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Dr. Anna Verena Hinrichsen

Workforce diversity and personal policies: Capital market perception and shareholder wealth effects

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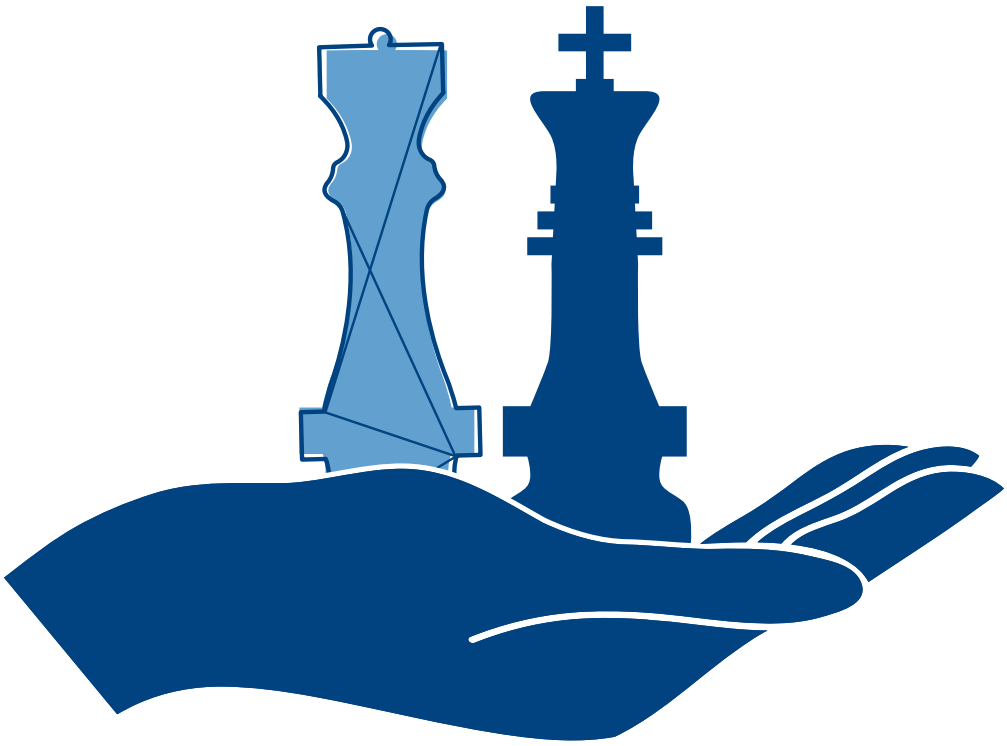

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Foreword

Whether changes in a corporate's board composition and a higher degree of gender diversity influence the corporate governance and, consequently, the corporate valuation has been widely discussed in the finance and management literature for more than a decade. However, many important questions raised in this discussion remain unanswered today – in particular with regard to the perception of important investor groups towards variations in gender diversity. The core market for addressing diversity arguments is the US market, which is the most mature and well established market with a longrun history and a large number of very experienced (ESG) market participants. In contrast, the German market is younger and smaller but has been characterized by a strengthening of gender diversity obligations and a sharp increase in female supervisory board members during recent years. Whether empirical evidence for the US market can be transferred to the German institutional setting is highly questionable given the very different foci of diversity rules in both countries.

In her thesis, Anna Hinrichsen sets out to ask investor relations managers and analyze whether investors in the German speaking stock markets evaluate gender diversity as a value relevant topic for German corporations which has an influence on the corporate governance. This is not only a remarkable endeavour, as Mrs. Hinrichsen uses – supported by the German Investor Relations Association DIRK – hand collected, unique German data to present state-of-the-art analyses, which are competitive and meet highest international standards. The thesis on hand carefully identifies and clarifies open research questions related to the gender diversity in German corporations but also addresses additional strategic personnel questions in an international context.

Mrs. Hinrichsen fully achieves the objectives of her dissertation. The analyses contain many intriguing and surprising results, which make this thesis a more than interesting read that I highly recommend to corporate finance researchers and investor relations practitioners. I wish for the dissertation its due wide diffusion in corporate finance and investor relations research.

Professor Dr. Dirk Schiereck
(TU Darmstadt)

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List of abbreviations

2SLS	Two-Stage Least Squares
3SLS	Three-Stage Least Squares
AAR	Average Abnormal Return
AG	Aktiengesellschaft (Stock Company)
BCBS	Basel Committee on Banking Supervision
BSW	Bundesverband Solarwirtschaft (Federal Solar Industry Association)
CAR	Cumulative Abnormal Return
CAAR	Cumulative Average Abnormal Return
CAGR	Compound Annual Growth Rate
CDU	Christlich-Demokratische Union (Christian Democratic Union)
CSR	Corporate Social Responsibility
CSU	Christlich-Soziale Union (Christian Social Union)
CEO	Chief Executive Officer
CFO	Chief Financial Officer
DAX	Deutscher Aktienindex (German Stock Index)
EBIT	Earnings before Interest and Taxes
EBITDA	Earnings before Interest, Taxes, Depreciation and Amortization
ECB	European Central Bank
EEG	Erneuerbare-Energien-Gesetz (Renewable Energies Act)
EPS	Earnings per share
ESG	Environmental, Social and Governance
EU	European Union
EUR	Euro (currency)
FDP	Freie Demokratische Partei (Liberal Democratic Party)
FidAR	Frauen in die Aufsichtsräte
FREP	German Financial Reporting Enforcement Panel
HR	Human Resources
HY	Half-Year
IMF	International Monetary Fund
IMR	Inverse Mill's Ratio

IR	Investor Relations
IRO	Investor Relations Officer
IRR	Internal Rate of Return
KWh	Kilowatt hour
LCR	Liquidity Coverage Ratio
M&A	Mergers and Aquisitions
MBA	Master of Business Administration
MDAX	Deutscher Aktienindex für 50 größte Werte nach DAX (German index for 50 largest stocks following DAX)
MWp	Megawatts peak
NPV	Net Present Value
NSFR	Net Stable Funding Ratio
OECD	Organisation for Economic Co-operation and Development
OLS	Ordinary Least Squares
PE	Private Equity
PV	Photovoltaics
ROA	Return on Assets
ROE	Return on Equity
ROI	Return on Investment
ROS	Return on Sales
SRI	Socially Responsible Investment
TecDAX	Deutscher Aktienindex für 30 größte Technologiewerte (German Index for 30 largest Technology Stocks)
TMT	Top Management Team
TSR	Total Shareholder Return
US	United States (of America)
USD	United States Dollar

1 Introduction

1.1 Motivation and Scope

This dissertation deals with the influence of corporate governance and corporate strategic personnel management on shareholder wealth. Factors that impact shareholder wealth are of particular interest for corporate finance research. The shareholders, suppliers of finance to the firm, pursue the goal of value maximization. The financiers (the principals) engage a person (the agent) to conduct and manage the business (Jensen & Meckling, 1976). They delegate decision-making authority. The principals request but cannot fully ensure that the agent acts in their interest. Possibly contrary interests of principal and agent as well as asymmetric information may lead to agency problems (Fama & Jensen, 1983; Jensen & Meckling, 1976).

Corporate governance concerns with this agency problem; the underlying question is how the suppliers of finance can ensure that they earn a return on their financial investment (Shleifer & Vishny, 1997). Corporate governance comprises several mechanisms, processes and institutions. One institution is monitoring of management by the board of directors (Hermalin & Weisbach, 1991). Due to corporations' great significance and influence in modern economies, the costs of their agency problems are highly relevant (Adams, Hermalin & Weisbach, 2010). Corporate governance and the role of the board of directors are thus of fundamental importance in economies and for good reason, it has become an active topic of research (Adams, Hermalin & Weisbach, 2010). The determinants of both board composition and the board's actions are in the focus of research interest. With regard to board composition, one focus is on the diversity of the members both from the executive and the supervisory board, primarily with respect to age, gender or ethnic background, and potential effects resulting from this diversity.

The shareholder value principle places the interests and expectations of a company's shareholders at the center. Management committed to the concept of shareholder value should strive to increase market capitalization in the interest of the firm's financiers. Major strategic and financial management decisions should be critically scrutinized by the firm's owners with regard to their value-creation potential. While the effects of financial decisions such as mergers and acquisitions or debt issues on firm value have been intensely investigated in corporate finance research, the impact of strategic personnel management on shareholder wealth has not been studied to the same extent. Personnel management policies comprise for instance identification and recruitment of talents, engagement and dismissal of personnel, staff development and diversity management. Choice, structuring and execution of related personnel measures may impact firm performance, especially when large numbers of employees are affected. The demands placed on personnel policy are particularly high in industries that heavily rely on their human capital, typically the services industry. The present dissertation aims at shedding light on selected aspects of personnel policy from the corporate finance perspective, namely diversity promotion and dismissals.

The key research question of the present dissertation is how governance and strategic personnel management impact firm value and thus shareholder wealth. This dissertation focuses on selected aspects of corporate governance and personnel management, namely the role and effects of gender diversity on corporate boards, female leadership, CEO overconfidence and layoff decisions.

The **first paper** reviews empirical evidence regarding the various effects of an increased female representation on corporate boards as well as

stronger participation of women in leadership. The review concentrates on economic rather than moral arguments. The "business case" for increased gender diversity in top management teams (TMT) and on corporate boards should provide support for a positive effect on firm performance and shareholder wealth in order to convince decision makers. Thus, the guiding question of the review is if previous research does provide empirical evidence for economic benefits of increased female representation in top management positions.

The **second paper** moves on from theory to practice: It investigates whether the moral or the economic point of view on diversity is dominant in firms in German-speaking countries, and it examines the status quo of gender diversity promotion and the attitude towards women on boards and female leadership. Increasing female representation in management and on boards can be both a corporate governance issue and a personnel management objective at the same time. The first two papers discuss if and under what conditions increasing female participation may be a strategy for improving corporate governance and thus firm performance.

The **third paper** shows the potential adverse effects of failures in corporate governance. In the context of a case study, it traces the development of (male) CEO overconfidence with fatal consequences for the firm, eventually leading to its insolvency. Male executives in fact appear to be overconfident relative to female executives (Huang & Kisgen, 2013). Hence, besides the poor monitoring and control mechanisms, gender is a factor that plays a role also in this context.

The **fourth paper** focuses on measures of personnel management by examining the wealth effects of layoff decisions. Large-scale layoffs can be of a proactive or reactive nature and they are executed for various reasons. A stakeholder conflict is regularly put forward as several stakeholders such as the suppliers of finance, labor unions or the public are affected, but primarily the shareholders benefit from the dismissals at the expense of employees (Fraunhoffer, Mietzner, Schiereck & Schneider, 2014). This paper investigates if layoff decisions really increase the equity's value in which case they would be beneficial for the shareholders.

Section 2 reviews relevant literature on the relationship between women on corporate boards or in TMTs and financial firm performance. Since the 1980s, a steadily growing number of studies has been concerned with various effects of diversity in a business environment. Evidence suggests that fostering diversity is not only an imperative of fairness but that firms may also realize specific benefits from a diverse workforce. However, there is also evidence for the advantageousness of homogeneous teams. The literature review presents evidence for positive but also potential negative effects of a diverse workforce on organizational processes and outcomes.

The review starts with an introduction to the concepts of workforce diversity and diversity management in organizations and continues with outlining the role of gender diversity in the context of business and of corporate governance. Hereafter, previous findings on various effects of female representation on corporate boards are presented. The core of the survey is a review of 44 studies on the link between women on boards or TMTs and firm performance or firm value, respectively.

On the basis of existing research findings and empirical evidence, **section 3** evaluates the status quo of diversity in predominantly listed companies in German-speaking Europe. For this purpose, an anonymous survey among investor relations professionals in Germany, Switzerland and

Austria was conducted in cooperation with the German Investor Relations Association DIRK in early 2015. Nearly 100 analyzable data sets were compiled.

The survey pursues three main objectives. The first objective is to determine the significance of workforce diversity from the company's but also the capital markets' perspective, including the question whether diversity is a relevant parameter for external company valuation. The second objective is to examine if companies employ an economic perspective on the topic of diversity. Research interests involve the "true" attitude towards the topic of diversity (possibly different than the published attitude that can be found in the official company documents) and major internal and external drivers for the development and implementation of diversity initiatives. With respect to the third objective, the focus is set on gender diversity and female leadership. The survey gains insight into strategy and progress regarding a stronger participation of women in executive positions. In this context, my research concerns the presence of planning objectives for women in management positions, of concrete measures to promote female leadership and of incentive measures to reconcile work and family life for both mothers and fathers. There are two major reasons for the thematic focus on gender diversity in management at that particular time. First, vigorous debates on women in top management positions have been held for decades in Germany and also in Austria and Switzerland. The German industry, for instance, obliged itself to promote equal participation of women and men in the private business sector 15 years ago. I examine what progress has been made until today. Second, the introduction of a women's quota for supervisory boards was imminent in Germany and in Switzerland at the time of the survey. Austria already introduced such a quota for its parastatal companies back in 2011. The survey investigates whether companies concerned are prepared or have taken measures to fulfill the forthcoming binding gender quota for supervisory boards and analyzes the acceptance level of the quota.

Section 4 of this dissertation is a case study. It describes the rise and fall of Germany-based CONERGY AG, an integrated systems supplier in the field of renewable energies, during the years 1998 to 2007. I argue that the main reason for CONERGY's distress that finally led to its insolvency was excessive expansion into international markets and new business sectors within very few years. The responsibility lies primarily with CONERGY's founder and Chief Executive Officer (CEO) Hans-Martin Rueter, but also with a weak supervisory board, which failed in its monitoring and control function and whose Chairman was far from independent being Rueter's uncle and founding partner. Referring to important insights of behavioral finance, I identify indicators for the presence of CEO over-optimism and overconfidence. I explain why they can provide an explanation for CONERGY's aggressive expansion strategy and I show how this development was further fueled by factors such as the state-funded boom of the renewable energies sector and the availability of abundant internal resources.

