi et al., 2000) and explores construct validity as well as performance effects of top management team internationalization.
The intended contribution to the field of international management, in turn, is the exploration of individual and team level effects, in particular the investigation of the role of top executives in the process of firm internationalization. By looking closely at the background characteristics and experiences of top managers, this dissertation investigates how certain profiles of top management teams are associated with firm internationalization strategies and performance.

This study is relevant to management practice in a number of ways. First, understanding of the antecedents of multiple dimensions of top management team diversity may allow managers to carefully evaluate the trade-offs associated with increasing team diversity while maintaining diversity balance. Furthermore, the results of this thesis may assist executive search firms in evaluating individual executive profiles and their fit to the existing composition of the firm management and board of directors. Second, insights about the strategic and performance consequences of top management team diversity and, in particular, complementarities between managerial backgrounds and experiences are of direct relevance to the management of top management team processes and dynamics. Finally, the exploration and discussion of what constitutes top management team internationalization will benefit companies in the process of expanding their international operations as company success is becoming increasingly dependent on a firm’s ability to deal with the challenges of globalization.

1.7 Empirical Setting

Switzerland was chosen as the primary context for the empirical investigation for a number of reasons. First, Switzerland is a preferred home base for many multinational companies due to its political stability, central location and tax advantages. As such, it is an appropriate empirical setting to study the role of executive diversity in the context of firm international operations. Moreover, multinational corporations report that the second most important reason for location decisions is the presence of qualified managers (Swissinfo, 2004). Switzerland is among the most competitive executive labor markets in Europe and has one of the highest percentages of foreign top executives (Ruigrok, Owtscharov & Greve, 2005). As such, it offers a suitable research context for the study of the antecedents and consequences of top management team diversity.

Second, the Swiss Stock Exchange (SWX) is among the leading stock exchanges in the world. In 2000, SWX ranked no. 8 in the world and no. 3 in Europe, following the London Stock Exchange and the Deutsche Boerse, in terms of market value of the
listed domestic shares. At the end of 2004 (which is the latest year taken into consideration in this empirical investigation), the Swiss Stock exchange moved to no. 10 internationally and no. 5 in Europe with market capitalization of domestic shares amounting to 939,073 million CHF (SWX, 2006). Compared to the New York Stock exchange (NYSE), SWX is fifteen times smaller in terms of market capitalization. Yet, the Swiss Stock Exchange is traditionally among the strongest European stock markets with international orientation trading a large number of domestic and foreign shares. The initial sample of this study comprises all Swiss companies listed on the Swiss Stock Exchange plus all Swiss blue chips listed on the virt-x.

By drawing a sample that represents the entire population of Swiss publicly traded companies, this study attempts to achieve generalization beyond the single country. The cross-sectional sample of companies of different size and age and belonging to a number of different industries is an important strength of the research design. The choice of publicly listed companies, as opposed to non-profit organizations and small and medium size enterprises, is motivated by a desire to make the results generalizable and make comparison to previous research possible. In addition, this study has a longitudinal character and the dataset contains time-series on top management and board composition, as well as strategy and performance of all Swiss listed firms over a five-year period.

This dissertation is based on a unique dataset capturing the population of Swiss publicly listed companies (n=165) in a longitudinal research design (2000-2004) and containing firm level information on their governance, strategy and performance. The uniqueness of the dataset lies in the in-depth individual level data on the background characteristics of the top management team and board members. Based on curriculum vitae’s, published in the firm annual report or website as well as the “Who’s who in Switzerland” publication, detailed individual profiles were created for the 9900 individuals serving on the top management team and boards of 165 companies between 2000 and 2004. These profiles contain information on all relevant demographic and professional aspects of executives/directors attributes, such as age, gender, nationality, position, function/occupation, education, team and company tenure, committee membership, other company directorships, international and industry experience etc. The level of detail of the data serves as the basis for the empirical investigation of diversity as a multi-dimensional phenomenon.

The empirical data was collected and organized at three different levels: individual, team/organization and industry level. Team and organization are regarded as one level of analysis as each company has only one top management team at the
headquarters level. Subsidiary management and boards, while applicable for multinational organizations, were not included in this study. Where necessary and following logically from the theoretical arguments, data was aggregated to the higher level (e.g. individual characteristics to calculate diversity indices; firm characteristics to estimate industry context). In all other instances, the data was analyzed at its theoretical and measurement level by accounting for its nested structure.

Three different methodological approaches were applied to the analysis of the data. Panel data econometric methods, allowing for utilization of both the cross-sectional and time-series dimension of the data, were used to explore the antecedents of top management team diversity over time in the second essay of this dissertation. The third essay applies a mixed coefficients model, namely, hierarchical linear model (HLM) that accounts for the nested structure of the data and estimates the variation in firm performance attributable to factors at team, organizational and industry levels. The fourth and final essay utilizes a structural equation model (SEM) to test the validity of the upper echelons internationalization construct and estimate path coefficients for its relations to firm strategy, compensation and performance.

1.8 Structure of the Dissertation

The doctoral thesis consists of an introduction, conclusion and four essays, the content of which is briefly outlined below (see Exhibit 3). The first essay outlines the evolution and progress of upper echelons research since its start in 1984 and reviews all empirical studies, focusing on diversity in top management teams, published in leading international journals. The purpose of the essay is to identify existing gaps in the upper echelons literature and to further develop the theoretical framework as well as to assess the methodologies applied in the field. Essay 2 develops a theoretical mixed determinants model of different level factors (corporate elites, firm and industry level) influencing the diversity composition of top management teams and empirically tests the model by applying panel data analytical methods. Essay 3 investigates the effects of top management team diversity on corporate performance by considering how different level (team, organizational and industry) contextual factors influence this relationship. This essay focuses on multilevel aspects of researching executive effects on firm behavior and performance and accordingly applies hierarchical linear modeling in the empirical analysis. Essay 4 focuses on one particular aspect of top management team diversity, namely upper echelons internationalization, and explores its relationship to executive compensation, internationalization strategy and corporate performance. This essay attempts to
theoretically develop the construct of top management team internationalization and empirically test its validity and predictive power by applying SEM methodology. Finally, the conclusion section summarizes the findings of the individual essays and draws implications for future research and practice.

Exhibit 3: Structure of the Dissertation

- Chapter 1: Introduction
- Chapter 2: Top Management Team Diversity: A Review of Theories and Methodologies
- Chapter 3: Antecedents of Top Management Team Diversity
- Chapter 4: Consequences of Top Management Team Diversity
- Chapter 5: Top Management Team Internationalization
- Chapter 6: Conclusion

Source: Author.
2 Top Management Team Diversity: A Review of Theories and Methodologies
TOP MANAGEMENT TEAM DIVERSITY: 
A REVIEW OF THEORIES AND METHODOLOGIES

ABSTRACT

This paper reviews upper echelons empirical research with particular focus on diversity. A number of scholars have concluded that upper echelons findings, in particular in terms of the effects of top management team heterogeneity, have been inconclusive. This review aims at conducting an in-depth analysis of conceptual and methodological issues related to upper echelons diversity research and offers a multilevel approach to investigating diversity in the context of top management teams. To this end, 60 journal articles, published in ten top international journals over a twenty-two year period (1984-2005), were analyzed. The results suggest that upper echelons research is increasingly multidisciplinary in nature and that a number of theories have been used together with the upper echelons perspective to gain a better understanding of antecedents and consequences of top management composition. Furthermore, the rising awareness of causality issues is reflected in the emergence of recursive, dynamic models of top management team composition and in the large number of longitudinal studies. Survey methodology is now commonly used in the field, in particular to scrutinize cognitive diversity aspects and team processes, and the use of structural equation modeling techniques is increasing. This review finds that clarity about level of analysis, both theoretically and empirically, remains an important issue in the field and thus multilevel research is encouraged. Moreover, the multi-dimensional nature of diversity as a construct needs to be acknowledged and operationalized accordingly in upper echelons studies.

Keywords: upper echelons, top management team heterogeneity, team diversity
2.1 Introduction

Ever since the seminal article of Hambrick and Mason (1984) researchers have devoted significant attention to exploring how the human side of managers, such as their background and psychological characteristics, influences the decisions they make. Early upper echelons research was dominated by the organizational demography approach (Pfeffer, 1983) and primarily used quantitative large-sample methods to investigate possible links between top management team members demographic characteristics and various organizational outcomes. These studies, however, yielded largely inconsistent results especially with regard to whether more homogeneous or more heterogeneous teams are associated with better firm performance (Finkelstein & Hambrick, 1996; Pettigrew, 1992). As a result, several scholars in the upper echelons field suggested that the hypothesized relationships are not as straightforward as tested, and identified possible research gaps and fruitful areas for future research.

Some authors discuss the exact definition of top management teams (Jackson, 1992; Pettigrew, 1992), while others focus on the importance of contextual factors, such as the organization and its environment (Finkelstein & Hambrick, 1996). At the same time, most researchers agree that the hypothesized links between TMT composition and organizational choices and performance are mediated and/or moderated by team processes (Forbes & Milliken, 1999; Jackson, 1992; Lawrence, 1997; Pettigrew, 1992; Priem, Lyon & Dess, 1999). Consequently, various attempts have been made to address these gaps in upper echelons research empirically and to further develop the conceptual model proposed by Hambrick and Mason (1984).

2.1.1 Aim of the Review

In 1996, Finkelstein and Hambrick published a book, which still remains the most comprehensive and admirable review of research on strategic leadership and executive effects. Almost ten year later, Carpenter, Geletkanycz and Sanders (2004) reviewed the post Finkelstein and Hambrick upper echelons research. In addition, a series of papers on the topic of multilevel issues in upper echelons research were recently published in Dansereau and Yammarino (2005). Given this impressive volume of existing review articles it seems legitimate to ask: why conduct yet another literature review? While previous reviews summarize the findings of empirical studies in the upper echelons field, little has been done in terms of reviewing the theories used in conjunction with upper echelons theory. This is surprising, given that already in their
1984 article, Hambrick and Mason noted the need of upper echelons theory to draw upon relevant literature in other disciplines, such as sociology and social psychology (1984: 203).

One of the purposes of this paper is to review the theoretical approaches applied to the field in furthering our understanding of upper echelons composition and its effects. Another unaddressed aspect of upper echelons studies is the applied methodologies. A research stream that originated from the organizational demography approach, based largely on secondary data sources, has significantly progressed over the past two decades. The challenging new research directions in the upper echelons stream, attempting to open the “black box” of upper echelons effects, have also brought along novel research approaches and methodologies. As noted by the authors of the most recently published upper echelons review (Carpenter, Geletkanycz & Sanders, 2004), there is a lack of methodological reviews of papers published post 1994. This review addresses this gap by conducting an in-depth analysis of methods applied in the upper echelons research stream and provides recommendations for fruitful future methodological approaches.

Moreover, the present review aims at advancing the understanding of the multi-level nature of upper echelons diversity research by simultaneously focusing on theory and methodology issues. As pointed out by Carpenter, Geletkanycz and Sanders, while the upper echelons stream is a flourishing one, it currently stands at important crossroads and “debates, addressing both underlying theory and methodology, present several avenues for future advancement of executive leadership research and the upper echelon perspective” (2004: 768).

Finally, this paper aims at contributing to the current debates of multilevel theories and methodology in the management field (Beamish, Hitt, Jackson & Mathieu, 2005; Klein, Dansssereau & Hall, 1994). As upper echelons is inherently a multilevel theory (Cannella & Holocomb, 2005; Carpenter, 2005), this paper assesses the extent to which scholars have theoretically recognized and empirically tested the nested, multilevel character of upper echelons phenomena and suggests possible future directions for advancing multilevel theory building in upper echelons research.

2.1.2 Scope of the Review

This paper reviews existing empirical research on the composition in terms of heterogeneity of firm upper echelons. A number of choices were made to define the articles suitable for the review given its stated purpose. First, the emphasis on
Top Management Team Diversity: A Review of Theories and Methodologies

empirical research is driven by the intended contribution of the paper to explore the interplay between theory and methodology in the field. Hence, theoretical pieces, while used to set the stage and present the development of the upper echelons stream over time, were not included in the actual review of published articles. Besides the seminal Hambrick and Mason’s (1984) article, nine pieces that either review or critically assess the development of upper echelons research were identified (see Appendix 1.1).

Second, the choice of journals was motivated by considerations of comparability to previous reviews in both the upper echelons and the diversity research fields. As such, the review is multidisciplinary in nature and along with the leading management and strategy journals it draws upon high quality psychology and international business academic outlets. While interesting research on top management team composition can be found in a number of journals not included in the list for this review, it was deemed necessary to limit the review by focusing on the most influential journals.

Third, the review was limited in time and the starting point was defined as 1984 when the seminal Hambrick and Mason’s piece was published from which the upper echelons research stream originated. Despite the fact that comprehensive reviews of the first decade of upper echelon’s research exist (Finkelstein & Hambrick, 1996; Jackson, 1992), it was decided to go back to the early years of upper echelon research in order to follow the evolution in the field, particularly in terms of methodological developments.

Finally, the focus was set explicitly on diversity in top management teams. A large number of studies address average tendencies in TMT composition. However, diversity is one of the poorly understood and under-theorized aspects of upper echelons effects. Hence, a decision was made to focus on diversity explicitly and by drawing upon group diversity research to attempt to provide an alternative approach to the unresolved questions surrounding the phenomenon of top management team heterogeneity.

Empirical papers published in ten top ranked journals over the past twenty two years (1984-2006) were reviewed\(^1\). The aim was to scrutinize the theoretical

perspectives and methodologies applied to deal with research gaps identified in theoretical upper echelons works. This paper continues as follows. The next section reviews upper echelons literature and outlines possible explanations for the ambiguity of organizational demography studies, as suggested by prominent authors in the field, and identifies issues which still remain unresolved. The subsequent section reviews empirical research attempting to address these issues and discusses the methodologies used. Finally, recommendations are made as to how to address some of the still unanswered questions in upper echelons research. Particular attention is paid to multilevel theory and analysis and its possible applications in the field.

2.2 Opening the “Black Box” of Upper Echelons Research

2.2.1 Early Upper Echelons Research

The roots of the upper echelons perspective lie in the behavioral theory of the firm (Cyert & March, 1963), which suggests that managerial choices are not always following rational motives but are to a large extent influenced by the natural limitations of managers as human beings. Behavioral factors, such as bounded rationality, multiple and conflicting goals, various aspiration levels etc., are believed to influence strategic choices made by top executives, which in turn determine firm performance. In a particular decision-making situation, managerial decisions are influenced by their own values and cognitive bases as they impact the managers’ perception of the situation and the subsequent interpretation of possible choices. In a perceptual model of strategic choice under conditions of bounded rationality, Hambrick and Mason (1984) visualize how manager’s characteristics affect strategic choice in a three-stage process: a limited field of vision, selective perception and interpreting noticed stimuli based on the manager’s “givens (see Exhibit 1).

In their seminal work, Hambrick and Mason (1984) suggest that managers’ observable demographic characteristics can be used as proxies for the more complex psychological dimensions of their personalities. The reasoning is based on the organizational demography approach, which criticizes the use of constructs such as attitudes, needs, values, preferences and cognitions, since such constructs are “difficult to reliably measure and conceptually validate [and] are neither concrete nor unambiguous in their meanings and interpretation” (Pfeffer, 1983: 302). Instead, demography is regarded as an important causal variable and whereas the existence of process and other intervening variables between demographic composition and organizational outcomes is acknowledged, it is not considered necessary to explore
these process constructs, as they are mostly mental processes, which are also considered difficult to access and measure reliably (Pfeffer, 1983: 351). The combination of strategic choice and organizational demography perspective leads to the first upper echelons model as suggested by Hambrick and Mason (1984) (see exhibit 4).

Due to difficulties of gaining access to and assessing intricate psychological dimensions of top managers and their actual behavior, organizational demography has become the predominant approach in upper echelons research (Daily, Dalton & Cannella, 2003; Hambrick & Mason, 1984; Pettigrew, 1992). Numerous empirical studies scrutinize the effects of top management demographics on organizational outcomes, such as strategy and performance. Especially the topic of team diversity has been of particular interest for researchers from a theoretical point of view (Finkelstein & Hambrick, 1996). Measures of distributional properties (dispersion of a group over specified categories) rather than central tendencies, such as mean, median or proportion, are considered crucial for understanding the effects of demography on organizational outcomes (Blau, 1977; Pfeffer, 1983).

**Exhibit 4: Upper Echelons Model**

![Upper Echelons Model](source: Hambrick & Mason, 1984)

Early empirical research on upper echelons investigated the effects of top management team heterogeneity in observable background characteristics, such as age, functional track and other career experiences, education etc., on various organizational outcomes, i.e., firm’s competitive behavior (Hambrick, Cho & Chen, 1996), level of diversification (Michel & Hambrick, 1992), innovativeness (Bantel & Jackson, 1989),
corporate strategic change (Wiersema & Bantel, 1992), and ultimately performance (Michel & Hambrick, 1992; Murray, 1989; Norburn & Birley, 1988). However, most of these studies did not reach clear confirmatory findings with regard to whether heterogeneous or homogeneous teams exhibit better company performance and how diversity in top management team composition relates to firm’s strategic choices (Finkelstein & Hambrick, 1996; Pettigrew, 1992). The ambiguous and contradictory findings of TMT heterogeneity research have led to a vivid debate about the limitations of the early upper echelons research (Prem, Lyon & Dess, 1999). Prominent authors in the field have identified research gaps and possible explanations for ambiguity of empirical findings discussed in the following section.

2.2.2 Research Gaps in Upper Echelons Research

2.2.2.1 Top Management Team Definition

On the most practical end, scholars focus on a precise definition of top management teams. Most often the top management team is identified based on top executives’ formal titles listed in publicly available documents or on a response provided by the firm CEO in a survey or an interview (Finkelstein & Hambrick, 1996; Hambrick, 1994). Jackson (1992), however, argues that in order to investigate the impact of team demographics on strategic choices it is necessary to consider only the persons who are actually involved in making a particular decision. This might result in a team, which does not consist of all top executives but at the same time includes managers and experts from other organizational levels. In line with this argumentation, in a longitudinal field study, Pitcher and Smith (2001) observed that the actual decision-making authority does not necessarily always lie in the formally defined top executive team. Similarly, Roberto (2003) argues that top management teams are comprised of a stable core and dynamic periphery that changes with the decision-making situation.

Pettigrew (1992) suggests that inconsistency of empirical results may well be attributed to the inconsistency in defining top management teams and argues that this issue can only be addressed by using interviews and observations. Carpenter, Geletkanycz and Sanders (2004) further note that the top management team size differs considerably over studies and many papers do not report the size of the top management teams at all, thereby making comparison impossible. The definition and the size of the top management team is an important aspect of TMT composition that clearly has an impact on empirical findings of diversity studies.
2.2.2.2 Top Management Team and Board Interactions

When discussing the definition of firm upper echelons it is important to note the dividing gap between top management team and board research. While both governance bodies (teams) are at the apex of the firm and influence its organization, structure, strategic decisions and future directions, research on TMT and board effects usually runs in two parallel streams. A large number of studies investigate the influence of top managers’ characteristics on a number of aspects of firm strategy (for a review, see Finkelstein & Hambrick, 1996). At the same time, an emerging stream in board research focuses on the board’s influence on firm strategic decisions (Goodstein, Gautam and Boeker, 1994; Hillman, Cannella & Paetzold, 2000; Judge & Zeithaml, 1992; Rindova, 1999). However, the independent and combinative influence of TMT and boards on firm strategy and other firm level outcomes has rarely been hypothesized or empirically tested.

Finkelstein and Hambrick (1996) specifically include the board of directors in their book of strategic leadership and executive effects and define the construct of a “Supra TMT” composed of both top executives and board members. Yet, it is the rare study that addresses the effects of both (e.g., Jensen & Zajac, 2004). Lately, this gap was bridged in the context of entrepreneurial firms where interactions between top management teams and boards are more common and the characteristics of both are related to firm growth and performance (Boeker & Wiltbank, 2005; Carpenter, Pollock & Leary, 2003). Carpenter, Geletkanycz and Sanders (2004) suggest to further extend research on executive effects by investigating the effects of strategy consultants, venture capitalists etc., as these actors have an impact on firm behavior through their interaction with the top management team and the board of the firm. Hence, a thorough exploration of executive effects needs to take into consideration both internal and external actors who significantly influence firm strategic decisions.

2.2.2.3 Interactions among Diversity Dimensions

A closer look at upper echelons theory reveals the surprising fact that top management team diversity (heterogeneity) is defined as a general construct. No distinction is made between different aspects of diversity, such as nationality, sex, age, functional diversity, tenure etc., and diversity is hypothesized to have uniform effects regardless of particular dimensions to which it is empirically applied (Finkelstein & Hambrick, 1996; Hambrick & Mason, 1984). Jackson (1992: 368) noted that whereas in the context of theory a general construct of diversity might be useful, when
conducting empirical research it is important to decompose the construct to the level of single attributes. Furthermore, an assumption that all diversity aspects will have similar influences on top management team choices and behavior is not grounded in theory. Group effectiveness theories differentiate between the effects of different types of diversity and reviews of group diversity research conclude that the effects of individual diversity dimensions should be studied separately (Milliken & Martins, 1996; Williams & O'Reilly, 1998). Furthermore, there is a need for clear classification of the sources of difference in order to understand the effects of such differences (Janssens & Steyaert, 2003).

Recently, however, researchers called for a new direction in diversity research – to consider all relevant diversity dimensions simultaneously (Ashkanasy, Haertel & Daus, 2002; Jackson & Joshi, 2001). Jackson, Joshi and Erhardt (2003) criticize the existing practice of empirically testing and discussing findings about different diversity dimensions included in a single study separately. Such an approach is based on an assumption that the effects of each type of diversity are independent of the presence of other types of diversity (Jackson & Joshi, 2004). However, previous empirical research suggests that this is not the case. For instance, Pelled, Eisenhardt & Xin (1999) found that a combination of multiple diversity aspects has stronger effects on different types of group conflict than individual effects of the diversity dimensions. Similarly, Kor (2003) found that interaction effects between different levels of managerial experience have impact beyond the effects of individual experience dimensions. Based on these insights, Carpenter, Geletkanycz and Sanders (2004) conclude that future research needs to regard top executives as a “bundle of resources” and consider multiple dimensions of top management team diversity simultaneously when investigating their effects on firm level decisions and behavior.

2.2.2.4 Demographic vs. Cognitive Diversity

Other scholars question the organizational demography postulate that diversity in demographic characteristics can serve as an indicator of cognitive diversity. This argument is the fundamental assumption of organizational demography (Pfeffer, 1983) and forms the basis of early theoretical and empirical upper echelons research. However, by using demographic variables as proxies for psychological dimensions of top management diversity, the construct validity of the studied phenomena is sacrificed for higher measurement reliability (Priem, Lyon & Dess, 1999). Looking back to the classical Hambrick and Mason’s article, it is evident that the authors were
already aware of this issue as they acknowledged that “observable demographic factors simply do not provide a reliable portrayal of a person’s makeup” (1984: 204).

Similarly, empirical research shows that the proxy assumption simply does not hold. Glick, Miller and Huber (1993) measured cognitive diversity directly and found no evidence for a link between demographic and cognitive diversity. Kilduff, Angelmar and Mehra (2000) found that cognitive diversity has a strong impact on team processes and performance. Demographic diversity, however, was found to have no effects on either firm performance or cognitive diversity. Miller, Burke and Glick (1998) found strong support for a negative impact of top management team cognitive diversity on the comprehensiveness of decision-making and the extensiveness of strategic planning, which, in turn, were positively related to firm performance. A study by Barsade et al.,(2000) similarly confirmed that, when measured directly, affective cognitive diversity in top management teams exhibits a negative impact on team processes and performance. The consistency of empirical results is a clear indication of the importance of focusing on cognitive diversity of top managers instead of relying on diversity in demographic characteristics only.

2.2.2.5 Team Processes

Some scholars argue that the conflicting results of upper echelons diversity research are due to inherent limitations of organizational demography (Lawrence, 1997; Priem, Lyon & Dess, 1999). By critically assessing its logical and methodological foundations, Lawrence concludes that organizational demography creates a “black box” which “moves researchers further and further away, both empirically and theoretically, from the actual mechanism underlying observed relationships” (1997: 19). A main point of criticism is the so-called “congruence assumption”. Research models based on demography include processes as concepts, which are expected to explain the relationships between demographic characteristics and organizational outcomes. However, these process constructs are not being investigated and directly measured. Thus, Lawrence (1997) argues that through the use of demographic variables the actual underlying phenomenon and the theoretical mechanisms remain unexplored.

Following this line of criticism, process studies attempt to advance upper echelons research in this direction. Different models relating team demography, processes and performance are theoretically developed and empirically tested. Empirical findings show that demography and team processes have direct effects on group and
organizational performance. In addition, processes also act as mediators of the relationship between team diversity and performance (Smith et al., 1994). Similar insights are generated from more recent studies on top management team processes. For instance, debate was discovered to mediate the interactive effects of diversity and decision comprehensiveness (Simons, Pelled & Smith, 1999). Similarly, collaborative effort was identified to mediate the link between the top management team diversity and the decision quality while consensus among group members on organizational goals was found to be a moderator in this relationship (Michie, Dooley & Fryxell, 2002). Knight et al. (1999) furthermore found that demographic diversity affects consensus through two intervening processes: interpersonal conflict and agreement seeking. Information sharing is another important mediator variable (Bunderson & Sutcliffe, 2002). By blending qualitative and quantitative methods in a case study design, O’Reilly, Snyder and Boothe (1993) found that team homogeneity is associated with better team dynamics and related to more efficient firm adaptation to change. Empirical studies on the role of processes in top management teams all confirm that these processes add explanatory power and help shed light on the link between top management team diversity and performance.

Processes are also considered a centre-piece in theoretical models of team diversity (Williams & O’Reilly, 1998). The diversity literature suggests that group heterogeneity is a "double-edged" sword, which is beneficial only if managed successfully (Milliken & Martins, 1996). Successful leverage of team diversity can be achieved through the actual team interactions. Thus, team process is considered not only a mediator but also an important moderating variable, which might change the effects of diversity on group effectiveness. The main question, which arises, is not which processes influence the group composition – performance link, but rather how, by influencing these processes, one can consciously alter the consequences of team diversity for group and organizational effectiveness.

2.2.2.6 Contextual Influences

Another possible explanation for the inconsistency of findings in top management diversity studies is the de-contextualization of previous research (Carpenter, 2002; Keck, 1997). Finkelstein and Hambrick (1996) identify the external and internal firm environment as important contextual factors in upper echelons research. On the one hand, industry norms, environmental turbulence and internal organizational factors affect criteria for choosing top executives and determine top management team
Top Management Team Diversity: A Review of Theories and Methodologies

composition. On the other hand, the external and internal environment is considered as an important contingency factor, which might change the effects that top managers have on an organization's strategic choices and performance.

Using a contingency approach, several studies explore the moderating effects of the environment in which firms operate. For instance, research suggests that in high velocity and turbulent environments, diversity will be crucial for top management team’s ability to assess the situation and to make the best possible strategic choice. Empirical results support this line of argument and show that under high environmental uncertainty heterogeneous top management teams achieve better performance, whereas less heterogeneous teams will be more successful in stable contexts (Eisenhardt & Schoonhoven, 1990, Hambrick, Cho & Chen, 1996; Iaquinto & Frederickson, 1997, Keck, 1997; Lant, Milliken & Barta, 1992).

However, a recent empirical study found support for the contrary argument that diversity has a strong positive link to performance at low levels of organizational complexity, but a negative one at high levels of uncertainty (Carpenter, 2002). The author’s interpretation is that affective conflict, which under stable conditions is suppressed, accelerates significantly with higher levels of environmental complexity and therefore has a strong negative moderating impact on organizational performance. Hence, it is important to pay attention not only to environmental factors but also to the interplay between context and processes. The study by Carpenter (2002) clearly shows that results in upper echelons research are only meaningful when taking into consideration the strategic and social context in which top executives work.

2.2.2.7 Leadership

Another important aspect, closely related to processes, which is crucial for understanding top management team dynamics, is the concept of leadership and the associated variables of power and influence (Cannella & Monroe, 1997). Jackson (1992) points at the paradox that upper echelons theory, which argues the strong impact of leaders on their organization, ignores the role of the CEO as the leader of the top management team. The argument that an executive team as a whole has stronger influence on firm behavior than the CEO alone has received much empirical support (Finkelstein & Hambrick, 1996). Yet, aggregating individual characteristics to the team level without paying due attention to and adequately hypothesizing the relative influence of each team member may be problematic (Canella & Holocomb, 2005).
The dominant upper echelons reasoning is based on an assumption of equality of individual effects. However, the degree of influence of individual executives on firm choices depends on the power of the CEO, who as a group leader has the “potential to neutralize both beneficial and debilitating composition effects” (Jackson, 1992: 371) as well as the power distribution within the team itself. In a qualitative study of eight companies, Eisenhardt and Bourgeois (1988) discovered a positive impact of power centralization on team politics, which were, in turn, negatively related to firm performance. Pitcher and Smith (2001) found support for the opposite causal relationship that distribution of power influences the degree of heterogeneity in top management teams. These insights indicate another possible explanation for inconsistent findings of previous research on top management heterogeneity, which has neglected the influence of power and status differentiation within the team (Jackson, Joshi & Erhardt, 2003).

### 2.2.2.8 Multilevel Approach

Both upper echelons and group diversity research involve multiple levels of theory and analysis. Based on the recent criticism of the individual approach to studying diversity, attention is increasingly paid to the different layers of context in which diversity is embedded, such as individual, group, organizational and societal contexts (Jackson, Joshi & Erhardt, 2003). Previous focus on internal individual processes leads to the assumption that diversity should be managed or influenced at the individual level. However, such an understanding leaves the impact of teams, organizations and society on diversity unexplored and unquestioned (Nkomo & Cox, 1999).

This line of argument corresponds to the increasing calls for multilevel research in management and organization sciences (Beamish et al., 2005). Bridging different levels of theory and analysis is suggested as a means to study the relationship between macro (e.g., nation, industry, organization) and micro (e.g., subsidiary, group, individual) aspects of organizational phenomena. A scientific inquiry often involves multiple levels of analysis. Thus, it is important to recognize the distinct levels of theory and find an appropriate way to specify interactions among these levels (Klein & Kozlowski, 2000). Moreover, the levels of theory and analysis must be corresponding in order to avoid ecological fallacy (Robinson, 1950).

Upper echelons research is inherently multilevel in nature as it involves individuals, teams, organizations and their environments. The construct of managerial
discretion provides a clear example of the multilevel nature of upper echelons theory. Hambrick and Finkelstein’s (1987) define different level factors that influence managerial discretion, such as environmental sources (e.g., market growth, industry structure etc.), organizational sources (e.g., firm size, age, resource availability) and managerial characteristics (e.g., aspiration, commitment, tolerance for ambiguity etc.). Pettigrew (1992) also argues for the embeddedness of top management team behavior and processes in a number of different contextual layers. Different level factors influence both the composition of the top management team and its effects on organizational outcomes, leading to a wide range of opportunities to apply multilevel theories and statistical analyses to the upper echelons field.

Recently, however, upper echelon research has been criticized for mixing levels of theory, measurement and analysis. For instance, Cannella and Holocomb (2005) note that while upper echelons research theoretically operates on the group level of analysis, variable operationalization has been primarily conducted on the individual level. Such inconsistency between the individual level of analysis and the group level of theory is problematic. Klein, Dansereau and Hall (1994) argue that a match between the level of theory, level of measurement and level of statistical analysis is essential in research including multiple levels and illustrate how mismatch may lead to false interpretation of findings. The recognized shortcomings hold promise for future research as the upper echelons framework is inherently multilevel, involving multiple actors and contexts (Carpenter, 2005).

2.2.2.9 Dynamic Models

One of the major suggestions for future research made by Carpenter, Geletkanycz and Sanders is the development of a comprehensive, dynamic theoretical approach that pays due attention to the multi-directional nature of the upper echelons model. The authors note that “to the extent that senior management plays a role in shaping firm outcomes, firm outcomes and context (including environmental and industry contingencies) play a critical role in determining who serves among the firm’s top leaders, as well as the nature of their impact on firm behaviors.” (2004: 773).

Indeed, already in the seminal Hambrick and Mason article significant attention is devoted to the question of causality in the upper echelons theoretical framework. The authors state that industry environment can affect the composition of the firm top management as “executives often are chosen exactly because they have the “right” background or temperament to carry out actions hoped for by the board of directors.
or other controlling parties” (1984: 197). By the same token, Finkelstein and Hambrick (1996: 108) connect the causality discussions with Miles and Snow’s (1978) notion that over time a reinforcing spiral occurs; managers select strategies based on their value and beliefs and successors are selected based on the extent to which their characteristics and qualities match existing firm strategies. The lack of longitudinal and dynamic models is an important gap in existing research and causality is set high on the future upper echelons research agenda. Longitudinal research designs combined with rigorous data-analysis techniques, such as cross-lagged correlations, change scores (or first-difference scores), controls for prior states, and simultaneous equation modeling, were highly recommended (Finkelstein & Hambrick, 1996).