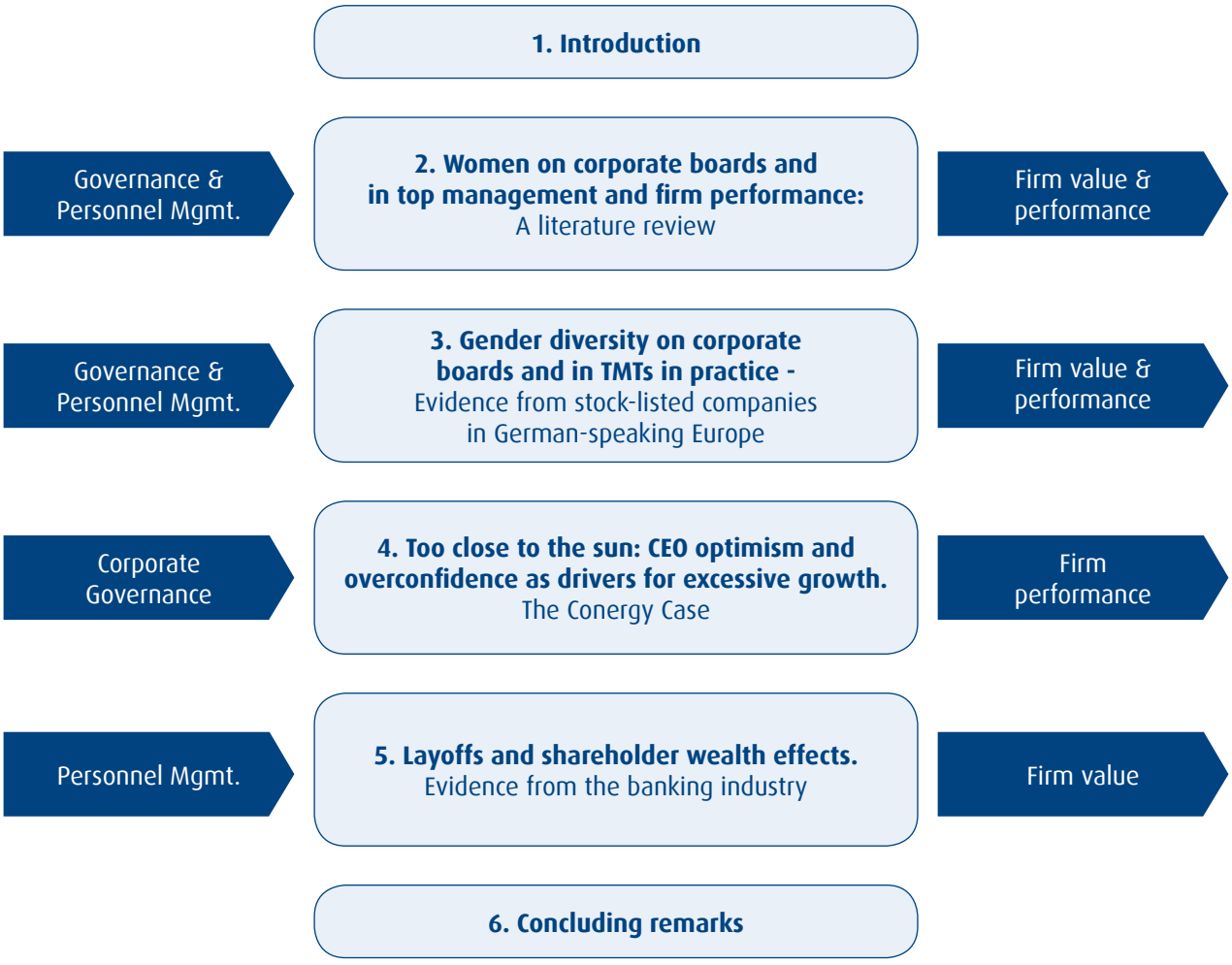
Section 5 concentrates on the personnel measure of large-scale workforce reductions. I investigate whether large-scale layoffs are really in the interest of the company's shareholders. Applying event study methodology, I examine the stock price reactions to layoff announcements by 49 different banks headquartered in Western Europe and the United States between 2004 and 2014, covering the period of the global financial crisis. The banking sector is particularly interesting because it

has seen massive waves of layoffs during those years albeit heavily relying on its human capital. My sample consists of 210 hand-collected layoff announcements in total. Univariate and multivariate analysis are applied to investigate the determinants of the stock price reaction. I consider event-specific variables such as layoff size or the strictness of local labor law, the stated reasons for the layoffs and firm-specific variables such as assets per employee or personnel expenses per employee.
Finally, **section 6** summarizes and concludes.

1.2 Outline of the dissertation

The present dissertation's structure is illustrated in a graphic form in figure 1.1.

Figure 1.1: Overview of the dissertation`s structure



2 Women on corporate boards and in top management and firm performance: A literature review

2.1 Introduction

While organizational diversity and successful diversity management has been a prominent issue in the United States since the 1990s, it has gained increasing importance also in Europe during recent years. Gender diversity in top management positions is of particular interest in this context. Although the share of qualified female graduates as well as the number of working women in Europe has steadily increased during the past decades, female representation at top managerial levels remains very low. Several European governments decided that political intervention was necessary in order to trigger change. Statutory gender quotas for supervisory boards were introduced for instance in Norway (2003: 40 percent), in Spain (2007: 30 percent), in Italy (2012: 30 percent) and also in Germany (2015: 30 percent).

Two main lines of argument are central to the debate: the "moral case" for gender diversity and the "business case" for gender diversity. The moral arguments in favor of diversity focus on fairness, equal opportunities and compliance with regulatory requirements. This understanding of diversity is known as the "discrimination-and-fairness paradigm" (Thomas & Ely, 1996). Core elements of the paradigm are equality, conformism and gender-blindness. Proponents of equality put forward that women represent half of mankind and thus half of its intelligence and capabilities. Thus, women should be equally represented in management positions. Proponents of conformism deny gender-specific differences and promote equivalence of both sexes.

Proponents of a business case for gender diversity argue that diversity was not an issue of fairness only but would make business sense (Thomas & Ely, 1996). The economic arguments in favor of gender diversity focus on the differences between women and men and the resulting (although stereotypic) advantages. The "access-and-legitimacy paradigm", for instance, generally accepts and emphasizes differences. Its line of reasoning suggests that an organization's workforce should reflect the diversity of its customers in order to gain access to all segments and to gain legitimacy with them (Thomas & Ely, 1996). Female representation on boards can indeed be associated with a reputational effect, which is most pronounced for firms operating in sectors with close proximity to final customers (Brammer, Millington & Pavelin, 2009). In line with this result, the highest proportion of women on boards is found in sectors such as consumer services, health, financial services or retailing (Brammer, Millington & Pavelin, 2007; Brammer et al., 2009; Hillman, Shropshire & Cannella, 2007). The "Learning-and-effectiveness paradigm" as a way of understanding diversity unites the two earlier approaches by promoting equal opportunities and recognizing values in cultural differences at the same time. It emphasizes the advantages of incorporating the diverse employees' perspectives to enhance processes, strategies and business practices, thereby "tapping diversity's true benefits" (Thomas & Ely, 1996, p. 85).

Although the enhancement of internal strategies and processes may indirectly impact firm performance, the "true benefits" of diversity must be measurable to achieve leadership commitment. The business case for diversity should be clear and convincing and naturally linked to the company's specific business objectives (Robinson & Dechant, 1997). This business case is particularly relevant when it comes to the call for increased female representation in top management and on corporate boards. Economic arguments, hence substantiated

figures, are most likely to convince. In brief, the business case for increased gender diversity in top management and on corporate boards should provide support for a positive effect on firm performance and shareholder wealth. Therefore, the key question of the present literature review is:

Does previous research provide empirical evidence for economic benefits of increased female representation in top management positions?

Several literature reviews and meta-analyses deal with various effects of workforce diversity on teams and organizations. Among the well-known surveys are those by Milliken and Martens (1996), Williams and O'Reilly (1998) and Jackson, Joshi and Erhardt (2003). A recent broad overview of the literature on diversity is provided by Pitts and Wise (2010). Fields and Keys (2003) survey papers examining the effect of board diversity on firm performance or shareholder wealth and De Abreu Dos Reis, Sastre Castillo and Roig Dobón (2007) provide an overview on 50 years of research in the field of diversity and business performance. The surveys yield ambiguous results suggesting that the relationship between diversity and performance is not simple and direct but rather moderated by a series of variables, thus context-sensitive.

Meta-analyses examine differences between homogeneous and heterogeneous teams with regard to the impact on performance by evaluation of 13 studies (Bowers, Pharmer, Salas, 2000) or the impact of highly and less job-related diversity on group cohesion and performance by analyzing 24 studies (Webber & Donahue, 2001). Other meta-analyses explore the role of contextual influences: Joshi and Roh (2009), for instance, investigate 39 studies to show whether contextual factors influence performance outcomes of relations-oriented and task-oriented diversity. Stahl, Maznevski, Voigt and Jonsen (2010) examine the role of task complexity and structural aspects of the team as moderators of the effects of cultural diversity on teams on the basis of 108 studies. None of the first three meta-analyses finds a positive and significant relationship between diversity and performance. The results of the fourth meta-analysis are ambiguous as they suggest that cultural diversity leads to process losses caused by conflict and decreased social integration as well as process gains in the form of creativity and satisfaction (Stahl et al., 2010).

Only few literature reviews explicitly consider the relationship of gender diversity in upper echelons and firm performance or firm value. Terjesen, Sealy and Singh (2009) present the first comprehensive review of how gender diversity on corporate boards influences corporate governance outcomes that in turn impact performance by incorporating research from more than 400 publications. Their findings indicate that gender diversity on corporate boards contributes to corporate governance and firm level outcomes as well as to firm value. Mohan (2014) focuses on three areas of research and provides a review of the gender effect on pay, corporate performance and entry into top management. She surveys several studies on the short-term and long-term performance of companies led by women. Due to ambiguous results, the question if a potential gender behavioral difference affects firm performance remains unsolved.

A comprehensive review of literature on female representation on corporate boards or in top management teams and firm performance is presented by Kroell, Szlusnus, Hüttermann and Boerner (2014) who survey 26 primary studies. They conclude that relevant research does not allow the assumption that gender diversity is generally econo-

mically beneficial. Furthermore, only few boundary conditions could be identified as critical for success. The survey conducted by Boerner, Keding and Hüttermann (2012) considers 18 studies including five literature reviews and one meta-analysis. The authors state that mixed leadership and the targeted promotion of gender diversity in management positions do not per se lead to economic benefits. Empirical evidence points towards certain boundary conditions under which women in leadership may contribute positively to the company's success. These include individual qualification and experience, the relevance of the specific resources that women bring in for the particular firm and if the company's environment allows female executives to develop their full potential. Both publications are available in German language only.

The most recent surveys review literature published up and including 2012. Since several studies have emerged in the meantime, an update seems to be required. I aim at filling this gap with my literature review. Moreover, the fact that two of the most recent studies are available in German language only means a limitation with regard to the size of the audience (Boerner et al., 2012; Kroell et al., 2014). The present survey is drafted in English language and thus accessible for international recipients.

In order to answer my research question, I conduct an analysis of existent empirical studies published between 1996 and 2014. In early 2015, the German government decided on a gender quota for the supervisory boards of large German listed firms. I seek to comprehend which conclusions regarding the relationship between gender diversity in upper echelons and firm performance could be drawn on the basis of published empirical evidence at that time. For this purpose, I identify relevant publications through searches in academic databases (Web of Science, EBSCO). I focus primarily on literature in English language as the vast majority of papers is published in English. I use the following keywords, linked by Boolean Operators (AND/OR): "board diversity"; "board gender diversity", "Women on boards", "gender diversity", "female representation", "boards of directors", "top management", "performance", "firm performance", "firm value", "firm valuation". Furthermore, I search the reference lists of the identified studies for further relevant papers, according to the snowball principle.

I identify 44 relevant publications on the link between gender diversity on corporate boards and in TMTs and firm performance or shareholder wealth. Ten studies that emerged since 2012 are not included in the most recent publications of Kroell et al. (2014) and Mohan (2014). I primarily consider papers from academic journals, in particular finance and management journals. For the core of my study, I focus on papers that examine the relation between one or more gender diversity measures as independent variable(s) and one or more financial performance measures as dependent variable(s). However, I additionally provide a detailed introduction into diversity in the context of business as well as an overview of the variety of nonfinancial effects of gender diversity in upper echelons.

I contribute to the literature by providing a structured overview of the relevant research including comparisons between theoretical models, research designs and empirical results. Furthermore, I trace the change of perception of the link between gender diversity and measures of performance and shareholder wealth over time. Finally, I make suggestions for future research.

The paper proceeds as follows. Section 2.2 recaps the theories of diversity in the context of business. This section also sets out the various effects

of gender diversity on corporate boards indirectly linked to firm performance. Section 2.3, the core of my study, presents research on the direct link between female representation and accounting-based as well as market-based measures for firm performance. Finally, section 2.4 points out unsettled issues and concludes.

2.2 Theoretical background

2.2.1 Workforce diversity in organizations

The topic „diversity in business" can be addressed from several sides. Taking an optimistic view, diversity of a company's workforce promises a great variety of beliefs, attitudes and capabilities. Differing perspectives and approaches to problems as well as openness to exchange of ideas and knowledge will most likely lead to increased creativity and better team performance (Mannix & Neale, 2005). From an ethical point of view, it could be argued that the thriving diversity of the population should be reflected in the diversity of a company's workforce. Securing equal rights, equal responsibilities and equal opportunities for all current and possible future employees, regardless of origin, nationality, religion, race, gender or age, should then be a desirable objective. This maxim should apply to all areas of human resource management - the recruitment process, the allocation of duties, to promotion procedures and the composition of teams up to the highest levels.

While the moral arguments in favor of diversity may be reasonable and widely accepted, other perspectives provide a mixed picture. The social-psychological perspective probably fosters a rather pessimistic view (Mannix & Neale, 2005). When striving to understand the effects of diversity, social-psychology provides three major theoretical approaches: information processing, the similarity-attraction and the self- and social categorization paradigm (Mannix & Neale, 2005). The information processing paradigm confirms the optimistic assessment by arguing that a group benefits from its diversity as each member has access to a wide range of knowledge, information and skills. This increased information may also increase group performance. By contrast, the similarity-attraction paradigm, part of interpersonal attraction theory (Berscheid, 1985), implies the principle that people are attracted by similarity rather than by diversity. Similarly, the self-/social categorization paradigm, part of social identity theory (Tajfel & Turner, 1986), argues that individuals intuitively seek for categorizing themselves and others into groups. Criteria such as age, nationality/race, gender or values serve as determinants for similarity (in-group members) respectively as means for distinction (out-group members) on the social level. According to the so-called in-group bias, there is a clear tendency to favor in-group members over out-group members. This preference applies to several dimensions such as the assessment of people, social interaction or the allocation of resources (Tajfel & Turner, 1986). In reverse, this means that individuals will experience more cohesion and social integration in homogeneous groups (Mannix & Neale, 2005) - weighty arguments against diversity.

Similarly, the economical perspective provides arguments both for and against diversity. At least since the early 1990s, proponents of diversity have suggested a direct and positive impact on business performance and firm value. Cox and Blake (1991) review research data supporting the existence of a link between managing diversity and organizational competitiveness. They state that solid diversity management can create a competitive advantage

in six dimensions of business performance, more precisely cost, resource acquisition, marketing success, creativity and innovation, problem-solving and organizational flexibility. Concrete examples for organizational accommodation to diversity as presented by Cox and Blake are increased use of flexible working hours or company investment in in-house child care. The authors further argue that the share of minorities increases on the labor market due to demographic change. As companies are in competition for excellent employees from underrepresented groups, the company's reputation regarding its efforts to effectively manage diversity gains in significance.