2.2.2.10 Extended Upper Echelons Framework

To summarize, a theoretical framework that started as a simple input-output relationship between top managers’ characteristics and firm level outcomes (based on the organizational demography approach) has developed into a complex theory over the last two decades. The extended upper echelons model (see Exhibit 5) covers several of these aspects. First, the discussions of the definition of top management teams have evolved. Second, the number of actors involved in shaping a firm’s strategic direction has been extended to include also board members, venture capitalists etc. Third, researchers call for closer attention to the theoretical construct of diversity and considering multiple diversity dimensions simultaneously. Fourth, the assumption of a link between demographic and cognitive diversity has been critically questioned. Fifth, group processes that have crucial influence on the diversity effects on team and organizational outcomes have been identified. Sixth, increasing attention is paid to different levels of context, such as environmental and organizational contextual factors. Seventh, particular emphasize is placed on the team context and the influence of the CEO and his/her power on top management team dynamics, as well as the internal power distribution among team members. Eight, the inherent multilevel nature of upper echelon theory has been recognized and suggestions have been developed for matching the levels of theory and empirical analysis. Finally, considerable attention has been paid to causality issues and recursive, dynamic models of upper echelons composition.
Exhibit 5: Extended Upper Echelons Model


2.3 Methodology

2.3.1 Sampling

For the purpose of a comprehensive review of contemporary research on top management teams across different disciplines, a search for articles published over a twenty-two year period (1984-2005) was undertaken. The choice of journals was based on a combination of the ranking of the most influential management research journals (Tahai & Meyer, 1999) and the Milliken and Martins (1996) review, resulting in seventeen management, psychology and organizational behavior journals. This initial choice was then extended to reflect the international business side of the phenomenon and included the top five leading international management journals as identified by Acedo and Cassilas (2005). A key word search on the Ebscohost database was conducted for all twenty-two journals over the entire period using the

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keywords "upper echelons", "top management", "TMT" as well as “board of directors”, “corporate boards”, “chief executive officer” and “CEO”. The initial search resulted in a large number of articles of which only those based on empirical work were included. In a second step, articles that focused on the composition of the entire top management team, as opposed to the characteristics of the CEO or key executives only were selected. In a third step, each and every remaining article was examined according to whether it contained diversity in top management team characteristics and experiences in the theory and/or the methodology part of the paper. Articles, which did not explicitly address issues of diversity in top management teams but studied central group tendencies, such as group size, average industry or international experience etc., were excluded.

This procedure resulted in a final sample of 60 articles published in the following ten journals: Academy of Management Journal (AMJ), Administrative Science Quarterly (ASQ), Journal of Applied Psychology (JAP), Journal of International Business Studies (JIBS), Journal of Management (JOM), Journal of Management Studies (JMS), Organization Science (OS), Management International Review (MIR), Management Science (MS) and Strategic Management Journal (SMJ). Exhibit 6 visualizes the distribution of articles among the ten journals. For a complete list of articles see Appendix 1.2.

2.3.2 Coding

The coding of the studies was conducted in a two-step process. In the first step, conceptual issues were analyzed and the extent to which studies addressed the research gaps identified by prominent scholars in the field assessed. In the second step, the particular methodologies used in the selected studies were scrutinized and coded. Similar to the review by Finkelstein and Hambrick (1996), selected conceptual issues include underlying theory, unit of analysis, theoretical level of analysis and causal logic (see Exhibit 7).
For a more in-depth analysis of upper echelons theoretical issues a coding scheme was developed based on Finkelstein and Hambrick's model of top management teams (1996: 120). The framework comprises four main categories of variables explaining top management team's impact on their organization. These factors are: (1) contextual factors, such as environment, organization and CEO; (2) top management team features including composition, structure and process; (3) strategic decision-making processes and (4) organizational outcomes in terms of strategy and firm performance. Further, despite existing arguments in upper echelons research that team outcomes equal organizational levels outcomes, a distinction was made between studies dealing with outcomes at the top management team level and at the organizational level. The coding scheme was further extended based on the Carpenter, Geletkanycz and Sanders (2004) framework and includes the following categories: (1) organizational antecedents, such as board characteristics and internal labor markets; (2) organizational outcomes in terms of TMT/board turnover and composition, (3) moderators/mediators; such as power, discretion, incentives, etc.

This resulted in a coding scheme consisting of the following categories: demography, cognitions, process, leadership, compensation, organization, environment, team level outcomes, organizational outcomes and performance. Each study was then coded according to the identified ten categories. All studies scored on at least two categories (diversity and certain outcomes). The criteria, according to which a study was attributed to one of the categories, was that it explicitly mentions the word of the coding criteria in the theoretical and/or methodology part of the paper (Appendix 1.3. details the exact coding rules and procedures used to classify the studies).

The author read carefully through the methodology part and paid attention to the role of the particular concept in the hypothesized models. Some of the variables were attributed to different categories according to whether they were independent, dependent or moderator variables. For instance, organizational level factors were
attributed to organizational outcomes if they were hypothesized as dependent outcome variables, or to organizational contextual factors if they were independent or moderating variables. Similarly, a distinction was made between environmental factors, modeled as contextual factors, exhibiting direct influence on top management characteristics, and environmental conditions, which have a moderating impact on the diversity link to outcome and performance.

For the second coding procedure, covering the methodological issues in upper echelon research, the methodology part of the articles was scrutinized in great detail. Following again the Finkelstein and Hambrick’s (1996) review, the following methodological issues were analyzed: research method, data sources, sample size, cross-sectional versus longitudinal character of the data, and statistical techniques applied. Two additional categories were added: nature of the diversity measure employed and approach to analyzing longitudinal data (Exhibit 8). For most of the categories, it was possible to code a study in more than one category; only in the case of two alternative categories a study falls into one of the two possible options. As coding research design and methodology issues are straight-forward matters, no detailed coding rules and procedures are listed in the appendix to this paper. The use of a single rater is certainly a disadvantage that needs to be acknowledged, yet a very small number of the classification decisions have been of an arbitrary nature.

**Exhibit 8: Methodological Issues in Upper Echelons Research**

<table>
<thead>
<tr>
<th>Data sources</th>
<th>Statistical technique</th>
<th>Panel data method</th>
<th>Diversity measure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Secondary</td>
<td>Regression</td>
<td>Fixed effects</td>
<td>Single item</td>
</tr>
<tr>
<td>Survey</td>
<td>ANOVA</td>
<td>Random effects</td>
<td>Index</td>
</tr>
<tr>
<td>Interview</td>
<td>Correlation</td>
<td>Pooled OLS</td>
<td></td>
</tr>
<tr>
<td>Observations</td>
<td>SEM</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Experiment</td>
<td>Survival analysis</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Source: Adapted from Finkelstein & Hambrick (1996).*
2.4 Results

2.4.1 Conceptual Issues

As theory is one of the primarily foci of this review, the theoretical perspectives applied in conjunction with upper echelons theory were first examined. The results of this analysis are reported in Exhibit 9. Most of the studies (52 articles) used upper echelons as their main theoretical perspective. Upper echelons theory was most often combined with social psychological theories (more than 20 percent of the studies), most common among which are group process and effectiveness theories. The second theoretical perspective commonly used together with upper echelon is strategy process (7 studies) and the third most commonly used are firm internationalization theories (5 studies). Surprisingly, agency theory was applied only in three of the selected studies. The other category includes among others entrepreneurship (3 studies), change (3), signaling (2), firm growth (1), resource based view (1) and social network theories (1). Hence, a variety of theoretical perspectives has been applied together with upper echelons theory to explain the antecedents and consequences of top management team diversity. Clearly, the call by Hambrick and Mason (1984) to blend upper echelons with sociology and psychology theories at later stages of its development has been addressed. The criticism of the organizational demography approach (Lawrence, 1997; Priem, Lyon & Dess, 1999) and the following attempts to research the “black box” of upper echelon theory have lead to wider application of group psychology theories. Yet, further combination of perspectives at different theoretical levels can be recommended.

Exhibit 9: Theoretical Perspectives Applied in Upper Echelons Studies

<table>
<thead>
<tr>
<th>Theoretical Perspective</th>
<th>Number of Works</th>
</tr>
</thead>
<tbody>
<tr>
<td>Upper echelon theory</td>
<td>52</td>
</tr>
<tr>
<td>Agency theory</td>
<td>3</td>
</tr>
<tr>
<td>Strategy process theory</td>
<td>7</td>
</tr>
<tr>
<td>Social psychological theories</td>
<td>14</td>
</tr>
<tr>
<td>Internationalization theories</td>
<td>5</td>
</tr>
<tr>
<td>Others</td>
<td>22</td>
</tr>
</tbody>
</table>

Source: Author.
In terms of theoretical level of analysis (see Exhibit 10), 42 studies combined team and firm level of analysis in their theoretical development and only four focused simply on the top management team level. It must be noted, however, that these two theoretical levels may equal one in multilevel modeling as there is only one top management team per firm and while top management teams are clearly nested in their organizations, the question of level equality still remains open. Only nine of the 60 studies delved into individual level theoretical constructs, two of which combined individual with team level of analysis and seven bridging individual with team and firm levels. Five studies looked beyond the organizational boundaries and applied industry level in combination with firm and team levels of analysis in their theoretical grounding.

The main unit of analysis was, not surprisingly, the top management team in 49 of the 60 studies (see Exhibit 11). Five studies looked simultaneously at the TMT and CEO and four scrutinized the interaction of top management team and board characteristics. Only two of the selected studies looked at top management team at the business unit level. Hence, a great potential exists for studies exploring the independent and interaction effects of top management team, board of directors and CEOs. Furthermore, management at lower levels of large corporations remains under-researched.

Exhibit 10: Theoretical Level in Upper Echelons Studies

Exhibit 11: Unit of Analysis in Upper Echelons Studies

Source: Author.
In terms of causality, the vast majority of studies (56 out of 60) apply top management team diversity as an independent variable. Only two studies regard it as a dependent variable, while one models TMT diversity as being simultaneously a dependent and an independent variable. These observations are similar to the conclusions of Finkelstein and Hambrick (1996). Hence, future research needs to focus on exploring the antecedents of top management team diversity. As Pettigrew (1992) noted, there is a need to understand why top management teams look the way they do. Lawrence (1997) also points out that most organizational demography researchers ignore antecedent theories completely and calls for more substantive theory of the antecedents of top management team composition.

Finkelstein and Hambrick (1996) note that studies modeling top management team composition as a moderator are not well represented. In the current review, twelve studies modeled interaction effects between the top management team and organizational or environmental context showing a rising awareness of contextual influences on the relationship between top management diversity and its effects. Interestingly, 20 percent of the studies (12 out of 60 articles) have applied dynamic as opposed to static models of top management team diversity.

The in-depth analysis of upper echelons specific conceptual issues shows that 27 percent of the studies (16 out of 60 articles) explored team processes. 13 of the studies focused on exploring the effects of cognitive diversity in top management teams, which is in stark contrast to the 49 studies (82 percent) focusing on demographic diversity dimensions. Only two studies explored demographic and cognitive diversity simultaneously. The most studied aspect, however, was the external firm environment: a total of 20 studies focused on industry and other environmental characteristics; twelve studies explored environment as a contextual factor influencing top management characteristics and eight studies explored its moderating effects on the link between top management team composition and firm level outcomes or performance. Organizational level factors were explored in 16 of the selected articles. Still relatively under-researched in combination with upper echelons diversity are the concepts of leadership (8 articles) and compensation (3 studies). Furthermore, the present review suggests that whereas early upper echelons research focused mostly on organizational level outcomes and corporate performance, recent research also increasingly explores team level outcomes (17 studies). Organizational level outcomes, such as firm innovation, strategic re-orientation, degree of diversification and internationalization, as well as organizational risk and crisis, were dependent variables in 29 (48 percent)
of the studies. Performance is among the most commonly studied outcome variable and was defined as the ultimate outcome of top managers’ actions in one third (20) of the selected studies. Only three of the reviewed articles have theoretically modeled and empirically tested upper echelons outcomes at the individual level of analysis.

In terms of diversity dimensions (see Exhibit 12), functional heterogeneity is the most studied aspect (30 studies) followed by team tenure (17 studies), age heterogeneity (16), educational background heterogeneity (14), company tenure heterogeneity (10 studies), and elite education (4 studies). Executive experiences are far less studied than executive background characteristics. Industry experience was examined in six studies, international experience in further six studies and five works dealt with various others aspect of executive experiences, such as prior TMT experience, shared top management team experience, prior firm experience, etc. Non-work related observable aspects of top management team heterogeneity are clearly under-researched with only one study exploring the effects of gender diversity and two studies looking at diversity in executive nationalities. Important to note is also that one third of the studies (20 articles) focused on a single diversity dimension. From the remaining 29 studies, which focused on demographic diversity and employed multiple dimensions, only one looked at the interaction effects between different diversity dimensions. Three studies conceptualized diversity as a higher order construct and combined multiple dimensions into one diversity construct – top management team heterogeneity. Hence, it can be concluded that recent calls to consider multiple dimensions simultaneously (Carpenter, Geletkanycz & Sanders, 2004; Jackson, Joshi & Erhardt, 2003) remain largely unaddressed.

Exhibit 12: Diversity Dimensions Studied in Upper Echelons Research

Source: Author.
2.4.2 Methodological Issues

In terms of research methods, there is still a clear dominance of quantitative studies in the upper echelons research stream (see Exhibit 13). Quantitative methods based on archival research were used in 29 studies of the 60 studies. Another twenty-four studies applied quantitative survey method as their primary methodology. Only seven studies used non-traditional research methodologies: three were based on computer simulations and four used a case study approach. Clearly, the applied methods in the upper echelons research field continue to be predominantly quantitative in nature; however, a significant increase in the use of survey methods can be observed over time. It is remarkable that despite all the calls for triangulation in management research in general, only one study combined qualitative field work with quantitative methods.

The more detailed analysis of data sources (see Exhibit 14) showed that the majority of the studies (31) use large databases, such as *Dun & Bradstreet* or *Standard & Poor*, as a data source. Eleven studies used annual reports and firm prospectus statements as other types of secondary data sources. Twenty-six studies have used a survey questionnaire as a data source and twelve studies conducted interviews with the CEOs and/or other executives. Three studies conducted an experiment/simulation and two included actual observation of top management team behavior in their research design. Twenty-three articles used more than one data source in their design.
In terms of statistical analysis, upper echelons researchers largely rely on conventional approaches (see Exhibit 15). Ordinary least squares regression was the most commonly used technique (51 studies). Four articles used correlation methods and nine applied structural equation models (SEM). To compare multiple groups, two studies used t-tests and another two applied ANOVA techniques. Furthermore, survival analysis was used in two of the reviewed sixty upper echelons articles. A quarter of the selected studies (15) were based on longitudinal quantitative datasets. Additionally, one qualitative study (an eight-year case study) was of a longitudinal nature. From the studies based on quantitative datasets (both cross-sectional and longitudinal), 15 studies used a lagged dependent variable to ensure the direction of causality. Panel datasets combining cross-sectional observations with time-series have applied different approaches to analyze the longitudinal data. Only two studies used fixed effects models which is the more conservative approach to analyzing panel data, six used random effects models and seven studies based their analysis on pooled ordinary least squares.

In terms of sampling, only two of the studies applied a random sampling approach. Most studies have limited their initial population to a specific industry or to the top 500 Fortune companies and have then attempted to collect data on all units of the specified population. The sample size of the reviewed studies varies from one to four companies for case studies and from 27 to 402 companies for studies applying quantitative methods. Thirty-seven of the quantitative studies had a sample size smaller than 100 firms and only eleven had more than 200 firm units in their final sample. In terms of industries, 28 of the studies focused on a single or few industries whereas 29 used a cross-sectional sample spanning a number of industries. The most commonly studied industries are high-tech (7 studies), computer (4 studies), banking (4 studies), electronics (4 studies), semiconductor (3 studies), furniture (3 studies), 

Exhibit 15: Statistical Techniques Applied in Upper Echelons Research

<table>
<thead>
<tr>
<th>Statistical Technique</th>
<th>Number of Works</th>
</tr>
</thead>
<tbody>
<tr>
<td>Regression</td>
<td>51</td>
</tr>
<tr>
<td>ANOVA</td>
<td>2</td>
</tr>
<tr>
<td>Correlation</td>
<td>4</td>
</tr>
<tr>
<td>T-test</td>
<td>2</td>
</tr>
<tr>
<td>SEM</td>
<td>9</td>
</tr>
<tr>
<td>Survival analysis</td>
<td>2</td>
</tr>
</tbody>
</table>

Source: Author.
food (2 studies), and airline (2 studies) industries. Apart from two articles studying Canadian firms and one studying Dutch companies, the rest of the investigated companies were all US based firms.

The average size of the top management team ranged between 6 and 33 executives. Similar to Carpenter, Geletkanycz and Sanders’ (2004) conclusion it was observed that many studies do not report TMT size. At the same time, it is evident that late upper echelons research has attempted to overcome some limitations of previous research. Fifteen studies identified directly the top management team, most often by asking the CEO in a questionnaire or an interview. The unit of analysis of these studies was indeed the team of executives who were involved in the strategic decision-making. However, only four studies asked the respondents to focus their answers on a particular decision-making making situation. Three out of the four studies focused on the same decision, a technique which is often used to reduce bias in qualitative field research (Eisenhardt & Bourgeois, 1988). Hence, whereas TMT members are increasingly being identified in research efforts based on primary data, Roberto’s (2003) concept of stable core and dynamic periphery for each strategic decision has not be considered in the research design of previous empirical upper echelon’s studies.

In terms of diversity measure, most studies apply a single item measure for each diversity dimension. Consistent with group diversity research, a Blau index (Blau, 1977) is used for categorical variables such as function, education, etc. and coefficient of variation is most commonly used for continuous variables. Only three studies apply an index measure of TMT diversity considering multiple dimensions simultaneously. Further three studies used an individual level measure, the Euclidean distance of each team member to every other team member in the group. Clearly, Blau index and coefficient of variation are accepted as the norm in the field and seldom do authors attempt to use an alternative measure of team diversity. However, a recent study by Bunderson and Sutcliffe (2002), applying an intra-personal (individual level) diversity measure, showed that different operationalizations of diversity may lead to different empirical results and false conclusions. Thus, it is necessary to consider the appropriateness of diversity measures in the field to strengthen the construct measurement and validity in order to ensure that measures actually capture the aspects of top management team diversity they attempt to measure.
2.5 Discussion

2.5.1 Antecedents Theory of Upper Echelons Composition

An interesting finding of the review is the limited theory development and empirical research on antecedents of top management team diversity. With few notable exceptions (e.g., Boeker & Wiltbank, 2005; Boone, van Olfen, van Witteloostuijn & De Brandauer, 2004), all reviewed studies focused on the effects of executive heterogeneity. An understanding of the drivers behind TMT diversity, however, is essential for building a comprehensive theory of top executives and their effects (Carpenter, Geletkanycz & Sanders, 2004; Finkestein & Hambrick, 1996).

The executive succession literature (for a review see Finkelstein & Hambrick, 1996) can inform future inquiries about the factors influencing top management team composition. This stream of research focuses on different level contextual factors that influence replacement of executives, such as environmental characteristics at the industry level, organizational factors and performance at organizational level, and agency conditions and predecessor characteristics at the individual level. As Finkelstein and Hambrick (1996) note, the executive turnover and succession literature focuses exclusively on the CEO, however, many of the underlying principles are applicable to the context of other top executives. Indeed, several studies draw upon the executive succession approach to study changes in top management composition (Birkner, 2004; Keck & Tushman, 1993).

The major challenge arising of combining insights from the upper echelons and executive succession literature is the level of theory, as the construct of succession is at the individual level (outcomes, such as turnover and succession, are defined at the lowest individual level of analysis) whereas diversity is a team level construct. Dismissal or appointment of individual members causes changes in team composition. However, diversity as a theoretical construct is not at individual level (e.g., the difference of the dismissed or selected team member to the existing members). Furthermore, the event of executive succession is a discrete event whereas team composition is continuous. Hence, testing an antecedent theory of upper echelon composition would require a longitudinal research approach.
2.5.2 Multilevel Issues in Upper Echelons Research

When discussing multilevel issues in the context of organizational research, two important topics need to be brought forward: the type of multilevel theory and its underlying assumptions. Rousseau (1985) distinguishes between two types of theory according to the nature of the relationships between constructs at different levels: cross-level and multilevel theory. Whereas multilevel theory assumes that the relationship between constructs holds across different levels (i.e. the same relationship can be observed at the individual and group level), cross-level theories predict the effect of constructs from one level on constructs at another level (i.e. the effect of a lower level construct on a higher level construct or vice versa).

Upper echelon theory as initially defined by Hambrick and Mason (1984) is a multilevel theory, as it predicts that the influence of managerial givens on strategic choice will be the same at individual and group level of analysis (Cannella & Holocomb, 2005). Over the past two decades, however, the upper echelons perspective has developed from a multilevel theory (suggesting that the same constructs operate at the individual and group level of analysis) to a cross-level theory bridging multiple levels (individual, group, organizational and industry levels).

In one of the most influential discussions of multilevel issues in management research, Klein, Dansereau and Hall (1994) call for clarity in the level of theory and argue that the level of theory determines the level of the theoretical construct and the nature of the relationship between constructs. By distinguishing between assumptions of homogeneity, independence and heterogeneity, the authors suggest that the level of a theoretical construct is dependent upon the choice of underlying assumptions. Furthermore, the chosen assumption influences the level of measurement and subsequent statistical analysis (John, 2005). Under the homogeneity assumption, the lower level units nested within a higher level unit are regarded to be homogeneous; whereas under the heterogeneity assumption the lower level units are believed to vary on certain characteristics within the higher level unit. The independence assumption regards the characteristics of the lower level unit as independent from their group (higher level unit) membership. The distinction between the three alternative assumptions is critical in understanding multilevel discussions in management research.

The majority of strategic leadership research is based on an independence assumption, focuses on the CEO or individual executive effects and hence disregards the executive’s membership to the top management team. The novelty of upper echelons
theory lied in the focus on the team rather than on the individual executive (Finkelstein & Hambrick, 1996). The upper echelons theoretical perspective draws upon two theories: first, theory of strategic choice (Child, 1972), an individual level theory based on the independence assumption, and second, organizational demography (Pfeffer, 1983), an organizational level theory arguing for aggregation of individuals to the organizational level. As Klein, Dansereau and Hall (1994: 247) note the multilevel organizational literature is dominated by a focus on two levels of theory and analysis: individuals and organizations. Upper echelons theory, however, brings the team level of analysis into the scope of strategic management research.

Two streams of research emerged from bridging the individual and team level of analysis within the upper echelon context: research on central tendencies in TMT characteristics (based on homogeneity assumptions) and research on TMT diversity (based on the heterogeneity assumption). The heterogeneity assumption brought along high level of complexity in theory building, lead to inconclusive findings in terms of diversity effects (Cannella & Holocomb, 2005; Finkelstein & Hambrick, 1996), and brought up a number of critical questions to upper echelons discussions. For instance; how are team level choices formed if team members are different and interpret the situation differently? Such questions lead to the conclusion that individual level mechanisms cannot be transferred directly to the team level of analysis. Therefore, team level characteristics, such as team processes and leadership, were introduced to explain the transition from individual to team level of theory and to explain the variance in executive choices, which is attributable to team level constructs.

The combination of upper echelons and group effectiveness perspectives, which is increasingly observed in research on top management teams, calls for thorough examination of the level of theoretical and analytical constructs. Upper echelons are inherently multilevel in nature, involving executives forming teams, nested within organizations, which in turn are members of industry groups. Diversity research, on the other hand, distinguishes between evolution over time of multiple diversity dimensions, nested within individuals who are members of teams, which in turn are nested within organizations. As a result, research on diversity in top management teams bridges at least five analytical levels (see Exhibit 16).
<table>
<thead>
<tr>
<th>Level</th>
<th>Homogeneity</th>
<th>Independent</th>
<th>Heterogeneity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diversity dimensions over time</td>
<td>Attributes homogeneous over time</td>
<td>attributes independent over time</td>
<td>attributes heterogeneous over time</td>
</tr>
<tr>
<td></td>
<td>time-invariant / time-dependent dimensions</td>
<td>function, position</td>
<td>heterogeneity within a person single dimension</td>
</tr>
<tr>
<td>Diversity dimensions within individuals</td>
<td>Homogenous dimensions within the individual</td>
<td>dimensions independent from each other</td>
<td>heterogeneous dimensions within an individual</td>
</tr>
<tr>
<td></td>
<td>individual attributes</td>
<td>individual attributes</td>
<td>individual profiles of multiple attributes</td>
</tr>
<tr>
<td>Individuals within groups</td>
<td>homogenous individuals within a group</td>
<td>TMT research on central tendencies</td>
<td>individuals within the team are independent</td>
</tr>
<tr>
<td></td>
<td>TMT research on central tendencies</td>
<td>individuals within the team are independent</td>
<td>individual managerial effects</td>
</tr>
<tr>
<td>Diversity dimensions within teams</td>
<td>Homogenous dimensions within the team</td>
<td>diversity indices</td>
<td>multiple independent dimensions</td>
</tr>
<tr>
<td></td>
<td>diversity indices</td>
<td>dimensions independent of each other</td>
<td>heterogeneous dimensions within the team</td>
</tr>
<tr>
<td>Groups in organizations</td>
<td>groups are homogeneous within each organization</td>
<td>Supra TMT</td>
<td>groups are heterogeneous within each organization</td>
</tr>
<tr>
<td></td>
<td>Supra TMT</td>
<td>groups within the firm are independent</td>
<td>TMT as a strategy body; boards are supervising</td>
</tr>
<tr>
<td>Organizations in industries</td>
<td>firms are homogeneous within industries</td>
<td>industry factors predict firm performance</td>
<td>firms are heterogeneous within industry</td>
</tr>
<tr>
<td></td>
<td>industry factors predict firm performance</td>
<td>organizations are independent of industries</td>
<td>interaction of firm &amp;industry characteristics</td>
</tr>
<tr>
<td></td>
<td>industry factors predict firm performance</td>
<td>organizational influences on performance</td>
<td></td>
</tr>
</tbody>
</table>

Source: Adapted from Klein, Dansereau & Hall, 1994.
2.5.3 Industry versus Corporate Effects

When discussing the inherent multilevel structure of upper echelons research in the context of the strategy field, the discussion naturally goes a level up from the organization to the firm environment, most notably industry characteristics. Theoretically, this consideration relates to one of the fundamental strategy debates about different level effects on firm performance (Adner & Helfat, 2003; McGahan & Porter, 1997; 2002). Empirically, strategy scholars have applied analysis of variance, variance components and interaction effects approaches to test the relative importance of different level effects including managerial, corporate, business segment and industry effects on firm performance. Recently, multilevel methodologies based on multiple levels hierarchical linear models and cross-classified models have brought novel perspectives to the fundamental debates of level effects in the strategy field (e.g., Misangyi, Elms, Greckhamer & Lepine, 2006; Hough, 2006).

In the upper echelons field, early research has been based on an independence assumption and has to a large extent neglected industry influences on executive effects. In the second decade of upper echelons research, a number of studies have acknowledged the importance of industry for executive effects and in particular for the influence of diversity on firm level outcomes (e.g., Keck, 1997). Based on a heterogeneity assumption these studies acknowledge that executive effects vary within industries as well as across industries (Norburn & Birley, 1988; Pegels, Song & Yang, 2000). In terms of methodology, the majority of the studies have typically modeled the impact of external firm context as an explanatory and/or moderator variable based on an OLS approach. While theoretically acknowledged and empirically measured, environmental context has often been studied in a rather simple way by splitting the sample according to different industries (e.g., Keck, 1997; Norburn & Birley, 1988) or by using industry dummies (e.g., Krishnan, Miller & Judge, 1997). Other studies theorize the influence of the firm environment as a moderator and enter interaction variables between top management team characteristics and environmental characteristics into the regression (Carpenter, 2002).

With the development of multilevel analysis techniques, however, new opportunities open up for researchers in the upper echelon field to scrutinize more precisely the impact of firm environmental context. Previous empirical results clearly suggest that industry characteristics influence the relationship between top management team diversity and firm behavior and performance. With multilevel analytical methods the
influence of industry level factors can be scrutinized in more detail. For instance, in a cross-sectional sample of firms representing a number of industries it is possible to model not only random intercept (different intercept for each industry) but also random slope (different slope for the relationship between top management team characteristics and firm level outcomes for each industry). Such an approach allows a researcher to observe the true variation of the relationship of interest both within an industry and between industries, and previous contradictory findings about the effects of executive diversity on firm outcomes can be reconciled.

2.5.3.1 Governance Bodies within Organizations

As noted earlier in this review, top management team and board effects are usually studied in two separate research streams. Most previous research is based on an independence assumption, clearly dividing the strategic role of the TMT from the supervisory role of the board of directors. However, each organization has two governance bodies that influence its strategy and performance. Finkelstein and Hambrick (1996) raise the question of whether the top management team and the board should be united in one unit of analysis – the “supra TMT”. Such an approach is based on a homogeneity assumption that the effects of executives and corporate directors can be summarized or averaged. A recent empirical study by Jensen and Zajac (2004) tested this assumption, found no support for the concept of the “supra TMT”, and criticized the use of an aggregated level of analysis.

With the increasing calls for strategic involvement of the board, the theoretical arguments in the field move towards the assumption of heterogeneity. Recent research recognizes that both bodies have independent influence on firm level behavior and performance while both (TMTs and boards) are nested within the same organizational context. As a result, researchers are increasingly exploring the interactions between top management teams and boards in terms of their characteristics as well as in terms of actual interaction processes (e.g., Boeker & Wiltbank, 2005; Carpenter, Pollock & Leary, 2003).

2.5.3.2 Individual versus Team Level of Analysis

Upper echelons research has its primary focus on the team level of analysis and most empirical research in the field can be classified in two streams: research on average tendencies of top management team characteristics, based on the homogeneity assumption, and research on heterogeneity in top management team composition, based on the heterogeneity assumption. The independence assumption has been
largely neglected in previous research until recently, when Cannella and Holocomb (2005) pointed at the merit of individual level of analysis.

As Lawrence (1997:2) notes, the main principle of organizational demography is aggregation. By focusing on the aggregate level rather than on the individual level of analysis, it is believed that this aggregated level influences behavior independently from the individual level. While this is certainly true, two main issues deserve caution. First, Robinson (1950) points at the ecological fallacy problem that relationships holding at the aggregated level are not necessarily true at the individual level. Second, even if aggregated level factors have influence independent from the individual level factors, it is not obvious why a researcher should completely ignore the individual level of analysis and focus on the aggregate level only. Instead, a research inquiry can simultaneously investigate both individual and aggregated level effects.

Klein, Dansereau and Hall (1994: 208) note that alternative assumptions of variability can be applied simultaneously, as some constructs can be operationalized meaningfully in more than one way. Such an approach is commonly used in other disciplines (Snijders & Bosker, 1999). For instance, an often studied relationship in the educational psychology discipline is the link between a student’s intellectual abilities and his/her achievement in tests. Educational psychology research acknowledges the relation at the individual level (individual intellectual abilities (IQ) lead to individual test scores) but also take into consideration the parallel influence of aggregated level (i.e. average class intellectual ability). The underlying logic is that average class level of intellectual ability will influence individual students’ achievements, i.e. a stimulating environment of class fellows with higher IQs will lead to higher scores of the individual student. Explained in simple terms, the same student will have higher test scores if in a class of students with higher IQs than if in a class with lower performing classmates. This is a typical example of cross-level research that illuminates how constructs at the aggregated level have independent and/or moderating effects on lower level relationships.

This notion can well be applied in the context of upper echelons diversity. For instance, the impact of individual backgrounds on strategic decisions is likely to be moderated by the degree of team diversity. The influence of a team member may depend on his/her individual characteristics and abilities as well as on the team context or aggregate level variables, such as central tendencies or diversity variables. Carpenter, Geltkanycz and Sanders note that “mounting evidence suggests that
studying executives collectively, important individual level outcomes have been overlooked” (2004: 768).

Indeed, the upper echelons field has focused exclusively on the aggregated level of analysis (the team) and has to a large extent neglected the independence assumption. Applying the independence assumption to the context of upper echelon research brings in focus one of the fundamental discussions of strategic research; do individual executives matter at all? Finkelstein and Hambrick (1996) follow historically the development of the discussion and, despite the conflicting empirical evidence, conclude that strategic leadership matters and executives have significant influence on firm outcomes. This conclusion was supported by a recent large-scale study of executive effects in the economics field (Bertrand & Schoar, 2003), which by following executive careers through different firms was able to provide evidence for individual managerial influences on firm level decisions, such as investment strategies, mergers & acquisitions, etc. In another empirical effort, based on an extensive longitudinal corporate strategy database of large U.S. based companies, Jensen and Zajac (2004) found further support for individual effects and called for disaggregating the team level of analysis or at least interpreting the results of empirical research based on aggregation with caution. These empirical findings are congruent with the recent theoretical developments in the upper echelons field suggesting that different theoretical mechanisms operate at the individual and group level of analysis (Cannella & Holocomb, 2005).

Future research needs to combine the individual and team level of analysis (based on both the independence and the heterogeneity assumption) to achieve a more fine-grained and precise understanding of the effects of top executives. While costly in terms of time and complexity, such analysis will be extremely valuable as it will use the data both at the level it is collected as well as the aggregated team level. Furthermore, it will lead to the match between theoretical and empirical level of analysis increasingly called for in the upper echelons research field (Carpenter, 2005; Lawrence, 1997).

2.5.3.3 Multi-Dimensional Diversity

As noted earlier most previous research both in the upper echelon and in the group diversity field has been based on an independence assumption, i.e. that the effects of individual diversity dimensions are independent from each other. Theoretically, however, most upper echelon studies have been based on the homogeneity assumption
of equality among different diversity dimensions. TMT heterogeneity is defined as a general higher level construct that has multiple dimensions, such as function, education, age, tenure etc. Empirically, only few studies are actually applying the homogeneity assumption in their analysis and aggregate different diversity dimensions to one diversity index (e.g., Boone et al., 2004; Ferrier, 2001; West & Schwenk, 1996).

Lau and Murnighan (1999) note that it is crucial to theoretically consider the interplay among multiple diversity dimensions in the context of groups. By simultaneously taking into consideration all relevant diversity dimensions in a group, it is possible to identify tendencies towards creating sub-groups in a team. When tested empirically, the theoretical model of demographic fault-lines suggests that, contrary to previous understanding, diversity has negative impact on team performance yet not in the cases of very low or very high diversity but rather in the case of moderate diversity, where coalitions between group members are formed on the basis of similarity on a number of characteristics (Lau & Murnighan, 2005). For instance, in a group consisting of four members, two of which are foreigners and two from the local nationality, if both foreigners are women (or of a younger age) a natural split in the group will occur due to the similarity attraction paradigm (Byrne, 1971); the tendency of people to be attracted to those similar to themselves. At the same time, in a group with only one foreigner and only one female member, who is from the local nationality, there are much lower chances to form sub-groups and experience the negative effects of diversity. Similarly, in a group where all members are from different nationalities and represent different age groups, the likelihood of forming coalitions is low. The demographic fault-lines approach is based on a heterogeneity assumption; multiple diversity dimensions are considered simultaneously while recognizing their interplay in the context of the group to which an individual belongs. Such an approach holds great promise for future upper echelons research, where information on diversity along a number of different dimensions is readily available but not analyzed simultaneously. Li and Hambrick (2005) applied the concept of fault-lines to the management of international joint ventures. Early empirical tests in the context of top management teams show that whereas single diversity dimensions has positive effects, demographic fault-lines has a negative impact on firm strategy in terms of internationalization (Barkema & Chvyrkov, 2007).

Depending on the research question and the applied theoretical perspective, demographic characteristics may not be nested within the team but within the
individual; multiple attributes are nested within the individual profile and the individual, in turn, is nested within the team. This distinction between levels is important in the upper echelons context. For instance, typical reasoning in top executive decision-making situation is that if there are three marketing people they will all see and interpret the situation in the same way; however, each of these marketing people also have a number of other characteristics, such as education, industry and international experience, etc. that will influence their individual interpretations accordingly. Hence, three executives will never reach completely the same interpretation. They may share certain views but will differ on others. The idea of individual profiles or considering top executives as a “bundle of attributes” (Carpenter, Geletkanycz & Sanders, 2004) is new to the upper echelons field, whereas in the governance literature, Hillman, Cannella and Harris (2002) explored the multiple dimensions of corporate director profiles.

2.5.3.4 **Time Dimension**

The results of the current review suggest that upper echelons research is clearly developing towards longitudinal studies of top management team dynamics and behavior. Time is an essential aspect of both team interactions and firm behavior. The use of time-series data and analytical techniques provides opportunities to discover mechanisms and relationships not available through cross-sectional analysis (Baltagi, 2005; Hsiao, 1986). The increasing use of longitudinal data has the potential to uncover hidden mechanisms influencing top management team composition and its effects. For example, in a longitudinal research design Boone et al., (2004) were able to find support for their hypothesis that top management teams follow the logic of homo-social reproduction. In the context of entrepreneurship research, the time dimension is used to explain aspects of top management team evolution (Boeker & Wiltbank, 2005; Higgins & Gulati, 2003).

Time is also considered a crucial factor influencing diversity effects on group dynamics and performance. Indeed, a remarkable consistency of results reflecting the impact of time on group outcomes in heterogeneous teams exists. For example, time that nationally diverse groups spent together was found to have a positive impact on their performance (Earley & Mosakowski, 2000; Watson, Johnson, Kumar & Critelli, 1998; Watson, Kumar & Michaelsen, 1993). Similarly, recent research shows that time has positive effect on performance of diverse groups by decreasing levels of conflict (Jehn & Mannix, 2001; Pelled, Eisenhardt & Xin, 1999), strengthening group
cohesiveness (Harrison, Price & Bell, 1998), and increasing collaboration (Harrison, Price, Gavin & Florey, 2002). In addition, time also influences the effects of group psychological traits, such as group norms of co-operation (Chatman & Flynn, 2001), interpersonal congruence (Polzer, Milton & Swann, 2002), and group potency (Lester, Meglino & Korsgaard, 2002). Hence, the time dimension is important to advance our current understanding of the effects of top management team diversity.

An alternative way of looking at time from a multilevel point of view is that observations over time are nested within individuals. Such an approach is often used in the educational psychology literature where personal characteristics and development are studied over time (Raudenbush & Bryk, 2002). Similarly, the literature on executive career paths reflects the development of individual characteristics and experiences over time. When considering the time dimension of individual characteristics it is important to explicate the underlying assumptions and distinguish between background characteristics and experiences. Characteristics that are time-invariant for top managers, such as gender, nationality as well as educational background, educational level (most executives complete their education before reaching top management positions) or time-dependent (tenure and age), can be aggregated to average levels based on the homogeneity assumption. Other characteristics, however, such as function or position within the firm are independent; the function of an executive of one period is not necessarily connected to his function in the previous or next period. Finally, the investigation of executive experiences over time can be based on a heterogeneity assumption; while independent from each other such experiences build a personal portfolio of professional experiences (i.e. international experience in a number of countries, industry experience in a number of industries, firm-level experience in different companies, etc.) within an individual over time. The portfolio of experiences within a person can be aggregated to generate intra-personal diversity measures (Bunderson & Sutcliffe, 2002).

Furthermore, the time dimension can be included as the lowest level in a hierarchical linear model analysis. Latent growth modeling, commonly used to reduce the complexity of development over time, can be applied as an alternative analytical approach to investigate the influence of time.

### 2.5.4 Interplay of Theory and Methodology

Despite recent calls for a shift in methodology (Pettigrew, 1992; Priem, Lyon & Dess, 1999) upper echelons research still seems to be dominated by traditional,
quantitative research methods. It is difficult to find an upper echelons study using a different methodological approach, with only few notable exceptions of qualitative field work (e.g., Eisenhardt & Bourgeois, 1988; Gioa & Thomas, 1996; O'Reilly, Snyder & Boothe, 1993; Pitcher & Smith, 2001). The fact that even novel studies delving into team processes are still predominantly based on quantitative research methods, most notably surveys, and rarely triangulate with non-quantitative data sources, is remarkable. McGrath argues that “if all of the studies of a given problem are based on the same methods, then the body of information thus gained is very much contingent on and limited by the flaws of those methods” (1984: 31).

When looking beyond the qualitative vs. quantitative dichotomy, however, it must be acknowledged that the field is evolving. While more than half of the reviewed studies are based on archival data sources, such as databases, there is a steady increase in the use of survey methods indicating that gaining access to top management teams is indeed possible. By the same token, the large number of personal interviews with top management team members and the case of actual observations of top management meetings show that upper echelons research is moving away from secondary sources closer to the reality of executive lives. Furthermore, scholars have been employing a number of innovative secondary data sources. Ferrier (2001), for example, has coded the sequence of competitive actions in an industry based on published histories. Similarly, Higgins and Gulati (2003; 2006) as well as Cohen and Dean (2005) collected data from managers’ career histories. Peterson et al., (2003) even investigated and coded top executive’s personality characteristics based on published biographies, interviews, memories, business histories, and books about executives from large corporations. Clearly, the upper echelon field is progressing towards more in-depth investigations of top executives and their behavior.

Similar to most empirical studies in the strategy field, upper echelons empirical research is primarily based on purposive non-probability sampling while hypothesis testing in social science is based on random sampling and probability theories. Usually, a random sample is drawn from a larger population based on the assumption that this sample follows normal distribution and, according to probability theory, is representative for the larger population. Random sampling is the approach recommended to avoid systematic error (Hitt, Boyd & Li, 2004; Kerlinger & Lee, 2000). Consequently, the results of upper echelon studies, the majority of which are based on non-probability sampling, must be interpreted and discussed with great care. Furthermore, the use of purposive sampling makes it difficult to compare and discuss
empirical results across studies. A second concern relates to the representativeness of samples to the population from which they are drawn, in particular in the context of survey research design, which is increasingly used in the field. Researchers need to thoroughly report and discuss non-respondent and self-selection bias to establish acceptable levels of validity (Ireland, Webb & Coombs, 2005: 127).

Another major concern is the generalizability of results or the extent to which the study’s sample is representative outside a particular context. The fact that virtually all but one of the reviewed studies use North American samples raises significant concern as to the generalizability of these results beyond the North-American context. Use of a two-stage stratified sampling, where a number of different countries is selected and then within each country equal size sub-samples of companies is chosen, can help overcome the issues of generalizability to other country contexts. Another related concern is the dominant focus on large publicly listed companies while the population of non-listed companies remains under-researched (Daily, Dalton & Cannella, 2003). A final concern related to sampling is the sample size that remains relatively small in the upper echelons field. Researchers need to carefully consider and discuss the trade-offs between sample size, effect size and statistical power.

### Exhibit 17: Methodological Challenges for Upper Echelons Research

<table>
<thead>
<tr>
<th>Challenge</th>
<th>Suggestions</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Data sources</strong></td>
<td>Use of multiple data sources and triangulation</td>
</tr>
<tr>
<td></td>
<td>Non-traditional data sources (observations, executive career histories)</td>
</tr>
<tr>
<td><strong>Sampling</strong></td>
<td>Use of random and stratified sampling</td>
</tr>
<tr>
<td></td>
<td>Generalizability/ Non U.S. based samples</td>
</tr>
<tr>
<td></td>
<td>Sample sizes adequate to detect Type I and Type II error</td>
</tr>
<tr>
<td><strong>Measurement</strong></td>
<td>Multiple indicators for constructs</td>
</tr>
<tr>
<td></td>
<td>Reliability and validity to minimize the chance of Type I &amp; II error</td>
</tr>
<tr>
<td><strong>Time frame</strong></td>
<td>Time-series to establish causality</td>
</tr>
<tr>
<td></td>
<td>Longitudinal field work</td>
</tr>
<tr>
<td><strong>Effect size</strong></td>
<td>Report and discuss effect sizes</td>
</tr>
<tr>
<td></td>
<td>Compare effect sizes across studies</td>
</tr>
<tr>
<td><strong>Multilevel analysis</strong></td>
<td>Use of hierarchical linear modeling</td>
</tr>
<tr>
<td></td>
<td>Multilevel structural equation models</td>
</tr>
</tbody>
</table>

*Source: Adapted from Ireland, Webb & Coombs (2005)*
Issues of measurement error and construct validity are rarely discussed in the upper echelons field with only few notable exceptions (e.g., Carpenter & Reilly, 2006; Priem, Lyon & Dess, 1999). As the majority of studies in the field are based on secondary data, which is assumed to be accurate and reliable, concerns relating to construct measurement remain unaddressed. Carpenter and Reilly (2006), however, raise considerable concerns regarding measurement errors and suggest the use of Nunnally and Bernstein’s (1994) approach to constructing valid measures. Furthermore, the increased use of survey method raises additional construct validity concerns.

Important to note is also the increasing use of dynamic theoretical models as well as the presence (while still limited) of recursive models that consider top management as both a dependent and an independent variable. In terms of data analysis techniques, there is a clear tendency towards use of techniques based on covariance structures, such as ANOVA and structural equation modeling. Such techniques are particularly useful in modeling and testing multi-directional relationships in recursive models (Kline, 2005).

While a few studies applied ANOVA techniques, mixed coefficient models are virtually lacking in the upper echelons research stream. There is high potential in applying these methods in the future in order to appropriately analyze multilevel relationships and cross-level interactions between individual, team, firm, and industry levels of analysis. Contextual analysis is a development in the social sciences, which for a long time has explored the effects of different layers of social context on individual behavior. However, until the 1980s contextual modeling primarily focused on the definition of appropriate social context variables to be used in ordinary least squares (OLS) regression analysis. Only with the development of statistical procedures for mixed coefficients models, such as random effects (random differences between groups) and random coefficients (random effects of variables), multilevel analysis emerged as an analytical approach (Snijders & Bosker, 1999). It has since been recognized that in contextual modeling, the individual and the context are two distinct sources of variability, which should be modeled as random influences. With the development of multilevel analysis techniques, new opportunities open up for researchers to scrutinize more precisely the multilevel nature of executive effects. Multilevel structural equation models (MSEM) can facilitate the simultaneous test of construct validity and multilevel influences in the field.
3 Antecedents of Top Management Team Diversity
WHAT DETERMINES HETEROGENEITY IN TOP MANAGEMENT TEAMS? A MULTILEVEL EXPLORATION OF INDUSTRY, ORGANIZATIONAL AND CORPORATE ELITES ANTECEDENTS

ABSTRACT

This paper addresses recent calls to apply a multilevel approach to explore different level antecedents of diversity in the context of top management teams. Drawing upon previous work in the upper echelons and group diversity research, a number of diversity dimensions that are of particular importance to top management teams are identified and the influences of different level contextual factors on the top management team composition along the multiple diversity dimensions are hypothesized in a mixed-determinants model. Empirically, the model is tested on a panel dataset of all Swiss publicly listed companies over a four-year period (2001-2004). The results confirm previous findings that industry membership has influence on the degree of diversity in the top management team. The evidence also suggests that organizational complexity pertaining to firm strategy determines the task-related aspects of top management team diversity (nationality, function and education) but is not related to relationships-oriented attributes (age). The degree of diversity in the top management team is influenced by the tenure of the CEO and the composition of the board. The results further support a team dynamics prediction that social integration is a prerequisite for background (nationality, function and education) but not experience (industry and international experience) diversity. The paper closes with a discussion of implications for top manager selection.

Keywords: top management team diversity, antecedents, multilevel analysis.
3.1 Introduction

While the consequences of top management team characteristics have been extensively studied in the literature (for reviews see Carpenter, Geletkanycz & Sanders, 2004; Certo, Lester, Dalton & Dalton, 2006; Finkelstein & Hambrick, 1996), a very limited number of empirical works explore antecedents of TMT composition (e.g., Boone et al., 2004; Keck & Tushman, 1993). As Finkelstein and Hambrick note, while “management scholars tend to focus on the effects of managers and their behaviors, much more understanding of the determinants of executives characteristics and behavior is needed” (1996: 335). In the same vein, Pettigrew called for studies exploring what factors influence top management team composition and pointed at the need to treat team characteristics as a dependent variable and answer the question: “why do teams look the way they do?” (1992: 176). Lawrence (1997) similarly notes that antecedent theories have been completely ignored in previous demography based research and calls for exploration of antecedents both within and outside the organization. The idea of investigating external and internal contextual factors influencing TMT composition corresponds to recent calls for multilevel research in management (Beamish et al., 2005). In the upper echelons field, the inherent multilevel nature of upper echelons theory was recently recognized (Cannella & Holocomb, 2005; Carpenter, 2005). Research on TMT composition bridges individual, team, organizational and industry levels of analysis and thus requires the application of multilevel theory and analysis.

Previous empirical work on the antecedents of top management team composition draws largely upon the executive succession literature and investigates composition in terms of succession events or appointments and departures. Some articles investigate what factors influence the number of executive appointments and departures (Hermalin & Weisbach, 1988) or look at how changes in the firm’s internal and external environment trigger changes in overall team composition (Guthrie, Grimm & Smith, 1991; Keck & Tushman, 1993; Thomas & Ramaswamy, 1993). Other works bridge individual and team levels of analysis and explore the similarity/dissimilarity of newly appointed or departing members to the characteristics of individual members or the team as a whole (Boone et al., 2004, Wagner, Pfeffer & O’Reilly, 1984). Whereas most of the previous antecedent studies explore changes in environmental, organizational and team context as antecedents to changes in top management team composition, this study takes a different approach. In order to find an explanation for
why top management teams look the way they do (i.e. what explains their composition in terms of heterogeneity), TMT diversity is modeled as a reflection of its context. Drawing upon upper echelons theory, factors at three different levels of context are identified as determinants of the degree of TMT heterogeneity: external (environmental), organizational (strategic) and corporate elites (governance) context. This article extends existing upper echelons theoretical frameworks at the corporate elite level by incorporating board composition along with CEO characteristics as an antecedent of top management team composition (Carpenter, Geletkanycz & Sanders, 2004). A mixed-determinants model (Klein, Dansereau & Hall, 1994), involving the different level predictors of TMT heterogeneity is developed and empirically tested.

As TMT composition is rather dynamic than static in nature, a longitudinal research design was applied in this study. Lawrence (1997) argues that demographic diversity needs to be explored in dynamic models using a longitudinal research design, as the tendencies towards homo-social reproduction (Kanter, 1977) and attraction-selection-attrition models (Schneider, 1983) will lead to homogeneity equilibrium over time. Using longitudinal data of TMT composition, a recent study by Boone et al., (2004) found support for the notion that top management team composition follows a cycle of “homo-social reproduction”. Similarly, this paper utilizes the advantages that panel datasets offer over traditional OLS techniques in investigating the within-firm variation of TMT characteristics over time.

In light of current discussions in the team diversity literature, this study critically questions the upper echelons assumption of TMT heterogeneity as a general construct and theoretically conceptualizes and empirically distinguished between multiple aspects of top management team diversity. Drawing upon group diversity research (Jackson, 2002; Milliken & Martins, 1996; Williams & O’Reilly, 1998), relevant diversity dimensions are identified and classified into categories specific to top management teams. Previous research on determinants in the upper echelons field has either defined diversity as an index assuming equality among the different dimensions (Boone et al., 2004), regarded multiple dimensions as interchangeable diversity aspects (Keck & Tushman, 1993), or investigated a single diversity dimension only (Ruigrok, Peck & Van der Linde, 1999). This paper questions the upper echelon assumption of diversity as a general construct and differentiates among dimensions in terms of their antecedents.

The intended contribution of this article is two-fold. First, by considering simultaneously and differentiating between a number of different TMT heterogeneity
dimensions, this paper provides an in-depth understanding of the concept of diversity itself. Second, by investigating the influence of multilevel contextual factors on the degree of TMT heterogeneity, this paper attempts to address the need for development and empirical test of antecedent theory and contribute to recent discussions of multilevel issues in upper echelons research. The paper proceeds as follows. First, existing theory and classifications of different types of diversity explored in previous upper echelons and group diversity research is reviewed. In doing so, diversity dimensions, which are of particular importance to top management teams, are identified. Subsequently, different level contextual influences on the individual diversity dimensions are hypothesized. Third, the study’s setting and methodology are outlined and fourth, the empirical results of the model test presented. Finally, the findings are discussed in the light of current developments of upper echelons research and future research directions identified.

3.2 Theoretical Background

3.2.1 Upper Echelons Research

Upper echelons theory suggests that managerial decisions are strongly influenced by behavioral aspects and characteristics of firm upper echelons, and organizations thus become a reflection of their top managers (Hambrick & Mason, 1984: 193). Based on the assumption that observable characteristics (such as age, tenure, functional and educational background) account for both managerial psychological “givens” and behavior, a large number of studies have explored the effects of diversity in top management characteristics on organizational outcomes (for reviews see Carpenter, Geletkanycz & Sanders, 2004; Finkelstein & Hambrick, 1996).

It is remarkable that upper echelons theory makes no distinction between different aspects of diversity, such as sex, age, functional diversity, tenure, etc. Instead, diversity is often treated as a general construct hypothesized as having uniform effects regardless of the particular attributes to which it is empirically applied (Finkelstein & Hambrick, 1996; Hambrick & Mason, 1984). Jackson (1992: 368), however, argued that whereas a general construct of diversity might be useful in the context of theorizing, when conducting empirical research it is important to decompose the construct to the level of single attributes and identify the most important ones. Similarly, Carpenter and Reilly (2006) observe that upper echelon research suffers from insufficient construct validity and inconsistency of the measures applied in the field.
In the group diversity field, on the other hand, it has been widely accepted that researchers need to differentiate between different types of diversity. As a result, diversity dimensions have been classified into a number of distinct categories (see Jackson & Joshi, 2001; Pelled; 1996; Williams & O'Reilly, 1998). Reviews of early diversity research have challenged the assumption that all types of diversity have the same effects on group process and performance and have shown that various diversity dimensions have differing effects on group and organizational outcomes (Milliken & Martins, 1996; Williams & O'Reilly, 1998). Consequently, some authors have argued that diversity dimensions should be distinguished from each other and studied separately.

Prior to commencing the discussion of the relevant aspects of upper echelons diversity, a precise definition of top management teams is needed. In the literature, there is no widely approved definition of upper echelons. By introducing the term “managerial elites” Pettigrew refers to a broader set of position holders: “those who occupy formally defined positions of authority, those at the head of, or who could be said to be in strategic positions” (1992: 163), such as board of directors, executive committees or top management teams. Hambrick and Mason (1984: 193) refer to top management as “the dominant coalition” or “the powerful actors in an organization”. Top management teams are also defined as “the relatively small group of most influential executives at the apex of an organization…the top three to ten executives” (Finkelstein & Hambrick, 1996: 8). In this paper, top management teams include the executives at the executive board level, who have a direct influence on the formulation of a firm’s strategy.

3.2.2 Group Diversity as a Theoretical Construct

3.2.2.1 Taxonomy of Diversity Dimensions

In this paper, diversity is defined as "the distribution of personal attributes among interdependent members of a work unit" (Jackson, Joshi & Erhardt, 2003). As such, diversity does not refer to gender and race only, as it is common in U.S. based group diversity research, but also includes a number of other dimensions, among which group members can differ, such as nationality, function, education, age, tenure, etc. Hence, a broad rather than narrow definition of diversity (Janssens & Steyaert, 2003) is applied. Throughout the paper, diversity is regarded as a synonym for heterogeneity, which is a more commonly used term in the upper echelons field (Finkelstein & Hambrick, 1996) and the two terms are used interchangeably. Furthermore, diversity
is defined at the team level of analysis and as such is an aggregate measure of individual team members’ characteristics. Individual level differences between group members are not included in the diversity definition used in this paper.

The most commonly used classification of diversity types is into observable (demographic) and non-observable (cognitive) diversity attributes (Milliken & Martins, 1996). The second important categorization of diversity dimensions is into task-related and relations-oriented attributes. Several authors (Jackson, 2002; Jackson & Joshi, 2001; Pelled, 1996) apply a two-by-two matrix to classify diversity dimensions according to this categorization (see Exhibit 18). For example, age, gender and nationality diversity fall into observable relations-oriented attributes, whereas educational and functional background are observable task-related attributes. Knowledge, skills and expertise are task-related non-observable attributes; personality, attitudes and values are classified as cognitive relations-oriented diversity dimensions.

### Exhibit 18: Taxonomy of Diversity Attributes

<table>
<thead>
<tr>
<th>Attributes</th>
<th>Task-related</th>
<th>Relations-oriented</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Demographic</strong></td>
<td>Educational background</td>
<td>Age</td>
</tr>
<tr>
<td><em>(observable)</em></td>
<td>Functional background</td>
<td>Gender</td>
</tr>
<tr>
<td></td>
<td>Industry experience</td>
<td>Nationality</td>
</tr>
<tr>
<td></td>
<td>International experience</td>
<td></td>
</tr>
<tr>
<td><strong>Cognitive</strong></td>
<td>Knowledge and expertise</td>
<td>Attitudes</td>
</tr>
<tr>
<td>*(non-observable)</td>
<td>Skills</td>
<td>Personalities</td>
</tr>
<tr>
<td></td>
<td>Specific experience</td>
<td>Values</td>
</tr>
</tbody>
</table>

*Source: Adapted from Jackson (2003).*

### 3.2.2.2 Demographic vs. Cognitive Diversity

An extensive discussion exists in both group diversity and upper echelons literature as to the extent to which observable (demographic) diversity dimensions can serve as proxies for non-observable underlying (cognitive) diversity. In this paper, the importance of non-observable cognitive diversity is acknowledged, yet the focus of analysis is on top management team demographics for two main reasons. First, the paper focuses on determinants of diversity, not on its effects. As Lawrence (1997) argues, an important difference exists between antecedents and effects theory of
demographic diversity. In effects theory, demographic diversity serves as an indicator of deep level cognitive diversity, whereas in antecedents theory demographic variables act on their own as organizational signals (Spence, 1974) or links to the external environment (Pfeffer & Salanczik, 1978). Non-observable attributes undoubtedly are important selection criteria for top managers. However, they are difficult to assess in a manager selection process. Therefore, top managers are primarily chosen on the basis of objective criteria, such as their observable attributes, and on assumptions about their personality and attitude characteristics. It is only in the context of actual work that managers’ personalities, beliefs and values come into play and influence group processes and decision-making. Hence, only demographic characteristics are included in the model of determinants of top management team diversity, while at the same time it is acknowledged that the effects of diversity on strategic decision-making are influenced simultaneously by both demographic and cognitive aspects of diversity. Second, in the field of upper echelons research, underlying (non-observable) diversity attributes are difficult to conceptualize and measure (Hambrick & Mason, 1984; Pettigrew, 1992) as executives are often reluctant to participate in psychological tests (Finkelstein & Hambrick, 1996: 46).

3.2.2.3 Task-related versus Relations-oriented Diversity

Most diversity research is based on two opposing streams of theories: social identity theory (and the related similarity-attraction paradigm) and information and decision-making theories (Williams & O'Reilly, 1998; Jackson & Joshi, 2001). Social identity theory (Tajfel, 1982; Turner, 1982) argues that a person’s social identity is determined by the groups to which the person belongs and the values shared by these groups. The theory suggests that people have a natural tendency to categorize the others and to differentiate between in-groups and out-groups. Such a categorization is mostly based on social categories and observable characteristics, such as age, race, gender, etc (i.e. the relations-oriented diversity dimensions). Hence, the effects of social identity theory will be more pronounced in the presence of relations-oriented diversity dimensions rather than task-related group diversity. In the categorization process, similarities within groups are minimized whereas attention is paid to differences between groups. Social categorization theory suggests that people naturally tend to view in-group members positively and members of out-groups negatively (Goethals, 2003). According to the similarity-attraction paradigm (Berscheid & Walster, 1978; Byrne, 1971) people like and feel attracted by those who
are similar to them. As a result, diverse groups will exhibit lower levels of interpersonal attraction and will show negative affective influence on group effectiveness.

On the opposite, information and decision-making theories suggest that variance in group composition leads to a broader range in perspectives, which positively influences group decision-making (Cox, Lobel & McLeod, 1991; McLeod & Lobel, 1992; Watson, Kumar & Michaelsen, 1993). Hence, diversity in team member characteristics, in particular job relevant backgrounds, skills and knowledge, is desirable as it has the potential to increase group creativity, innovativeness and quality of decision-making.

Task-related diversity attributes are usually associated with positive cognitive and communication consequences predicted by information-processing and decision-making theories, whereas relations-oriented diversity dimensions are associated with negative affective consequences, such as communication difficulties, conflict and misunderstandings as suggested by social categorization theory (Milliken & Martins, 1996). The distinction between task-related and relations-oriented diversity attributes is certainly important not only due to their different effects but also because the rational for increasing diversity along these two categories of diversity may differ.

3.2.2.4 Background Characteristics vs. Experience Diversity

An important distinction made in this paper is the difference between diversity in background characteristics and managerial experiences. The first category refers to managerial attributes in terms of personal background characteristics, such as gender, age and nationality and professional attributes, such as educational and functional background that are pre-determined (i.e. every person has an age, gender, nationality, education and function). The second category refers to specific experiences outside the domain of typical professional activities that a person may or may not have, such as international experience and experience from a different industry. Whereas the first category is “fixed” for each person (i.e. every manager has certain nationality, gender, age, certain type of education) that remain stable, the second category reflects choices that executives have made to acquire additional professionally relevant experience and may change in the courses of their careers. An underlying assumption of this paper is that, whereas individuals identify strongly with their backgrounds, they are less so bound to their range of experiences. The distinction between background characteristics and managerial experiences is important for the factors that determine the degree of top management team diversity.
3.2.2.5  A Taxonomy of Upper Echelons Demographic Diversity

Finkelstein and Hambrick (1996: 45) argue that two major classes of personal characteristics constitute an executive’s orientation: psychological properties, such as values, cognitions and other elements of personality; and observable dimensions of a person’s experiences, such as functional background, company tenure, and formal education. The taxonomy suggested here differs from the Finkelstein and Hambrick’s (1996) classification in three important ways. First, as noted above, this paper focuses explicitly on demographic aspects of diversity and excludes psychological properties. Second, people’s experiences are classified in two separate categories: background characteristics and experiences. Finally, the distinction between task-related and relations-oriented diversity dimensions from the group diversity literature is introduced. These differences result in the following taxonomy of upper echelons diversity (see Exhibit 19).

Exhibit 19:  Taxonomy of Upper Echelons Diversity Attributes

<table>
<thead>
<tr>
<th>Attributes</th>
<th>Task-related</th>
<th>Relations-oriented</th>
</tr>
</thead>
<tbody>
<tr>
<td>Background</td>
<td>Educational background</td>
<td>Age</td>
</tr>
<tr>
<td>characteristics</td>
<td>Educational level</td>
<td>Gender</td>
</tr>
<tr>
<td></td>
<td>Elite education</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Function</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Nationality</td>
<td></td>
</tr>
<tr>
<td>Managerial</td>
<td>Industry experience</td>
<td></td>
</tr>
<tr>
<td>experiences</td>
<td>International experience</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Functional experience</td>
<td></td>
</tr>
</tbody>
</table>

*Source: Author.*

*Function* can be regarded as both background characteristic and experience: an executive’s current function reflects a background, whereas previous functions he/she has had reflect a range of experiences. Functional background is one of the most prominent and most often studied aspects of top management team diversity (Finkelstein & Hambrick, 1996). Top management teams are naturally comprised of individuals representing different functional areas. As a result, they bring along specific knowledge and experience from the different areas of a firm’s operations. A certain degree of variety in managers’ knowledge of the different functional areas is a prerequisite for successfully managing the complexity of a firm’s operations.
Diversity in functional backgrounds is believed to be related to diversity in top managers’ perspectives, knowledge and skill sets. A range of functional experiences, on the other hand, reflects high intra-personal functional diversity (Bunderson & Sutcliffe, 2002) and a broader individual knowledge and information base.

*Education* in the context of top management teams is regarded as a background characteristic, i.e. at the time an executive reaches a top executive position he/she has already completed his/her relevant education and has a certain background (business, technology, law etc.). Heterogeneity in educational background is similar to functional background diversity in terms of its determinants and anticipated effects; both dimensions are associated with variation in terms of information and knowledge within the team (Williams & O’Reilly, 1998).

*International experience* is a valuable source of knowledge and expertise about foreign markets and cultures (Carpenter, Sanders & Gregersen, 1998; Johanson & Vahlne, 1977; Reuber & Fischer, 1997; Sambharya, 1996). Furthermore, managers’ international experience facilitates access to international networks (Athanassiou & Nigh, 1999). The anticipated effects of diversity in top executives’ international experiences are better understanding of the complexity and dynamics of managing a firm’s international operations.

Diversity in executives’ *industry experience* is vital for highly diversified firms. Similar to the benefits of international experience, the expected advantages of diversity in top management team members’ industry experiences is a wide range of industry specific knowledge and expertise and access to network contacts within a number of industries.