People from different gender, race or age hold different attitudes, perspectives and beliefs. They also differ in their cognitive functioning. Hence, according to Cox & Blake (1991), cultural diversity should have a positive impact on team creativity and innovation as well as on problem solving and decision making. Heterogeneous groups may be more successful than homogeneous groups in solving the most contentious problems (Lucas-Pérez, Mínguez-Vera, Baixauli-Soler & Martín-Ugedo, 2015). General system flexibility may be enhanced by managing cultural diversity for two reasons: firstly, particularly flexible cognitive structures are assigned to women and racioethnic minorities (Cox & Blake, 1991). Second, the firm's processes and policies are dissolved and the company is more open to change.

Heffernan (2002) examines diversity in terms of economic power. The transformation of organizations into "more projects and matrix organizational structures" should also be reflected in a variety of input, that means employees with differing education, expertise and experience. "A business is, after all, the clients and the customers it serves" (Heffernan, 2002). Hence, diversity of perspectives can be crucial for business success. Companies have realized that diversity fosters creativity on the lower and middle organizational levels as well as in the external relationship with customers and consumers. As a logical consequence, a variety of viewpoints and ideas should be equally advantageous for the upper levels up to the corporate board level (Heffernan, 2002).

The reason why diversity is seldom a top business priority is that alternative business initiatives promise concrete results and clear returns in the short-term. Robinson and Dechant (1997) call for the creation of a sound business case for diversity in order to receive support from the top and resources for the implementation of diversity initiatives. The authors concur with Cox & Blake (1991) with regard to the major business reasons for diversity such as cost savings due to lower turnover costs and absenteeism rates or avoidance of lawsuits on sexual, race and age discrimination; further improvements in attracting, retaining and promoting excellent employees with diverse backgrounds; driving business growth through increased marketplace understanding, greater creativity and innovation, producing higher-quality problem-solving, improved leadership effectiveness and effective global relationships.

However, diversity initiatives must be treated like any other business investment to achieve leadership commitment. A realistic assessment of the expected return on investment increases the probability of winning the in-house competition for the company's scarce resources (Robinson & Dechant, 1997). Research consortium „Diversity Research Network" commits itself to this task. Associated scholars (Kochan, Bezrukova, Jackson, Joshi, Jehn, Leonard, ... Thomas, 2003) strive to assess the diversity-performance link in multiple firms in order to find evidence for their view that increasing di-

versity of the workforce enhances organizational effectiveness. The authors report on the findings of their multiannual, collaborative industry-university research project. They express their disenchantment in view of the fact that only four out of originally 20 Fortune 500 companies were willing to cooperate. Although not representative due to the small sample, quantitative results for the four companies are similar. Effects proven by earlier studies could not be confirmed: there is neither a significant positive impact of gender and racial diversity on performance nor a significant negative impact of diversity on group processes. With regard to the general lack of direct effects of diversity on performance it is presumed that context is of great importance. Kochan et al. (2003) note that diversity may increase performance under certain conditions. Thus, one of several provided managerial implications is to focus on these specific conditions and modify the business case for diversity accordingly. The request to adopt a more analytical approach is related to the call for diligent data collection to enable a thorough analysis of the link between diversity-oriented HR activities and business performance.

Contrary to the arguments raised by the proponents of diversity in business, there is also evidence that diversity may adversely affect firm performance. Tsui, Egan & O'Reilly (1992) show that the greater the differences on age, gender or race, the lower the individual's psychological and behavioral attachment to the organization. Surprisingly, the effects shown by Tsui and colleagues relating to difference in gender (race) are stronger for males (whites) than for females (non-whites). The authors provide as one possible explanation that females as well as non-whites are used to be minorities in organizational settings and have learned to cope with this difference whereas white men were traditionally part of gender-(race-)homogeneous groups, where there was neither an opportunity nor a necessity to adapt to the presence of females (or non-whites) within their work environment (Tsui et al., 1992).

The need for a successful diversity management is undeniable in view of the above. Integration of employees remains a priority task for companies. Cox and Blake (1991) admit that women (and minorities) may increase companies' costs due to higher absenteeism and turnover rates. They stress that diversity needs to be managed by increasing awareness among team members of their cultural differences in order to realize performance benefits (see also Kochan et al., 2003).

Although team heterogeneity is positively related to propensity to action and willingness for competition (Hambrick, Cho & Chen, 1996), homogeneous groups outperform heterogeneous groups because their communication processes are more efficient and thus improve decision-making significantly (Hambrick et al., 1996). According to Hambrick et al. (1996), the internal similarity of homogeneous team members, their joint vocabulary and way of exchanging information create an advantage by increasing the team's ability to understand the competitor's move and to decide on an adequate countermove. These results are in accordance with the findings on intergroup relations from social psychology. Cooperation is better and emotional conflicts are rarer in homogeneous groups (Tajfel & Turner, 1986). Communication patterns become stabilized and routinized within groups over time (Wagner, Pfeffer & O'Reilly, 1984) and group members are familiar with these. Patterns need to be changed if (out-group) individuals enter the group at a later stage. Furthermore, frequent communication creates similarity among group members in terms of beliefs and perception of the organization (Wagner

et al., 1984). Joint characteristics of group members tend to predict their similarity and frequency of communication and these in turn determine if there is rather cohesion or conflict (Wagner et al., 1984). Interestingly, Katz (1982) notes that group longevity has a negative impact on internal and external communication of group members: overall communication is reduced and thus the respective project groups become increasingly isolated from key information sources.

With regard to the present study's topic, the following part of the literature review will focus on studies that deal with gender diversity in the context of management and corporate governance.

2.2.2 Gender diversity in the context of business

Previous literature has provided evidence that women show relatively more risk aversion in financial decision making[1] than men (Bernasek & Shwiff, 2001; Eckel & Grossman, 2002; Jianakoplos & Bernasek, 1998; Sunden & Surette, 1998), even irrespective of the level of task familiarity and framing of tasks, costs or ambiguity (Powell & Ansic, 1997). Risk aversion will likely lead to diligent action. Strategic mistakes may be avoided.

However, claimed female risk aversion may also be judged negatively as women might shy away from high-risk decisions crucial for the firm's success (Schubert, Brown, Gysler & Brachinger, 1999). The fact that firms with female executives are less likely to make acquisitions (Huang & Kisgen, 2013) could hence also mean that these companies pass up golden opportunities.

According to Schubert et al. (1999), the stereotyping of women said to be risk-averse may lead to statistical discrimination and reduces women's chances of success in financial and labor markets as the environment does not entrust them to make risky decisions necessary for the company. It should be noted that gender-specific risk behavior arises in abstract gambling experiments. The authors believe that these experiments might be inadequate for the analysis of gender-specific risk propensities as financial decisions have to be considered in broader context. Contrary to other studies, Schubert et al. (1999) find no evidence for stereotypic risk attitudes. They add a context scenario to the gambling (control) scenario. Measuring risk behavior in practice-relevant contextual financial decisions (investment and insurance decisions), they note that women do not generally make less risky financial choices than men. Rather, the risk propensity of men versus women in financial decisions strongly depends on the decision frame (Schubert et al., 1999).

Their results are consistent with other findings from the literature on gender differences in leadership styles (Eagly & Johannesen-Schmidt, 2001), concluding that there are no fundamental differences in male and female behavior but differences dependent on certain tasks and situations. The gender-stereotypic expectation that women lead in an interpersonally oriented and men in a task-oriented style cannot be confirmed in organizational studies. Rather, male and female leaders do not differ in these two styles (Eagly & Johnson, 1990). This difference however appears in laboratory experiments and when assessing leadership styles of people that do not actually occupy a leadership role. A gender difference that can be proven in all types of leadership studies is the female tendency to adopt a more democratic and less autocratic or directive style than men (Eagly & Johnson, 1990).

Nielsen and Huse (2010) show that women do not generally perform better or worse than men in operational tasks but bring specific advantages when it comes to tasks related to firm strategy. According to the authors, this could be explained

[1] A literature review on gender differences in investing is provided by Bajtelsmit and Bernasek (1996).

by enhanced empathy towards others and the ability to consider multiple views, both often ascribed to women, fostering oversight of firm strategy (Nielsen & Huse, 2010).
In fact, business teams with an equal gender mix perform better than male-dominated teams. On average, sales and profits are higher for groups with a proper balance of women and men (Hoogendorn, Oosterbeek & van Praag, 2013). Teams perform also worse when they are dominated by women. The relation between sales and share of women is inverse U-shaped. For a share of women below 50 percent, sales and profits do rise along with an increase in the share of women. For higher shares of women above 50 percent, sales tend to decrease and the relation between profits and the share of women is flat.

2.2.3 The effects of female representation on corporate boards

Various theories can be used for examining the composition of corporate boards, in particular the role of women on corporate boards, and its impact on firm performance: agency theory, stakeholder theory and resource dependence theory. Agency theory (Fama & Jensen, 1983; Jensen & Meckling, 1976) is most often used for this purpose. Agency theory views corporate boards as representatives of shareholders' (principal's) interests. The corporate board monitors and controls management's (agent's) actions. Independence of supervising board members from executive directors is crucial for its functioning. If diversity is understood as one manifestation of independence as individuals with diverse gender (respectively age, nationality) add new, possibly critical perspectives, a diverse board could be more effective in monitoring. Although this approach sounds convincing at first glance, Carter, Simkins and Simpson (2003) point out that „agency theory simply does not provide a clear-cut prediction concerning the link between board diversity and firm value" (p. 37).
Stakeholder theory (Freeman, 1984) says that it is not only the interest of shareholders that counts but the interests of all internal and external stakeholders of a firm. The board is a linkage instrument between the firm and its environment. Ideally, increased equality of representation on corporate boards corresponds to demographic characteristics among key stakeholders such as customers, suppliers or potential and current employees (Brammer et al., 2007). Appointing women to the board can thus provide legitimacy to the firm (Lückerath-Rovers, 2013).
Resource dependency theory (Pfeffer & Salancik, 1978), is a third line of research that is used to investigate the composition of corporate boards. Similarly to stakeholder theory, corporate boards are seen as an essential link between the company and its external resources on which the firm depends; this link is the basis for good performance (Lückerath-Rovers, 2013). There are (at least) four categories of benefits provided to companies through corporate boards in their linkage function. These are information/advice, legitimacy, access to resources or communication channels and obtaining commitment of support from the environment (Hillman et al., 2007; Lückerath-Rovers, 2013). Hence, composition of the board does have an impact. Hillman et al. (2007) apply these categories with regard to gender diversity on corporate boards. Legitimacy may accrue from appointing women to the board; second, companies that depend on the resource „female employees" can realize benefits by building bonds with current and potential (female) employees (Hillman et al., 2007). Third, advice and scope and content of information may be improved by adding female

perspectives and experience.

Resource dependence theory suggests that large firms experience increased pressure for legitimacy (Hillman et al., 2007). In accordance with theory, firm size appears to be highly relevant: the relation to the women's ratio on boards is positive (Adams & Ferreira, 2004; Carter et al., 2003; Hillman et al., 2007). Hillman et al. (2007) further provide evidence for a positive relationship between a firm's number of female employees and female representation on boards. The share of female employees varies between industries. The industry the company is operating thus partly determines the probability of having women on the board. Industry sectors are associated with gender-based connotations due to overrepresentation of one sex in its labor force (Hillman et al., 2007) respectively in its customer group (Harrigan, 1981). Construction, engineering, manufacturing or automotive sectors could thus be considered as „typically male" and branches such as media, health, insurance, retail trade or services regarded as „typically female". Indeed, board composition varies systematically across industries and companies with a high share of women in their workforce tend to have more women on boards.

Moreover, close proximity to the customer appears to be an industry characteristic associated with a higher share of women on board. Brammer et al.'s (2007) results suggest that the latter factor is of higher importance for shaping board diversity. They argue that the company-specific business environment influences board diversity. Moreover, board diversity is „particularly an imperative to reflect corresponding diversity among its customers" (Brammer et al., 2007; Heffernan, 2002). Accordingly, Brammer et al. (2007) report highest female representation on UK boards for the sectors banking and retailing (with relatively high rates of female employment and a high degree of customer proximity) and lowest for the industry sectors resources and engineering (with a relatively low rate of female employment and distance from final consumers). Hillman et al. (2007) prove these relationships for the health and financial sector, Brammer et al. (2009) for consumer services and knowledge-based areas. In Carter et al.'s (2003) sample, firms from the financial-services industry have the highest share with three or more women on the board of directors and only 23 percent have no women on board. By contrast, 44 percent of firms from the mining and construction sector have no women on board and no company from this industry has more than two women on its board. Holst and Kirsch (2014) point out that the three German companies (financial sector excluded) with the highest share of women on board as of year-end 2013 belong to the cosmetics and fragrances industry (Douglas, 56 percent women on board), travel industry (TUI, 50 percent) and pharmaceuticals wholesale (Noweda, 44 percent). Furthermore, firm risk is the most robust and important determinant of the share of women on corporate boards (Adams & Ferreira, 2009). Board size is also positively related to the presence of women on corporate boards: firms with two or more female directors have larger boards (Carter et al., 2003). Furthermore, firms with two or more female board members hold a larger number of board meetings and have a higher share of minority directors than those with no women on board (Carter et al., 2003).

Eventually though, when striving to obtain leadership commitment, increasing female representation on corporate boards should yield persuasive advantages from an economical perspective. Returning to Robinson and Dechant's (1997) call for a solid business case for diversity, evidence for

positive effects of women on boards is required. Various positive effects with regard to board functioning and work discipline as well as to gender composition of internal top management or to company reputation are proven. However, these are opposed by several negative effects.

Female directors appear to have a notable impact on board inputs and company outcomes. In particular, gender board composition is positively related to board effectiveness (Adams & Ferreira, 2009; Nielsen & Huse, 2010). The impact of female board members depends on the type of task performed. Nielsen and Huse (2010) find a positive direct relationship between female representation on board and board strategic control but no direct relationship with board operational control. Thus, women influence board processes in such a way that board effectiveness in strategic control is enhanced (Nielsen & Huse, 2010). One of these board processes through which women influence board effectiveness is the use of board development activities such as board work instructions or evaluations. Furthermore, female directors reduce the level of board conflict and thus improve effectiveness (the authors point out that board processes might be more important than board composition).

In a sample of US firms, Adams & Ferreira (2009) find that female directors have better attendance records than male directors and the higher their presence on boards the fewer the attendance problems of their male colleagues. Women are more likely to join monitoring-related committees, particularly to audit, nominating and corporate governance committees. By contrast, they are less likely to sit on compensation committees. The results suggest that gender-diverse boards are tougher monitors and have stronger governance. Adams & Ferreira (2009) highlight that the female directors' impact is comparable to that of independent directors described in governance theory (see also Lucas-Pérez et al, 2015; Nielsen & Huse, 2010).

The relation between the variability of stock returns, the structure of director compensation and the gender diversity of corporate boards is subject to an investigation by Adams and Ferreira (2004). On the basis of a cross-sectional sample of boards of directors of 1,024 publicly traded firms, the authors find several significant correlations. First, companies that experience more variability in their stock returns have fewer women on their boards of directors. Second, firms with more diverse boards provide their directors with more performance-related payments. Third, companies with more diverse boards have higher numbers of board meetings.

In an analysis of a sample including 120 companies listed on the Spanish stock exchange during the years 2004 to 2009, Lucas-Pérez et al. (2015) strive to show how gender diversity can determine governance effectiveness. Taking into consideration arguments from various theories, they examine two possible „forms" of gender diversity's firm effectiveness: first, how it affects top managers' compensation and second, how it transforms board characteristics that are crucial for the board's monitoring effectiveness such as composition, structure, size and functioning (Lucas-Pérez et al, 2015). In proving the positive relationship between gender diversity and performance-related pay for top managers, they confirm the earlier results of Adams and Ferreira (2004). Based on their evidence, they further suggest that higher female representation on boards leads to a greater variety of knowledge, skills and decision-making criteria. They conclude that gender-diverse groups may be particularly suitable to solve problems with potential for disputes. This conclusion is in accordance with Heffernan saying that "group think" may be avoided through composing a heterogeneous board. A diverse board

may analyze own actions and decisions quickly and thoroughly and thus anticipate reactions of the external environment such as public criticism (Heffernan, 2002).

Furthermore, Lucas-Pérez et al. (2015) identify a substitution effect running in two directions. Gender diversity on the board may improve monitoring by compensating for lacking board characteristics that enhance board effectiveness, for example increased independency due to a high share of external directors, separation of CEO role and Chairman role instead of duality (one person holding both positions simultaneously), a medium board size between five and 15 members and a high number of compensation committee meetings - synonymous with board functioning. The effect also runs in the opposite direction: firms with duality of CEO and Chairman roles and a low number of external or independent directors have a higher share of women on their board of directors (Lucas-Pérez et al., 2015).

Matsa and Miller (2011) show that female representation on corporate boards does affect the gender composition of top management. Controlling for timing, they find that changes in board composition precede a greater share of female executives. Further controlling for a full set of firm-fixed effects, the relation is still significant. Moreover, an increase in female board members appears to have a positive impact on women's share of top executives total compensation (overproportional to their number of positions) as well as on the likelihood of having a female among the top five executives or even as CEO. They point out that the long-term impact of their results may be much larger than short-term effects, illustrating the following „feedback cycle": increasing the share of women on corporate boards can lead to a subsequent increase in the ratio of women in management positions. A rise in the number of female managers expands the pool of potential female board members which in turn may lead to greater female board membership and, as a consequence, to further increases in female executives. Statutory quotas for women on boards of directors might thus lead to general spillovers in management.

Female representation on board is also associated with a reputational effect (Brammer et al., 2009). The reputational effect varies significantly across industries suggesting that the presence of women on corporate boards is assessed favorably only in sectors with close proximity to final customers (interestingly, the correlation corresponds to the relation between customer proximity of a sector and the probability of having female directors). The authors' interpretation of this finding is that reputational assessors adopt a rather narrow view of the relevance of women on boards and potential resources that they may provide to the board. That is, increased board independency due to female representation or the mentoring role for other women within the firm appear not to be relevant for the assessment.

The potential positive effects of increased female representation on boards are opposed by possible negative effects suggested by studies from various lines of research. As the board turns from a homogeneous into a heterogeneous group when female directors join, it is likely that cohesion is reduced and the probability of conflict increases (e.j. Hambrick et al., 1996; Tajfel & Turner, 1986). Communication and exchange of information could be impeded, decision-making processes could become more complex, more time-consuming and less effective due to conflicting opinions (Campbell & Minguez-Vera, 2010).

If there is only one woman or a small minority of women on the board, these women could be

considered as a symbol or „token" (Kanter, 1977). The theory of tokenism implies that filling a vacant position with a token employee is usually driven by the motivation to create the appearance of diversity and is thus a purely symbolic act. The prevalent dominant group (in this case: males) will strive to heighten the barriers between themselves and the minority group (females). Women being the minority have to cope with the resulting effects: they are often assumed to be insufficiently qualified, not taken seriously, doubted or not trusted (Arfken, Bellar & Helms, 2004; Kanter, 1977; Torchia, Calabro & Huse, 2011). As a result, being labelled as a token leads to feelings of discomfort, isolation or self-doubt (Torchia et al., 2011). All these effects would adversely affect cooperation within the board.

The various effects above are all suitable to have an impact on firm performance. It is nevertheless essential to examine direct links between gender diversity on the board and firm performance and firm value, respectively.

2.3 Gender diversity on corporate boards and in TMTs and firm performance

2.3.1 Overview: relevant research to date

With regard to board composition and firm performance, an early empirical analysis conducted by Hermalin and Weisbach (1991) indicates that there appears to be no link. The authors note that even if there was a relation, it would be small with little economic significance. Board composition is investigated in terms of directors' „origin", that means inside versus outside directors – the gender of board members is not considered. They provide as one possible explanation that board composition does simply not matter but admit inconsistency with the then growing literature suggesting that outside directors have a decisive impact on monitoring management. Conducting a survey of economic literature on the composition of boards, Hermalin and Weisbach (2001) confirm their previous conclusion: board composition appears not to be related to corporate performance. Board size, on the other hand, appears to be negatively related to corporate performance. However, both board composition and size do appear to be related to the quality of certain decisions of the board and firm performance appears to be one important factor affecting changes to boards (Hermalin & Weisbach, 2001).

Literature has grown further during the past two decades and several studies find a relationship between board composition and firm performance. The impact of outside directors on monitoring management they refer to, for instance, has been proven for female directors (Adams & Ferreira, 2009; Lucas-Pérez et al, 2015; Nielsen & Huse, 2010). Economic arguments in favor of diversity support the view that board diversity results in higher firm performance. The existence of such a positive relationship is backed by consultancy firm McKinsey and non-profit organization Catalyst. Since 2007, McKinsey publishes an annual study called „Women matter", exploring female representation in the global workplace and its impact from different perspectives. The 2007 study suggests that companies with high female representation on board and top management level also yield the best performance. The recent report consists of a qualitative and a quantitative study of the relationship between women in top management teams and firm performance for a sample of European companies. Catalyst, fostering gender diversity in business, conducts research on the relationship between the women's ratio on corporate boards and firm financial performance, focusing on US enterprises.

However, methodological weaknesses might affect the quality of the results (Lückerath-Rovers, 2013). McKinsey selects the companies for its sample on subjective criteria and fails to clarify the criterion „specific attention to diversity in the annual report". Both studies compare means of financial ratios although a comparison of medians would be more suitable as financial ratios often do not follow a normal distribution. Furthermore, there is a lack of evidence proving the statistical significance of McKinsey's as well as Catalyst's 2007 results (Lückerath-Rovers, 2013). Furthermore, the present literature review primarily considers academic literature. I thus exclude McKinsey's and Catalyst's studies.

I identify 44 relevant studies published during the period 1996-2014. The fact that more than half of the papers (26) presented in this survey were published between 2010 and 2014 underlines the increasing awareness of and interest in female representation in upper echelons and its associated effects. The topic receives attention in the Academy of Management Journal, the Strategic Management Journal and the Journal of Corporate Finance and is of relevance for journals covering the field of corporate governance. Most studies (5) were published in the Journal of Business Ethics, four in the Journal of Business Research. The sample size in the studies under review varies considerably. Analyses in the first decade of empirical research focus on the United States only. It is only since 2006 that the interest of research concentrates also on other countries. In total, 21 studies were conducted in the United States, six in Scandinavian countries, four in the UK, two each in Spain and in Germany and nine in other countries. The papers reviewed cover the investigation period 1989 to 2011. The following table 2.1 gives an overview of the relevant literature on the link between female representation on corporate boards or in top management teams and firm performance or firm value, respectively.

Table 2.1: Empirical studies on women in upper echelons and firm performance

Author(s)	Year	Gender diversity measure (explanatory variable)	Performance measure (dependent variable)
Velte, Eulerich, van Uum	2014	women's ratio on the executive board	EBITDA
Ali, Ng, Kulik	2014	Gender diversity (Blau index)	ROA, employee productiv -ity (operating revenue/ number of employees)
Strøm, D'Espallier, Mersland	2014	ratio of female directors, dummy variables (female CEO/chair/director: yes/no)	ROA, ROE, OSS (portfolio revenues/operational expenses), FSS (adjusted OSS incl. financial/ default costs...)
Liu, Wei, Xie	2014	women's ratio on the board, dummy variables (1, 2, 3 women), percentage female independent directors, percentage female executive directors	ROA, ROS
Chapple, Humphrey	2014	no women on the board, one women on the board, more than one women on the board; women's ratio on the board	stock returns to portfolios; industry-adjusted Tobin's Q, ROA
Gregory-Smith, Main, O'Reilly III	2014	women's ratio on the board	TSR, ROA, ROE, Price-to-Book ratio (approx. to Tobin's Q)
Huang, Kisgen	2013	dummy: female CEO (yes/ no), women's ratio on the board	asset growth and capital structure decisions, acquisi-tions and value-destruction in acquisitions; announce-ment returns to corporate financial decisions

Data Base (Number of Companies,Country)	Period	Method/Model	Main result	Journal
149 largest listed German companies from DAX30/ MDAX/SDAX/ TecDAX	2009-2011	multivariate regression analysis	no link between women's ratio on the executive board and EBITDA	BFuP
288 firms from nine industry groups listed on the Australian Securities Exchange (ASX)	2011-2012	hierarchical multivariate regression analysis	positive linear relationship between gender diversity and employee productivity	JBE
329 Microfinance Institutions (MFIs) in 73 countries	1998-2008	pooled probit regression, pooled OLS, tobit-censored regressions	positive link between presence of female CEO/director/chair and financial performance	JBF
over 2,000 listed firms in Shanghai and Shenzhen Stock Exchanges	1999-2011	panel regression with fixed effects, FE with lagged board variables, FE with IV, Arellano-Bond	positive and significant relation between board gender diversity and ROA and ROS	JCF
Australian firms listed on the S&P/ ASX 300	2004-2011	one-factor-model, four-factor-model; OLS regression, firm fixed effects, Arellano-Bond	no significant link between having women on a firm's board and returns or performance	JBE
all 350 UK-companies from the FTSE350 listed on the London Stock Exchange	1996-2011	Regression analysis	no significant link between gender diversity and performance	Econ J
USA: 26,668 firm-year observations; final sample contains 1,750 cases of male-to-male transitions and 116 cases of male-to-female transitions.	1993-2005	panel data regression, probit regression, difference-in-difference regression, propensity score matching	Firms with female executives: less likely to make acquisitions/ issue debt, more favorable investor reaction to their financial decisions; higher announcement returns around acquisitions and debt offerings.	AMJ

Table 2.1 (continued): Empirical studies on women in upper echelons and firm performance

Author(s)	Year	Gender diversity measure (explanatory variable)	Performance measure (dependent variable)
Dale-Olsen, Schøne, Verner	2013	firms affected by the quota reform (PLCs) versus control group: firms not affected by the reform (LTDs)	ROA
Khan, Vieito	2013	dummy (female CEO: yes/no)	ROA adjusted (av. industry ROA substracted)
Darmadi	2013	dummy (female direcor: yes/no), gender diversity (Blau index), women's ratio on the board	ROA, Tobin's Q
Joecks, Pull, Vetter	2013	gender diversity (Blau-Index)	ROE
Gregory, Jeanes, Tharyan, Tonks	2013	share trades by female directors; female executives, female non-executives	short-term and long-term abnormal returns to trade announcements
Lückerath-Rovers	2013	dummy (women: yes/no), women's ratio (3-yrs av.)	ROE, ROS, ROIC, EBIT, Stock price growth, TSR
Ahern, Dittmar	2012	women's ratio on the board, dummy (female director: yes/no)	cumulative abnormal returns; Tobin's Q

Data Base (Number of Companies,Country)	Period	Method/Model	Main result	Journal
128 public limited (PLC) firms and 36,924 ordinary limited (LTD) firms in Norway	2003-2007	OLS regression, median regression	results in most cases insignificant; reform had negligible effect on performance at the end of 2007	Fem Econ
11,315 observations of executive compensation from S&P1,500 US firms	1992-2004	Two-stage least square regression analysis	positive and significant link between female CEO and ROA	JBE
354 firms listed on the Indonesia Stock Exchange (IDX)	2007	Cross-sectional regression analysis	negative link between female representation and ROA, negative link between women's ratio and Tobin's Q (both significant for larger firms only)	CG: Intl. J of busi -ness in society
151 companies listed on the German Stock exchange	2000-2005	random-effects regression	non-linear and concave relation between gender diversity an ROE	JBE
80,930 trades by directors, composed of 62,106 purchases and 18,824 sales by 15,357 and 6689 male and female directors of UK companies listed on the London Stock Exchange	1994-2006	market model event study, firm fixed-effects regression analysis, Carhart four-factor model	price reaction to male directors' buy trades faster and larger than that for females'. In the long term, markets recognize that females' trades are informative about future corporate performance.	BJM
99 Dutch companies	2005-2007	comparisons of means and medians, OLS regression analysis	positive and significant link between presence of one or more female directors and ROE	JCG
1,230 firm-year observations for 248 unique Norwegian firms listed on the Oslo Stock Exchange (OSE)	2001-2009	Natural experiment (event study methodology), fixed-effects regression analysis	negative abnormal returns to the announcement of the gender quota for all companies (stronger negative for firms with no females); negative and significant link between women's ratio and Tobin's Q. Negative effects persist over time.	Quarterly Journal of Econ

Table 2.1 (continued): Empirical studies on women in upper echelons and firm performance

Author(s)	Year	Gender diversity measure (explanatory variable)	Performance measure (dependent variable)
Kolev	2012	Female CEO indicator variable	Firm-specific monthly TSR including dividend distributions in percentage form
Mahadeo, Soobaroyen, Hanuman	2012	women's ratio on the board	ROA
Dezsö, Ross	2012	dummy (women in top management: yes/no)	Tobin's Q, ROA, ROE
Dobbin, Jung	2011	women's ratio on the board, number of female directors	ROA, Tobin's Q