*Nationality* is a diversity dimension, which, in the context of top management teams, can be classified as a task-related rather than relations-oriented attribute. The underlying assumption is that foreign top managers are hired because of their foreign nationality and the related experience and expertise (Ruigrok, Owtscharov & Greve, 2004). Having a foreign top management team member is associated with advantages similar to having managers with international experience (Ruigrok, Greve & Tacheva, 2006). Diversity in national backgrounds helps managers to better understand and cope with the complexity related to a firm’s international operations. The alternative assumption is that the nationality of an executive is just a random outcome of the choice of “the best person for the job” in a globalized executive job market. Under such an assumption, nationality diversity would be classified as a relations-oriented diversity attribute as it is typically categorized in the context of workforce diversity.
The anticipated consequences of age similarity are shared visions of life and experiences, which in turn leads to high degrees of interpersonal attraction and shared values. Diversity in managers’ age is an observable relations-oriented characteristic that may have negative influence on team processes. Female top managers are rare (Daily, Certo & Dalton, 1999) and research on the effects of gender diversity in top management teams is scarce (Krishnan & Park, 2005). Previous research on gender diversity in work teams, however, evidenced negative affective outcomes on team dynamics and higher turnover rates among women (Milliken & Martins, 1996).

3.2.3 Multiple Level Contextual Factors

The importance of context as a determinant of top management team composition was initially addressed by Hambrick and Mason (1984) and further developed conceptually by Finkelstein and Hambrick (1996), who distinguish between environmental (industry), organizational and CEO factors influencing TMT composition. Complexity, instability and munificence are three environmental dimensions typically identified as important determinants of TMT degree of diversity as well as team processes. Firm strategy and organizational performance are suggested as organizational level factors and openness, domination and tenure are important CEO characteristics that influence the composition and dynamics within TMTs.

In an empirical work on the effects of demographic diversity in sales teams, Jackson and Joshi (2004) investigated the moderation effects of the team manager’s characteristics as an important aspect of team social context. In the upper echelons field, Carpenter (2002) scrutinized the importance of team social and firm strategic context and found that both strategic and social context are moderators of the top management team diversity - performance relationship. Hence, based on existing theoretical arguments and empirical evidence, this paper simultaneously investigates the impact of three levels of context: industry, organizational and team context.

Drawing upon the Carpenter, Geletkanycz and Sanders’s (2004) extended upper echelons framework and insights from corporate governance research, board characteristics are identified as an additional contextual factor influencing the composition of top management teams. However, as boards, TMTs and CEOs are theoretically at the same level of analysis (corporate elites level), the mixed determinants model remains a three-level theoretical model including industry, organizational and upper echelon factors. The underlying logic of the model (see Exhibit 20) is that higher and same level factors have a direct influence on lower level
outcomes and no cross-level interactions between higher and lower level factors are hypothesized.

_Exhibit 20: Antecedents Model of Upper Echelons Diversity_

3.3 Hypotheses

3.3.1 Environmental (Industry) Characteristics

The external (macro) perspective on organizations argues that firms are being constrained by their external environment. Resource-dependence theory (Pfeffer & Salancik, 1978), for example, suggests that firms are dependent on their environments and a firm’s ability to secure critical resources is vital to its survival. Upper echelons and in particular corporate directors play a crucial role as a link between the firm and its environment and are viewed as boundary spanners who, through their existing knowledge and networks, have access to important information and resources (Hillman & Dalziel, 2003). According to resource-dependence theory, environmental factors influence organizational characteristics and behavior. In particular, environmental conditions influence the distribution of power and control within the organization and thereby affect the process of selection and departure of executives.
Antecedents of Top Management Team Diversity

(Keck & Tushman, 1993; Thomas & Ramaswamy, 1993), which in turn has impact on organizational actions and structures. Furthermore, Pfeffer and Salanczik suggest that “the selection and tenure of chief executives in organizations are consequences of the organization’s context and the ability of administrators to cope with the uncertainties and contingencies deriving from that context” (1978: 238).

The degree of environmental complexity in which a firm operates is determined by the dynamism and the characteristics of the industry to which it belongs. Porter (1980) argues that firm behavior and performance are constrained by the industry in which firms operate. In their seminal work, Hambrick and Mason (1984) suggest that managerial characteristics are influenced by a firm’s industry. Accordingly, in one of the early upper echelon empirical studies on the effects of top management team composition, Norburn and Birley (1988) found significant differences in managerial attributes between five industries. Similarly, Pegels, Song and Young (2000) found that the degree of tenure, educational and functional background diversity (task-related attributes) in top management teams differs between industry groups. Furthermore, firms operating in different industries are exposed to different institutional pressures. In a study of industry evolution over a 40-year period, Hambrick, Finkelstein, Cho and Jackson (2005) made two interesting observations. First, industries became more heterogeneous over the last twenty years of the past century and second, more industries experienced an increase, rather than a decrease, in heterogeneity of top executives’ backgrounds. Hence, both theoretically and empirically industry has been established as an important macro-level factor influencing the diversity in top management teams.

**Hypothesis 1a:** Industry membership is related to the degree of diversity in background characteristics in top management teams.

**Hypothesis 1b:** Industry membership is related to the degree of diversity in managerial experiences in top management teams.

### 3.3.2 Organizational (Strategic) Characteristics

The relevance of organizational factors for top management composition has been extensively discussed in the upper echelons literature (for a review see Carpenter, Geletkanycz & Sanders, 2004; Finkelstein & Hambrick, 1996). At the individual level of analysis, research exists on the alignment of managerial characteristics with firm strategy (Changanti & Sambharya, 1987; Datta & Guthrie, 1994; Guthrie & Olian, 1991; Szilagyi & Schweiger, 1984) and the performance consequences of such fit
(Gupta & Govindarajan, 1984; Thomas, Litschert & Ramaswamy, 1991). At the team level of analysis, the underlying idea is that the higher the complexity of firm operations, the higher are the demands posed on the top management teams (Michel & Hambrick, 1992; Sanders & Carpenter, 1998). Hambrick et al. (2005) observed that today companies experience broader resource-dependence than before the 1980s. From a resource-dependence perspective (Pfeffer & Salanczik, 1978), diversity in managerial backgrounds will bring to the firm relational capital (network contacts) as well as human capital (e.g., expertise, knowledge and skills) (Hillman & Dalziel, 2003) that are essential for successful management of complex organizations. Hence, top management teams with diverse background characteristics and experiences will be better able to manage complex environments compared to homogeneous top management teams (Carpenter, 2002; Keck, 1997). In order to be able to cope with the complexity of firm operations, top management teams need to adjust to have first, a broader knowledge base and information processing capacity and, second, efficient team processes, which will allow the team to capitalize on the benefits of diversity in knowledge and experiences and make sound and innovative strategic decisions.

Arguments for a fit between the degree of complexity of a firm’s operations and the degree of complexity within the top management team are based on a requisite variety logic (Ashby, 1956). In the executive succession literature, Keck and Tushman (1993) found that changes in environmental and organizational context trigger changes in the composition of the top management team. The degree of complexity a firm is facing is influenced by its strategy; for instance firm degree of product diversification and level of international involvement. The resource-dependence perspective also suggests that the benefits of managers serving as boundary-spanners are dependent on the firm strategy (Hillman, Canella & Paetzold, 2000). As diversity is associated not only with positive but also negative consequences, variations in team composition will be more advantageous at high levels of organizational complexity compared to low levels of organizational complexity. However, Carpenter (2002) also notes that at high levels of complexity, the degree of suppressed conflict in diverse top management teams may occur and lead to negative performance outcomes.

The benefits associated with task-related types of diversity (job relevant background characteristics and experiences) can be explained by the requisite variety argument that diversity within an organization should reflect the complexity of its environment (Weick, 1979). Hence, companies operating in complex environments should strive to reflect the existing degree of complexity in the cognitive structures of
their top management teams (Keck, 1997) by increasing diversity in task-related executive backgrounds and experiences. Executives, coming from different educational and functional backgrounds and having different industry and foreign country experience, will create a broader knowledge base as well as higher cognitive and information-processing capacity, which, in turn, will increase the top management team’s ability to cope with the complexity of firm operations (Carpenter, 2002; Finkelstein & Hambrick, 1996; Keck, 1997; Sanders & Carpenter, 1998). Diversity in task-related attributes is associated with a higher number of perspectives that influence decision-making by increased communication, debate and decision comprehensiveness within the team (Simons, Pelled & Smith, 1999; Smith et al., 1994).

**Hypothesis 2a:** The degree of organizational complexity is positively related to the degree of diversity in task-related background characteristics in top management teams.

**Hypothesis 2b:** The degree of organizational complexity is positively related to the degree of diversity in managerial experiences in top management teams.

Relations-oriented diversity attributes, such as gender, race and ethnicity, on the other hand, have only recently started to be relevant for top management teams due to the increased investors and societal pressures to raise diversity in executive suites (Daily, Certo & Dalton, 1999; Erhardt, Werbel & Schrader, 2003; Richard et al., 2004). Unlike task-related types of diversity, there is no distinct business rational behind selecting women or minority top management team members. Moreover, observable relations-oriented diversity is most often associated with negative affective outcomes. Jackson (2002) notes that relations-oriented diversity attributes “can shape behavior even if there is no association between it and the team’s task-related attributes, because it triggers stereotypes that influence the way team members think and feel about themselves as well as about others on the team” (2002: 57).

Furthermore, relations-oriented diversity is often associated with higher turnover costs and absenteeism rates as well as a higher number of lawsuits (Robinson & Dechant, 1997). These types of diversity more often have negative effects and are therefore costly in terms of team process and organizational losses. The argument for increasing top management team diversity along relations-oriented dimensions is not driven by the organizational complexity rational. Instead, the rational behind increasing diversity in relations-oriented types of attributes is primarily symbolic, sending a positive signal to internal and external stakeholders (Spence, 1974).
Hypothesis 2c: The degree of organizational complexity is not related to the degree of diversity in relations-oriented characteristics in top management teams.

3.3.3 Corporate Elites Characteristics

3.3.3.1 Team Social Integration

Team social integration is a crucial determinant of the degree of diversity within the top management team. In the group diversity literature, team behavior and psychological traits are mostly regarded as consequences of diversity. Social integration, however, is also an important contextual factor that influences team composition aspects. The social psychology construct of social integration refers to the degree to which team members are attracted and psychologically linked to each other (Hambrick, 1994). Research on group effectiveness suggests that the time teams spent together has significant influence on team processes and dynamics as well as on the social cohesion and integration among team members (Cohen & Bailey, 1997). The organizational demography literature (Pfeffer, 1983) identifies similarity in tenure as an important factor influencing team and organizational outcomes as similarity in tenure (cohort group) leads to increased communication and, subsequently, to higher degrees of team social integration and cohesion.

The degree of interpersonal attraction among top executives is likely to be higher for those with similar organizational and team experiences (Hambrick, 1994). In long-tenured TMTs, group processes become more inwardly focused and routinized and team demographics more homogeneous (Keck & Tushman, 1993: 1319). At the same time, the extent to which diversity will be utilized in the team depends on the degree of social integration and the time that top executives have spent together as a team. At low levels of integration, high heterogeneity will have negative consequences for strategic decision-making, as the costs associated with low social integration will outweigh the benefits of variance in knowledge, skills and perspectives.

Social identity theory (Turner, 1982; 1987) can help explain the differential influence of TMT tenure on diversity in background characteristics vs. diversity in managerial experiences. Interpersonal attraction and team social integration is particularly important in the context of teams with background diversity dimensions, since people are more likely to identify with those. The costs associated with diversity in managerial experience will be lower than the negative consequences of background diversity as it is unlikely that discrimination will occur on the basis of differences in past experiences. People are less likely to identify with the countries they have lived
in for a limited period than for example with the countries of their origin, or with their function or organization. In addition, diversity in managerial experience is not related to diversity in values and preferences, which are found to lead to cognitive differences and affective conflict. As a result, no “process losses” can be anticipated as a result of diversity in managerial experience and, all other aspects being equal, background diversity within top management teams will require a higher degree of team tenure and integration. Diversity in managerial experiences, on the other hand, does not require high degrees of social integration, as differences in backgrounds may lead to negative process outcomes but diversity in experiences is less likely to cause negative process consequences.

Hypothesis 3a: The degree of team social integration is positively related to the degree of diversity in background characteristics in the top management team.

Hypothesis 3b: The degree of team social integration is not related to the degree of diversity in managerial experiences in the top management team.

3.3.3.2 CEO Dominance

The power and dominance of a CEO is a well researched topic in the strategic leadership field. CEO personality was found to have a strong influence on top management team dynamics (Peterson, Martorana, Smith & Owens, 2003). As a result, the extent to which all executives are involved in the strategic decision-making is contingent on the CEO's personality and power. Furthermore, the CEO plays an important role in selecting new directors and the degree of similarity among top executives can be regarded as a result of the CEO's dominance (Mace, 1971). More demographically similar executives are more likely to agree with the CEO suggestions and decisions and to not critically question his/her thinking. Thus, a powerful CEO would prefer to have top management team members who are similar to himself and support his decisions. Established CEO’s are more powerful than newly selected CEOs (Hambrick & Fukutomi, 1991; Ocasio, 1994). In the context of board research, the tenure of the CEO was found to be significantly related to the appointments and departures of executive and non-executive directors (Hermalin & Weisbach, 1988). Westphal and Zajac (1995) found that demographic similarity between CEO and the appointed corporate directors resulted in higher CEO compensation. Similar dynamics can be expected to take place within the top management team itself. Keck and Tushman (1993) found empirical support for a positive relationship between CEO tenure and top management team homogeneity. Hence:
Hypothesis 4a: CEO tenure is negatively related to the degree of diversity in background characteristics in top management teams.

Hypothesis 4b: CEO tenure is negatively related to the degree of diversity in managerial experiences in top management teams.

3.3.3.3 Board Characteristics

The interaction of top management team and board characteristics is an emergent theme in research on firm governance (Jensen & Zajac, 2004). While previous research has mostly been undertaken in two separate streams – top management teams and boards of directors research – the two governance bodies share many features (Finkelstein & Hambrick, 1996). As their tasks are inter-related to a varying extent, the two bodies work close to and interact with each other. Early research on top management and board interactions has mostly focused on the dominance of the CEO over the board of directors (Mace, 1971; Lorsch & McIver, 1989; Pearce & Zahra, 1991). Yet, with the increasing pressures for improving governance practices, boards assume a more active role in their interactions with the top management.

Recent research reports increasing use of board committees and, particularly in terms of director selection, provides evidence that nomination committees have impact on the degree of diversity on corporate boards (Ruigrok, Peck, Tacheva, Greve & Hu, 2006). Similarly, it can be argued that as boards are assuming higher responsibilities they will be more involved in the selection of top management team members. On the one hand, boards with established nomination committees will strive to match top management team composition to the requirements of the firm environment. In this process, both background characteristics and managerial experiences will be considered as resources to link the firm to its environment. On the other hand, the same will hold true when selecting board members (Hillman & Dalziel, 2003; Pfeffer & Salanczik, 1978). The notion of homo-social reproduction (Boone et al., 2004; Schneider, 1983) would predict that top management team characteristics will reflect the composition of the board (as managers are selected by the board members). No difference is expected of the effects of homo-social reproduction on both types of diversity in backgrounds: task-related and relations-oriented. Further, it can be anticipated that TMT composition will reflect the characteristics of the board, both in terms of background characteristics and managerial experiences.
Hypothesis 5a: The degree of diversity in background characteristics of the corporate board will be positively related to the degree of diversity in background characteristics in the top management team.

Hypothesis 5b: The degree of diversity in managerial experience of the corporate board will be positively related to the degree of diversity in managerial experiences in the top management team.

3.4 Methodology

3.4.1 Sample

The initial sample of this study consists of all 269 companies listed on the SWX in September 2004. The following categories of companies were subsequently excluded: (1) investment trusts, (2) companies without websites and investor relations contacts, as well as companies with no annual reports available to the public or very short annual reports, (3) foreign companies listed on the Swiss stock exchange; (4) local cantonal banks and (5) energy companies. Investment trusts are not companies in the traditional meaning of a firm and the criteria for selecting top executives of investment trusts may differ substantially from those in regular publicly listed companies. The lack of information on corporate governance was the reason for exclusion of the second category of companies. Where no annual report (or contact details to request one) was available to the public, no data was obtainable on the members of the top management team and the board and their characteristics. Similarly, short annual reports with no governance section did not detail the information necessary for this study. Foreign-based companies listed on the Swiss Stock exchange and Virt-X were initially included in the sample. However, the upper echelons of these three companies are clearly outliers in terms of their nationality diversity and were therefore subsequently excluded. The last two categories of companies were removed from the sample as the composition of the upper echelons of these companies is influenced by national and cantonal laws and regulations and are thus not representative for a population outside the specific country (e.g., Switzerland). This procedure generated a final sample consisting of 165 companies (see Exhibit 21).
Data was collected for a five-year period (2000-2004). The analysis was based only on four years of observations (2001-2000). Not all companies were listed for the entire period of the study. Further, company/year observations were removed where data was missing for more than a quarter of the top management team and board members, or where data on the CEO was missing (Westphal & Zajac, 1997; Jensen & Zajac, 2004). This resulted in an unbalanced dataset of 644 company/year observations.

Although Swiss listed firms are legally required only to establish one board, they usually have a two-tier board structure. Unlike in the German governance system, Swiss supervisory boards comprise both inside and outside directors. The CEO is typically a member of the supervisory board and in less than a quarter of the Swiss listed companies is also the Chairman of the board (Ruigrok et al., 2006). Data was collected on both inside and outside directors, who were members of a firm's supervisory board (*Verwaltungsrat*), as well as on the top management team (*Geschäftsleitung*). Data on top management and board composition was obtained from companies' annual reports and websites. The final dataset contains 9900 individual records of top management team and board members of the 165 companies. Data on firm size and segment sales was obtained from the Worldscope and Datastream databases of Thomson One Banker.

### 3.4.2 Measures

**3.4.2.1 Diversity Variables**

Data was collected at the individual level (top management team and board member) and then aggregated to the team level by the use of different diversity measures. Team composition was measured as those executives or non-executives who were in place in the top management team or the board of the directors at the end of a calendar year. In the rare case, where a top management team or board member was present on the team for less than one year and was no longer in office at a year-end reporting date this person did not appear in the team composition variables for this particular year.

### Exhibit 21: Dissertation Sample

<table>
<thead>
<tr>
<th>Dissertation Sample</th>
<th>165</th>
</tr>
</thead>
<tbody>
<tr>
<td>Energy companies</td>
<td>10</td>
</tr>
<tr>
<td>Cantonal banks</td>
<td>18</td>
</tr>
<tr>
<td>Foreign companies</td>
<td>3</td>
</tr>
<tr>
<td>No information available</td>
<td>33</td>
</tr>
<tr>
<td>Investment trusts</td>
<td>40</td>
</tr>
<tr>
<td><strong>All listed companies</strong></td>
<td><strong>269</strong></td>
</tr>
</tbody>
</table>

*Source: Author.*
Nationality was recorded as stated in the annual report and coded first as a dummy variable (one for foreign vs. zero for Swiss national) and second as a categorical variable reflecting the country of origin of the particular top management team or board member. Gender was coded as a dummy variable equal to one if the person was a woman and zero otherwise. Age is a continuous variable measured in years and either directly recorded from the annual report or calculated on the basis of the year of birth of the particular top management team or board member. Tenure was measured in months since a person became a member of the top management team or the board. In the case were no specific month of appointment was stated in the annual report, January 1 of the indicated calendar year was assumed as a starting date. For persons, who were both top management team and board members, two specific tenure measures were calculated for each of the teams: tenure in the top management team and tenure in the board of directors.

Consistent with previous operationalization in upper echelons studies, education was coded in four main categories: (1) business administration, (2) law, (3) technical education and (4) others. For a complete list of the categorical demographic variables see Exhibit 22. Function of the top management team members was measured as a categorical variable with ten possible values: (1) production, (2) marketing and sales, (3) engineering, (4) finance and accounting, (5) general management, (6) R&D, (7) legal, (8) human resources, (9) logistic and (10) others. Functional diversity is a widely used measure of top management team diversity and the categorization used is mostly based on the work by Wiersema and Bantel (1992). In this study, similar to Keck and Tushman (1993) due to lack of data on previous functional experience, the functional title from the annual reports was used. Board members’ occupation was defined as a categorical variable based on Hillman, Cannella and Paetzold (2000) and Hillman, Cannella and Harris (2002) and reflected the current occupation of each board member. The following ten categories were defined: (1) executive director, (2) member of other boards, (3) lawyer, (4) banker, (5) manager at an insurance company, (6) member of trade council, (7) politician, (8) university faculty, (9) no occupation, and (10) other.

Professional experience was measured with the use of dummy variables. International experience was coded as one if the top executive or director had international assignment or full-time work experience from a foreign country and to zero if he spent his entire career in Switzerland. Industry experience was coded as one if the top
executive or director had previous work experience in an industry different than the one in which his/her current company operates and to zero otherwise.

Three different measures were used to aggregate the data to the team level. Simple ratios (percentage members out of the total number of team members) were created for the dummy variables. Gender diversity, international experience diversity and industry experience diversity were calculated as ratios. Co-efficient of variation was used for the continuous variable and age diversity was calculated as the standard deviation divided by the mean (Boeker, 1997; Wiersema & Bantel, 1992). The degree of team diversity, based on categorical variables (nationality diversity, educational diversity, functional diversity and occupational diversity), was measured by a Blau’s (1977) index, a measure of group heterogeneity, which is commonly used in top management team and board research (Carpenter, 2002; Finkelstein & Hambrick, 1996) and captures the dispersion of team members across all possible categories of a certain dimension:

\[ B = \left[ 1 - \sum (p_i)^2 \right] \]

where B is the heterogeneity measure and p is the percentage of team members in the \( i^{th} \) group (i.e. nationality, education). The higher the value of B, the greater is the heterogeneity on a particular variable.

### Exhibit 22: Categories of Demographic Diversity Variables

<table>
<thead>
<tr>
<th>Function</th>
<th>Occupation</th>
<th>Education</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Production</td>
<td>Executive</td>
<td>Business</td>
</tr>
<tr>
<td>2 Marketing and sales</td>
<td>Director at other firms</td>
<td>Law</td>
</tr>
<tr>
<td>3 Engineering</td>
<td>Lawyer</td>
<td>Technical</td>
</tr>
<tr>
<td>4 Finance and accounting</td>
<td>Banker</td>
<td>Other</td>
</tr>
<tr>
<td>5 General management</td>
<td>Insurance executive</td>
<td></td>
</tr>
<tr>
<td>6 R&amp;D</td>
<td>Trade council member</td>
<td></td>
</tr>
<tr>
<td>7 Legal</td>
<td>Politician</td>
<td></td>
</tr>
<tr>
<td>8 Human resources</td>
<td>University faculty</td>
<td></td>
</tr>
<tr>
<td>9 Logistics</td>
<td>No specified occupation</td>
<td></td>
</tr>
<tr>
<td>10 Others</td>
<td>Other</td>
<td></td>
</tr>
</tbody>
</table>

*Source: Author.*
3.4.2.2 Independent Variables

Most previous research uses the Datastream SIC codes for industry classification. In this paper, the first digit SIC code classification resulted in nine categories that were highly correlated and created multi-collinearity problems when entered simultaneously in an ordinary least square regression. The first two-digit SIC classification resulted in a large number of categories with only few observations per category, the use of which would be insufficient for industry analysis and costly in terms of degrees of freedom. Thus, the Swiss Stock Exchange industry classification was preferred. The companies in the final sample represent 16 of the official 17 categories used by SWX. For details on the industries and their market capitalization in the period 2000-2005 see Exhibit 23.


<table>
<thead>
<tr>
<th>Industry</th>
<th>2000</th>
<th>2001</th>
<th>2002</th>
<th>2003</th>
<th>2004</th>
<th>2005</th>
</tr>
</thead>
<tbody>
<tr>
<td>Automobiles</td>
<td>858</td>
<td>6001</td>
<td>723</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Banking</td>
<td>144 864</td>
<td>131 448</td>
<td>101 405</td>
<td>175 275</td>
<td>187 134</td>
<td>259 097</td>
</tr>
<tr>
<td>Basic resources</td>
<td>3 732</td>
<td>1 485</td>
<td>3 680</td>
<td>9 042</td>
<td>509</td>
<td>1 020</td>
</tr>
<tr>
<td>Chemicals</td>
<td>38 069</td>
<td>32 878</td>
<td>27 328</td>
<td>28 312</td>
<td>33 442</td>
<td>40 249</td>
</tr>
<tr>
<td>Construction</td>
<td>21 940</td>
<td>19 240</td>
<td>10 712</td>
<td>15 344</td>
<td>20 888</td>
<td>27 203</td>
</tr>
<tr>
<td>Cyclical goods services</td>
<td>43 791</td>
<td>31 083</td>
<td>23 280</td>
<td>26 747</td>
<td>32 381</td>
<td>45 550</td>
</tr>
<tr>
<td>Financial services</td>
<td>187 611</td>
<td>130 129</td>
<td>64 373</td>
<td>11 654</td>
<td>13 967</td>
<td>18 822</td>
</tr>
<tr>
<td>Food and beverage</td>
<td>154 192</td>
<td>144 927</td>
<td>120 161</td>
<td>129 218</td>
<td>127 005</td>
<td>167 775</td>
</tr>
<tr>
<td>Healthcare</td>
<td>400 854</td>
<td>322 932</td>
<td>267 982</td>
<td>275 372</td>
<td>285 614</td>
<td>373 660</td>
</tr>
<tr>
<td>Industrial goods service</td>
<td>110 683</td>
<td>60 353</td>
<td>34 203</td>
<td>54 806</td>
<td>58 534</td>
<td>86 849</td>
</tr>
<tr>
<td>Insurance</td>
<td>87 657</td>
<td>76 652</td>
<td>39 278</td>
<td>65 746</td>
<td>66 191</td>
<td>89 772</td>
</tr>
<tr>
<td>Media</td>
<td>6 268</td>
<td>3 246</td>
<td>2 307</td>
<td>3 288</td>
<td>3 227</td>
<td>3 490</td>
</tr>
<tr>
<td>Non-cyclical goods</td>
<td>7 183</td>
<td>6 015</td>
<td>7 017</td>
<td>7 025</td>
<td>7 329</td>
<td>8 228</td>
</tr>
<tr>
<td>Retailing</td>
<td>4 480</td>
<td>2 008</td>
<td>1 570</td>
<td>2 787</td>
<td>3 008</td>
<td>3 774</td>
</tr>
<tr>
<td>Technology</td>
<td>27 869</td>
<td>15 020</td>
<td>6 014</td>
<td>11 036</td>
<td>11 229</td>
<td>16 002</td>
</tr>
<tr>
<td>Telecom</td>
<td>10 696</td>
<td>33 833</td>
<td>26 514</td>
<td>27 011</td>
<td>29 659</td>
<td>25 500</td>
</tr>
<tr>
<td>Utility suppliers</td>
<td>6 531</td>
<td>6 769</td>
<td>1 453</td>
<td>4 903</td>
<td>6 633</td>
<td>7 761</td>
</tr>
<tr>
<td>Investment firms</td>
<td>26 672</td>
<td>20 614</td>
<td>11 959</td>
<td>11 897</td>
<td>10 970</td>
<td>10 188</td>
</tr>
<tr>
<td>All Swiss Shares</td>
<td><strong>1283132</strong></td>
<td><strong>1039225</strong></td>
<td><strong>76410</strong></td>
<td><strong>899091</strong></td>
<td><strong>939073</strong></td>
<td><strong>1237106</strong></td>
</tr>
</tbody>
</table>

Corporate diversification was measured using the entropy measure of firm diversification (Palepu, 1985) similar to previous research in the field (Jensen & Zajac, 2004; Hoskinsson, Hitt, Johnson & Moesel, 1993; Wiersema & Bantel, 1992). The entropy measure is calculated with the formula:

$$\sum P_i \left[ \ln \left( \frac{1}{P_i} \right) \right]^2$$

where P is the percentage of segment in sales of the total firm sales and \((1/P)\) is used as a weight to account for the importance of each segment in the total sales of a company. Segments were defined as both geographical and business segment sales and two distinct measures were used based on the segment sales information: business diversification, hereafter called product diversification and geographical diversification referred to as international diversification throughout the rest of the paper.

CEO tenure was measured in months since the chief executive officer assumed his/her current position. Team median tenure was used as a proxy for team social integration. Hambrick and D’Aveni (1992) suggest that team tenure is an important dimension of team cohesion. Previous research further suggests that median tenure is a better measure of the average team tenure as it is less affected by very short or very long individual tenures (Hermalin & Weisbach, 1988). Board diversity was defined as the diversity dimension matching the respective top management team diversity dimension. Only in the case of functional diversity was board’s occupational diversity used as the corresponding diversity dimension.

3.4.2.3 Control variables

Top management team size is an important control variable in upper echelons research (Carpenter, Geletkanycz & Sanders, 2004) that influences both top executive diversity and its effects. The sum of the number of top management team members was used to measure the TMT size. Company size was measured as the logarithm of the total number of firm employees in the respective year. To correct for the skewness, logarithmic transformation was used for the number of firm employees and the tenure of the CEO (Boeker, 1997; Tihanyi et al., 2000;, Westphal & Zajac, 1997).

3.4.3 Data Analysis

Cross-sectional time-series (or panel) data contains information about a cross-section of multiple units (firms) observed over a number of time periods (years) and allows a researcher to conduct analysis based on two types of information: the cross-sectional information about differences between units and the time-series information about changes within units over time. While containing rich and valuable information,
A first step in choosing an analytical approach for a panel dataset is to test for the presence of group effects. The conducted Breusch-Pagan Lagrange multiplier (LM) test indicated that the group specific effects are statistically different from zero and a random effect model preferred over OLS. The choice between random and fixed effects models was based on the Hausman specification test (Greene, 2005), the results of which showed no significant difference in the estimated coefficients. A random effects model is preferable, as the fixed effects approach is costly in terms of degrees of freedom. Furthermore, Jensen and Zajac (2004) note that a random effects model is preferable when the number of years is limited.

The conducted White test confirmed the presence of heteroscedasticity in the data. Autocorrelation or serial correlation (correlation of error terms over time periods) is another common problem in a time-series setting due to the fact that factors omitted from the regression are correlated across periods. The Durbin-Watson test as well as the Box-Pierce Q test both indicated the presence of serial correlation. Generalized least squares (GLS) correcting for heteroscedasticity and first order autoregression AR (1) was chosen for the analysis of the data (Stata, 2003). This approach corrects for the autocorrelation in the data by calculating a unit-specific factor, which is then applied to transform each individual firm’s data. An autoregressive-heteroskedastic model for the pooled time-series cross-sectional data model was specified as follows:

\[ Y_{it} = b_1 X_{i1t} + b_2 X_{i2t} + \ldots + b_k X_{ikt} + E_{it} \]

where \( i \) equals 1,2,3 … \( N \) and corresponds to the number of the cross-sectional units; \( t \) equals 1,2,3 … \( T \) is the number of time periods; and \( K \) is the number of explanatory variables.
3.5 Results and Discussion

3.5.1 Descriptive Results

The companies in this study sample have on average 8430 employees. The overall tendency over the four years 2001-2004 has been towards a decrease in the average number of employees from 8972 in 2001 to 7862 in 2004 (see Appendix 2.1). The average degree of geographical diversification has followed a downward trend from 1.004 in year 2001 to 0.760 in year 2003 and picking up again in year 2004 to the level of 0.951. The average degree of product diversification has increased from 0.898 in 2001 to 0.998 in year 2002 and following a downward trend reached 0.724 in 2004.

The 165 companies in the sample represented 16 industries as defined by the Swiss Stock Exchange (SWX, 2006). The largest industry in terms of market capitalization represented on the Swiss stock market in 2005 is healthcare, followed by banking and food and beverage. The industry with the largest number of firms is industrial goods and services (52), followed by retailing (21), chemicals (16) and services (14). The remaining industries were represented by less than 10 companies and accounted for less than 5 percent of the sample (see Exhibit 25).
In terms of top management team and board composition, an overall stability in the characteristics was observed over the four year period. Similar to a previous study in the German context (Birkner, 2004), the composition of the upper echelons in Switzerland is rather static. The only exception is nationality diversity that has significantly increased over the period. This trend has two important dimensions. First, the percentage of foreign team members has increased from 20 percent to 23 percent for the boards and from 26 percent to 31 percent for the top management teams between 2001 and 2004. Second, not only the relative number of foreigners but also the number of nationalities in the team has increased and the Blau’s index of nationality diversity has increased from 25.3 percent on average in 2001 to 29.3 percent in 2004 for the boards and from 28.3 percent in 2001 to 34.3 percent in 2004 for the top management teams (Exhibit 26). It is evident that the management of Swiss companies is more internationalized than the corporate boards of directors.