Data Base (Number of Companies,Country)	Period	Method/Model	Main result	Journal
Execucomp data on CEOs; Observations: 491,375.	20 yrs; 240 clusters (months)	Regression analysis	Female CEOs underperform their male counterparts in terms of shareholders' returns by roughly 0.35% per month. This difference is significant, comparable to the in-sample value premium, somewhat smaller than the equity and momentum premia, and larger than size premium.	EL
371 directors of 39 companies listed on the Stock Exchange of Mauritius	2007	OLS regression analysis	positive and significant link between women's ratio on the board and ROA	JBE
S&P 1,500	1992-2006	fixed-effects OLS regression, Arellano-Bond regression	simple effect of female representation in top management on performance insignificant; positive and highly significant for all measures when moderated by innovation intensity	SMJ
432 US listed firms from Fortune500 list	1997-2006	pooled, cross-sectional time series models with fixed year and firm effects	no significant link between gender diversity and profitability, negative link between gender diversity and stock price	North Carolina Law Review

Table 2.1 (continued): Empirical studies on women in upper echelons and firm performance

Author(s)	Year	Gender diversity measure (explanatory variable)	Performance measure (dependent variable)
Van Knippenberg, Dawson, West, Homan	2011	gender div. (Blau index) and gender div. in interaction with functionnal and tenure background, moderated by shared objectives	productivity (value added per employee), profitability (profit per employee)
Jurkus, Park, Woodard	2011	ratio of female officers, gender-diversity dummy (female officers: yes/no)	ROA
He, Huang	2011	gender diversity (Blau Index)	ROA
Ali, Kulik, Metz	2011	Blau Index, moderators: industry (services vs. manufacturing)	Employee productivity, ROE
Kang, Ding, Charoenwong	2010	women's ratio on the board, position adopted (non-CEO executive, outside/independent/ affiliate director)	announcement returns to female top executive appointments

Data Base (Number of Companies,Country)	Period	Method/Model	Main result	Journal
42 UK manufacturing companies from 4 sectors (engineering, plastics and rubber, electronics and electrical engineering, food/ drink)	Not specified	Regression analysis	Gender by functional background faultlines (negatively) predicted productivity, and profitability (profitability) contingent on shared objectives; gender by tenure faultlines predicted productivity (positively) contingent on shared objectives (not profitability).	Human Relations
668 US firms; Catalyst data on female officers in Fortune500	1995-2000, 2002, 2005	OLS regression, fixed effects models, IV models	positive and significant link in OLS, weaker effect in fixed-effects-regression, opposite relation in IV models	JBR
530 US manufacturing firms	2001-2007	Arellano-Bond linear, dynamic panel data estimation	no (negative only on the 10% level) link between gender diversity and ROA	AMJ
213 firms (2002), 209 firms (2005) listed on Australian Stock Exchange	2002-2007	Hierarchical multivariate regression	Partial support for positive linear relationship gender diversity-performance (5-yrs time lag); effects more positive for services. Support for inverted U-shaped curvilinear relationship (5-yrs time lag).	IJHRM
53 announcements by 45 firms from nine industries listed on the Singapore Stock Exchange	2004	standard event study, multivariate regression analysis	positive & significant returns to female appointments (investors most receptive when women independent directors, least when assume CEO role)	JBR

Table 2.1 (continued): Empirical studies on women in upper echelons and firm performance

Author(s)	Year	Gender diversity measure (explanatory variable)	Performance measure (dependent variable)
Carter, D'Souza, Simkins, Simpson	2010	women's ratio on the board	ROA, Tobin's Q
Haslam, Ryan, Kulich, Trojanowski, Atkins	2010	dummy (women on the board: yes/no); women's ratio	ROE, ROA Tobin's Q
Gallego-Álvarez, García-Sánchez, Rodríguez-Domínguez	2010	presence of female directors, women's ratio on the board	Tobin's Q, ROA, ROE, ROS, ROAN (net income/ net assets), GM (gross margin/ net sales)
Bøhren, Strøm	2010	proportion of shareholder–elected female directors	Tobin's Q, ROA, ROS
Wang, Clift	2009	number of female directors, women's ratio on the board	ROA, ROE, Shareholder Return
Miller, Del Carmen Triana	2009	Blau Index, women's ratio	ROI, ROS
Adams, Ferreira	2009	women's ratio	Tobin's Q, ROA

Data Base (Number of Companies,Country)	Period	Method/Model	Main result	Journal
641 firms in the S&P 500 index	1998-2002	OLS regression, 3SLS regression	no link between gender diversity and ROA or Tobin's Q	CG
126 British companies included in the FTSE 100 index	2001-2005	analysis of variance (ANOVA), bivariate and time-lagged correlations analysis	no link between women's presence on board and ROA or ROE; negative and significant link with Tobin's Q	BJM
117 firms from different activity sectors listed on the Madrid Stock Exchange	2004-2006	linear regression for panel data	performance is positively affected by female directors in companies devoted to technology and telecommunications; they are negatively affected by female directors in the services sector.	Eur J Law Econ
203 firms in Norway listed on the Oslo Stock Exch.	1989-2002	pooled OLS regression, GLS, 2SLS	negative link	JBFA
243 companies from the top 500 by market cap listed on the Australian Stock Exchange	2003	OLS regression analysis	no significant link between gender diversity and performance	PAR
326 US Fortune 500 firms	2003	OLS regression	no significant link between gender diversity and performance	JMS
1,939 US firms (Standard&Poor's 500, S&P MidCap and S&P SmallCap)	1996-2003	Arellano and Bond one step regression, OLS and firm fixed effects regressions	positive and significant relation between women's ratio and Tobin's Q. When adding firm effects: negative and significant relation	JFE

Table 2.1 (continued): Empirical studies on women in upper echelons and firm performance

Author(s)	Year	Gender diversity measure (explanatory variable)	Performance measure (dependent variable)
Campbell, Minguez- Vera	2008	dummy (women on the board: yes/no), women's ratio, Blau/Shannon Index	Tobin's Q
Rose	2007	Women's ratio on the supervisory board, dummy variable (=1 if there is at least one woman on the board)	Tobin's Q
Smith, Smith, Verner	2006	women's ratio among CEOs/CEOs + vice-directors/ on board of directors incl. staff & excl. staff	Gross profit/net sales. Contribution margin/ net sales. Operating income/ net assets. Net income after tax/ net assets.
Wolfers	2006	female-headed firms vs. male-headed firms	long-term stock returns to holding zero investment portfolios (strategy of buying female-headed firms and shorting male-headed firms)
Farrell, Hersch	2005	addition of a woman to the board	cumulative abnormal stock return
Randöy, Thomsen, Oxelheim	2006	women's ratio	ROA, ROS ROA, market-to-book
Krishnan, Park	2005	women's ratio on TMTs (+ weighted average industry performance)	ROA, ROS

Data Base (Number of Companies,Country)	Period	Method/Model	Main result	Journal
68 Spanish firms	1995-2000	2SLS regression	dummy not significant; positive and significant link between gender diversity and Tobin's Q	JBE
All firms listed on Copenhagen Stock Exchange (except banks & insurance)	1998-2001	Cross-sectional regression	No link	CG
2,500 largest Danish firms	1993-2001	OLS regression, fixed effects regression	positive link depending on education of women and performance measure	IJPPM
US firms from S&P 1,500 (64 female CEOs and 4,175 male CEOs)	1992-2004	portfolio performance analysis; Fama-Macbeth regression	no systematic differences in returns to holding stock in female-headed firms	J EU Econ Assoc
111 announcements of US firms (Wall Street Journal index); firms on Fortune 500 & Service 500 lists in 1990	1990-1999	market model event study	no associated wealth effects	JCF
459 largest listed firms in Scandinavia: 154 Danish, 144 Norwegian, 161 Swedish firms	2005	Regression analysis	No link	Norden (Nordic Innovation Centre) Working Paper
679 US Fortune 1,000 firms (from 1998 list)	1998	Hierarchical regression analysis	positive link (ROA and ROS), direct relationship between women on TMTs & performance	JBR

Table 2.1 (continued): Empirical studies on women in upper echelons and firm performance

Author(s)	Year	Gender diversity measure (explanatory variable)	Performance measure (dependent variable)
Richard, Barnett, Dwyer, Chadwick	2004	gender diversity (Blau index) in interaction with innovativeness and risk taking	Employee productivity (net income/employee), ROE
Adams, Ferreira	2004	women's ratio on boards	Tobin's Q, ROA
Dwyer, Richard, Chadwick	2003	gender diversity in category „officials and managers" (Blau index) in interaction with growth orientation/clan culture/ adhocracy culture type	Employee productivity (net income/ employee), ROE
Erhardt, Werbel, Shrader	2003	ratio of non-whites and white females on the executive board	ROA, ROI
Carter, Simkins, Simpson	2003	dummy (women on the board: y/n), women's ratio	ROA, Tobin's Q

Data Base (Number of Companies,Country)	Period	Method/Model	Main result	Journal
153 US banks	1998	Regression analysis	Risk taking negatively moderates curvi-linear relationship between gender diversity/ firm performance	AMJ
1024 publicly traded firms (US Fortune 500, ExecuComp database), 1998	1998	grouped-data probit regression, OLS/ NLLS regression, poisson regression	positive and sig-nificant link with Tobin's Q, negative (insigni-ficant) link with ROA	ECGI Working Paper
177 US banks	1998	regression analysis	positive and significant link: between gender diversity-growth orien-tation and productivity/ ROE and between gen-der diversity-clan culture interaction and productivity. Negative and signi-ficant link between gender diversity-ad-hocracy interaction and productivity/ ROE.	JBR
112 US Fortune 1000 firms	1998	correlation and hie-rarchical regression analyses	positive link bet-ween board diversi-ty and ROA/ROI	CG
638 US Fortune 1000 firms	1997	comparison of means, 2SLS regression analysis	Positive and signi-ficant link between presence of women on board and To-bin's Q and ROA	FR

Table 2.1 (continued): Empirical studies on women in upper echelons and firm performance

Author(s)	Year	Gender diversity measure (explanatory variable)	Performance measure (dependent variable)
Shrader, Blackburn, Iles	1997	women's ratio on boards, women's ratio in top management, women's ratio in management	ROS, ROA, ROI, ROE
Siciliano	1996	women's ratio	social performance, operating efficiency, level of donations

Abbreviations for journal titles stand for: AMJ = Academy of Management Journal, BFuP = Betriebswirtschaftliche Forschung und Praxis, BJM = British Journal of Management, CG = Corporate Governance: An International Review, ECGI = European Corporate Governance Institute, Econ J = The Economic Journal, EL = Economics Letters, Eur J Law Econ = European Journal of Law & Economics, Fem Econ = Feminist Economics, FR = The Financial Review, IJHRM = International Journal of Human Resource Management, IJPPM = International Journal of Productivity and Performance Management, JBE = Journal of Business Ethics, JBF = Journal of Banking & Finance, JBFA = Journal of Business, Finance & Accounting, JBR = Journal of Business Research, JCF = Journal of Corporate Finance, JCG = Journal of Corporate Governance, JEB = Journal of Economics & Business, J EU Econ Assoc = Journal of the European Economic Association, JFE = , JMI = Journal of Managerial Issues, JMS = Journal of Management Studies, PAR=Pacific Accounting Review, SMJ = Strategic Management Journal

Data Base (Number of Companies,Country)	Period	Method/Model	Main result	Journal
200 US firms with largest market value (from Wall Street Journal)	1992	hierachical regression analysis	positive and significant link for women in management and performance. No significant link between women on boards or TMTs and performance	JMI
240 YMCA organizations	1989	partial correlations	no significant link with operating efficiency, positive and significant link with social performance, negative and significant link with level of donations	JBE

2.3.2 Research methodology and operationalization of variables

The majority of papers that investigate the relationship between diversity and performance are cross-sectional or panel data studies. The dominant research methodology applied is regression analysis.

The independent variable (female representation/gender diversity in upper echelons) is operationalized by different indicators. Most studies measure gender diversity by more than one indicator. The percentage of women on corporate boards (executive boards/top management teams) is used as independent variable in 30 cases. 17 studies apply dummy variables for the presence of one (or more) woman on the board, women on the executive board, a female CEO or women in top management. Nine studies make use of the heterogeneity index developed by Blau (1977), one additionally of the Shannon (1948) index, recognized indices for measuring the level of gender diversity in management teams.

The vast majority of studies applies a combination of different performance measures for operationalization of the dependent variable. Accounting-based performance measures are backward-looking whereas market-based measures are future-oriented. The mostly used accounting-based performance measure is return on assets (ROA). ROA is an indicator for management's efficiency in generating earnings by using its assets and constitutes the relevant dependent variable in 26 studies. Tobin's Q is the mostly used market-based performance measure. 18 of the studies under review choose Tobin's Q or approximations to it (such as the market-to-book ratio which divides the equity's market value by its book value) in order to capture the market valuation of the firm. For the calculation of Tobin's Q, the total market value is divided by the total value of the assets. A high Tobin's Q ratio indicates overvaluation whereas a low ratio implies undervaluation. Carter et al. (2003) are the first to focus on both performance indicators. Overall, 13 studies use both ROA and Tobin's Q for their analyses (e.g. Adams & Ferreira, 2009; Bøhren & Strøm, 2010; Dobbin & Jung, 2011; Gregory-Smith, Main & O'Reilly, 2014). Other frequently applied accounting-based measures include return on equity (ROE), return on investment (ROI), return on sales (ROS) or employee productivity (e.g. operating revenue per employee, value added per employee). An alternative figure applied to capture the market's perception of the company's performance is the total shareholder return (TSR) considering stock price changes and dividends paid.

The effects of female board representation are also investigated by setting the focus on external firm valuation. Event study methodology using time series is used in order to analyze the short-term stock market reaction to the appointment of female directors and a multiple regression approach to assess the long term influence on firm value. This approach is applied for instance by Farrell and Hersch (2005), Lee and James (2007), Francoeur, Labelle and Sinclair-Desgagné (2008) or Campbell and Minguez-Vera (2010). A quarter of the papers (11) in the present survey use short-term abnormal stock returns following company-specific announcements, average monthly (abnormal) returns or long-term stock returns in order to measure gender diversity effects on firm value and thus shareholder wealth. Ahern and Dittmar (2012) use the approach of a natural experiment setting.