Exhibit 26: Foreigners Ratio and Nationality Diversity

In terms of gender diversity, there are more women directors than women executives (3 percent vs. 2 percent average over all companies and four years). Age diversity is similar across the two governance bodies (on average 0.13 for the top management and 0.14 for the corporate boards). The figures remained relatively stable over the study period and a trend toward convergence in age diversity is observed; board age diversity decreased slightly with a downward trend, whereas top management team age diversity increased with a slight upward trend (see Exhibit 27). This observation holds also for the top management team and board of directors’ educational diversity. The changes in the degree of educational diversity between years seldom exceeding more than 1 -1.5 percent (see Exhibit 28 for details).
The static nature of the results may be an indication that top management teams and boards have reached a certain degree of diversity among these dimensions that is well balanced. At the same time, it seems that both top management teams and boards are still in transition towards higher states of diversity in terms of national origin of their members.

**Exhibit 27: Gender and Age Diversity**

Source: Author.

Both top management team and board educational diversity were rather high (0.42 and 0.52). Even higher was the degree of diversity in terms of functions of the top management team members (0.52) and occupation of the board members (0.56) suggesting that firms attempt to draw upon a large pool of resources in terms of managers’ and directors’ areas of expertise and network contacts. These figures are comparable with previous research in the U.S. context reporting functional diversity ranging between 0.50 and 0.60 (Barsade et al., 2000; Carpenter, 2002; Habelian &

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**Exhibit 28: Educational and Functional/Occupational Diversity**

Source: Author.
Finkelstein, 1993; Keck, 1997; Smith et al., 1994). The degree of diversity in directors’ occupations, however, has decreased over the period.

International experience was higher among the top management teams (0.24) compared to the boards (0.14) (see Exhibit 29 for development over time). Not surprisingly, the opposite trend was observed for industry experience – 0.60 for the board and 0.43 for the top management teams.

Exhibit 29: International and Industry Experience Diversity

The logical explanation for these differences is that top executives are often recruited from within the company whereas the majority of board members are outsiders and in selecting corporate directors, the firm attempts to create a broad portfolio of experiences and contacts. International experience, on average, was lower than the industry experience, which is an interesting observation given the higher international diversification compared to product diversification of Swiss publicly listed companies, reported above. Whereas international experience remains stable over the time-period of this study, the international experience of the board members follows a slight upward trend (from 0.14 in 2001 to 0.16 in 2004).

3.5.2 Analytical Results

Hypotheses 1a and 1b suggested systematic differences in top management team composition between industries and was supported in two different tests. The one-way ANOVA tests provided strong evidence for systematic differences (see Exhibit 30). Differences in all diversity dimensions were statistically significant at the 1 percent level. The interclass correlation (ICC) shows that (apart from educational and nationality diversity) less than 10 percent of the variance of the remaining diversity dimensions is at the industry level. This is an indication for a weak nested structure. In
this case, ordinary least squares results will be unbiased and are preferred to hierarchical linear modeling (Raudensbush & Bryk, 2002; Snijders & Bosker, 1999).

Exhibit 30: ANOVA Results for Industry Differences

<table>
<thead>
<tr>
<th>Diversity Dimensions</th>
<th>DF</th>
<th>F-</th>
<th>P-value</th>
<th>ICC</th>
</tr>
</thead>
<tbody>
<tr>
<td>TMT nationality diversity</td>
<td>15</td>
<td>8.34</td>
<td>0.000</td>
<td>0.16787</td>
</tr>
<tr>
<td>TMT gender diversity</td>
<td>15</td>
<td>3.44</td>
<td>0.000</td>
<td>0.06286</td>
</tr>
<tr>
<td>TMT intern. experience diversity</td>
<td>15</td>
<td>4.85</td>
<td>0.000</td>
<td>0.09748</td>
</tr>
<tr>
<td>TMT industry experience</td>
<td>15</td>
<td>4.53</td>
<td>0.000</td>
<td>0.09097</td>
</tr>
<tr>
<td>TMT age diversity</td>
<td>15</td>
<td>2.61</td>
<td>0.001</td>
<td>0.05130</td>
</tr>
<tr>
<td>TMT functional diversity</td>
<td>15</td>
<td>4.04</td>
<td>0.000</td>
<td>0.08402</td>
</tr>
<tr>
<td>TMT educational diversity</td>
<td>15</td>
<td>9.53</td>
<td>0.000</td>
<td>0.25585</td>
</tr>
</tbody>
</table>

Source: Author.

The GLS results further support Hypotheses 1a and 1b (see Appendix 2.3). Nationality diversity, for example, is more common for companies in the services, industrial goods and services, financial services and media industries (positively related at the 5 percent level) and far less common (significant negative regression coefficient at the 5 percent level) in the banking, construction, retailing, telecom and transportation industries. These results intuitively make sense as the second category of industries is of more local nature compared to the first group of industries.

Exhibit 31: The Effects of Different Level Factors on TMT Diversity

<table>
<thead>
<tr>
<th></th>
<th>National</th>
<th>Int. Exp.</th>
<th>Ind. Exp.</th>
<th>Age</th>
<th>Function</th>
<th>Education</th>
</tr>
</thead>
<tbody>
<tr>
<td>Board diversity</td>
<td>0.417**</td>
<td>0.320**</td>
<td>0.124**</td>
<td>0.012</td>
<td>0.091**</td>
<td>0.319**</td>
</tr>
<tr>
<td>CEO tenure</td>
<td>-0.044**</td>
<td>-0.008*</td>
<td>-0.006</td>
<td>-0.004**</td>
<td>-0.006**</td>
<td>0.004</td>
</tr>
<tr>
<td>Team tenure</td>
<td>0.000*</td>
<td>-0.000</td>
<td>-0.000</td>
<td>-0.000*</td>
<td>0.000**</td>
<td>0.000</td>
</tr>
<tr>
<td>TMT size</td>
<td>0.029**</td>
<td>0.003</td>
<td>0.012**</td>
<td>-0.001</td>
<td>0.007*</td>
<td>0.027**</td>
</tr>
<tr>
<td>Firm size</td>
<td>0.007</td>
<td>0.014</td>
<td>-0.027*</td>
<td>-0.008**</td>
<td>-0.010</td>
<td>-0.021**</td>
</tr>
<tr>
<td>Int. Diversification</td>
<td>0.029*</td>
<td>0.024</td>
<td>-0.007</td>
<td>-0.009*</td>
<td>0.022*</td>
<td>0.057**</td>
</tr>
<tr>
<td>Pr. Diversification</td>
<td>0.022</td>
<td>-0.004</td>
<td>0.048*</td>
<td>0.006*</td>
<td>-0.031*</td>
<td>0.037**</td>
</tr>
<tr>
<td>Industry</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Year</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Constant</td>
<td>0.106*</td>
<td>0.028</td>
<td>0.514**</td>
<td>0.213**</td>
<td>0.180</td>
<td>0.191**</td>
</tr>
<tr>
<td>Observations</td>
<td>437</td>
<td>434</td>
<td>431</td>
<td>384</td>
<td>281</td>
<td>284</td>
</tr>
</tbody>
</table>

Source: Author.
Hypotheses 2a predicts that the degree of strategic complexity an organization is facing will be positively related to the degree of diversity in task-related attributes. The empirical results (see Exhibit 31 for a summary and Appendix 2.3. for the detailed findings) show some evidence in support of this assertion. All three task-related diversity dimensions, functional ($b=0.02$, $p<0.05$), educational ($b=0.06$, $p<0.01$) and nationality diversity ($b=0.03$, $p<0.05$), were positively and significantly associated with the firm international diversification. Furthermore, educational diversity was positively related to the degree of product diversification ($b=0.04$, $p<0.01$). Functional diversity, however, was negatively related to firm product diversification ($b=-0.03$, $p<0.05$). This result can be explained with the management structure of highly diversified companies. Firms that operate in a number of important business segments tend to appoint a business unit manager to the top management team. Such managers are classified as general managers and consequently the overall team measure of functional diversity will be lower. This explanation also finds some support in the significant positive correlation between firm product diversification and the size of the top management team. Some support for hypothesis 2b can be found in the positive relation between firm degree of diversification and the degree of industry experience diversity in the top management team ($b=0.05$, $p<0.05$). However, no significant relationship was found between firm international diversification and the degree of international experience in the top management team. A possible explanation for this result is that executive international experience is a common resource for all firms in today’s business environment, particularly in Europe.

Diversity in top management team members age was positively related to firm product diversification ($b=0.01$, $p<0.05$) and negatively associated with firm international diversification ($b=-0.01$, $p<0.05$). These mixed results did not provide support for hypothesis 2c, which predicted no relationship between relations-oriented diversity attributes and organizational complexity. The regression results with gender diversity as a dependent variable did not produce any significant findings and a valid model. Therefore, these results are not reported and cannot be used to test hypotheses regarding determinants of gender diversity in top management teams. The most likely reason for the lack of any significant regression coefficients is the very low number of women on the top management teams of Swiss publicly listed companies.

Hypotheses 3a suggests a positive relationship between top management team social integration (measured as the median team tenure) and the degree of diversity in the backgrounds of the top management team members. Some support was found in
the positive association between top management team tenure and the degree of functional diversity \( (b=0.00, p>0.01) \) and nationality diversity \( (b=0.00, p>0.05) \). Age diversity, however, was found to be significantly negatively related to the team tenure \( (b=0.00, p>0.05) \). A plausible explanation is that older executives are replaced by younger ones, thereby increasing the degree of age diversity in the team. Furthermore, these events are more likely to have occurred recently in the short-tenured top management teams. The results relating executive tenure to age diversity need to be interpreted with caution since unlike the rest of the studied dimensions, age in top management teams is cyclical in nature and executives reaching a certain age are replaced with younger ones on a regular basis regardless of other influences. Hypothesis 3b was supported as no significant relationships were found between diversity in managerial experiences (industry and international experience) and the median TMT tenure.

The next hypotheses, 4a and 4b, predict that the tenure of the CEO will be negatively related to the degree of diversity in managerial experiences and background characteristics of the top management team members. Nationality diversity and international experience were both negatively related to the tenure of the CEO \( (b=-0.04, p<0.01 \text{ and } b=-0.01, p<0.05) \). Further, age and functional diversity also had significant negative regression coefficients \( (b=-0.00, p<0.01 \text{ and } b=-0.01, p<0.01) \). Industry experience and educational diversity were not significantly associated with the tenure of the chief executive officer. Overall, the majority of the associations between diversity dimensions and CEO tenure exhibited the hypothesized sign of the relationship and hypotheses 4a and 4b therefore cannot be rejected.

The last hypotheses, 5a and 5b, predicting that top management team characteristics will resemble those of the board of directors, found strong supporting evidence. Apart from age diversity, all diversity regression coefficients were positive and statistically significant. The strongest relation was found for nationality diversity \( (b=0.42, p<0.01) \), followed by international experience \( (b=0.32, p<0.01) \) and educational diversity \( (b=0.32, p<0.01) \), industry experience \( (b=0.12, p<0.05) \) and functional diversity \( (b=0.09, p<0.01) \). Hence, it can be concluded that the law of homo-social reproduction applies also between the board of directors and the executive team. The relatively low regression coefficient for functional diversity can be explained by the fact that the predictor variable for the board was occupational diversity, which is not exactly the same dimension as top management team function. At the same time, the variety of current occupations of the board members reflects
diversity in expertise and work-related experiences similar to the executive diversity in functions.

The control variables, top management team and firm size, had significant effects on the degree of diversity across multiple dimensions. The variables were entered in the regression in a hierarchical approach (first the control variables and then the predictors). However, $R^2$ and F-statistics are not available for GLS regressions as measures of the increased proportion of explained variance. Instead, the log likelihood statistic is an indicator of goodness of fit (or rather lack of fit). The lower the log likelihood figure, the better is the observed fit between the model and the data. Adding the explanatory variables led to lower log-likelihood statistics in all six regressions.

### 3.6 Conclusion

This paper aimed at explaining the composition of top management teams in terms of diversity as a reflection of industry, organizational and corporate elites factors. The empirical results suggest that looking at different level-factors and multiple diversity dimensions are two fruitful areas for future research. Moving away from a general construct of diversity, support was found for the prediction that there are different rationales and necessary conditions for the different diversity dimensions. By distinguishing between background characteristics and experiences and relations-oriented and task-related diversity attributes, a more nuanced understanding of the determinants of different diversity dimensions was reached.

The findings of this study are consistent with previous theoretical work by Carpenter, Geletkanycz & Sanders (2004) and Finkelstein and Hambrick (1996) and empirical investigations by Boone et al. (2004), Keck and Tishman (1993) who predicted that top management team composition is influenced simultaneously by industry, organizational and upper echelons factors. In this particular research settings, industry accounted for only ten percent of the variation in management diversity and firm level factors are crucial for explaining these differences. In particular, corporate elite contexts, such as the tenure of the CEO and the TMT as well as board characteristics, were found to be important predictors of TMT heterogeneity. Previous research has addressed the issues of power between the top management team and the board (Boone et al., 2004; Daily and Schwenk, 1996) but has largely neglected the interdependencies between TMT and board composition. By introducing board demography as an antecedent to top management team diversity, evidence was found that similarity-attraction paradigm (Byrne, 1971) is also valid between the two
governance bodies and that board diversity composition is among the strongest determinants of the degree of heterogeneity in backgrounds and experiences in the executive team.

One of the main contributions of the paper is the level of detail in the results linking context and top management team composition (e.g., role of international experience and nationality for internationalized companies, industry experience diversity in diversified companies etc.) as suggested by Certo et al. (2006). Such an approach allows researchers to move beyond the general construct of diversity to make more precise predictions about benefits of diversity and to better evaluate potential and existing trade-offs. It is seldom the case that diversity aspects are completely independent and can serve as substitutes for each other (Jackson and Joshi, 2004). According to the notion of requisite variety (Ashby, 1956) diversity will enable a top management team to cope with the challenges of a firm’s environment. However, it must be noted that some diversity aspects have similar anticipated benefits for strategic decision-making. Some dimensions are associated with the same advantages (e.g., diversity in information, perspectives and expertise for industry, functional and educational background diversity or country specific knowledge and access to networks for international experience diversity and nationality diversity). The findings of this study, however, indicate that the level of organizational complexity as reflected in firm strategy is a stronger predictor of background diversity than of experience diversity. An interesting questions for future research is whether such dimensions complement or substitute each other, e.g., whether experience can substitute for background characteristics (e.g., international experience for nationality or industry experience for educational and/or functional diversity).

At the same time, it is important to address the issue of keeping the degree of complexity within the top management team at levels, which are manageable. In top management teams that are often comprised of up to ten top executives, it is difficult to accommodate all potentially beneficial diversity attributes. There are certain limits to which the composition can be diversified in terms of top executives’ backgrounds. The underlying argument is that at high levels of environmental complexity diversity in top management teams does not increase at the same pace. Furthermore, research suggests that the relationship between diversity and performance may be curvilinear, with diminishing effects at high levels of executive diversity (Earley & Mosakowski, 2000). It is important to prioritize according to the relevant environmental conditions (requisite variety argument) and accommodate the most important diversity
dimensions in the composition of the TMT. Diversity aspects that do not bring specific advantages for particular environmental conditions will be less relevant.

An attempt was made to integrate the theoretical arguments and findings in a conceptual model of antecedents of top management team multi-dimensional diversity. An important limitation of the model is the lack of consideration of complementarities and trade-offs among the discussed diversity dimensions. Whereas some issues have been addressed in this paper, a fine-tuned discussion of how the different diversity dimensions relate to each other as team and organizational resources will be desirable. In this particular paper, such analytical considerations were not utilized in order to be able to present a simple and conceptually clear antecedents model.

Future research should conceptualize and empirically test the complementarities and trade-offs as well as the cumulative and combinative interactions among the various diversity dimensions. Jackson and Joshi (2004) suggest two approaches that have been applied in previous research. First, it is possible to categorize team members according to the different diversity dimensions. Many gender and race diversity studies are based on such an approach and use categorizations of white man, non-white man, white female and non-white female. Second, it is possible to study the interaction effects of two or more diversity dimensions. Furthermore, it must be noted that diversity interactions can be studied at individual levels of analysis (individual manager) or the team level (interaction between team diversity indices).

Another limitation of the model is its static character. In reality, top management team selection does not start from a zero situation. In most cases, certain aspects of diversity already present in the team influence the selection of a new member. Often a new appointment is simply a replacement and will just marginally increase or decrease the diversity ratio. A case of an introduction of a new diversity dimension (e.g., selection of the first female or foreign board member), however, might lead to small changes in other diversity ratios but will cause significant alterations in team dynamics. In this respect, the model does not capture the magnitude of changes in degree of diversity. Neither does it measure how changes in diversity dimensions influence changes in power and positions within the top management team. Future research may pay more close attention to these fine-grained aspects of changes in top management team diversity and the subsequent changes in team dynamics.
4 Consequences of Top Management Team Diversity
A MULTILEVEL EXPLORATION OF THE PERFORMANCE EFFECTS OF TOP MANAGEMENT TEAM DIVERSITY

ABSTRACT

Previous research on the effects of top management team diversity on corporate performance has yielded mixed results; some studies find a positive relationship, others find a negative relationship, whereas yet others find no significant relationship at all. This paper pays specific attention to the time and context dimensions of the effects of upper echelons diversity and provides a multilevel theoretical approach and empirical test of the controversial relationship. Drawing upon group diversity, upper echelons and contingency theories, influences of contextual factors are hypothesized at three distinct levels: team context, organizational characteristics and industry dynamics. Three level hierarchical linear modeling was conducted on a longitudinal dataset of 131 Swiss publicly listed companies representing 16 industries. The results suggest that TMT nationality diversity is positively related to firm performance. Some support was found for a positive effect of TMT diversity in international experience on performance. No evidence, however, was found for such effects of functional diversity and diversity in industry experience. The study findings further support a positive main effect of team tenure as well as an interaction effect between nationality diversity and TMT tenure. Industry growth had some positive moderating effect on the relationship between TMT tenure and corporate performance. The results suggest that applying a multilevel theoretical and empirical approach, bridging time dimension with team, organizational and industry levels of analysis, will improve our current understanding of the relationship between TMT diversity and corporate performance.

Keywords: TMT heterogeneity, corporate performance, multilevel analysis.
4.1 Introduction

Research on the effects of top managers’ characteristics on organizational outcomes is abundant; yet the question of whether diversity in the managerial backgrounds is advantageous for private firms still remains open. Based on upper echelons theory (Hambrick & Mason, 1984), a large number of studies have investigated how the composition of the executive team influences firm strategy and performance. The accumulated body of research suggests that upper echelons background characteristics and experiences have significant influence on firm level outcomes (for reviews see Carpenter, Geletkanycz & Sanders, 2004; Finkelstein & Hambrick, 1996). Research on the effects of top management team heterogeneity on corporate performance, however, has yielded inconsistent results. The findings of studies on the effects of TMT demographic diversity on corporate performance range from positive (e.g., Barsade et al., 2000; Carpenter, 2002; Gordon, Stewart, Sweo & Luker, 2000; Hambrick, Cho & Chen, 1996; Kilduff, Angelmar & Mehra, 2000), through non-significant (e.g., Ferrier, 2001; West & Schwenk, 1996) to negative (e.g., Michel & Hambrick, 1992). The majority of studies find mixed findings, i.e. both positive and negative relationships for different diversity dimensions on different performance variables within the same study (e.g., Simons, Pelled & Smith, 1999; Smith et al., 1994). The mixed evidence suggests that it is necessary to move away from diversity as a general construct (Jackson, 1992) and differentiate between diversity dimensions theoretically and empirically.

The inconsistent results have made West and Schwenk conclude that “although the questions remain interesting and important ones, we believe pursuing this line of inquiry further will yield results inconsistent at best and fruitless at worst” (1996: 571). Similarly, Finkelstein and Hambrick point out that “one tentative conclusion that emerges from this work... is that the distributional properties of TMTs will not be predictive of firm performance in all circumstances” (1996: 157) and call for a contingency perspective considering both internal (firm level) and external (environmental) contingencies.

The moderating effects of environmental characteristics on the relationship between top management team demographic diversity and corporate performance have been investigated in several studies. The underlying theoretical argument is that in high velocity and turbulent environments, diversity will be an asset that will enhance the top management team’s ability to assess the situation and, in turn, make the best
possible strategic choice. Empirical results support this line of argument and show that under high environmental uncertainty heterogeneous top management teams achieve better performance, whereas homogeneous teams will be more successful in stable contexts (Eisenhardt & Schoonhoven, 1990, Hambrick, Cho & Chen, 1996; Keck, 1997; Lant, Milliken & Barta, 1992; Murray, 1989; Pegels, Song & Yang, 2000). Other scholars focus on internal organizational contingencies, such as firm strategy. For instance, Thomas, Litschert and Ramaswamy (1991) found that firms aligning the managerial characteristics to firm strategies exhibit superior performance outcomes. As Carpenter notes “a striking feature of upper echelon studies that have sought an explanation for firm performance is the tendency to decontextualize top management teams – that is, not account for the idiosyncratic nature of each firm’s strategy and the social structure of the TMT“ (2002: 275). Empirical tests of the moderating effects of firm strategic and team social contexts show that results in upper echelons research are only meaningful when taking into consideration the strategic and social contexts in which top executives work (Carpenter, 2002). Indeed, a growing body of upper echelons research suggests that team dynamics and context have either direct impact on firm performance (e.g., Iaquinto & Frederickson, 1997; Priem, 1990) and/or moderating influence on the relationship between top management diversity and firm performance (e.g., Simons, Pelled & Smith, 1999; Smith et al., 1994; Knight et al., 1999).

Recent discussions of the multilevel nature of strategy research note the existing gap between the “micro” and “macro” perspectives in the field (Drnevich & Shanley, 2005). Whereas strategy is a field bridging individual, team, organizational and industry levels of analysis, researchers have typically focused on the level of interest in their fields (disciplines). For instance, economists typically study industries and markets with only limited attention to firm behavior or individual behavior within the firm (with few notable exceptions, such as Cyert & March, 1963; Penrose, 1959). Psychologists, on the other hand, focus on individual behavior within the team and only sometimes consider the wider organizational context. Drnevich and Schanley conclude that the multidisciplinary nature of strategy has resulted in some research that crosses different levels; however “academic studies of strategy (and of strategic managers) often consider only one or two levels, while controlling for other levels involved in the topic of interest” (2005: 122).

Based on this criticism of the strategy field in general and Carpenter’s (2002) call to explore different layers of context in upper echelons research, this paper
theoretically conceptualizes, and empirically tests, the contextual influences on the relationship between top management team diversity and organizational performance at three different levels: team context, organizational context and industry context. Empirically, it addresses existing concerns of matching the level of theory and analysis and applies hierarchical linear regression (Hox, 2002; Raudenbush & Bryk, 2002; Snijders & Bosker, 1999) to estimate direct relationships at the lowest level as well as cross-level interactions. Multilevel analysis is a methodology used for data with complex patterns of variability or hierarchical (nested) structure, where the nesting aspect refers to the independence of the observations. By acknowledging that observations within a group (team, firm or industry) are more similar to each other than observations from different groups, the variability associated with each level of nesting is taken into account. The variance in the dependent variable is decomposed into variances at the different levels and allows a researcher to investigate contextual influences on hypothesized relationships.

The intended contribution of this paper is threefold. First, by applying multilevel analytical methods to test theoretical arguments of multiple level contextual effects, this paper offers a new perspective and supporting evidence to the existing debate on the performance effects of top management team diversity. Second, this paper distinguishes both conceptually and empirically between different aspects of top management team diversity. As a result, evidence was found for significant effects of top management team nationality diversity, a dimension, which has been largely overlooked by previous upper echelons research. Finally, this paper contributes to recent multilevel debates in the management field. The study findings support the view that multilevel analysis may help advance our understanding of organizational phenomena and build more fine-grained management theories (Beamish et al., 2005).

This paper proceeds as follows. First, theoretical arguments for a link between top management team diversity and organizational performance are presented. Second, hypotheses are developed for the individual effects of multiple diversity dimensions and, consequently, for the cross-level interaction of contextual factors. Third, the methodology is outlined. Finally, after presenting the results, the paper concludes with a discussion of these in light of the ongoing debate.
4.2 Theory

4.2.1 Upper Echelons Perspective

The upper echelons theory explains firm strategy and performance with the characteristics of its top management team (Hambrick & Mason, 1984). Rooted in the behavioral theory of the firm (Cyert & March, 1963), the upper echelons perspective is based on the premise that decisions are not always made as rational choice but are influenced by the natural human limitations, such as selective perception, bounded rationality, conflicting goals etc. Drawing upon the organizational demography approach (Pfeffer, 1983), Hambrick and Mason (1984) argued that managers’ demographic characteristics can be used as proxies for their cognitive bases. The underlying assumption is that strategic choices can be predicted by looking at the demographic characteristics of managers.

A distinct feature of the upper echelons perspective is the focus on the composition of the entire top management team rather than investigating the effects of the CEO or individual managers (Finkelstein & Hambrick, 1996). As a result, research has focused on the team level of analysis and distinguished between two main aspects of team composition: team traits and team heterogeneity (Wiersema & Bantel, 1992). Finkelstein and Hambrick (1996: 155) note that theoretically significant differences exist between how TMT heterogeneity and TMT central tendencies affect firm strategy. Central tendencies are associated with certain preferences or orientations and therefore can be linked to specific strategic outcomes (as a result of such preferences or orientations). TMT heterogeneity, on the other hand, is not necessarily expected to lead to a particular strategic outcome (choice of strategy) as diversity in top management team characteristics “affects the process of making strategic decisions much more than it does the content of those strategies” (Finkelstein & Hambrick, 1996: 155).

Hence, research on the effects of top management team heterogeneity needs to focus on the process of decision-making rather than on the specific outcomes in terms of firm strategy. However, gaining access to and directly investigating actual decision-making and the influence of heterogeneity on team dynamics through primary data has proved difficult (Pettigrew, 1992; Priem, Lyon & Dess, 1999) with only a few notable exceptions in the field (e.g., Bourgeois & Eisenhardt, 1988; Iaquinto & Frederickson, 1997; Knight et al., 1999; Miller, Burke & Glick, 1998; Pitcher & Smith, 2001; Priem, 1990; Simons, Pelled & Smith, 1999). As a result, whereas conceptually TMT
heterogeneity is expected to influence the strategy processes rather than the strategy content, empirically, researchers have investigated the effects of top management team diversity on strategic outcomes (in terms of content). The majority of existing research focuses on the effects of top management team diversity on strategic change (e.g., Boeker, 1997; Changati & Sambharya, 1987; Gordon et al., 2000; Lant, Milliken & Barta, 1992; Wiersema & Bantel, 1992). Furthermore, according to the upper echelons theory, TMT heterogeneity is expected to have differential impacts on strategy formulation and strategy implementation (Cannella & Holocomb, 2005; Finkelstein & Hambrick, 1996). Diversity in managerial characteristics is believed to enhance diversity in perspectives, thereby leading to the generation of more alternatives and the more rigorous evaluation of those alternatives. Thus, top management team diversity is expected to have positive effects on strategic change during strategy formulation (Wiersema & Bantel, 1992). During strategy implementation, however, homogeneity in top managers’ characteristics is considered a crucial factor as cohesion is necessary in order to successfully implement strategic change (O’Reilly, Snyder & Boothe, 1993). Due to the different effects of top management team heterogeneity during the phases of strategy formulation and strategy implementation, Finkelstein and Hambrick (1996: 156) conclude that it is unlikely to obtain robust findings for direct effects of top management team heterogeneity on strategic outcomes. Instead, the authors recommend investigating the interplay of managerial characteristics and social cohesion on strategic decision-making as a step towards predicting strategic outcomes.

Even more controversial is the theoretical grounding for executive effects on firm performance as there are a number of alternative organizational mechanisms through which managerial characteristics can influence firm performance outcomes. The major problem is that existing research rarely theorize and empirically test these organizational mechanisms and a “black box” is created in the understanding of the effects of top management team composition and organizational performance (Lawrence, 1997). Finkelstein and Hambrick suggest a contingency approach to unlock the “black box” of executive effects as it “offers the potential for redirecting research on the consequences of TMTs on firm performance in the future” (1996: 157). They further note the need to explore not only environmental contingencies but also other relevant contextual factors.
4.2.2 Organizational Performance

Corporate performance is the most important and commonly studied construct in strategic management research (Rumelt, Schendel & Teece, 1994). Discussions about different level determinants of corporate performance and industry versus corporate and business unit effects are abundant in the strategy field (Adner & Helfat, 2003; Bowman & Helfat, 2001; McGahan & Porter, 1997). New perspectives have been brought to existing debates by utilizing a multilevel approach (Hough, 2006; Misanguyi et al., 2006). At the same time, discussions, of what actually constitutes corporate performance and what are the relevant dimensions of corporate performance, continue (Drnevich & Shanley, 2005).

In a recent review of all empirical research published in the *Strategic Management Journal* from its first issue in 1980 through 2004, Combs, Crook and Shook (2005) found strong evidence for the multi-dimensional nature of corporate performance. One of the first major distinctions made in the field is between organizational and operational performance. Venkatraman and Ramanujam (1984) distinguished between three levels of performance, where organizational effectiveness is the broader domain, operational performance is the middle circle and financial performance is the innermost (narrow) performance construct. Murphy, Trailer and Hill (1996) distinguished between four aspects of performance: efficiency, growth, profitability and size. More recent attempts to define the relevant dimensions of performance include Rowe and Morrow’s (1999) distinction between subjective, accounting and market based performance measures and Maltz, Schenar and Reilly’s (2003) financial, market, process, people and future performance categories. Combs, Crook and Shook’s (2005) study found strong evidence that operational\(^4\) and organizational performance are distinct and separate constructs and the former can be regarded as an antecedent of the latter. Three dimensions of the organizational performance construct were identified: accounting returns, stock market performance and growth.

\(^4\) Operational performance is defined as a multi-dimensional construct covering marketing and sales, human resources, service, procurement, logistics, technological development, operations and infrastructure outcomes.
Consequences of Top Management Team Diversity

Exhibit 32: Operational and Organizational Performance Dimensions

Source: Combs, Crook & Shook, 2005.

The distinction between the different performance dimensions is particularly important in the upper echelons heterogeneity context. The majority of existing studies focus on financial/accounting performance measures, such as return on assets (ROA), return on equity (ROE) or return on sales (ROS) (Habelian & Finkelstein, 1993; McNamara, Luce & Tompson, 2002; Michel & Hambrick, 1992; Keck, 1997). Some studies have focused on a single performance aspect, such as firm growth (e.g., Eisenhardt & Schoonhoven, 1990; Ferrier, 2001; Kor, 2003; Peterson et al., 2003). Others use multiple dimensions within a single study, such as stock market and accounting performance measures (e.g., Carpenter, 2002; Isabella & Waddock, 1994) or accounting and growth measures (e.g., Smith et al., 1994). Hence, previous research has rarely addressed the multi-dimensional nature of organizational performance and, while multiple performance measures have been utilized in the context of single studies, rarely has the distinction been made theoretically.

Given the discussion of the differential influences of top management team heterogeneity during strategy formulation and strategy implementation, it is important to consider which dimension of organizational performance will be influenced by TMT diversity. Operational performance is related to the implementation of firm strategy and its outcomes. Hence, it is difficult to predict direct links between top management team diversity and operational outcomes. Firm growth, however, especially through the means of new market entry (Boeker, 1997) or mergers and acquisitions (Bergh, 2001; Jensen & Zajac, 2004) can be seen as a direct outcome of top executive
Consequences of Top Management Team Diversity

decision-making. A link between accounting/financial performance and top management team diversity is less evident. In particular since accounting performance measures are influenced by a number of other organizational factors. Furthermore, accounting based measures are historical and therefore do not capture executive effects with sufficient time lag. At the same time, stock market based performance measures are future oriented and are often the result of recent announcement of executive decisions about future strategies. Hence, if the upper echelon premise that top management team heterogeneity will influence the process of strategy (decision-making process) rather than the strategy content (strategic outcome) holds, and TMT diversity has impact on the strategy formulation rather than the strategy implementation, it can be predicted that its effects will be evident in two of the three organizational performance measures. First, organizational growth, as growth is a direct outcome of managerial decisions for expansion; and second, stock market performance as it reflects investor reactions towards the quality of executive decisions.

Support for the last argument can also be found in the emerging stream of research on managerial characteristics in the context of entrepreneurship. Traditionally, upper echelons research has focused on large companies and firm outcomes, such as change in strategy or performance. With the rise of entrepreneurship research, however, a number of novel firm outcomes are explored and new upper echelon relationships discovered. For instance, in a sample of 858 biotechnology firms, managerial characteristics were related to investors decisions (Higgins & Gulati, 2006) as well as to the prestige of the underwriting bank (Higgins & Gulati, 2003). By applying a signaling theory perspective, Cohen and Dean (2005) found that top managerial characteristics are an important market signal and are correlated with the pricing of initial public offerings (IPOs). Top management teams have an important signaling role also beyond the context of entrepreneurial firms. Therefore, the characteristics of the top management team, in particular diversity influencing the strategic decision-making, may impact investor’s decisions, which, in turn, will be reflected in the company stock market performance.

4.3 Hypotheses

4.3.1 Demographic Diversity in Top Management Teams

According to the upper echelons theory (Hambrick & Mason, 1984), individual characteristics influence the manager’s perception and interpretation of a particular
decision-making situation. Strategic choice is reached on the basis of team decision-making, which is influenced by individual perceptions and views. As a result, diversity in the characteristics of individual top management team members participating in a particular decision is expected to lead to diversity of perspectives, which is likely to generate more alternatives, to rigorously evaluate the different alternatives along multiple dimensions and, consequently, lead to higher-quality strategic decisions (Finkelstein & Hambrick, 1996). Diversity in top management teams, however, may have different sources. A number of demographic and cognitive aspects of diversity, as well as relevant professional experiences, have previously been identified as important predictors of firm level outcomes. In the following section, the consequences of two categories of managerial characteristics are discussed, namely, diversity in managerial experiences and diversity in managerial backgrounds.

Group diversity researchers have established that diversity is associated with both costs and benefits. On the one hand, diversity leads to a wide range of perspectives, and intensive discussions resulting in higher innovativeness and creativity. On the other hand, diversity is often resulting in negative team “process losses”, such as communication costs, affective conflict, disagreement etc. The simultaneous positive and negative effects of diversity have made researchers conclude that team heterogeneity is a “mixed blessing” (Williams & O’Reilly, 1998) or a “double-edged sword” (Milliken & Martins, 1996). Therefore, the consequences of diversity in top managers characteristics will be evaluated against both costs and benefits associated with each particular dimension.

4.3.1.1 Diversity in Top Management Team Experiences

Professional experiences are an indicator of managerial skills and knowledge and are regarded as a source of expertise and managerial competence (Kor, 2003). Penrose (1959), in her growth theory of the firm, emphasizes the importance of individual level previous executive experience for recognizing and taking advantage of growth opportunities. In an empirical test of a bundle of managerial experiences, Kor (2003) found that team, firm and industry level experiences of the top executives have individual (direct) and additive (interaction) effects on entrepreneurial growth. Similarly, in high-tech firm settings, Eisenhardt and Schoonhoven (1990) found a positive relationship between top managers’ previous industry experience and firm growth.
Managerial industry experience is a crucial resource for knowing how an industry operates and for recognizing market opportunities. Furthermore, previous industry experiences can help to identify early on common industry threats. The anticipated benefits of industry experience are industry specific knowledge and expertise as well as access to network contacts within the industry (Cohen & Dean, 2005; Kor, 2003). At the same time, two different aspects can be investigated in terms of industry experience. On the one hand, previous experience of top management team members within the industry, in which the company predominantly operates, i.e. industry tenure or the average years top management team members have spent in the industry, is relevant. On the other hand, diversity in industry experiences or the number of different other industries, in which each top management team members have previously worked, is an important source of expertise. The central tendency versus the diversity argument is crucial in evaluating the anticipated benefits. Both previous experience in the firm’s industry as well as diversity of experiences from different industries can be sources of knowledge and expertise. However, whereas a team composed of individuals, who have only experience in one industry, is prone to “group think” (Janis, 1982) and not recognizing non-traditional threats and opportunities, a team comprised of members with experiences from a number of different industries will have a broader knowledge base and different perspectives. Surprisingly, however, difference in previous industry experience is seldom investigated in top management team studies (Eisenhardt & Schoonhoven, 1990). Instead, most previous research looks at the previous executive experience in the industry, in which a company operates (e.g., Boone et al., 2004; Cohen & Dean, 2005; Ferrier, 2001; Kor, 2003; Pitcher & Smith, 2001).

In line with diversity in perspectives and knowledge argumentation, diversity in top managers’ industry experience will be positively related to firm performance. Managers with diverse industry backgrounds will be quick in recognizing trends, assessing threats and opportunities, will evaluate choices from different angles, and will consequently make better strategic choices, which, in turn, will be reflected in subsequent firm performance. Furthermore, industry experience is a task-related attribute (characteristic) and is unlikely to lead to disagreement within the team and cause negative affective consequences. Rather, diversity in industry experience is expected to lead to constructive conflict, which prevents “group think” and helps the team avoid costly mistakes in terms of premature decisions (Eisenhardt & Schoonhoven, 1990). Hence:
Hypothesis 1a: Diversity in top management team members’ industry experiences is positively related to corporate performance.

Firms in today’s business environment compete simultaneously not only in a number of product markets but also in a wide range of geographical markets. Hence, companies are exposed to a variety of national contexts and their success is contingent upon knowledge and expertise in international business. It has been recognized by both industry and practice that in order to cope with the complexity of a firm’s international operations, companies need to adjust the international orientation and backgrounds of their managers (Bartlett & Ghoshal, 1989; Perlmutter & Heenan, 1974). International experience is a valuable source of knowledge and expertise about a particular market or region and in-depth understanding of the institutions and culture from outside the firm’s own institutional context (Carpenter, 2002; Carpenter, Sanders & Gregersen, 2001; Johanson & Vahlne, 1977). Furthermore, managers’ international experience facilitates access to international networks (Athanassiou & Nigh, 1999). The broader the diversity in managers’ international experience, the higher will be the top management team’s ability to deal with the challenges of international exposure and operations. Previous empirical research shows that top managers’ international experience is positively related to a firm’s internationalization strategy (Athanassiou & Nigh, 2002; Carpenter & Fredrickson, 2001; Reuber & Fischer, 1997, Tihanyi et al., 2000).

Similarly, evidence exists for the positive effects of top managers’ international experience on the performance of multinational firms (Athanassiou & Nigh; 1999; Carpenter, Sanders & Gregersen, 2001). Clearly, international experience is a resource, which will be most beneficial for companies operating in foreign markets. At the same time, it is unlikely that any costs will be associated with diversity in previous managerial international experiences and no team process losses can be expected in teams with high degree of diversity in international experiences. Hence, diversity in managerial international experiences is likely to have positive effects on firm performance:

Hypothesis 1b: Diversity in top management team members’ international experiences is positively related to corporate performance.

4.3.1.2 Diversity in Top Management Team Backgrounds

One of the most prominent and often investigated aspects of top management team diversity is the variation in top managers’ functional backgrounds. A certain variety in
managers’ knowledge of the different functional areas is a prerequisite to successfully managing the complexity of a firm’s operations. Diversity in functional backgrounds is believed to be related to diversity in top managers’ perspectives, knowledge and skill sets (Bantel & Jackson, 1989; Finkelstein & Hambrick, 1996). Yet, functionally diverse teams often suffer from process losses due to difficulties related to effective communication and shared understanding of issues. Glick, Miller and Huber (1993) found that functional diversity in top management teams is associated with more frequent communication within the team. However, the variety of perspectives stemming from managers different functional backgrounds often leads not only to positive aspects of communication but also to debate and conflict. Knight et al. (1999) found a positive link between top management functional diversity and the degree of interpersonal conflict. Similarly, Pelled, Eisenhardt and Xin (1999) found a significant positive relationship between functional diversity and task conflict. However, the relationship between functional diversity and task conflict lead to positive overall effects on corporate performance. Indeed, a number of empirical studies provide evidence for firm level benefits of top management team functional diversity. Bantel and Jackson (1989) found a link between top management team’s degree of functional diversity and the number of administrative, but not technical innovations, made in banks. Hambrick, Cho and Chen (1996) found that top managers’ diversity in functional backgrounds leads to a higher propensity to take action, but at the same time has negative consequences on execution speed. All in all, despite the process losses, previous research seems to agree on the positive overall effects of functional diversity within top management teams. Thus:

Hypothesis 1c: Functional diversity in top management teams is positively related to corporate performance.

Particularly in European companies, the number of foreigners on top management teams has increased significantly over the last decade (Heijltjes, Olie & Glunk, 2003; Ruigrok, Peck & van der Linde, 1999; Ruigrok, Owtsharov & Greve, 2005). Finkelstein and Hambrick (1996) predict that with the increasing diversity of the U.S. workforce, diversity in nationality and race will be among the important diversity dimensions in the future. Having a foreign top management team member is associated with advantages similar to having managers with international experience.

Diversity in national backgrounds helps managers better understand and cope with the complexity related to a firm’s international operations and the globalization process. At the same time, a person’s nationality has a strong impact on his/her
personality (Trinadis & Suh, 2002). Especially cultural norms and values are deeply rooted in a person’s perception of the world and behavior. As a result, nationality diversity may lead to negative consequences of stereotyping and related cultural biases (Early & Gibson, 2002). Difference in cultural perceptions and behavior may lead to affective conflict and misunderstandings. Hambrick, Davison, Snell and Snow (1998) developed a two-stage theoretical model, which considers first, individual characteristics (values, cognitive schema, outward physical behavior, and language) as a reflection of an individual’s nationality and second, the effects of national diversity on group functioning and performance. The model predicts that in a group work situation, where team members simultaneously interact with and reflect on each others’ personality characteristics, individual contributions will be influenced by the other team members' attributes and behaviors as well as group processes and interaction.

Previous empirical research on the impact of nationality diversity in management teams found support for the intervening effects of team processes and interactions. In a sample of subsidiary management teams, Elron (1997) found that cultural heterogeneity was directly related to both issue-based conflict and the management team performance. Team level outcomes, in turn, were positively related to performance at the subsidiary level. The impact of the intervening team processes on performance were two-fold: issue-based conflict had negative effects on team performance, but was positively related to subsidiary performance. These results can be expected to hold in the context of top executive nationality diversity.

Hypothesis 1d: Nationality diversity in top management teams is positively related to corporate performance.

4.3.2 Team Context

Social cohesion is one of the widely recognized team context dimensions. Barnard (1938) argues that interpersonal and social cohesion among top executives has effects on corporate performance. The degree to which top management team members are attracted to each other and are able to work closely to make decisions may influence strategic choice. A team that works well together is likely to reach decisions more efficiently and to be open to communication and debate. Michel and Hambrick (1992: 17) suggest that the average top management team tenure can be used as an indicator for social cohesion. Elron (1997) found empirical support for a positive relationship
between top management team tenure and organizational performance. Hence, a positive association between executive tenure and performance can be predicted.

Hypothesis 2a: The average tenure of top management teams is positively related to corporate performance.

Despite the fact that empirical contributions on multinational teams per se are still scarce, among the few studies there is remarkable consistency of results reflecting the impact of time on nationality diversity outcomes. Time, that nationally diverse groups spent together, was found to have a positive direct impact on their performance as well as moderating influence on the diversity effects (Earley & Mosakowski, 2000; Watson, Kumar & Michaelsen, 1993). The initial negative influences of cultural diversity on team dynamics were found to diminish over time. As a result, the positive consequences of team diversity, such as larger range of perspectives and broader knowledge, outweigh the initial negative communication and affective consequences and, in the long run, lead to higher innovativeness, creativity and better term performance. Therefore, it can be expected that the positive effects of nationality diversity will be stronger in teams with longer tenure.

Hypothesis 2b: The positive relationship between nationality diversity in top management teams and corporate performance will be stronger in teams with longer team tenure.

4.3.3 Organizational Context

Based on empirical findings regarding the influences of top executive nationality diversity on team processes and decision-making, Ruigrok and Wagner (2002) conclude that cultural diversity in top management teams is associated with both costs and benefits. Hence, a universal impact on performance cannot be expected and future studies of contingency effects are encouraged (Ruigrok and Wagner, 2002: 12).

As noted above, diversity in top managers’ nationality has both positive and negative effects on team dynamics and strategic decision-making (Elron, 1997). The double-edged nature of team heterogeneity leads to the conclusion that diversity should only be encouraged if direct benefits are anticipated. Otherwise, the negative consequences might outweigh the positive ones and lead to lower team and organizational performance. Research on the alignment of managerial characteristics to firm strategy suggests that a fit between the two fosters organizational performance (Thomas, Litschert & Ramaswamy, 1991).
Consequences of Top Management Team Diversity

In the context of firm international operations, it is likely that highly internationalized companies will benefit from managers’ international backgrounds. The knowledge and expertise related to specific countries/regions or the general knowledge of doing business abroad will bring advantages for firms that have international operations. Therefore, similar to Carpenter, Sanders and Gregersen’s (2001) and Herrmann and Datta’s (2005) arguments for international experience, this paper suggests that the more internationalized the firm, the greater will be the positive association between top management team nationality diversity and corporate performance.

Hypothesis 3: The positive relationship between nationality diversity in top management teams and corporate performance will be stronger in firms with high internationalization.

4.3.4 Environmental Context

The external firm environment has been established as an important moderating factor in research on executive effects (Finkelstein & Hambrick, 1996). The context in which firm operates may constrain or restrict the choices available to executives (Hambrick & Finkelstein, 1987; Thomas & Ramaswamy, 1993). Furthermore, the strategy and performance of a firm are often assessed and analyzed compared to its competitors and the contingency perspective can be extended beyond the firm to the industry context. The effects of TMT nationality diversity on performance may be moderated not only by the firm internationalization but also by industry internationalization.

Norburn and Bilrey (1988) were among the first to pay attention to the intra- and inter-industry differences of executive effects on firm performance. Whereas support was found for the predictive power of managerial characteristics within five different industries, the evidence for inter-industry differences was weaker. As a result, Norburn and Birley concluded that “clearly, what is needed is a much larger population of industries to ensure a comprehensive mix (e.g. growth rates, technologies, import vulnerabilities) more representative of U.S. SICs as a whole” (1988: 236). By paying attention to industry groupings, Pegels, Song and Yang (2000) found that the closer the top management team composition is in terms of characteristics to the dominant heterogeneity in the competitive interaction group, the stronger are its positive effects on corporate performance.
Highly internationalized industries are more dependent on foreign markets and firms within such industries have higher necessity of knowledge and expertise about operations in foreign markets. In industries where companies compete not only in the local market but also globally, managerial talent associated with firm internationalization will be a critical success factor. As such, diversity in top management team nationality will be a valuable resource to strengthen the firm’s position within the industry. Hence, the positive effects of top management team nationality diversity on corporate performance for highly internalized firms may be stronger in industries characterized by high internationalization.

Hypothesis 4a: The firm internationalization contingent relationship between nationality diversity in top management teams and corporate performance will be stronger in industries characterized by high internationalization.

Carpenter, Geletkanycz and Sanders (2004) note that results of empirical studies are typically consistent as to the moderating effects of environmental characteristics defined at industry level. Tushman and Romanelli (1985) suggest that during stable periods of convergence, middle and lower managers are making adjustments (modifications) to existing structures, whereas in periods of reorientation (uncertainty), top managers are drivers of strategic change. Furthermore, Keck and Tushman (1993) argue that in contexts of incremental change, demands on executives are limited. Keck (1997) predicts that short-tenured heterogeneous top management teams are better performing in unstable (uncertain) environments, whereas long-tenured homogeneous firms are likely to be more successful in stable environments with low uncertainty. Finkelstein and Hambrick (1996) similarly note that in high turbulence environments, heterogeneity in top managers’ backgrounds is more important compared to stable environments as it promotes rigorous strategy formulation and evaluation of all viable alternatives. This reasoning was supported in a number of empirical studies (Eisenhardt & Schoonhoven, 1990; Hambrick, Cho & Chen, 1996; Lant, Milliken & Barta, 1992; Murray, 1989; Pegels, Song & Yang, 2000). Hence, the link between top management team heterogeneity and firm performance may be stronger in unstable industry environments characterized with high uncertainty compared to stable industry contexts. Industry growth is one of the most important determinants of managerial discretion at the industry level (Hambrick & Finkelstein, 1987). Growth is associated with uncertainty and high environmental complexity. Hence, the growth rate of an industry may moderate the effects of executive diversity on corporate performance.
Hypothesis 4b: The positive relationship between nationality diversity in top management teams and corporate performance will be stronger in high growth industries.

Finkelstein and Hambrick (1996:159) argue that in stable environments TMT social integration and cooperation is a crucial factor in making successful strategic decisions. On the contrary, under high environmental uncertainty diversity in perspectives and ability to generate alternative solutions is critical to firm survival. As a result, in stable, low growth environments, top management team social integration rather than diversity in managerial backgrounds will be positively related to performance.

Hypothesis 4c: The positive relationship between top management team tenure and corporate performance will be stronger in low growth industries.

4.4 Methodology

4.4.1 Sample

The initial sample of this study consists of all 269 companies listed on the Swiss Stock Exchange in September 2004. A number of criteria were applied to reduce the sample to exclude companies that (1) did not have sufficiently detailed information in their annual reports and (2) were not representative for the population of firms outside Switzerland (such as cantonal banks, state owned energy companies, investment trusts etc.; see Exhibit 21). The sampling procedure and the characteristics of the Swiss corporate governance system are discussed in detail in the methodology section of the second essay of this dissertation. The sampling procedure generated a final sample consisting of 165 companies. Data was collected for a five-year period (2000-2004). Not all companies were listed for the entire period of the study. Furthermore, company/year observations were removed if data on the top management team and board members was missing for more than a quarter, or where data on the CEO was missing (Westphal & Zajac, 1997; Jensen & Zajac, 2004). Finally, as HLM allows for missing data only at the lowest level of analysis (Raudenbush & Bryk, 2002), observations with missing data on company and industry level were not included in the statistical analyses. This resulted in a total of 655 company/year observations of 131 firms representing 16 industries over a five year period.
4.4.2 Measures

Data on the top management team composition was obtained from companies’ annual reports and websites. Individual records were compared within the dataset and completed where data was available from a record of the same individual in a different company. Data on firm size, geographical segment and firm growth was obtained from the Worldscope and Datastream databases of Thomson One Banker. Data was collected at the individual level (top management team member) and then aggregated to the team level by the use of different diversity measures.

Nationality was recorded as stated in the annual report and coded first as a dummy variable (one for foreign vs. zero for Swiss national) and second as a categorical variable reflecting the country of origin of the particular top management team member. Tenure was measured in months since a person became a member of the top management team. In the case were no specific month of appointment was stated in the annual report, January 1 of the indicated calendar year was assumed as a starting date. Function was measured as a categorical variable with ten possible values: (1) production, (2) marketing and sales, (3) engineering, (4) finance and accounting, (5) general management, (6) R&D, (7) legal, (8) human resources, (9) logistic and (10) others. Functional diversity is a widely used measure of top management team diversity and the categorization used is mostly based on the work by Wiersema & Bantel (1992). Similar to Keck & Tushman (1993), due to lack of data on previous functional experience, the functional title used in the annual reports was used in this study. Professional experience was measured with the use of dummy variables. International experience was coded as one if the top executive had international assignment or full-time work experience from a foreign country and zero if he/she spent his/her entire career in Switzerland. Industry experience was coded as one if the top executive had previous work experience in an industry different than the one in which his/her current company operates and to zero otherwise.

Two different measures were used to aggregate the data to the team level. Simple ratios (percentage members out of the total number of team members) were calculated for the dummy variables: international experience diversity and industry experience diversity. The degree of team diversity based on categorical variables (nationality diversity and functional diversity) was measured by applying a Blau’s (1977) index. The Blau index is a measure of group heterogeneity, which is commonly used in top management team research (Carpenter, 2002; Finkelstein & Hambrick, 1996) to aggregate data from the individual to team level:
$B = [1 - \sum (p_i)^2]$ 

where $B$ is the heterogeneity measure and $p$ is the percentage of team members in the $i^{th}$ group (i.e. nationality, education). The higher the value of $B$, the greater is the heterogeneity on a particular variable. The Blau index is a measure that captures the dispersion of team members across all possible categories of a certain dimension. 

*Team tenure* was calculated as the median of the tenures of all top management team members. Previous research suggests that median tenure is a better measure than the average team tenure as it is less affected by very short or very long individual tenures (Hermalin & Weisbach, 1988).

*Corporate performance* was operationalized by using a stock market return measure. The return index for each company and year was downloaded from Thomson One Banker. Two lagged dependent variables were used to avoid problems with causality of the studied relationships. As the effects of top management team actions can be expected to be reflected in the stock market reaction within a short period of time, one- and two-year time-lag of the dependent variable was used.

*Firm internationalization* was measured as firm international diversification using the entropy measure of firm diversification (Palepu, 1985) similar to previous research in the field (Jensen & Zajac, 2004; Hoskinsson, Hitt, Johnson & Moesel, 1993; Wiersema & Bantel, 1992). The entropy measure is calculated with the formula:

$\sum P_i [\ln(1/P_i)^2]$ 

where $P$ is the percentage of a geographic segment in sales of the total firm sales and $(1/P)$ is used as a weight to account for the importance of each geographic segment in the total sales of a company. *Company size* was measured as the logarithm of the total firm sales in the respective year. Since some variables were skewed, logarithmic transformation was used for the firm sales and the stock market return variables (Boeker, 1997; Tihanyi et al., 2000; Westphal & Zajac, 1997).

Most previous research uses the Datastream SIC codes for industry classification. In this paper, however, the Swiss Stock Exchange (SWX) industry classification is applied (see Exhibit 23). The companies in the sample represent 16 of the official 17 SWX categories. In multilevel research, the macro-level variable is often simply an aggregate of a micro-level variable that influences its relationship to the dependent variable (Snijders & Bosker, 1999). *Industry internationalization* was calculated as the average of the internationalization of the companies representing an industry. Similarly, *industry growth* was the average of the individual firm growth measure for
a particular industry. One-year growth of total assets was used as a measure of individual firm growth.

4.4.3 Data Analysis

Multilevel analysis is a methodology used for analysis of data with nested sources of variability. In the analysis of such data, it is usually illuminating to take account of variability associated with each level of nesting (Snijders & Bosker, 1999). The multilevel structure of the data can be a result of either the sampling procedure (stratified random sampling) or natural nesting of behavior of the phenomenon under investigation (e.g., individuals within organizations). Datasets with a nesting structure that include unexplained variability at each level are usually not adequately represented by the probability model of multiple regression analysis. Instead, a hierarchical linear model, which is an extension of the multiple regression model to a model that includes nested random coefficients, is recommended (Hox, 2002; Snijders & Bosker, 1999; Raudenbush & Bryk, 2002). In multilevel analysis it is important to pay due attention to the nested structure of the data (data is analyzed at the level at which it is measured) in order to avoid drawing wrong conclusions about observed relationships (Klein, Dansereau & Hall, 1994; Robinson, 1950; Snijders & Bosker, 1999).

In strategy research, the influence of higher level factors has typically been investigated based on the principle of disaggregation (for each micro-unit within a macro-unit the higher level factor is recorded repeatedly). The main problem with disaggregation is that first, it is statistically incorrect and second, the sample size is dramatically exaggerated (Klein & Kozlowski, 2000; Snijders & Bosker, 1999). Furthermore, for the study of between-group differences, disaggregation often leads to high risks of committing type I errors. At the same time, for studying within-group differences, disaggregation often leads to unnecessary conservative tests (i.e. too low type I error probabilities) (Snijders & Bosker, 1999). Hierarchical linear model approaches conduct statistical analysis at the level of theory and measurement of the variables, and therefore allow the researcher to model variability at multiple levels.

The hierarchical linear model differs from the usual regression model primarily by the fact that the equation contains more than one error term: one (or more) for each level. The basic idea of multilevel modeling is that the outcome variable (y) has an individual effect (x) as well as group aspects (z). A simple regression model can be extended to a model with main effects of x and z on y as well as cross-level
interaction effects (where the relationship between x and y is dependent on higher level factor z).

A special kind of nesting is defined by longitudinal data treated as “repeated measures” or “measurements within subjects”. The measurement occasions (e.g., year of observation) are the micro-units of analysis and the subjects (e.g., firms) are the macro-units. In a longitudinal setting, multilevel analysis helps to determine to what extent an observed effect is attributable to “true” observed relationships between dependent and exploratory variables or to temporal factors. Hence, similarly to panel data methods, the variability is modeled into within group differences and between group differences and inferences can be drawn about both types of relationships. Another similarity with panel data methods is the modeling of variability between groups in their intercepts. The random intercept model (Snijders & Bosker, 1999), also called intercepts-as-outcomes (Raudenbush & Bryk, 2002), defines, similar to the fixed effect approach for analyzing time-series, different intercepts for each of the higher level units (groups). HLM also estimates the variance component at the higher level unit and it is possible to draw inferences about the range within which the intercepts of all observed groups will vary. Additional effects of the nesting structure can be represented by letting the regression coefficients vary from group to group. Hence, the regression coefficients of x and z may depend on the group j. The random slopes model, also called slopes-as-outcomes model, models variability in the observed relationship between lower level variables according to values of a higher level variable for each group (i.e. cross-level interactions).

In the upper echelons research, while theoretically acknowledged and empirically measured, higher level contextual factors have often been studied in a rather simple way by splitting the sample according to different industries (e.g., Keck, 1997) or by using industry dummies (e.g., Krishnan, Miller & Judge, 1997). In order to explore the influence of the firm environment as a moderator, interaction variables between top management team characteristics and environmental characteristics are then entered into the regression (e.g., Carpenter, 2002). With the development of multilevel analysis techniques, however, it is possible to use a random slope model to investigate how the observed relationships vary with higher level contextual factors.
4.5 Results

4.5.1 Descriptive Results

The 131 companies in this study represent 16 different industries. The logarithm of company sales ranged between 2.04 and 12.39 and averaged 7.80. The average firm international diversification was 0.99 with values ranging between 0.00 and 2.14. The average industry internationalization ranged between 0.00 and 1.41, with an average of 0.89. Industry growth represented a wide range of yearly changes in total assets between -2.27 and 45.09, with an average value of 12.47. In terms of profitability, logarithm of the return index of the observed companies ranged from -1.24 to 9.71, with an average value across firms and years of 4.99 (see Appendix 3.1 for a summary of the descriptive statistics).

In terms of degree of diversity, the companies in this sample are comparable to previous research. Top management teams had an average nationality diversity of 0.34 ranging between 0.00 and 0.89 (with possible values between 0 and 1). Kilduff, Angelmar and Mehra (2000) reported average nationality diversity in top management teams of 0.37. Functional diversity ranged between 0.00 and 0.88, with an average of 0.58 comparable to the degree of functional diversity reported by Barsade et al. (2000), Carpenter (2002), Habelian and Finkelstein (1993), Keck (1997) and Smith et al. (1994). On average, 45 percent of the top management team members had experience from different industries and 26 percent had professional experience from outside Switzerland.

4.5.2 Empty Model

Estimating a hierarchical linear model usually starts with estimating the empty (unconditional) model (Model 1), which gives the raw between and within group variances. These raw variance components are useful for a general description of the data structure and as a starting point for model fitting. Based on the estimated variance components at each level, an interclass correlation was calculated. In a two-level model, the interclass correlation is a measure of the degree of resemblance between micro-level units belonging to the same macro-unit. It measures the proportion variance that is accounted for by the group level. In a three-level model, variance components are estimated at three different levels. By accounting for the nested structure of the dataset, three levels of analysis were defined for the empirical test of the specified hypotheses. Due to the longitudinal character of the data, company/year observations were defined as “measurements with subjects” or “repeated measures”.
Hence, observation of a company in particular year $i$ is the lowest (level 1) in the data, a company $j$ is the level 2 and industry $k$ is the highest level 3 in the hierarchy. The outcome variable $Y_{ijk}$ is influenced by the temporal factor (year $i$), company specific factors (denoted with $j$) and industry level factors ($k$). The unconditional empty model can be expressed by the following equations:

$$Y_{ijk} = \pi_{0jk} + e_{ijk}$$

where $e_{ijk}$ is the random error (temporal variance) at the lowest level 1; $\pi_{0jk}$ is average firm performance over five year period;

$$\pi_{0jk} = \beta_{00k} + r_{0jk}$$

where $r_{0jk}$ is the random error (variance) at the firm level 2; $\beta_{00k}$ is average industry performance of all firms within an industry;

$$\beta_{00k} = \gamma_{000} + u_{00k}$$

where $u_{00k}$ is the random error (variance) at the industry level 3 and $\gamma_{000}$ is the grand mean of corporate performance;

The estimated variance at the lowest level (within firm variance) $\delta^2$ was 0.19, the variance at level two, the firm level (between firm variance), $\tau_p^2$ was approximately 2.2 and the industry (level 3) variance (between firms within industry variance) $\tau_{\beta}^2$ was 0.56. The $\chi^2$ statistics indicated that both the firm and industry level variance are significantly different from zero. Since the empty model contains no explanatory variables, it provides the basic partition of the variability in the data between the levels.

The interclass correlation in a three-level model estimates the percentage of variance attributable to each of the levels. The results for the one and two year time lagged performance variables were very close to one another. Approximately 75 percent of the variance was at the between firm level; 19 percent was at the industry level and only 6 percent was at the lowest (temporal) level. The “rule of thumb” in multilevel analysis for choosing HLM over OLS is not clearly defined; however, any variance higher than 10 percent is worth exploring. The lowest level variance in this dataset is rather low. Between-firm difference within industries is the main source of variability and the industry categorization accounts for a large share of the variation. Therefore, the multilevel exploration promises to be a worthwhile endeavor.

Another important criterion for multilevel analysis is the reliability coefficient. The reliability of a measurement is defined as the variance of true scores to the variance of observed scores and is equal to the correlation between independent replications of measuring the same subject (Snijders & Bosker, 1999). When several measurements are made for each macro-level unit, these constitute a group of
measurements of the micro-level units which are aggregated to the group mean $Y_j$. The reliability of aggregated variables increases as the number of micro-units per macro-units increases. A reliability coefficient $\lambda$ greater than 0.2 indicates that a significant difference exists between the group means; hence, the between group variance is significantly different from zero. The $\lambda$ coefficients for the intercept $\pi_0$ (the group mean at level 2) was 0.977 for the one year lagged dependent variable and 0.972 for the two-year lagged dependent variable. These results indicate that significant differences exist between the average performance of firms when aggregated over the five year period. The $\lambda$ coefficients for the intercept $\beta_{00}$ (the industry mean at level 3) was 0.541 for the one year lagged dependent variable and 0.518 for the two-year lagged dependent variable. Hence, there are significant differences between industries (firm performance averaged to the industry level).

4.5.3 Within-Firm Variability

The next step in estimating a hierarchical linear model is to include the predictors at the lowest (micro) level (Model 2) or to model the within-group variability. The underlying idea is to first explain the within-group variability and then proceed to explain the between-group variability. A number of level one variables that, according to existing theory, are deemed important to predict the value of $Y$ are selected and entered into the model to explain the within-group variability. An important decision when entering explanatory variables concerns their centering. As the intercept variances and the meaning of an intercept in the random slope model depends on the location of the X variable, a 0 value of X has to be meaningful. Further, the covariance between intercepts and slopes depends on the location of X. Therefore, grand mean centering is always to be preferred unless the interest is in the difference between within- and between-group regressions (Snijders & Bosker, 1999).

At this stage, between-group variability is simply modeled as random variability (there are no explanatory variables at level 2). A hierarchical linear model is defined by its statistical parameters: the regression parameters and the variance components. The fixed effects (HLM regression coefficients) are similar to the OLS coefficients and interpreted in exactly the same way as non-standardized OLS regression coefficients. The random effects (the variance components), however, are not parameters in a statistical sense but latent (i.e. not directly observable) variables (Snijders & Bosker, 1999). Two major estimation methods are applied in HLM: maximum likelihood (ML) and residual (or restricted) maximum likelihood (REML).
The difference between the two is that the ML estimators for the variance components usually have a downward bias. The difference can be important especially when the number of groups is small. Therefore, the literature suggests that the REML method is preferable.

The estimated fixed intercept $\pi_0$ is again the intercept for the average industry group ($\pi_0=4.964$, $p<0.001$ for the one-year lagged dependent variable and $\pi_0=5.031$, $p<0.001$ for the two-year lagged dependent variable). A fixed effect value of 4.964 with a standard error of 0.246 indicates that the grand mean of 64 percent of the observations will fall in the interval (4.964 +/-0.246); 95 percent of the observations will fall within (4.964 +/-2*0.246) interval. In support of hypothesis H1d, nationality diversity was significantly positively related to firm performance in the subsequent year ($b=0.530$, $p<0.01$) and two years later ($b=0.782$, $p<0.001$). Team tenure was positively related to the one-year performance variable ($b=0.001$, $p<0.05$) as predicted by hypothesis H2a. Moderate support was found for hypothesis H1b, as diversity in international experience was positively related to the two-year lagged performance measure ($b=0.523$, $p<0.05$) but not to the one-year lagged variable. No significant effects were found for functional diversity (H1c) and diversity in industry experience (H1a).