2.3.3 The issue of endogeneity

A central problem that occurs in most corporate governance studies is endogeneity. Roberts and Whited (2012) devote an extensive survey to the

topic of endogeneity in empirical corporate finance. They define endogeneity roughly as a correlation between the explanatory variable and the error term in the regression. Adams, Hermalin and Weisbach (2010) state:

> *"This endogeneity creates estimation problems if governance choices are made on the basis of unobservables correlated with the error term in the regression equations being estimated. [...] Governance structures arise endogenously because economic actors choose them in response to the governance issues they face."* (Adams, Hermalin & Weisbach, 2010, p. 59)

Happ (2016) discusses the issue of endogeneity in his literature review on the influence of ownership and capital structure on firm performance. Several causes for endogeneity can be identified: unobservable heterogeneity, simultaneity and reverse causation (see also Happ, 2016), whereas the latter can be understood as one concrete example for simultaneity. In the case of unobservable heterogeneity, the dependent and the independent variable are both impacted by the same exogenous factor, which cannot be measured directly (Happ, 2016). The presence of omitted variables and variables being measured incorrectly may be classified as subcategories of unobservable heterogeneity (Happ, 2016). Omitted-variable bias occurs when one or more important causal factors are not considered in the model. Due to the heterogeneity of the objects of study such as firms, corporate boards or TMTs with a view to various, hard to observe dimensions, the problem is particularly serious in corporate finance (Roberts & Whited, 2012). With respect to the topic of gender diversity and firm performance, omitted variables might have an effect on both the selection of directors and performance and could thus lead to spurious correlations between the variables of interest (Adams & Ferreira, 2009). Simultaneity is present from an econometric point of view if dependent and independent variable are determined in equilibrium, in other words, left-hand side (y) and right-hand side (one or more x's) of the equation are determined simultaneously (Roberts & Whited, 2012). Following Demsetz and Lehn (1985), it is to be expected that board composition - as does ownership structure - will vary systematically in ways coherent with value maximization. Boards are selected under the objective of maximizing shareholder wealth. With respect to reverse causation (e.g. Hermalin & Weisbach, 1998) as one form of simultaneity, it is possible that having women on the board improves firm performance. It is also conceivable, however, that well-performing firms decide to increase female representation on their boards. It could also mean that a financially well performing firm has greater attractiveness for a female CEO (Strøm et al., 2014), also because women have freedom of choice given the scarcity of experienced female managers (Farrell & Hersch, 2005). Thus, board diversity could affect firm value and vice versa (Carter et al., 2003).

Wintoki, Linck and Netter (2012) note that most corporate finance researchers would acknowledge unobservable heterogeneity and simultaneity as possible sources of endogeneity. They point out that scholars often ignore a third source that "arises from the possibility that current values of governance variables are a function of past firm performance" (Wintoki et al., 2012, p. 582). Not considering this issue could have serious consequences for inference.

Further potential endogeneity issues that may occur when investigating the relationship between gender diversity in TMTs and firm performance

are that an executive's gender is random, that boards discriminate based on gender, that women self-select into particular types of firms (Huang & Kisgen, 2013) or that the selection of a female leader might be related to an emphasized focus on female customers (Strøm et al., 2014). Moreover, time-delayed data collection of independent (female representation/gender diversity) and dependent variable (firm financial performance) is a central requirement for the proof of causation (Kroell et al., 2014). Potential effects of women in executive positions on firm performance will become apparent only after a certain period of time has elapsed.

In summary, parameter estimates might be biased and inconsistent due to endogeneity, making reliable inference difficult or impossible (Roberts & Whited, 2012). It stands to reason that the method applied has a notable influence on the results of empirical studies and also on the interpretation of results and the conclusions drawn from them. However, within the framework of the present literature review, I may only highlight key aspects of endogeneity and sketch important trends in dealing with potential endogeneity.

The early papers in this review do not take the aspect of endogeneity into account (e.g. Erhardt et al., 2003; Shrader et al., 1997; Siciliano, 1996). Single OLS regression, for instance, does not explicitly control for endogeneity and can thus produce biased coefficient estimates (Carter et al., 2003), However, during the past decade, studies have applied other methods to their (panel) data set, underscoring the efforts to enhance validity and reliability of the models and to rule out endogeneity. Dobbin and Jung (2011) underline the importance of controlling for endogeneity:

> *„Early cross-sectional studies suggested that board gender diversity has positive effects on both profits and stock performance. However, the use of panel data and statistical methods designed to rule out endogeneity suggested that female directors tend to have neutral or negative effects. The big picture seems to be that gender board diversity does not help firms—and it may hurt them"* (Dobbin & Jung, 2011, pp. 836).

In order to control for possible endogeneity between gender diversity variable and firm value/performance, various regression models and statistical test procedures are applied.

Lagged dependent variables and the inclusion of fixed effects are used striving to mitigate omitted variables and to address unobserved changes over time as well as industry- and firm-specific characteristics (e.g. Adams & Ferreira, 2009; Carter et al., 2010). Fixed-effects estimation can possibly improve unobservable heterogeneity bias. The underlying strong assumption of exogeneity might be unrealistic though, as current values of the independent variable are not likely to be completely independent from past values of the dependent variable (Wintoki et al., 2012).

Instrumental variables (IVs) are another possibility to handle endogeneity. An instrumental variable replaces the endogenous independent variable in the regression. It should be sufficiently correlated to the endogenous independent variable but must not be correlated to the error term (Happ, 2016). IVs are often used in two-stage least squares (2SLS) regressions. Two-stage least squares regression is employed by Campbell and Minguez-Vera (2008), Carter et al. (2003), Bøhren and Strøm (2010) or Khan and Vieito (2013) and three-stage

least squares (3SLS) regression by Carter, D'Souza, Simkins and Simpson (2010). Carter et al. (2010) use single OLS regression equation and a 3SLS regression analysis, both accounting for firm and time fixed effects. 3SLS estimation is considered to be advantageous compared with 2SLS because it accounts for both potential endogeneity and cross-correlation between equations (Carter et al., 2010).

Carter et al. (2003) consider other explanatory variables such as firm size, board size, CEO/chair duality or the percentage of insiders on the board and the approximation of Tobin's Q in their 2SLS model. Bøhren and Strøm (2010) examine the interaction of the four board mechanisms gender mix, employee directors, director independence and multiple directorships with firm value. Amongst others, they control for the effects of firm characteristics including unobservable fixed and random effects and of potential endogeneity between board mechanisms and firm value. They use instrumental variables and 2SLS regression. Endogenous variables they specify in the estimation in addition to performance are board independence, CEO director, exported CEO, imported CEO, board size, gender and board age dispersion. Two ownership variables, network, employee directors, risk and firm size constitute the exogenous variables (Bøhren & Strøm, 2010).

Huang and Kisgen (2013) use a difference-in-differences approach in order to mitigate endogeneity issues, comparing activity before and after transitions from a male to a female executive with a control sample of male-to-male transition firms. Panel data regressions with firm fixed effects with a female executive dummy variable are conducted in addition as a robustness check. Chapple and Humphrey (2014) handle the endogeneity problem through forming and comparing portfolios of firms with gender diverse boards to those without. Portfolio formation is the method of choice as the interest is focused on the market-level impact of gender diversity. They apply OLS and firm fixed-effects regression, followed by an Arellano and Bond dynamic panel model. The authors further state that the firm-specific characteristics were averaged out by applying this approach and the precision of estimates from regression analysis was improved. The authors claim that the heterogeneity issue was thus eliminated and the omitted variables problem reduced (Chapple & Humphrey, 2014). Deszö and Ross (2012) handle the issue of reverse causation by controlling for prior firm performance through adding lagged values of Tobin's Q to the regression. If the positive association between female leadership and firm performance was driven by reverse causality, it should then disappear. However, two new problems may emerge: adding lagged values to a panel data regression may result in difficulties with autocorrelation and other control variables related to firm policies might also be endogenous (Deszö & Ross, 2012). Deszö and Ross (2012) as well as further recent studies (Campbell & Minguez-Vera, 2010; Chapple & Humphrey, 2014; He & Huang, 2011; Liu et al., 2014) try to overcome these challenges by using generalized method-of-moments (GMM) estimators as proposed by Arellano and Bond (1991), Arellano and Bover (1995), Blundell and Bond (1998) or Wintoki (2012). Strøm et al. (2014) address the problem of reverse causation of female leadership in financial performance regression by applying the Heckman (1978) model for an endogenous dummy variable. They solve the sample selectivity problem by the inverse Mill's ratio (IMR) test.

2.3.4 Empirical evidence on the diversity-performance relationship

The empirical evidence obtained to the present is inconsistent. Different methods lead to ambiguous results, but results are contradictory even within identical methodological approaches. There is both evidence for a positive relation between female representation on boards and performance (15 studies) and for a negative link (5 studies). Numerous studies provide mixed evidence regarding the relationship between women in top management positions and measures of performance (13 studies) and a substantial number of studies cannot establish any link between gender diversity and financial performance (13 studies).

Carter et al. (2003) were among the first to present empirical evidence for a relationship between board diversity and improved financial value. The authors examine the relationship between board diversity, defined as the percentage of women, African Americans, Asians, Hispanics and other minorities on the board of directors and firm value for Fortune 1000 firms. The approximation of Tobin's Q is used as the measure of firm value and regressed against the presence and percentage of women/minorities on the board of directors as measures of board diversity. Carter and colleagues find statistically significant positive relationships between the presence of women on the board and firm value: firms with two or more women on board perform better in terms of Tobin's Q. Thus, female representation on boards is associated with higher market valuation. They also perform better in terms of return on assets (ROA). An additional finding is that the fraction of women and minorities directors increases with firm size but decreases as the number of insiders increases. The authors conclude that companies that increase the number of women on boards are likely to also have more minorities on their boards and vice versa.

Three studies in the investigation period confirm a positive and significant link between the women's ratio on the board and ROA (Erhardt, Werbel & Shrader, 2003; Liu et al., 2014; Mahadeo, Soobaroyen & Hanuman, 2012) and two a positive link between the CEO being female and ROA (Khan & Vieito, 2013; Strøm et al., 2014). Krishnan and Park (2005) find a positive and significant relation between female representation in top management and ROA. Positive effects of gender diversity on employee productivity are documented by Ali, Ng and Kulik (2014) as well as for the presence of one or more female directors on ROE by Lückerath-Rovers (2013). With respect to market-based measures of performance, a positive relation between board gender diversity and Tobin's Q is also found by Campbell and Minguez-Vera (2008). Moreover, two studies using event study methodology show that the stock market responds with positive and significant abnormal returns to announcements of female top executive appointments (Campbell & Minguez-Vera, 2010; Kang, Ding & Charoenwong, 2010). Huang and Kisgen (2013) find that investors appear to honor financial decisions of firms with female executives as announcement returns are higher around the respective companies' acquisitions and debt offerings. Their research reveals significant differences in firm behavior between firms with male executives versus those with female executives, indicating that models of capital structure and acquisitions that concentrate solely on company features miss this essential factor. Firms with female executives show slower growth, are less likely to make acquisitions and are also less likely to issue debt than companies with male executives. By analogy, value destroying acquisitions firms are rather executed by companies with male executives. Thereby, they provide evidence that male executives are overconfident relative to female executives. Overconfidence is also expressed

in men's tendency to provide narrower earnings forecasts and to exercise options at a later stage. The still small percentage of women in executive positions is surprising when considering that women tend to make shareholder-friendly decisions. Possible explanations might be a potential scarcity of qualified female executives or in the analysis' limited focus on selected corporate decisions, which means that male executives could perform better in other areas such as strategy or compliance.

Interestingly, using numerous regression models in combination may yield conflicting results: while the OLS regression analysis provides evidence for a (insignificant) positive relationship between diversity and Tobin's Q, the coefficient is significantly negative using firm fixed effects and a dynamic panel model (Adams & Ferreira, 2009; Chapple & Humphrey, 2014). The authors of the respective studies note that these disparities underscore the importance for correct model specification.

It appears that the presence of women on the board does not automatically improve performance. Five studies in this survey provide evidence for a negative relationship between the variables of interest. Contrary to the two event studies that showed positive market reactions to female top executive announcements and contrary to the positive market reactions to financial decisions of female-led firms observed by Huang and Kisgen (2013), 248 listed companies in Norway in a natural experiment setting on the whole experience a negative market reaction in response to the official announcement of the gender quota (Ahern & Dittmar, 2012). Stock returns are stronger negative for firms that had no female directors at that time. There seems to be consistency with the hypothesis that boards are selected to maximize shareholder value and that severe constraints in the choice of directors imposed by law lead to significant reductions in value (Ahern & Dittmar, 2012). The findings further show a negative and significant link between the women's ratio on the board and Tobin's Q, persisting over time. Similarly, Lee and James (2007), who employ event study methodology in combination with multivariate regression analysis, find negative and significant cumulative returns for female executives – and positive and significant cumulative returns for male executives. These market reactions are backed by Kolev (2013) who regresses firm-specific monthly TSRs against the indicator variable female CEO and finds that female CEOs underperform their male counterparts in terms of shareholders' returns by roughly 0.35 percent per month. Although only significant for larger firms and only considering one financial year, evidence for a negative link between female representation and ROA and between the women's ratio on boards and Tobin's Q is provided by Darmadi (2013). The results imply that a higher proportion of women tends to be found in low-performing firms. Negative and significant effects of the proportion of shareholder-elected females on the board on performance measures Tobin's Q, ROA and ROS are documented by Bøhren and Strøm (2010). The results are robust to how performance is measured. Thus, they argue that valuation arguments do not appear suitable to justify politics of board design:

> *"from the owners' point of view, politicians should ignore independence and encourage less gender diversity, fewer employee directors, and more directors with multiple seats. Alternatively, one could argue that for gender mix in particular, political arguments should not be based on beneficial economic consequences for the firm's stockholders"* (Bøhren & Strøm, 2010, p. 1305).

One possible explanation for negative stock returns to the presence of women in upper echelons is investor bias or sex-role stereotyping (Dobbin & Jung, 2011; Gregory, Jeanes, Tharyan & Tonks, 2014; Lee & James, 2007). Using pooled, cross-sectional time-series models with fixed firm and year effects, Dobbin and Jung (2011) explore different effects of changes in the gender composition of boards. Besides examining the effects on ROA and Tobin's Q, they also investigate the effects on the equity positions of institutional investors and other investor groups including banks, mutual funds and public pension funds. Their findings indicate that female directors have negative effects on stock value and no effects on profits. The results provide support for the authors' thesis that institutional investors sell shares of firms that previously appointed females to the board. The reason for the sale is not a fall in profits but the investors' bias against women (Dobbin & Jung, 2011). Gregory et al. (2014) analyze short-term and long-term stock returns to announcements of directors' trades by males and females. The price reaction to male directors' buy trades is faster and larger than that for female directors'. However, markets recognize in the long term that female executives' trades are in fact informative about future corporate performance. The initially negative market reactions are indicators for the persistence of biased beliefs about the abilities of female managers (Gregory et al., 2014; Wolfers, 2006). Hence, the analysis of financial data can reveal discrimination.

A third group of twelve studies finds no relationship at all, neither positive nor negative. Four of them were published quite recently (Chapple & Humphrey, 2014; Dale-Olsen, Schøne & Verner, 2013; Gregory-Smith et al., 2014; Velte, Eulerich & van Uum, 2014). The selected variables or research methods fail to account for the ambiguous results. In contrast to other studies, the result of a classic market-model event study for 111 US firms is that no shareholder wealth effects are associated with the announcements of the addition of a women to the board (Farrell & Hersch, 2005). Equally, Carter et al. (2010), replicating the 2003 analysis with a new sample (of similar size) find no significant relation between the women's ratio on the board and Tobin's Q or ROA.