The estimated residual variances are the variances conditional on the value of the independent variables (nationality diversity, functional diversity, diversity in industry experience, diversity in international experience and team tenure). Introducing explanatory variables at level 1 lead to a slight reduction of the unexplained variance at level 1 and level 3 for both performance variables (see Appendix 3.3). The level 2 variance naturally has increased (as the sum of variances equals 100). As a next step, the hypothesized interaction effects of nationality diversity and team tenure were added (Model 3). The three main effects described above remained significant. Furthermore, the product term was positively significantly related to corporate performance in the subsequent year ($b=0.012$, $p<0.01$) in support of hypothesis H2b. This step of the analysis led to further reduction in the residual variances at level 1 and level 3.

4.5.4 Within-Industry Between-Firm Variability

The next step in the modeling process is to explain the random effects at level 2 by level-two variables (Model 4). Aggregates of level-one variables are often regarded as important level-two variables. The between-group variance at level 2 (between
firms within industries) was modeled by introducing level 2 predictors: the explanatory variable (firm internationalization) and the control variable (firm size). The random intercept variance can be explained by main effects of level two variables, the random slopes by interactions between level-one and level-two variables (Snijders & Bosker, 1999). The results of the analysis indicated that main effects were significant for firm size ($b=0.478$, $p<0.001$ for the one-year lagged performance measure and $b=0.456$, $p<0.001$ for the two-year lagged performance measure) but not for firm internationalization. Hence, the significant differences in intercept between firms can be explained by firm size. Companies with higher total amount of sales exhibited higher corporate performance. Firm internationalization, however, did not have a direct effect on firm performance. Furthermore, no support was found for hypothesis 3 as the random intercept coefficient of firm internationalization on the slope between nationality diversity and firm performance was positive as hypothesized but not statistically significant. The addition of level 2 predictors, modeled both as random intercept and as random slope, led to reduction of the residual variance at level 2 and level 3. The $\chi^2$ tests indicated that the difference between means at level 3 (industry) was no longer significant. This conclusion was further supported by the low reliability coefficient $\lambda$.

4.5.5 Between-Industry Variability

Snijders and Bosker (1999) suggest the use of a built-in filter for cross-level interaction: an interaction between lower level variable $X$ and higher level variable $Z$ is considered only if $X$ has a significant random slope. However, the authors note that if there are theoretical reasons to consider $X$-$Z$ interaction, this interaction can be tested even if $X$ does not have a significant random slope. The background for this reasoning is that if there is such an interaction, the test for it has a higher power to detect it than the test for the random slope. Snijders and Bosker (1999) further note that if a random slope (random effect) is theoretically reasoned, a random intercept (corresponding fixed main effect) of the variable $Z$ needs also to be included in the model.

According to the theoretical reasoning underlying the consideration of the moderating effect of industry characteristics in this paper, two level 3 explanatory variables were included: average industry internationalization and average industry growth. The final model (Model 5) can be expressed with the following equations:

Level 1:
Consequences of Top Management Team Diversity

\[ Y_{ijk} = \pi_{0jk} + \pi_{1jk} (\text{nationality diversity}) + \pi_{2jk} (\text{international experience}) + \pi_{3jk} (\text{industry experience}) + \pi_{4jk} (\text{team tenure}) + \pi_{5jk} (\text{functional diversity}) + \pi_{6jk} (\text{nationality X tenure}) + e_{ijk}, \]

where \( e_{ijk} \) is the random error (temporal variance) at the lowest level 1; \( \pi_{0jk} \) is a firm average performance over the five year period;

Level 2:

\[ \pi_{0jk} = \beta_{00k} + \beta_{01k} (\text{firm internationalization}) + \beta_{02k} (\text{firm size}) + r_{0jk} \]
\[ \pi_{1jk} = \beta_{10k} + \beta_{11k} (\text{firm internationalization}) \]
\[ \pi_{2jk} = \beta_{20k}; \pi_{3jk} = \beta_{30k}; \pi_{4jk} = \beta_{40k}; \pi_{5jk} = \beta_{50k}; \pi_{6jk} = \beta_{60k}. \]

where \( r_{0jk} \) is the random error (variance) at the firm level 2; \( \beta_{00k} \) is average industry performance of all firms within an industry;

Level 3:

\[ \beta_{00k} = \gamma_{000} + \gamma_{001} (\text{industry internationalization}) + \gamma_{002} (\text{industry growth}) + u_{00k} \]
\[ \beta_{11k} = \gamma_{100} + \gamma_{111} (\text{industry internationalization}) + \gamma_{112} (\text{industry growth}) \]
\[ \beta_{40k} = \gamma_{400} + \gamma_{401} (\text{industry growth}) \]
\[ \beta_{01k} = \gamma_{010}; \beta_{02k} = \gamma_{020}; \beta_{10k} = \gamma_{100}; \beta_{20k} = \gamma_{200}; \beta_{30k} = \gamma_{300}; \beta_{50k} = \gamma_{500}; \beta_{60k} = \gamma_{600}, \]

where \( u_{00k} \) is the random error (variance) at the industry level 3 and \( \gamma_{000} \) is the grand mean of corporate performance;

The results of the test for cross-level interaction effects of industry growth (H4b) and industry internationalization (H4a) on the relationship between top management team nationality diversity and corporate performance were not statistically significant. A positive cross-level interaction effect of industry growth on the relationship between team tenure and performance was found significant at the ten percent level for the one-year time lagged performance variable (\( b=0.000, p<0.10 \)). However, hypothesis 4c predicted a negative relationship, which could not be supported. The random intercept and random slope effects model at level 3 led to reduction of the residual variance at level 2. For the two-year time lagged dependent variable, no longer did significant differences exist in the level 2 intercepts (company means). Therefore, the model fitting is considered to have reached its goal.

In hierarchical linear modeling models are evaluated through comparison of deviances. A deviance test is a measure of the lack of fit between the model and data. The results of a deviance test cannot be interpreted directly; only differences in deviance values for several models fitted to the same dataset are meaningful. The deviance tests of the four models tested in this paper evidenced incremental
improvements of the model fit by adding higher level variables from Model 2 through Model 5 (see Appendix 3.2).

### 4.5.6 Summary of Hypotheses Testing

In multilevel analysis settings, hypothesis testing is based on both fixed and random effects. Fixed effect results are tested through t-tests and interpreted like regression coefficients. Random effects are estimated through variance components (interpretation of residuals) and tested through F-test statistics. Exhibit 33 summarizes the tests of hypothesized relationships.

#### Exhibit 33: Summary of Hypotheses and Findings

<table>
<thead>
<tr>
<th>Hypotheses</th>
<th>Sign</th>
<th>Support</th>
</tr>
</thead>
<tbody>
<tr>
<td>H1a Industry experience -&gt; performance</td>
<td>+</td>
<td>no</td>
</tr>
<tr>
<td>H1b International experience -&gt; performance</td>
<td>+</td>
<td>some</td>
</tr>
<tr>
<td>H1c Functional diversity -&gt; performance</td>
<td>+</td>
<td>no</td>
</tr>
<tr>
<td>H1d Nationality diversity -&gt; performance</td>
<td>+</td>
<td>yes</td>
</tr>
<tr>
<td>H2a Team tenure -&gt; performance</td>
<td>+</td>
<td>yes</td>
</tr>
<tr>
<td>H2b Nationality X tenure -&gt; performance</td>
<td>+</td>
<td>yes</td>
</tr>
<tr>
<td>H3 Firm internationalization X nationality diversity -&gt; performance</td>
<td>+</td>
<td>no</td>
</tr>
<tr>
<td>H4a Industry internationalization X firm internationalization X nationality diversity X tenure -&gt; performance</td>
<td>+</td>
<td>no</td>
</tr>
<tr>
<td>H4b Industry growth X firm internationalization X nationality diversity X team tenure -&gt; performance</td>
<td>+</td>
<td>no</td>
</tr>
</tbody>
</table>

*Source: Author.*

It is evident that strongest support was found for the direct effects at the lowest level of analysis. The hierarchical linear modeling was complemented by fixed effect regression analysis and the results were essentially the same: positive main effects as well as interaction of nationality diversity and tenure on corporate performance. A fixed effect model is a panel data analytical technique, which accounts for the time-series structure of the data, however, it does not allow for modeling of level 3 (industry-level) variance. Inclusion of industry variables is not possible in a fixed effects model as such variables have the same values over all years of observations.
and therefore violate the assumption of independence of observations (Baltagi, 2005). At the same time, a fixed effect model provides the most conservative test for panel datasets, where a dummy variable is created for each and every higher level unit (company). Therefore, fixed effect model allows for the inclusion in the model, and control for, company specific effects that may influence performance (Hsiao, 1986).

HLM analysis accounted for the three-level nested nature of the data. However, only few of the hypothesized cross-level interactions at level 2 and level 3 were significant. A possible explanation for the fact that the results were close to - yet not - significant is the lack of statistical power. Multilevel research is often based on data with a limited number of groups. In two-level hierarchical linear models, power for detecting effects of level-two variables depends strongly on the number of groups in the data and thus warnings about a low power are especially important for level-two variables (Snijders & Bosker, 1999). In a three-level model, the concerns regarding statistical power and committing type I error are even higher. The optimal design software for longitudinal and multilevel research (Spybrook, Raudenbush, Liu & Congdon, 2006) indicated that in order to detect an effect size of 0.125 (similar to estimates from previous studies, e.g. Carpenter, 2002), in a setting of 16 industries, given the variability structure of the dataset, each industry needs to contain at least 17 companies to reach power of 0.8. Raudenbush and Bryk (2002) suggest that, in a three-level model, the number of the level-three units should be at least ten times the number of random effects modeled at level three. In this particular dataset, the number of level 3 units is very limited and the lack of statistical results for cross-level interactions of level-three factors might be due to insufficient power.

4.5.7 Illustration of Relationships

To test this proposition, additional analysis was conducted with a cross-section of the panel data (year 2002) and one-year lagged dependent performance variable with firm level data as level 1 and industry data as level 2. Utilizing the graphic function of HLM, the between group (average industry) relationship between nationality diversity and corporate performance, while controlling for the other explanatory variables, was graphed. First, the relationship was conditioned upon industry internationalization and second on industry growth (both relationships were not statistically significant in the three-level analysis). The first illustration indicates that for companies that are in industries that fall into the upper 25 percent in terms of internationalization, the relationship between top management team nationality diversity and corporate
performance is positive (see Exhibit 34). For firms that belong to industries that fall into the lower 25 percent in terms of internationalization, the relationship is clearly negative. For the industries that form the mid 50 percent of the observations the relationship is slightly to moderately negative.

Exhibit 34: The Effects of Nationality Diversity on Performance Conditioned by Industry Internationalization

Source: Author.

This graph illustrates that the effects of nationality diversity on company performance are conditioned by industry internationalization. Whereas in industries with medium to low internationalization, nationality diversity might have negative effects, for highly internationalized firms this relationship is positive. The moderating effect of industry growth, however, illuminates a different type of moderation (see Exhibit 35). The relationship between nationality diversity and performance is negative for firms operating in industries with very high (top 25 percent) or very low (low 25 percent) growth. At the same time, for industries that experience moderate growth (mid 50 percent) the relationship ranges from positive through neutral to slightly negative.
This illustration consolidates previous contradictory findings on the moderating effect of firm environment. It supports the proposition that top management team diversity is not beneficial at low levels of environmental uncertainty. At the same time, it supports Carpenter’s (2002) surprising evidence that at high levels of uncertainty, top management team diversity has a negative impact on corporate performance. Hence, it can be concluded that the moderating effects of industry characteristics on the relationship between top executive nationality diversity and firm performance may not be as straightforward as previously predicted. Using industry dummies and dividing samples into high and low uncertainty industry limits the extent to which this relationship can be studied. The use of hierarchical linear modeling with larger industry samples and non-linear relationships in the future may be more fruitful.

4.6 Conclusion

This paper attempted to apply a multilevel theoretical and empirical approach to contribute to existing debates on the top management team-performance relationship. By conceptualizing different level contextual effects on the proposed relationship and
testing these effects by accounting for the hierarchical (multilevel) structure of the data, this study shed some light on important main and interaction effects.

First, this paper conceptualized and empirically measured diversity as a multi-dimensional construct. In the theory part, it distinguished between diversity in experiences and diversity in backgrounds and the positive and negative consequences of each diversity dimension were conceptualized separately. Subsequently, the effects of the individual diversity dimensions were tested empirically. The findings suggest that whereas diversity in national background and in international experience have positive effects on firm performance, diversity in industry experience and functional diversity did not have a significant impact. This evidence might be an indication of the changing importance of different diversity dimensions. Whereas functional background and industry experience are common diversity aspects for top management teams, both international experience and nationality diversity are “new diversity“ dimensions that have only recently begun to appear at the upper echelons of organizations, due to the increasing globalization of most industries. A possible explanation for the strong positive effect of nationality diversity and weaker yet significant effects of international experience is that these dimensions have not yet become a “common good” on the executive market. Hence, there is sufficient variation in firms in terms of their degree of top management team internationalization (both in terms of nationality and international experience) and the performance effects are possible to discern.

An alternative explanation for the mixed results of the multiple diversity dimensions is their operationalization. Nationality diversity was measured as a Blau index, accounting for the spread of top management team members across all nationalities represented in the team. The functional diversity measure was similarly based on a Blau index; however, it did not account for the intra-personal breadth of functional experiences of each team member. A previous study by Bunderson and Sutcliffe (2002) evidenced that intra-personal functional diversity is a better indicator of team processes and performance than a simple Blau measure, which accounts only for the current function of each of the executives. Hence, future research should attempt to continue applying fine-grained measures of upper echelons diversity. The costs of collecting in-depth data will be outweighed by the increased validity and predictive strength of the constructs. In addition, it must be noted that experience diversity was operationalized through a simple ratio measure based on dichotomous variables. The industry measure is an improvement compared to previous research as it captured the
experience in industries different than the one in which the firm operates. At the same time, a measure, which depicts the breadth of individual industry experiences, may have stronger predictive power. Similarly, a measure that captures the breadth of international experiences can be linked to firm internationalization (Ruigrok, Greve & Tacheva, 2006). In the context of alliance research, the breadth of experiences in a particular type of internationalization (i.e. international alliance experience) was found to be a significant predictor of modal choice, whereas the impact of simply having previous international experience was not significant (Globerman & Nielsen, 2006).

Third, this paper attempted to shed some light on the multi-dimensional nature of corporate performance as a construct and to theorize specific effects for one of its dimensions. If performance has different dimensions, conceptual clarity is needed as to what aspect of performance is expected to be influenced by which dimension of top management team diversity. Even more important is to theoretically develop the arguments of how (through what team processes and organizational mechanisms) diversity is expected to impact a particular performance dimension. A major weakness of this study is the failure to empirically test the hypothesized team and organizational mechanisms. As a result, this work may fall into the category of “black box” studies. However, the attempted contribution of this study was to shed some light on contextual influences. Such an exploratory research approach, bridging three levels of analysis, is only feasible when a simple relationship is studied. Future research should attempt to combine process and contextual influences in the same study. Finally, if performance is multi-dimensional, as is diversity, this work underscores the need to start building more fine-grained theories of diversity effects instead of simply relying on the broader premise that diversity in perspectives (regardless of its source) leads to better decisions and subsequently performance.

Another limitation of this study, which needs to be acknowledged, is the focus on team instead of individual level of analysis. Upper echelon data is typically collected at the individual level and psychology theories can help researchers to conceptualize diversity at the individual level and investigate relationships between diversity and individual, team and organizational level outcomes. At the same time, this study applied a longitudinal dataset and modeled the influence of time in two separate ways. First, the time the team spent together was found to be an important predictor as well as moderator of the diversity effects on performance. Second, by treating the annual dimension of both top management team composition and corporate performance as repeated observations of the same companies, additional insights were gained into the
temporal dynamics of the relationship. Future research may build upon latent growth models to explore how the studied relationship evolves over time and how the initial state composition influences the development of the relationship. Such an investigation may be of particular interest for “new diversity” dimensions, such as nationality and gender diversity in firm upper echelons, which are still following an upward trend.
5 Top Management Team Internationalization: Construct Development and Empirical Test
TOP MANAGEMENT TEAM INTERNATIONALIZATION:
CONSTRUCT DEVELOPMENT AND EMPIRICAL TEST

ABSTRACT

The ongoing globalization poses significant challenges to the upper echelons of organizations. As a result, companies search for different ways to increase the information-processing capacity at the firm upper echelons and internationalize their top management teams as a source of knowledge and expertise about managing firm foreign operations. Unlike most previous studies conducted on American companies and focusing on executives’ international experience only, this paper empirically tests the proposition that top management team internationalization is a multi-dimensional theoretical construct that relates to executive compensation, firm internationalization and corporate performance. By drawing upon upper echelons and firm internationalization theories, alternative causal models of the relationship between firm internationalization, upper echelons internationalization and corporate performance are proposed and empirically tested in a sample of Swiss publicly listed companies. The findings confirm the validity of the conceptualized construct and suggest that top management team internationalization is an important dimension of firm’s internationalization. Furthermore, the empirical evidence suggests that TMT internationalization has direct as well as indirect effects on corporate performance, mediated through firm internationalization and executive compensation.

Keywords: top management team internationalization, construct validity, firm internationalization, executive effects.
5.1 Introduction

The behavioral approach to firm internationalization (Johanson & Valne, 1977) emphasizes the use of experiential knowledge in expanding and managing firm international operations. The role of learning from experience in the process of gradually increasing firm international involvement is investigated extensively in the internationalization literature (e.g., Andersen, 1997; Barkema, Bell & Pennings, 1996; Barkema & Vermeulen, 1998; Melin, 1992). Yet, in most of these studies, emphasis is placed on firm level experience, whereas the antecedents and consequences of individual (managerial) level of knowledge and expertise remain largely unexplored. At the same time, the strategy literature has long recognized the influence of managerial characteristics and experience on firm strategic choices and behavior (Finkelstein & Hambrick, 1996; Hambrick & Mason, 1984). Similarly, in large sample longitudinal studies, economists investigate the effects of top executives on firm strategic decisions and corporate level performance and find evidence that individual managers have discernible effects on corporate behavior (Bertrand & Schoar, 2003; Jensen & Zajac, 2004).

The importance of having top managers, who know and understand the logic and dynamics of firm foreign markets, has been addressed for a long time among researchers and practitioners (Bartlett & Ghoshal, 1989; Luo, 2005). Extensive experience from a particular country helps a manager to better understand the local market and institutions and to make sound managerial decisions (Kobrin, 1984). However, international assignment experience is often limited in time and regional scope and thus also limited in its impact. Instead, Perlmutter and Heenan (1974) suggest the use of foreign nationals as top managers. With the increasing globalization, foreign-born managers have become more prevalent among the ranks of American business leaders (Business Week, 1998). A study by the U.S. Conference Board found that successful global companies have multinational top management (Berman, 1997).

This paper suggests that top executives’ foreign nationality and international work experience are two important sources of individual competence and ability to deal with the complexity of international operations of multinational corporations (MNCs). Yet, making successful strategic decisions requires more than the mere existence of individual knowledge and competences. It is the diversity in individual knowledge, skills and competences that creates a broader resource and knowledge base within the team and influences the quality of group decisions (Milliken & Martins, 1996).
Focusing on the team level of analysis, upper echelons theory suggests that the composition of the entire top management team, particularly in terms of heterogeneity in managers’ backgrounds, creates the basis for managerial decisions (Hambrick & Mason, 1984). Over the past twenty years the upper echelons research stream has provided coherent evidence for a link between TMT backgrounds and firm strategy and performance (for reviews see Carpenter, Geletkanycz & Sanders, 2004; Certo et al., 2006; Finkelstein & Hambrick, 1996). However, only over the past decade has the discussion of top management team effects been extended to the context of MNCs and firm internationalization (Herrmann & Datta, 2005).

The existing upper echelons studies dealing with international contexts (Athanas-siou & Nigh; 2002; Carpenter & Frederickson, 2001; Carpenter, Sanders & Gregersen, 2001; Herrmann & Datta, 2005; Reuber & Fischer, 1997; Sambharya, 1996; Sanders & Carpenter, 1998; Tihanyi et al., 2000) are based on North-American samples and focus primarily on top managers’ international experience as an important source of competitive advantage for multinational corporations. Only a few studies, mostly in the European context, address the nationality diversity in top management teams as related to firm internationalization (e.g., Caliguri, Lazarova & Zehetbauer, 2004; Elron, 1997; Heijltjes, Olie & Glunk, 2003; Ruigrok, Owtscharov & Greve, 2005; Ruigrok, Greve & Tacheva, 2006).

This paper suggests that in the context of firm internationalization both top management team members’ national origins and international experiences influence their ability to manage the complexity of firm international operations. Whereas nationality and international experience are two distinct sources of knowledge and expertise, both are associated with similar advantages pertaining to decision-making related to firm internationalization. At the same time, the ability of the top management team to deal with the challenges of firm international operations and make sound managerial decisions is a latent construct, which is not directly observable and therefore difficult to measure. The diversity in nationality and international experience of top managers are two possible indicators of this latent variable. This paper proposes a multi-dimensional construct of top management team internationalization and applies structural equation modeling to empirically test the validity of the construct as well as its relationships to firm internationalization, compensation and performance.

The intended contribution of this paper is three-fold: first, to address recent calls for increasing construct validity in upper echelons research (Carpenter & Reilly, 2006); second, to contribute to the discussions in the international management field about the relevant dimensions of firm internationalization; and finally, to address
issues of causality between top management team internationalization and firm internationalization. The paper proceeds as follows. First, the theoretical basis for the development of the top management team internationalization construct is presented. Second, the relationships between TMT internationalization, firm internationalization and corporate performance are hypothesized. Third, the sample selection and the data collection procedures are outlined, followed by a description of the variables and the methods of analysis used in the study. Subsequently, the empirical results are presented; finally, the findings are discussed in relation to existing research in both upper echelon and internationalization streams.

5.2 Theoretical Underpinnings

Firms expanding their operations beyond their national borders face significant challenges related to increased environmental uncertainty and lack of knowledge about the local political, legal, tax, etc. systems. The behavioral approach to firm internationalization (Johanson & Vahlne, 1977; Johanson & Wiederheim-Paul, 1975) suggests experiential learning as an important source of knowledge and expertise to deal with the uncertainty of entering new geographical markets (Eriksson, Johanson, Majkgaard & Sharma, 1997). Grounded in the behavioral theory of the firm (Cyert & March, 1963) and the growth theory of the firm (Penrose, 1959), the Uppsala internationalization process model (Johanson & Vahlne, 1977) emphasizes the irrationality of managerial choices and the uncertainty under which they are made.

Similarly, building on the behavioral view of the firm (Cyert & March, 1963; March & Simon, 1958), upper echelons theory suggests that top managers’ human boundaries/limitations, such as limited field of vision, selective perception and interpretation bias, influence the strategic choices executives make (Finkelstein & Hambrick, 1996). Hence, under high environmental uncertainty organizational choices and behavior are strongly influenced by the background characteristics and previous experiences of managers. As a result, firm strategic choices and behavior can be explained by the composition of the top management team (Hambrick & Mason, 1984). In line with the logic of both firm internationalization and upper echelons theory, the international backgrounds and experiences of top management team members can be expected to have a significant influence on firm decision-making pertaining to foreign expansion strategies and thus to be related to firm degree of internationalization (DOI) and ultimately to corporate performance.
5.2.1 The Construct of Top Management Team Internationalization

National origin is an important aspect of a top manager’s international background and orientation. A number of conceptual and empirical works from various disciplines address the manner in which nationality influences individual personalities (for a review see Triandis & Suh, 2002). Furthermore, national origin has significant influence on team dynamics and interactions in multicultural teams (Hambrick et al., 1998). In the context of firm strategy, executives’ nationalities have implications not only for individual personalities and top management team dynamics but also for the strategic decision-making (Elron, 1997; Hambrick, Cho & Chen, 1998; Kilduff, Angelmar & Mehra, 2000). Top manager nationality is a source of knowledge about a particular region or economy. Foreign-born executives possess valuable knowledge about economic and market factors and institutions as well as about culture, behavior and norms of the region, from which they originate, that may be invaluable in making decisions about a firm’s strategy in the region. Luo suggests that “foreign natives have natural advantages in processing information pertaining to their home countries and in finding solutions that improve information processing.” (2005: 34).

Besides individual level knowledge, the diversity in executive nationalities is important for firm strategy. Sanders and Carpenter (1998) argue that, particularly in the context of firm internationalization, diversity in executive backgrounds increases the information-processing capacity of the top management team. Diversity in top management team members’ backgrounds leads to different perspectives on and interpretations of a particular situation, thus reducing the individual bias and group think and increasing the quality of the decision-making of the team. Diversity in top managers’ nationality is recognized as one of the emerging dimensions of top management team heterogeneity (Finkelstein & Hambrick, 1996). According to the notion of requisite variety (Ashby, 1956), the composition of a company’s top management team should reflect the complexity of its environment (Keck, 1997). Hence, diversity in TMT national backgrounds may help the team as a whole to better understand and interpret the complexity of firm international environment. Indeed, a practitioners’ oriented study conducted by the U.S .Conference Board found that successful global companies have multinational top management (Berman, 1997).

The benefits of top managers’ international assignment experience for multinational firms are well established in the literature (Athanassiou & Nigh; 1999; Carpenter, Sanders & Gregersen, 2001). Top managers’ previous experience with foreign markets is viewed as a valuable resource, which increases the competitive advantage of the firm. Important network contacts and access to sources of informa-
tion are acquired through executive foreign assignment experience (Athanassiou & Nigh, 2002). Moreover, international experience has an influence on managers’ perceptions and personalities and contributes to the higher international orientation of top executives (Gunz & Jalland, 1996). At the same time, while a number of empirical studies found support for a positive relationship between international experience of the TMT and firm internationalization, only two provide evidence for positive effects of top management team international experience on corporate performance (Carpenter, 2002; Carpenter, Sanders & Gregersen, 2001).

Previous research has primarily used single proxies for top management team internationalization, i.e. either top managers’ nationality or international experience. Carpenter and Reilly (2006) note the lack of construct validity measures in upper echelons research and cite Cook and Campbell’s (1979) remark that “since single operationalizations both under-represent constructs and contain irrelevancies, construct validity will be lower in single exemplar research than in research where each construct is multiply operationalized” (1979: 65). A major limitation of using nationality as a single proxy for top managers’ internationalization is that it only captures the impact of one country/culture and does not consider the influences of other countries/cultures to which the person has been exposed. International experience, however, is a dimension that takes into account a person’s exposure to various cultural environments. This paper argues that top executives’ nationalities and international experiences are two distinct sources of the top management team’s ability to better understand and successfully deal with the challenges of firm international operations. Such ability is an unobservable characteristic of the top management team level that is difficult to measure directly. Nunnally and Bernstein note that “to the extent that a variable is abstract and latent rather than concrete and observable, it is called a “construct”. Such a variable is literally something that scientists “construct” (put together form their own imagination) and does not exist as an observable dimension of behavior” (1994: 85).

Nationality diversity and diversity in international experiences are two distinct dimensions of the construct of top management team internationalization that reflect different sources of expertise and knowledge necessary for the top management team to be able to manage an internationalized corporation. The use of multiple indicators of theoretical constructs is strongly advocated in social science research. As Nunnally and Bernstein argue that “because constructs concern domains of observables, a better measure of any construct is obtained by combining the results from a number of measures than by taking any one of them individually... Similarly, combining several
observables provides greater construct validity and scientific generalizability in the domain as a whole relative to a single measure” (1994: 86). Furthermore, diversity researchers recently raised the argument that diversity dimensions within a team do not influence team dynamics and performance independently from each other (Jackson & Joshi, 2004). Hence, top executives should be regarded as a “bundle of attributes” (Carpenter, Geletkanycz & Sanders, 2004; Kor, 2003) and the effects of their background characteristics investigated simultaneously rather than studying single attributes or multiple characteristics independently.

The two dimensions of the top management team internationalization construct are rather complementary than independent from each other in building the top management team’s ability to deal with the complexity of firm foreign operations. The underlying argument is that top managers’ international experience will have cumulative effects with the diversity in top managers’ national origin in forming the ability of the top management team to deal with the challenges of firm internationalization in particular, and the globalization process in general. These combined effects of nationality and international experience are expected to play a role at both the individual level as well as the team level of analysis.

Previous research on group diversity indicates that cultural diversity has some negative effects on group dynamics, which, however, diminish over time (Earley & Mosakowski, 2000; Watson, Kumar & Michelsen, 1993). Yet, these negative effects of national diversity might be less pronounced contingent upon the level of international experience of the team members. For instance, the role that a foreign national plays in a TMT and the way his/her national characteristics influence team processes and performance may largely depend on the experience that the rest of the top executives have made with foreign cultures. The extent to which the other top managers speak the language and are used to common beliefs and values of a foreign team member’s culture may have an impact on team interactions (Hambrick et al., 1998). Thus, the positive effects of national diversity in a top management team may be stronger when bundled with greater degree of team international experience.

The difference between individual and team level of analysis, as well as issues of leadership and power, has recently been raised in upper echelons research (Cannella & Holocomb, 2005). Attention is increasingly being paid to the influence of the CEO compared to the entire top management team. In an empirical investigation of executive effects in a sample of U.S. multinationals, Carpenter, Sanders and Gregersen (2001) found that international experience has a positive and consistent impact on a firm’s performance, with the impact being stronger when a CEO’s
international experience is combined with the international experiences of other TMT members. Hence, a theoretical construct of top management team internationalization needs to take into consideration the cumulative effects of the top management team members and the CEO’s characteristics.

**Hypothesis 1:** Top management team internationalization is a multi-dimensional construct capturing individual level CEO and team level top management characteristics in terms of nationality and international experience.

### 5.2.2 TMT Internationalization from the Firm Internationalization Perspective

Issues of causality have long been discussed in upper echelons research yet rarely addressed in empirical research settings. In the context of firm internationalization, top management team internationalization has been investigated as both an independent (Athanassiou & Nigh, 2002; Carpenter, Sanders & Gregersen, 2001; Carpenter & Frederickson, 2001; Elron, 1997; Herman & Datta, 2005; Lee & Park, 2006; Reuber & Fisher, 1997; Sambharya, 1996; Tihanyi et al., 2000) and dependent variable (Athanassiou & Nigh, 1999; Athanassiou & Nigh, 2000; Heijltjes, Olie & Glunk, 2003; Ruigrok, Greve & Tacheva, 2006; Ruigrok, Peck & Van der Linde, 1999).

Some international business researchers further suggest that top management team internationalization is simply a dimension of firm degree of internationalization (e.g., Caliguri, Lazarova & Zehetbauer, 2004; Sullivan, 1994).

The causal relationship between top management team internationalization and firm degree of internationalization is indeed a complex one. Whereas managers are selected to fit a firm’s strategy (Szilagyi & Schweiger, 1984), they subsequently have significant influence on the development of firm strategy (Hambrick & Mason, 1984). Therefore, a clear causal relationship is difficult to establish (Finkelstein & Hambrick, 1996). As a result, the alternative view of top management team internationalization as being one of the dimensions of firm degree of internationalization appears plausible. Sullivan (1994: 331) argues that firm degree of internationalization is a multi-dimensional construct having three attributes: performance (what sales are abroad), structural (what resources are abroad) and attitudinal (what is top management’s international orientation). The attitudinal dimension of firm degree of internationalization is most difficult to measure with secondary (archival) data as it has psychometric properties. Therefore, international experience at the top management team level is suggested as a proxy for the attitudinal dimension (Sullivan, 1994).

Revisiting this discussion ten years later, Caliguri, Lazarova and Zehetbauer (2004) note that the attitudinal dimension is the least studied one and suggest a new
proxy for it, namely, top management team nationality diversity. The study’s findings suggest that TMT nationality diversity is significantly positively correlated with all other measures of firm degree of internationalization (i.e. foreign sales ratio, foreign assets ratio, foreign subsidiaries ratio, foreign employee’s ratio, board nationality diversity and number of countries of operation) and should be established as a relevant indicator. Hence, building on previous research in the international business field suggesting that both top management team nationality diversity and international experience are indicators of the attitudinal aspect of firm degree of internationalization, this paper suggests that the multi-dimensional construct of top management team internationalization is in itself a dimension of the higher-level construct firm internationalization.

**Hypothesis 2:** Top management team internationalization is an indicator of firm degree of internationalization.

### 5.2.3 TMT Internationalization from the Upper Echelons Perspective

In line with upper echelons theory (Finkelstein & Hambrick, 1996; Hambrick & Mason, 1984), top management team internationalization may influence firm strategic decision-making and ultimately performance. As top management team internationalization is regarded an ability to manage the complexity of firm foreign operations and cope with the challenges of globalization, a positive effect on firm strategy can be predicted. At the same time, top management team internationalization has additional effects on other aspects of executives work and strategic decision-making, which may not necessarily be advantageous. It is important to note that diversity in top managers’ international backgrounds and orientation has both positive and negative influences on team dynamics and strategic decision-making (Elron, 1997). Whereas the positive impact of top management team international experience on corporate performance is established in the literature (Carpenter, 2002; Carpenter, Sanders & Gregersen, 2001), the performance effects of nationality diversity are less straightforward (Elron, 1997; Kilduff, Angelmar & Mehra, 2000; Richard et al., 2004).