2.3.5 Intervening variables as moderators of the relationship

Research reveals that the relationship between gender diversity on the board and firm performance appears to be more complex. One reason for the inconsistency of evidence could be the often one-sided focus on a direct relation between gender diversity and firm performance instead of taking into account other board-related intervening variables that may also influence this relationship (Lucas-Pérez et al., 2015). It is more likely that boundary conditions and further variables moderate this relationship (Kroell et al., 2014). Following this approach, the effects of gender diversity in top management are conditional on certain organizational variables. Several studies explore the effects of moderating variables by applying interaction analyses or group comparisons through regression analyses.

Smith, Smith and Verner (2006), for instance, use different independent variables and various dependent variables. A positive link can be found in dependence of the selected performance measure and in dependence of the women's education. For instance, the measure gross profit is affected more positively and more significantly than other measures such as net income after taxes. Moreover, performance effects are positive and stronger for female CEOs with a university degree whereas they

are much smaller or insignificant for female CEOs without such a degree (Smith et al., 2006).

Francoeur et al. (2008) point out that one boundary condition seems to be if the company is operating in a complex environment. If this is the case, firms with a high proportion of female officers experience positive and significant monthly abnormal returns. Deszö and Ross (2012) provide empirical evidence for the moderating influence of the variable "strategic focus on innovation intensity". While the simple effect of female representation in top management on performance is insignificant, the effects are positive and highly significant for all measures only when moderated by innovation intensity. The relationship is characterized as follows: "the more a firm's strategy is focused on innovation, the more female representation in top management improves firm performance" (p.1081). The authors note that within the context of innovation, the informational and social benefits of gender diversity and the specific female managers' behavior are likely to play a crucial role for managerial task performance (Deszö & Ross, 2012). These findings support the theory that increased diversity enhances creativity and problem-solving capabilities (Cox & Blake, 1991) and that heterogeneous teams may be more successful than homogeneous groups in solving the most contentious problems (Lucas-Pérez et al., 2015).

The role of the firm's strategic orientation, its organizational culture and the multivariate interaction among these variables is examined by Dwyer, Richard and Chadwick (2003). With respect to growth orientation, they show that firms with high levels of gender diversity and growth have the highest productivity. With regard to ROE, the interaction is significant at only a level of $P < .10$. Furthermore, the presence of an "adhocracy culture" (a democratic form of organization that fosters flexibility, individuality and spontaneity and which stands in contrast to bureaucracy culture) is identified as a factor that significantly moderates gender diversity's effects on performance. However, the observed association between the gender diversity and adhocracy variable and ROE is negative, contrary to that hypothesized. The explanation offered by the authors is that the adhocracy culture type has an external rather than an internal, employee-focused orientation, it is results-oriented and emphasizes competition. Dywer et al. (2003) point out that prior studies have shown that women are more cooperative, encourage participation and rather avoid competition. Thus, the specific benefits of female leadership might not unfold within an adhocracy culture.

The sector in which a company is operating in appears to be a further moderator of the relationship between female representation in top management and firm performance. Rodríguez-Domínguez, García-Sánchez and Gallego-Álvarez (2010) find that performance variables are positively affected by female directors employed in companies that are active in the areas of technology and telecommunications. Performance is negatively affected by female directors in companies operating in the services sector. Ali, Kulik and Metz (2011), in contrast, show that the positive effects of gender diversity are stronger in the services than in the manufacturing industry. They argue that the services sector was in the best position to realize the benefits stemming from gender diversity because the higher importance attached to market insight as well as greater interaction among employees and between employees and customers. This finding fits well with previous studies showing that female directors are rather found in the services and retail sectors with close proximity to end customers.

Moreover, the firm-specific quality of corporate

governance also seems to play a role. Gender diversity on corporate boards has a positive impact on the performance of firms that otherwise have weak governance and shareholder rights as intensified monitoring could enhance firm value (Adams & Ferreira, 2009). The effects are negative for companies with strong shareholder rights, suggesting that increased gender diversity might lead to over-monitoring. Adams and Ferreira contextualize their findings and the current debate on enforcing gender quotas in the boardroom. They conclude that their results are evidence of female directors' "substantial and value-relevant impact" on board structure. However, the average effect of gender diversity on firm performance is negative. Thus, in their view, no evidence supports the introduction of gender quotas. In contrast, the results suggest that mandating gender quotas for board directors can even reduce firm value for companies with strong governance.

2.3.6 Evidence for a curvilinear relationship

Numerous studies take a new perspective by exploring the relation between gender diversity on corporate boards and firm financial performance based on critical mass theory (Joecks, Pull & Vetter, 2013; Konrad, Kramer & Erkut, 2008; Torchia et al., 2011). Joecks et al. (2013) find evidence for a non-linear and concave relation between gender diversity on the board and firm performance, measured using ROE. The U-shaped link indicates that it needs a critical mass of about 30 percent women on the board in order to realize potential benefits stemming from a more diverse board. It further suggests that increased gender diversity on the board will only enhance performance if female representation is ten percent or higher and performance will be better than the one of male boards only above the threshold of 30 percent. At very low levels of female representation below ten percent, an increase in diversity might even have a negative impact on firm performance (Joecks et al., 2013). This U-shaped relationship may be one possible explanation for the controversial empirical evidence on the relation of gender diversity in the boardroom and firm performance. Several other studies also shift away from assuming a simple, linear relation between diversity and performance by furnishing evidence for a curvilinear relation (Ali, Kulik & Metz, 2011; Ali, Ng & Kulik, 2014; Hoogendorn et al., 2013; Richard, Dwyer, Barnett & Chadwick; 2004). The findings are also in line with Williams and O'Reilly's (1998) assumption that the overall effect of increasing diversity has a U-shaped form. Difference lies in the shape of the curve (besides differing performance measures and assumptions regarding moderating effects): Joecks et al. (2013) present a concave U-shaped relation whereas Hoogendorn et al. (2013) show an inverted U-shaped relationship between share of women in business teams and profits. An inverted U-shaped relationship for gender diversity and productivity is confirmed by Ali, Ng und Kulik (2014) as well as Ali, Kulik and Metz (2011). Richard et al. (2004) cannot fully support their hypothesized curvilinear relationship between cultural diversity in management and firm performance, but when adding moderating effects such as „firm's level of risk taking" to their analysis they observe an inverted U-shaped relationship between gender diversity in management and productivity (expressed by the logarithm of net income per employee) in firms characterized by high levels of risk taking. For firms with low levels of risk taking, the relation is concave U-shaped. The authors' interpretation is that totally homogeneous groups may not succeed in an environment with aggressive competition requiring decision speed whereas the positive

effects of moderate diversity may create benefits in a high-risk context. Further increasing diversity may in turn lead to cognitive biasing, communication problems and conflicts.

2.4 Summary and conclusion

No uniform picture emerges from almost 20 years of research on the relationship between gender diversity on corporate boards and on TMTs and firm performance. There is no clear trend towards a general economic advantageousness of increased female leadership and performance, the findings are ambiguous. While 15 studies find empirical evidence for a positive relationship, five studies report a negative relationship. Several studies report mixed evidence regarding the relationship (13 studies) and a substantial number of studies cannot establish any link between gender diversity and financial performance (14 studies). A wide variety of different regression models is applied, furthermore events study methodology or interaction analysis. The independent variable (female representation/gender diversity in upper echelons) is in most cases operationalized by more than one indicator. The percentage of women on corporate boards (executive boards/top management teams) is used as independent variable in two thirds of the studies surveyed. Dummy variables for the presence of one (or more) women on the board, women on the executive board, a female CEO or women in top management are applied in a third of the analyses under review. Numerous studies make use of the heterogeneity index developed by Blau (1977), one additionally of the Shannon (1948) index. Most studies apply a combination of different performance measures for operationalization of the dependent variable. Accounting-based performance measures are ROA, ROE, ROS and employee-productivity, whereas Tobin's Q, TSR and cumulative abnormal stock returns are used as market-based performance measures.

Findings suggest that the relationship between female representation in top management positions and financial firm performance appears to be more complex than originally assumed. The answer to my research question is thus: it depends. Certain boundary conditions and moderating factors appear to influence the relationship. First, performance effects vary between different business sectors. Female representation in top management is associated with better performance if the firm is operating in a complex business environment. Positive effects are observed in particular in the areas of technology and telecommunications. Second, the firm's strategic orientation is a decisive factor. Firms with a strategic focus on innovation benefit from increased gender diversity in TMTs with regard to performance and firms with a strong growth orientation benefit with respect to productivity. Third, women's education is a factor of relevance. Performance effects are positive and stronger for female CEOs with a university degree. Fourth, performance effects depend on the quality of a firm's corporate governance. Gender diversity on the board has a positive impact on the performance of firms that otherwise have weak governance and shareholder rights as intensified monitoring could enhance firm value. Fifth, it needs a critical mass of women in order to realize the potential benefits from increased gender diversity. There is evidence for a curvilinear instead of a simple, linear relationship between gender diversity and firm performance.

To sum up, the impact of gender diversity on financial firm performance is not as clearly positive as the proponents claim it to be. Even when taking a broader view on business performance, the "business case" for gender diversity is not fully clear

and convincing. A business may benefit from the various perspectives, beliefs and capabilities of a (gender-)diverse workforce as they potentially enhance market knowledge and creativity and avoid "group think". Different business practices, risk preferences or problem-solving approaches are suitable to improve management activity and strategic thinking. On the other hand, homogeneous management may perform better than diverse teams as communication processes and decision-making processes are more efficient and its members are more open to the exchange of ideas. Cooperation is better in homogeneous teams, cohesion is stronger and emotional conflicts are rarer. With regard to potential effects on firm performance, there appears to be no generally applicable rule for the "right" level of gender diversity in upper echelons. However, critical mass theory gives an indication. The reported evidence on a U-shaped link means that it needs a critical mass of about 30 percent women on the board in order to realize potential benefits stemming from a gender-diverse board. This finding lends support to the statutory gender quotas for supervisory boards at levels between 30 and 40 percent. With respect to the identified boundary conditions, it might further be advisable to develop firm- or even team-specific diversity policies under consideration of the respective business environment, the strategic orientation and the quality of existing corporate governance.

Possible starting points for future research activities are potential additional moderating variables that influence the relationship between gender diversity and firm performance or the curvilinear shape of this relationship. In-depth analyses of effects variations between different industries could help in designing appropriate diversity concepts for individual firms. Furthermore, construction and application of innovative statistical methods aiming at mitigating the endogeneity problems are required.

3. Gender diversity on corporate boards and in TMTs in practice: Evidence from stock-listed companies in German-speaking Europe[2]

3.1 Introduction

In April 2015, the Hamburg/Hanover stock exchange launched the German Gender Index, comprised of 50 German stock-listed companies with a balanced ratio of women and men on their supervisory and executive boards (Hamburg/Hanover Stock Exchange, 2015). In the same month, Cologne-based fund provider Ampega introduced a special product that was a novelty on the German market for funds. The Ampega GenderPlus Equity Fund invests in corporations with a high percentage of women in executive positions and that are listed in the German Gender Index (Ampega, 2015). In an interview with Capital, Ampega's managing director Koeberlein said that his fund was neither a "marketing gag" nor a passing fashion; albeit the studies to date painted a mixed picture, a tendency towards a mixed-gender better performance could be observed (Groth, 2015). Koeberlein was convinced that fund managers worldwide would consider the number of women in public company management more strongly as selection criterion in the future. According to this argumentation, investors choose the GenderPlus fund on the basis of higher return assumptions and thus fundamental economic reasons.

The growing relevance of corporate diversity for capital markets has also been encouraged by a second development - the increasing importance of so-called impact investing: "the idea behind impact investing is that investors can pursue financial returns while also intentionally addressing social and environmental challenges" (Bugg-Levine & Emerson, 2011, p.11). Investors have increasingly considered non-financial assets such as corporate social responsibility (CSR) in their company valuation for many years (Hockerts & Moir, 2004; Hoffmann & Fieseler, 2012; Rivoli, 1995). From an investor's point of view, diversity promotion programs can be one manifestation of corporate social responsibility[3].

From the company's perspective, investors mean an important stakeholder group. However, there may be even more relevant stakeholder groups that push the issue forward. Stakeholders include regulators/politics, the media, the public, employees or lobby groups. With respect to politics, the German Federal Council (Bundesrat) in March 2015 approved the act on the equal participation of women and men in executive positions including a statutory gender quota for supervisory boards of large German listed companies.

It seems as if diversity and particularly gender diversity were becoming increasingly important issues for capital markets. But what are actually the major drivers behind the establishment of diversity programs in companies? The programs to promote diversity could be the result of economic considerations. In this case, the decision makers most likely expect economic benefits from increased diversity. Initiatives could also be the result of ethical considerations and the promotion of diversity might be a corporate guiding principle or a measure under the umbrella of the company's sustainability strategy (Stock-Homburg, von Ahsen & Wagner, 2014). However, it may as well be first and foremost regulatory pressure that forces firms to develop and implement diversity measures.

The present study analyzes unique data from anonymous surveys of investor relations officers (IROs) in German-speaking Europe to examine the drivers behind and the attitude towards diversity management as well as the implementation status of regulatory requirements. I aim at checking

[2] This chapter is largely based on a joint working paper with Dirk Schiereck and Anette von Ahsen.

[3] See also Bear, Rahman and Post (2010).

for discrepancies between aspirations and reality. The survey pursues three essential objectives. First, I strive to determine the significance of workforce diversity from the capital markets' perspective. Linked to this is the question whether diversity is a relevant parameter for external company valuation. The investor relations officer is the interface between the listed company and the capital market and thus in a position to give an assessment of the attitude on both sides towards diversity in general and gender diversity in top echelons in particular.
Second, I investigate whether the questioned listed companies employ an economic perspective on the topic of diversity. Closely related to the foregoing is the question of motivation. I aim at identifying internal and external drivers other than capital markets behind the development and implementation of corporate diversity programs.
Third, I intend to gain an insight into strategy and progress regarding a stronger participation of women in executive positions within listed companies in Germany, Austria and Switzerland. Referring to voluntary commitments of the industry as well as corporate governance codes' recommendations, I investigate whether companies have implemented specific promotion programs for women in leadership and whether they have created an appropriate infrastructure for reconciling career and family life. The survey also evaluates the status quo for internal planning targets for female representation in management positions. In this context, I are particularly interested to learn more about the reasons why many firms do not disclose these planning targets. Moreover, the survey examines whether companies concerned are prepared or have taken measures to fulfill the coming binding gender quota for supervisory boards and analyzes the acceptance level of the quota beyond the official statements in the financial reports.
This chapter proceeds as follows. An overview of the regulatory background regarding the equal participation of women and men in working life, the promotion of female leadership and increased female representation on corporate boards is given in section 3.2. For a comprehensive review of the existing literature on diversity in general and gender diversity in particular, I refer to section 2 of this dissertation. In section 3.3, two supplementary subsections present empirical evidence of special relevance for the present survey. In section 3.3.2, I discuss the link between diversity and CSR as well as the role of investor relations within this context. In section 3.3.3, I give a short recap on the investor reaction to female representation on corporate boards and in top management as it is of vital importance when surveying investor relations professionals on this topic. Based on the prior systematic stocktaking of relevant literature and in light of the introduction of a gender quota for supervisory boards in Germany, I develop my central hypotheses for my survey results in subsection 3.3.4. I also point out how I contribute to the existing literature. Subsequently, the sample data and the survey methodology (section 3.4.1) are described as well as limitations of the survey method (section 3.4.2). Descriptive statistics and the results are presented in section 3.5 before section 3.6 summarizes the findings and concludes.