In the group effectiveness literature, diversity is often characterized as a "double-edged sword" which is beneficial only if managed successfully. Cultural diversity is associated with certain advantages, such as creativity and generation of more numerous and higher quality solutions (Cox, Lobel & McLeod, 1991). At the same time, the negative consequences of cultural diversity on team processes and performance tend to diminish over time (Earley & Mosakowski, 2000; Watson, Kumar & Michaelsen; 1993). By analyzing the consistency of findings in diversity
research, Milliken and Martins (1996) found that due to the negative consequences, groups and organizations have a tendency to systematically drive out diversity and create very homogeneous groups. This argument is in alignment with empirical evidence from the top management team studies (Boone et al., 2004; Wagner, Pfeffer & O'Reilly, 1984). Furthermore, top management diversity is often associated with increased team conflict (Barsade et al., 2000; Knight et al., 1999; Simons & Peterson, 2000) which in turn influences performance. Hence, the top management team diversity may have negative influences on executive strategic making and ultimately on corporate performance.

*Hypothesis 3a: Top management team internationalization has direct negative effects on corporate performance.*

### 5.2.4 The Mediating Role of Firm Strategy

According to the upper echelons perspective top management team internationalization will influence firm performance through the mediating effects of firm strategy (Finkelstein & Hambrick, 1996). The international backgrounds and orientation of the top management team will have significant influence on the processes of firm internationalization. It can be expected that top management team internationalization will lead to higher company international involvement. Indeed, empirical evidence supports the proposed relationship between top management team characteristics and different aspects of firm internationalization strategy, such as overall degree of internationalization (Athanassiou & Nigh, 2002; Lee & Park, 2006; Peyrefitte, Fadil & Thomas, 2002; Reuber & Fisher, 1997; Sambharya, 1996), degree of international diversification (Herrmann & Datta, 2005; Tihanyi et al., 2000), change in international diversification (Wally & Beccerra, 2001), and foreign entry (Barkema & Chvyrikov, 2007).

Similar to Carpenter (2002), Carpenter, Sanders and Gregersen (2001) and Herrmann and Datta (2005), this paper argues that firm internationalization is an important factor in the relationship between top management team internationalization and corporate performance. Executive choices based on a broader international knowledge base and cognitions of the top management team will lead to sound managerial decisions pertaining to increasing the degree- and managing the portfolio of- firm foreign operations. Luo (2005: 34) suggests that increased cultural diversity at the top management team and board levels further facilitates the development and utilization of firm level experiences. Foreign expansions based on decisions made by
individuals and teams with the necessary capacity to process information and find solutions (Luo, 2005) will have a positive impact on corporate performance.

_Hypothesis 3b: Top management team internationalization will have positive effects on corporate performance mediated through firm internationalization._

5.2.5 Executive Compensation as a Mediator

Executive compensation is an important yet controversial upper echelons aspect that has an influence on executive effects on firm strategy and performance (Finkelstein & Hambrick, 1996). Sanders and Capreter (1998) argue that top executives at internationalized companies are remunerated better as they are typically faced with increased complexity. In the context of globalization, managers with international experience are rare and valuable resources and accordingly receive higher remuneration packages (Carpenter, Sanders & Gregersen, 2001). Hiring foreign nationals is similarly costly as it involves higher mobility and integrations costs as well as high remuneration to make the job change to a different country more attractive and compensate for various inconveniences. Hence, more internationalized top management teams will receive a higher compensation than those without foreigners or international experience, both for their human capital (Capenter, Sanders & Gregersen, 1998) as well as for the complexity of their task.

At the same time, agency theory predicts a positive relationship between executive compensation and corporate performance. Linking executive compensation to firm performance is considered a governance mechanism to mitigate agency problems (Jensen & Meckling, 1976; Alchain & Demsetz, 1972; Fama & Jensen, 1983). A number of studies found a positive relationship between the level of CEO and executive compensation and corporate performance (e.g., Tosi & Gomez-Mehia, 1989). In the context of firm internationalization, Sanders and Carpenter (2004) found that whereas CEO compensation per se had no effects on corporate performance, non-CEO total pay was positively associated with subsequent performance with the effects being stronger in MNCs with high degrees of internationalization.

_Hypothesis 3c: Top management team internationalization will have positive effects on corporate performance mediated through the level of executive compensation._

The theoretical model underlying top management team internationalization and its corporate effects is visualized in Exhibit 36. The construct of top management team (upper echelons) internationalization (UE) has two dimensions: nationality and international experience diversity. TMT internationalization has direct as well as
mediated effects through executive compensation and firm internationalization (INT) on corporate performance.

**Exhibit 36: Theoretical Model of TMT Internationalization**

![Theoretical Model of TMT Internationalization](image)

*Source: Author.*

### 5.3 Methodology

#### 5.3.1 Study sample and data sources

The initial sample for this study consists of all Swiss publicly listed companies. From the 269 companies listed on the SWX in September 2004, the sample was reduced to \( n=165 \) based on a number of criteria (see Exhibit 21). The sampling procedures and the characteristics of the Swiss corporate governance system are discussed in detail in the methodology section of the second essay of this dissertation.

Data was initially collected for a five-year period (2000-2004). The availability of data on demographic characteristics and personal experiences of Swiss top management team members was very limited until the introduction of the Swiss Corporate Governance Directive by the Swiss Stock Exchange in July 2002. This directive is based on the "comply or explain" principle and urges companies to disclose detailed information on a number of important governance mechanisms and the composition of top management and boards. In particular, information on executive compensation was not available before the end of 2002. Therefore, the analysis for this study is based on only three years of observations (2002-2004). Furthermore, company/year
observations were removed (1) where companies were not listed for the entire period and (2) if data was missing for the CEO or for more than a quarter of the top management team members, (Westphal & Zajac, 1997; Jensen & Zajac, 2004). This resulted in a total of 495 company/year observations of 165 firms.

Company level internationalization and performance data was obtained from the Worldscope and Thomson One Banker databases. Data on top management team composition and executive compensation was obtained from the companies’ annual reports. Information on top managers’ nationality and international experience was collected from executives’ biographies published on companies’ websites and in annual reports. Subsequently, individual manager’s records were cross-checked across companies to complete missing records.

5.3.2 Variables

A company's degree of internationalization was operationalized using a multi-item measure based on Sullivan’s (1994) conceptualization. The composite measure accounted for the extent to which each company had international sales as well as to the geographical dispersion of the sales. The proportion of foreign sales to the total sales of a company \( (FSTS) \) was used as an indicator of the performance dimension of firm DOI. A measure of the dispersion of foreign sales was used in addition to the ones initially proposed by Sullivan (1994). The degree of geographical diversification was measured using the entropy measure \( (GSENTR) \) of firm diversification (Palepu, 1985) similar to previous research in the upper echelons field (Jensen & Zajac, 2004; Hoskinsson, Hitt, Johnson & Moesel, 1993; Wiersema & Bantel, 1992). The entropy measure is calculated with the formula:

\[
\sum P_i \left[ \ln \left( \frac{1}{P_i} \right) \right]^2
\]

Where \( P_i \) is the percentage of segment i sales of the total firm sales and \( (1/P_i) \) is a weight to account for the importance of each segment in the total sales of a company. Proportions were defined as sales per geographical segment. The ratio of foreign assets to the total assets \( (FATA) \) was employed to represent the structural dimension of the internationalization measure, as an indicator of firms’ resources invested abroad. Information on foreign employees is not available in the Thomson One Banker database. Furthermore, the foreign employees figure was not consistently reported in the annual reports of Swiss companies. Therefore, a measure of the proportion of foreign employees to the total number of employees \( (FETE) \) was not applied in this study.
The top management team of a company was defined as the officers, who were members of the management board or executive committee as identified in the company’s annual report at the end of the calendar year. The members of the extended executive committee were generally not included in the top management team, following the commonly employed definition of the TMT as a group of the most important decision-makers in a company (Murray, 1989; Pettigrew, 1992). Degree of nationality diversity in a top management team \( (TMTFOR) \) was calculated using a simple ratio measure of the percentage of top management team members (excluding the CEO) with foreign nationality out of the total number of top management team members (minus one for the CEO). The nationality of the CEO \( (CEONAT) \) was recorded as a dummy variable equal to one if the CEO did not have Swiss nationality and zero otherwise. Diversity in international experience \( (TMTEXP) \) was operationalized by applying a simple ratio measure of the proportion of top management team members (excluding the CEO) who had previous work experience outside Switzerland. The international experience of the CEO \( (CEOEXP) \) is a dummy variable equal to one if the CEO has previously worked abroad and zero otherwise.

The team level variables as well as the three indicators of firm internationalization all ranged between 0 (no internationalization) and 1 (highest degree of internationalization). Corporate performance was measured as the return index \( (RETIND) \) for each company and year, an objective measure of stock market returns. Executive compensation was operationalized through a multi-item measure. Executive compensation \( (LEXCO) \) data was collected from annual reports and measured as the total compensation of the entire top management team, excluding the CEO. CEO compensation \( (HICO) \) is the highest compensation listed in the company annual report under the remuneration part of the corporate governance information section.

Firm size was previously found to correlate with both a company’s degree of internationalization and the two dimensions of top management team internationalization, namely international experience (Sambharya, 1996) and nationality diversity (Ruigrok, Peck & van der Linde, 1999) and was therefore included as a control variable. The total number of firm employees \( (LEMP) \) was used to control for firm size. The performance, compensation and size variables were transformed using a logarithmic function in order to meet normal distributions requirements, which are essential conditions for conducting a structural equation model analysis (Kline, 2005).
5.3.3 Data Analysis

Structural equation model analysis was applied to test the hypothesized relationships by using the EQS software. SEM is particularly suitable to test for the validity of latent (unobservable) constructs (Loehlin, 2004) as well as their direct and mediated relationships with other observable or unobservable variables (Kline, 2005). A two-step approach to structural equation modeling is usually recommended (Anderson & Gerbing, 1988; Hoyle & Panter, 1995; Medsker, Williams & Holahan, 1994). In the first step, a confirmatory factors analysis (CFA) is conducted to assess the validity of the measurement model and the discriminant validity of individual constructs. In the second step, a structural model involving path analysis is used to estimate the path coefficients for the relationships between constructs. A sequence of nested structural models (competing and alternative models) are evaluated in order to determine the model that represents the best fit between the hypothesized relationship and the observed variance in the data. As combining multiple year-observations in the same dataset would violate the assumption of independence among observations, multiple group analysis with equality constraints was conducted for the three years 2002, 2003 and 2004.

Structural equation estimates are based on covariance structures (or alternatively on the correlation matrices between the observed variables with their standard deviations). In some of the recently developed models, such as growth models, mean structures are also included in the analysis (Kline, 2005). Table 1 in Appendix 4.1 presents the means, standard deviations and the correlations between the observed variables included in the SEM analysis.

5.4 Results

5.4.1 CFA Model Results

The first step of the SEM analysis involves the confirmatory factor analysis to investigate the psychometric properties of individual constructs and simultaneously assess the fit of the overall measurement model. Byrne (2006) suggests a number of criteria that need to be met for the factorial validity of a multi-dimensional theoretical construct. First, the latent variable can be explained by the hypothesized constructs; second, each item measure has a non-zero loading on the factor it is designed to measure and a zero loading to all other factors; third, the factors are correlated consistent with theory; and finally the error-uniqueness associated with each measure are uncorrelated. Furthermore, for the purposes of item identification and determining the scale of latent variables, either one of the indicators or the factor variance needs to
be fixed (set to 1.0), while all other parameters are freely estimated (Byrne, 2006; Kline, 2005). If a latent construct is a dependent variable, however, its variance can not be fixed as the paths leading to this dependent variable explain its variance. In addition, in structural equation modeling a distinction is made between error terms of independent variables (e) and error terms of dependent variables called disturbances and denoted with (d). The error terms in a factoral model represent measurement error or any kind of disturbance in assessing the true value of the observed variables. As Carpenter and Reilly (2006) note, measurement error has rarely been accounted for in previous upper echelons research.

Results of the confirmatory factor analysis provided support for the multi-dimensionality of the top management team internationalization construct (see Exhibit 37). Both top management team nationality diversity ($\beta=0.82$) and top management team international experience ($\beta=0.82$) were positively related to the respective diversity dimension. Both diversity dimensions, in turn, loaded significantly on the upper echelons internationalization construct ($\beta=0.75$ for nationality and $\beta=0.45$, $p<0.05$ for international experience).

Exhibit 37: Measurement Model Results

Source: Author.
Hence, in accordance with H1 support was found for the multidimensionality of the proposed construct. Top management team composition was a stronger indicator of both TMT diversity dimensions compared to the CEO characteristics ($\beta=0.49$, $p<0.05$ for CEO nationality and $\beta=0.40$, $p<0.05$ for CEO international experience. The three items of FSTS ($\beta=0.90$), FATA ($\beta=0.72$, $p<0.05$) and GSENTR ($\beta=0.75$, $p<0.05$) loaded to a single factor. This factor captures the internationalization of the firm in terms of operations abroad. The upper echelons internationalization factor, on the other hand, is a latent variable for the international orientation of the firm top management. The results supported the convergent validity of the measurement model as all freely estimated parameters had significant and high factor loadings. In support of the discriminant validity of the conceptualized model, the multivariate Lagrange-Multiplier (LM) tests of the modification index suggested no cross-factor loadings.

In support of H2, both constructs, upper echelons internationalization ($\beta=0.82$, $p<0.05$) and firm internationalization ($\beta=0.56$) loaded on the higher order latent variable firm degree of internationalization (see measurement model 4 in Appendix 4.2), which had a significant factor variance. The CFA results show that the relationship between each freely estimated indicator and the factor it represents, as well as between the first and second order (latent) factor, were positive and statistically significant. Thus, the convergent validity of the model was verified. The discriminant validity was supported by the lack of cross-factor loadings between the indicators of each of the hypothesized factors.

The results reported above are of the model with the best fit between hypothesized factors and observed variance in the dataset (measurement model 4). To further support the discriminant validity of the hypothesized factors, a series of comparative measurement models were assessed (Kline, 2005). The theoretical reasoning and the sequence of testing the measurement models was as follows (see all measurement models in Appendix 4.2). First, according to current research by Caliguri, Lazarova and Zehetbauer (2004) a first-order confirmatory factor analysis was conducted to test whether all items load to one construct (measurement model 1). Subsequently, according to upper echelons theory (Hambrick & Mason, 1984), a distinction was made between upper echelons internationalization and firm internationalization (international strategy measured as the degree of commitment of resources and profits abroad) and a two-factor measurement model was tested (measurement model 2). Third, the multidimensionality of the upper echelons internationalization was tested by distinguishing between nationality diversity and international experience diversity that were considered separate dimensions of the upper echelons internationalization.
construct (measurement model 3). This model recognized that firm internationalization and upper echelon internationalization are two separate yet correlated constructs. Finally, a second order CFA (Byrne, 2006; Kline, 2005; Loehlin, 2004) was applied to test the proposition that both constructs were dimensions of a higher order multidimensional latent construct, namely, degree of internationalization (measurement model 4).

Exhibit 38 reports the fit indices used to assess the fit of the measurement models or the extent to which the proposed models adequately describe the sample data (Byrne, 2006). In the process of assessing the model fit, the residual variance matrices are first examined; the magnitude of residuals is of interest and is expected to be small. Large residuals of particular variables would indicate their misspecification in the model. The residuals of the seven variables included in the measurement model were all in acceptable norms with the average absolute standardized residual having a value of 0.0194 and the average off-diagonal absolute residual equal to 0.0247. The next step in assessing the model fit is the examination of the goodness-of-fit statistics. $\chi^2$ statistics is one of the conventional methods for assessing model fit. Based on the degrees of freedom, the significance of the $\chi^2$ statistics is usually reported. However, the sensitivity of $\chi^2$ statistics to sample size has been extensively criticized (Byrne, 2006; Kline, 2005) and a number of alternative fit indices are proposed. Comparative fit indices measure the proportional improvement of the model fit by comparing the hypothesized model with a restricted, baseline model. The Bentler and Bonnett’s (1980) Normed Fit Index (NFI) is among the most often used. The index value ranges from zero to one and a value higher than 0.95 (or less conservative 0.90) is considered as a good model fit. The CFI index (Bentler, 1990) is a revised version of the NFI index that takes into consideration sample size and has the same range of cut-off values. The Non-Normed Fit Index (NNFI) is also a modification of the NFI index that takes into account model complexity and can take values higher than one. The Root Mean Square Error of Approximation (RMSEA) has recently been recognized as one of the most informative criteria in structural equation modeling (Byrne, 2006). This fit index is also sensitive to model complexity. Values lower than 0.05 indicate a very good model fit whereas values lower than 0.08 are acceptable and values between 0.08 and 0.10 are considered indicators of a weak fit.

The one-factor model of firm DOI (measurement model 1) clearly did not fit the data adequately. The distinction between two factors, upper echelons internationalization and operational internationalization (measurement model 2) showed an improvement in model fit with acceptable fit to the variance of the data.
Top Management Team Internationalization

(RMSEA=0.046 and CFI=0.964). Measurement model 3 tested whether the top
management team nationality and international experience diversity are two distinct
dimensions of the theoretical construct of upper echelons internationalization and the
improvement of model fit ($\chi^2$ difference of 64.140; RMSEA=0.000 and CFI=1.000)
supported this proposition. Measurement model 4 (RMSEA=0.000 and CFI=1.000)
tested the second-order factor of firm degree of internationalization. The slight
improvement of fit compared to model 3 indicated that the constructs of firm
internationalization and upper echelons internationalization are distinct yet correlated
and load to a latent variable of firm DOI.

Exhibit 38:  Fit Indices for Alternative Measurement Models

<table>
<thead>
<tr>
<th>Nr.</th>
<th>Model</th>
<th>Df</th>
<th>$\chi^2$</th>
<th>NFI</th>
<th>NNFI</th>
<th>CFI</th>
<th>RMSEA</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>One factor DOI</td>
<td>56</td>
<td>245.783</td>
<td>0.844</td>
<td>0.859</td>
<td>0.875</td>
<td>0.085</td>
</tr>
<tr>
<td>2</td>
<td>Two factors (UE &amp; INT)</td>
<td>55</td>
<td>109.875</td>
<td>0.930</td>
<td>0.958</td>
<td>0.964</td>
<td>0.046</td>
</tr>
<tr>
<td>3</td>
<td>Two factors (UE (NAT and EXP)) &amp; INT</td>
<td>53</td>
<td>45.735</td>
<td>0.971</td>
<td>1.006</td>
<td>1.000</td>
<td>0.000</td>
</tr>
<tr>
<td>4</td>
<td>Second order DOI (INT and UE (NAT and EXP))</td>
<td>52</td>
<td>44.873</td>
<td>0.972</td>
<td>1.006</td>
<td>1.000</td>
<td>0.000</td>
</tr>
</tbody>
</table>

Source: Author

In addition, alternative measurement models, including the nationality diversity
and international experience diversity of the board of directors as additional indicators
of upper echelons internationalization, were tested. Previous research suggests that
board nationality diversity is a significant indicator of firm DOI (Caliguri, Lazarova &
Zehetbauer, 2004). However, the goodness of fit of all four models was significantly
lower and therefore the results are not reported here. Similar to Jensen and Zajac
(2004), these results lead to the conclusion that the “supra-TMT” theoretical construct
cannot find empirical support and the effects of top executives and board of directors
need to be studied separately.

5.4.2  Structural Model Results

The structural model is used to assess the validity of causal structures among
latent variables. By comparing a series of nested theoretically competing models, the
hypothesized causal relationships between variables are tested. The initial model
(structural model 1) represented a direct relationship between upper echelons
internationalization and corporate performance. The test results suggest a significant
negative relationship between top management team internationalization and corporate performance ($\beta=-0.244$, $p<0.05$). The overall fit of the model was good (CFI=1.000; RMSEA=0.000). Wald multivariate test for structural paths in the model (Byrne, 2006) indicated that none of the parameters were redundant and needed to be removed from the model.

**Exhibit 39: Fit Indices for Nested Structural Models**

<table>
<thead>
<tr>
<th>Nr.</th>
<th>Model</th>
<th>Df</th>
<th>$\chi^2$</th>
<th>NFI</th>
<th>NNFI</th>
<th>CFI</th>
<th>RMSEA</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Direct effects model</td>
<td>118</td>
<td>102.177</td>
<td>0.971</td>
<td>1.007</td>
<td>1.000</td>
<td>0.000</td>
</tr>
<tr>
<td>2</td>
<td>Mediated effects model</td>
<td>128</td>
<td>59.006</td>
<td>0.983</td>
<td>1.027</td>
<td>1.000</td>
<td>0.000</td>
</tr>
</tbody>
</table>

*Source: Author*

To test for the mediating effects of firm internationalization and executive compensation, two paths were added from upper echelons internationalization to the respective constructs (see structural model 2 in appendix 4.3).

**Exhibit 40: Structural Model Results**

*Source: Author.*
The results indicate that the relationship between upper echelons internationalization and corporate performance is a complex one. First, in support of hypothesis 3a, top management team internationalization has a direct negative effect ($\beta=-0.30$, $p<0.05$) on company performance (see exhibit 40). However, upper echelons internationalization has a significant positive effect on firm internationalization ($\beta=0.25$, $p<0.05$), which in turn is slightly negatively related to performance ($\beta=-0.10$, $p<0.05$). Thus, whereas firm internationalization mediates the relationship between TMT composition and performance, no support was found for hypothesis 3b. Finally, the path between upper echelons internationalization and executive compensation was positive and significant ($\beta=0.19$, $p<0.05$) and compensation was, in turn, positively significantly related to corporate performance ($\beta=0.61$, $p<0.05$). The results provide support for the mediating role of executive compensation predicted by Hypothesis 3c.

5.4.3 Additional Insights into the Top Management Team - Firm Internationalization Relationship

Two alternative models were tested to delve into the issue of causality between upper echelons internationalization and internationalization of firm operations. First, a requisite variety logic (Ashby, 1956) was applied. Based on the matching managers to strategies argument (Szilagyi & Schweiger, 1984) and the proposition that top management teams are internationalized as a response to increasing international involvement, the structural path between operational internationalization and upper echelons internationalization was reversed. The test results suggested a positive significant effect of firm internationalization on upper echelons internationalization ($\beta=0.45$, $p<0.05$). The other structural paths remained virtually the same. However, the fit indices indicated a reduction in model fit (CFI=0.932; RMSEA= 0.043). Second, a recursive relationship where both variables (INT and UE) influence each other was tested (($\beta=0.40$, $p<0.05$). The fit indices indicated again a weaker model fit (CFI=0.936; RMSEA= 0.063).

Structural equation modeling is not an analytical method to test causality (Kline, 2005). Rather, it allows for the testing of alternative models predicting different causal relationships and the evaluation of parameter significance and overall model fit. The comparison of the alternative models indicated that none of them fits the data better than model 2.
5.5 Discussion

This study was stimulated by a recent trend in business corporations - the increasing internationalization of their top management teams. A multi-dimensional measure of top management team international orientation was applied to explore its relationship to firm international operations and executive compensation and ultimately to corporate performance. Importantly, this study addresses the gap in research on international experience of top executives of European companies (Carpenter & Fredrickson; 2001) and supports previous findings of the emerging research stream on nationality diversity of top management teams (Birkner, 2004; Caliguri, Lazrova & Zehetbauer, 2004; Heijltjes, Olie & Glunk, 2003; Ruigrok, Peck & van der Linde, 1999). Furthermore, the study develops a multi-dimensional measure of TMT internationalization as a latent variable, capturing the upper echelon’s ability to deal with the challenges of firm international operations. The results suggest that the construct has strong validity and future research in this direction is encouraged.

This study’s findings emphasize the impact of individual level knowledge and experience in the firm internationalization process. The majority of firm internationalization literature focuses on firm level experience and largely ignores or finds no support for the effects of previous international experience at the individual level (Carlsson, Nordegren & Sjöholm, 2005). This work, however, shows that managers’ international backgrounds and experiences are positively related to firm degree of internationalization. The evidence suggests that in the European context, top management team internationalization is an important factor in the firm internationalization process. Diversity in both international experience and top manager nationalities was found to be a reliable proxy for the international orientation of top management teams in European multinational companies. Future research may consider other important sources of top managers’ international orientation, such as international education (Kobrin, 1984), the languages that executives speak as well as international network contacts (Athannassiou & Nigh, 2002). Considering a bundle of relevant executive attributes (Carpenter, Geletkanycz & Sanders, 2004; Kor, 2003) and their cumulative effects in the team context may help advance the current understanding of what contributes to developing international capability at the upper echelon level of business organizations.
6 Conclusion

This dissertation explored the antecedents and consequences of diversity in top management teams. One literature review paper and three empirical essays delved into different aspects of the phenomenon of diversity in top executive teams. The literature review identified a number of research gaps and methodological issues, some of which were addressed in the subsequent empirical essays. The main message of this dissertation is that diversity is a multi-dimensional construct. It is necessary to distinguish between different diversity aspects theoretically, both in terms of their antecedents and consequences, as well as empirically. A number of theories and methodologies from different disciplines were applied in this investigation. Whereas the empirical data was of a quantitative nature and no triangulation with qualitative evidence was used, a number of alternative data analytical techniques were applied to answer different research questions and fully utilize the richness of the data.

The multilevel nature of upper echelon research was brought forward in this thesis. The direct and moderating effects of different level factors were scrutinized through a mixed-determinant model of antecedents of top management team diversity and a cross-level model of its consequences. The evidence suggests that upper echelons factors, such as board characteristics, CEO dominance and team social integration, predict the degree of diversity in top management teams. Similarly, upper echelons team context had strong influence on the executive team effects on corporate performance. Organizational factors, such as firm size and strategy, were also found to be strong predictors of top management team diversity and, to a certain extent, moderators of its effects. Industry factors, while important, were not scrutinized in great detail. Future research needs to explore industry characteristics that capture more precisely the uncertainty and complexity that top managers are facing in decision-making by using more fine-grained measures.

The greatest promise for future upper echelons research may rest on bridging the individual and team levels of analysis. The effects of the top management team have been established in the literature. Yet the mechanisms that operate at the individual level are different from those operating at the team level, and understanding how individuals come together to make decisions as a team may result in research much closer to reality. Indeed, the practical relevance of upper echelons research is one of its main points of criticism. The large-scale studies, based on secondary data, among which this dissertation also counts, rarely discover the complex mechanisms of upper echelons decision-making and hence have limited implications for practice. Whereas
certain recommendations as to top management team composition and dynamics can be derived, such ideas are rarely of immediate relevance to top managers or board members, who manage under conditions of limited time and competing demands.

One conclusion of the empirical part of this thesis is that some dimensions are more relevant than others. It seems that with the ongoing process of globalization and increasing international involvement of business enterprises, aspects of top management team internationalization, such as nationality diversity and diversity in international experience, have become important. Traditional diversity dimensions, such as functional diversity, educational diversity and diversity in industry experience, while associated with firm strategy and degree of organizational complexity, did not have significant effects on corporate performance. The relationship between nationality diversity and performance, however, proved to be an intriguing one. By utilizing the time dimension of the dataset as well as accounting for the nested structure of the data, in the third essay evidence was found that diversity in national origin of top management team members has positive effects on company stock market performance. The fourth essay found some results that at first glance may seem contradictory. Applying covariance structure analysis, a direct negative relationship between nationality diversity and firm stock market performance was discovered. This negative relationship, however, was outweighed by the positive effects mediated through executive compensation. The results suggest that researchers need to look beyond simple direct effects in order to understand the complexity of organizational phenomena and their interrelationships.
References


References


References


References


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Ruigrok W., Greve P. M. & Tacheva S. 2006. Transcending borders with international top management teams in: A study of European Financial MNCs, presented at the Academy of Management Annual Meeting, Atlanta.


Appendices
Appendix 1.1 List of Theoretical Upper Echelons Works

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### Appendix 1.2 List of Empirical Studies on Upper Echelons Diversity

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### Appendix 1.3 Coding Rules

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| Demography  | Heterogeneity in top management observable (demographic) characteristics such as age, team, company and organizational tenure, educational and functional background  
  • only studies looking into heterogeneity of top managers' characteristics were included; works on the impact of central tendencies in managerial characteristics per se were excluded  
  • studies identifying diversity in top managers' characteristics as both independent or dependent variable were included                                                                                                                                                                        |
| Cognitions  | Heterogeneity in non-observable managers' characteristics such as personality characteristics, preferences, beliefs, perceptions, individual mental models and affect, etc.                                                                                                                                                                             |
| Processes   | Team processes characterizing a team's functioning or behavior such as conflict, debate, communication, social integration etc.  
  • only construct for which the word process was explicitly mentioned in the description of variables  
  • processes modeled as independent, dependent or intervening (mediating or moderating) variables                                                                                                                                                                                                                         |
| Leadership  | Constructs referring to the concepts of power, influence and leadership in context of teamwork (not in organizations)  
  • only studies which included such constructs as dependent or mediating and/or moderating variables in their model                                                                                                                                                                                                  |
| Compensation| Executive compensation (CEO and top managers’ remuneration).                                                                                                                                                                                                                                                                                                          |
| Organization| Organizational level factors such as organizational slack, structural inertia, past performance as well as firm degree of internationalization and diversification  
  • only organizational factors influencing managerial characteristics directly or top managers' effects on firm outcomes                                                                                                                                                                                                 |
| Environment | Factors external to the organization reflecting industry and general economic phenomena  
  • it was distinguished between environmental factors as context which directly influence top management team composition and environment as a moderator where changes in environmental condition lead to changes in the relationship between top management team diversity and outcomes                                                                                                                                 |
| Team level outcomes | Outcomes capturing both team process outcomes and team effectiveness outcomes  
  • only variables explicitly defined as outcomes in the hypothesis or as dependent variables in the methodology section                                                                                                                                                                                                 |
| Organizational level outcomes | Organizational level results of top management team decision-making and actions such as innovation, diversification, internationalization as well as strategic actions only variables explicitly defined as outcomes in the hypothesis or as dependent variables in the methodology section                                                                                                                                 |
| Performance | Financial performance of companies as a dependent variable                                                                                                                                                                                                                                                                                                           |
Appendices

### Appendix 2.1 Development of Firm, Board and TMT Characteristics

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### Appendix 2.2 Descriptive Statistics

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### Appendix 2.3 Regression Results

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### Appendix 3.1 Descriptive Statistics at Three Analytical Levels

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### Appendix 3.2 Fixed Effects Results of the HLM Analysis

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** indicates significance at the 0.05 level; *** indicates significance at the 0.01 level.
### Appendix 3.3 Random Effects Results of the HLM Analysis

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<th>Model 3</th>
<th>Model 4</th>
<th>Model 5</th>
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Appendix 4.1 Means, Standard Deviations and Correlations

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N=165
Appendix 4.2 Measurement Models

Measurement Model 1

- DOI
  - FSTS
  - FATA
  - GSENTR
  - TMTFOR
  - CEONAT
  - TMTEXP
  - CEOEXP

Measurement Model 2

- INT
  - FSTS
  - FATA
  - GSENTR
  - TMTFOR

- UE
  - CEONAT
  - TMTEXP
  - CEOEXP
Measurement Model 3

Measurement Model 4
Appendix 4.3 Structural Models

Structural Model 1

Structural Model 2
Curriculum Vitae
Sabina Tacheva

ACADEMIC POSITIONS

2007 Post-Doctoral Research Fellow, Department of International Economics and Management, Copenhagen Business School, Denmark
2006 Guest Researcher, Department of International Economics and Management, Copenhagen Business School, Denmark
2005-2006 Visiting Scholar, Management and Organization Department, University of Washington Business School, Seattle, USA
2002-2005 Research Assistant, Research Institute for International Management, University of St. Gallen, St. Gallen, Switzerland

EDUCATION

2002 – 2007 Dr.oec. in International Management, University of St.Gallen, Switzerland
1999 - 2001 Lic. oec. / M.Sc. in International Management (MIM), University of St. Gallen, Switzerland
2000 – 2001 Erasmus Exchange Program, Copenhagen Business School, Denmark
1998 – 1999 JOSZEF Program, Vienna University of Economics and Business Administration, Vienna, Austria
1993 – 1998 M.A. in International Tourism, Varna University of Economics and Business Administration, Varna, Bulgaria

PRACTICAL EXPERIENCE

2002-2004 Program Coordinator, MIM Program, University of St. Gallen, Switzerland
2002 Coordinator of the Freshman Introduction Week, New Concept of Teaching Department, University of St. Gallen, Switzerland
2001 Internship, Rehau, Vienna, Austria
2000 Internship, Kinstreet, London, UK

LANGUAGES

Bulgarian (native), English, German, Russian