3.2 Regulatory background

A greater participation of women in traditionally male-dominated top management and control levels has been under discussion in Germany for more than three decades. The German industry has always been opposed to any regulatory constraints and takes a stand against a statutory women's

quota still today. Instead, the industry has been in favor of voluntary measures. In 2001, the German federal government and leading associations of the German industry made an Agreement on the promotion of equal opportunities for women and men in the private business sector - known as the industry's "self-obligation". Industry associations assured to improve women's education perspectives and professional opportunities as well as the reconciliation of work and family life for both mothers and fathers through active incentive measures (German Federal Government and German industry, July 2, 2011, p. 2). The objective was a strong increase in the rate of employment content of women, also in areas where women had been underrepresented: management positions and professions of the future. In this respect, income disparities between men and women should be reduced. Realization of the agreement was to be evaluated every two years by a joint committee composed by an equal number of members from both parties. Provided that the agreement was realized successfully, the Federal Government pledged that it would not take any legislative initiatives to ensure equal opportunities (German Federal Government and German industry, July 2, 2011, p. 5). Pressure on the German industry increased when recommendations concerning female participation in leadership were added to the German Corporate Governance Code in the years 2009 and 2010. The Corporate Governance Code, submitted by the Government Commission and most recently updated on May 5, 2015, constitutes key statutory provisions and contains international and national standards for prudent and responsible corporate management. According to section 5.1.2 para. 5, the supervisory board ("Aufsichtsrat"), when appointing executive board members, should also respect diversity and, in particular, ensure an appropriate consideration of women (Government Commission, 2015). In accordance with section 5.4.1, this also applies when proposing candidates for the supervisory board. Likewise, the executive board should pay attention to diversity – again concretized by an appropriate consideration of women - when filling managerial positions in the enterprise (Government Commission, section 4.1.5, para. 4).

However, previous research has elucidated that corporations hardly meet the self-obligation and only reluctantly comply with the recommendations. As an analysis of DAX30 annual reports 2010 yields, 73 percent contain quantitative statements about female representation in the enlarged management group, although management levels are not defined consistently (Heidemann, Landherr & Müller, 2013). However, 30 percent do not name concrete targets for an appropriate female representation on the supervisory board. Only four firms do this by stating a specific quota. 23 out of 30 DAX-listed companies report on women on their supervisory boards whose share is within the interval 0 to 30 percent. Almost two thirds (60.7 percent) of enterprises indicate for female supervisory board members a proportion of more than ten percent. With regard to the executive board, the percentage of women is 2.2 percent in 2010. Similar evidence is provided for MDAX-companies in 2012 (Eggers, 2014). Only every seventh supervisory board member and no more than every fiftieth executive board member in the MDAX is female. 62 percent of the 50 MDAX-companies make statements on the subject of women in top management positions, half of these in quantitative form. Solely eight enterprises set quantitative targets for increasing the percentage of women on executive levels.

Compared to the rest of Europe, Germany in 2012 was slightly above the 16 percent-aver-

age for the EU-27 with an 18 percent share of women in top executive positions in its largest listed firms (European Commission, 2012). Scandinavia was clearly leading the field: Finland came first with a percentage of 29 percent, followed by Latvia (28 percent) and Sweden (26 percent). Least women are found on executive boards in Hungary, Portugal (7 percent each) and Malta (4 percent). However, positions on supervisory and executive boards seem to have been added up. As

FidAR (Frauen in die Aufsichtsräte), an association promoting an increase of women on supervisory boards, shows in its periodical surveys, the share of female executive board members in Germany's 160 listed DAX-companies[4] has slightly increased from 3.7 percent in 2012 to 5.2 percent in 2015. The percentage of female supervisory boards has developed significantly better during the same period. Female representation increased by 50 percent from 14.2 percent in 2012 to 21.4 percent in 2015 (FidAR, 2012/2015).

Very small growth rates of women in top management positions and low speed of realization rekindled the debate on a statutory quota. The grand coalition of CDU/CSU and SPD, in power since 2013, had agreed on the introduction of a women's quota for supervisory boards in its coalition negotiations in 2014. On March 6, 2015, the German parliament (Bundestag) voted for the introduction of a women's quota by a large majority. On March 27, 2015, the German Federal Council (Bundesrat) approved the act on the introduction of a quota. The "women's quota" is actually a gender quota intended to enable equal participation of women and men in executive positions in business and public administration. The act obligates employers to consider the under-represented gender, in most cases women, to a greater degree.

The act, which took effect on January 1, 2016, consists of three pillars (Bundestag, 2015). First, listed companies, which are subject to full co-determination, must meet a gender quota of 30 percent when filling a vacant post on the Supervisory Board. In the case of failure to meet the quota, the post must remain unfilled. At the time of the act's approval, 108 listed stock corporations (Aktiengesellschaft - AG) and partnerships limited by shares (Kommanditgesellschaft auf Aktien - KgaA) were affected by this regulation. Second, supervisory and executive boards of companies that are listed or subject to co-determination are obligated to set targets and timeframes for increasing the ratio of women in management positions. Supervisory boards have the duty to set targets for their own supervisory and the executive board. Executive boards are obliged to set targets for the top two management levels. In all cases, timeframes for achievement must not exceed five years. The group of firms affected consists of 3,500 companies of different legal forms. Besides AG, KgaA and Societas Europea (Europäische AG - SE), these legal forms also include limited liability companies (Gesellschaft mit beschraenkter Haftung - GmbH or registered cooperatives (eingetragene Genossenschaft - eG). As stated in the explanatory memorandum of the act, pressure on firms to set ambitious targets with short timeframes is created by introducing reporting requirements in parallel (Bundestag, 2015). Companies concerned are obligated to disclose targets and timeframes and to report "transparently" and regularly on progress respectively reasons for non-achievement within the framework of their Declaration of Corporate Governance. Third, regulation also applies on public service. The Federal Administration

[4] Four major indizes together comprise 160 German listed companies that trade on the Frankfurt Stock exchange. In terms of market capitalization and order book volume, DAX30 comprises the 30 largest German listed companies, followed by the 50 next largest firms listed in MDAX, followed by further 50 firms listed in SDAX. Index TecDAX comprises the 30 largest German technology stocks.

(Bundesverwaltung) must set targets to increase the percentage of the underrepresented sex - women or men.

A vigorous debate on women in top management positions is also held in Austria and Switzerland. In 2011, the Austrian government within Council of Ministers obligated itself to meet a women's quota for supervisory boards ("Aufsichtsrat") of in total 55 parastatal companies. The law provided for two stages: the objective of 25 percent until 2013 and the target of 35 percent until 2018. Gender equality in management positions (although without any targets) has been embodied in the law in 2010 ("Unternehmensgesetzbuch") and 2012 ("Aktiengesetz") as well as in the Austrian Corporate Governance Code (Arbeiterkammer, 2015). Female representation in Austria's 200 companies with the highest turnover increased from 7.7 percent in 2007 to 13.5 percent in 2013 and to 16.2 percent in 2015 (Arbeiterkammer, 2015). Changes in executive management have been only marginal. The percentage of women rose only slightly from 3.7 percent in 2006 to 5.6 percent in 2013 and 5.9 percent in 2015.

In November 2014, the Swiss government declared that it planned the introduction of a binding women's quota for supervisory boards ("Verwaltungsrat") of 30 percent. Possibly fostered by the public debate and the government's announcement, every third vacancy on the supervisory boards of Switzerland's 90 largest firms was filled with a woman in 2014. Female representation on Swiss supervisory boards thus increased from ten percent in 2010 to 13 percent in 2013 and to 15 percent in 2015. Women in executive management of 120 companies surveyed accounted for four percent in 2006. Their share reached six percent in 2013 and remained unchanged since then, also in 2015 (Guido Schilling AG, 2015).

3.3 Literature review and hypotheses development

3.3.1 Diversity and gender diversity in the context of business

I refer to the comprehensive literature review in section 2 of this dissertation. There I discuss the impact of diversity policies for business in general. I focus on gender diversity and set out empirical evidence on the link between female executives and firm performance. I argue why there are good performance-related reasons for increasing the ratio of women in management positions up to the board level. I further provide governance-related arguments why enhanced female representation on executive levels is in the interest of shareholders and I show how capital markets react to increased gender diversity in top management teams and on corporate boards.

3.3.2 Diversity, CSR and the role of investor relations

Following either the discrimination-and-fairness or the access-and-legitimacy paradigm, diversity policies can be included in the category of corporate social responsibility (Bear et al., 2010). Undoubtedly, there is overlapping content (Hansen, 2014). Investors have increasingly considered CSR aspects in their valuation of companies in recent years (Hockerts & Moir, 2004; Hoffmann & Fieseler, 2012). In the past, however, so-called "mainstream" investors were interested solely in CSR measures if these impacted stated results or the cost of capital. Similarly, from equity analysts' point of view, environmental, social and governance (ESG) issues are always linked to economic responsibilities (Fieseler, 2011). By contrast, specialized socially responsible investors (SRI) demonstrated sincere concern with the interactions of firms and socie-

ty (Hockerts & Moir, 2004). Despite their different approaches, the interests of mainstream investors and SRI may overlap. They share a common objective: to make investments in companies on the assumption that greater responsibility will result in higher value, consistent with a best-in-class approach. An economic justification is crucial to convince the broader investment community of CSR initiatives including diversity programs.

In 2006, equity analysts at the German Stock Exchange in Frankfurt covering DAX-companies were interviewed regarding their CSR perception (Fieseler, 2011). The survey revealed that ESG issues were gaining in importance for mainstream investment analyses but that there were considerable weaknesses in investor relations' communication. IR should communicate the firm's CSR performance more actively to external capital markets players. Indeed, there has also been a proactive trend shift towards a stronger focus on CSR in corporate communication (Arvidsson, 2010). Moreover, IR should address CSR topics strategically (Hoffmann & Fieseler, 2012), "not only as a cost, a constraint or a charitable deed. In other words, capital markets will consider CSR more relevant if companies describe it as a benefit to shareholders, a source of opportunity, risk prevention and competitive advantage" (Fieseler, 2011, p. 143). IR should thus frame ESG issues as integral element of a firm's strategy and equity story and elucidate the long-term prospects that influenced the strategy behind investing in ESG activities (Fieseler, 2011). Communication strategy for individual target groups should be to educate mainstream investors about the essentiality of CSR including diversity policies, to interact with engagement funds on the topic in greater depth and to give feedback to rating agencies on the appropriateness of rating criteria and methodology (Hockerts & Moir, 2004). IR must also transfer information to the company by educating the board about investor sentiment and by providing early warnings on reputational risks and emerging issues to corporate communication and specialized staff functions (Hockerts & Moir, 2004).

3.3.3 Shareholder reactions to women on boards and in TMTs

Empirical evidence on the investor reaction to gender-diverse boards is ambiguous. Schmid & Dauth (2014) find no significant influence of gender on abnormal returns to appointments of international top managers. Similarly, Farrell and Hersch (2005) find only insignificant abnormal returns on the appointment of female board members. Other studies prove a generally positive reaction to the announcement of a women added to the board (Campbell et al., 2010; Kang et al., 2010). Campbell et al. (2010) document positive capital markets' reaction in the short term and in the long term, suggesting that shareholders believe that women add value. Investors' openness is far less when respective directors occupy a CEO position. Shareholders respond more negatively to announcements of female CEO appointments than to male CEO appointments (Kang et al., 2010; Lee & James, 2007). Market reactions are less negative for women that are recruited from within the company than from outside and also less negative for appointments of women in top management positions other than the CEO role (Lee & James, 2007). Shareholder reaction to the announcement of the law on a gender quota in Norway was negative, particularly for firms that had no women on their boards at that time, suggesting that the restrictions with regard to future composition of the board imposed by the quota were rated negatively (Ahern & Dittmar, 2012).

3.3.4 Contributions to literature and hypotheses

My ambition is to contribute to existing literature in two ways. First, I extend the extant literature on diversity and firm performance by providing an analysis of the current practice of diversity management in stock-listed enterprises in German-speaking Europe. By conducting an anonymous web survey, I gain insight into attitudes towards diversity policies and determine the relevance of diversity for firm performance from both the company and the capital markets perspective. Second, I show to what extent companies comply with (self-)regulatory requirements regarding women's participation in leadership and whether firms are prepared for coming regulatory changes. Since more than ten years have elapsed since Hockerts and Moir's (2004) and Fieseler's (2011) analyses, I hypothesize that now mainstream investors are aware of the potential benefits of diversity and thus constitute a driving force for development and advancement of corporate diversity policies. I assume that mainstream investors similarly to SRI and specialized investors express deeper interest in diversity and request information on status quo and progress of diversity initiatives. I expect that capital market participants are aware of the various potential benefits of gender diversity in leadership and consequently consider it as a relevant parameter for company valuation. The same holds true for rating agencies. I expect that rating agencies do consider gender diversity in leadership as a factor of relevance for the rating process.

I further hypothesize that companies interviewed do generally not employ an economic perspective on the topic of diversity. Since the ongoing debate on diversity has until now mainly been a debate on equal rights and equal treatment, I assume that empirical findings on the economic benefits of staff diversity have not found their way into practice yet. I presume that the companies primarily pursue internal ethical and moral objectives, following the discrimination-and-fairness paradigm. I hypothesize that external regulatory requirements gave cause to develop and implement diversity initiatives within organizations in many cases. Accordingly, I expect that regulators are perceived as a major driving force over all other external stakeholders.

At the time of the survey, the great coalition had already agreed on the introduction of a gender quota for supervisory boards. With regard to issuers' preparation for the coming binding quota, I expect that companies concerned have taken specific measures to identify and win qualified female candidates for positions on corporate boards. German industry initiatives have clearly demonstrated their opposition against a statutory quota for more than two decades and favored a voluntary self-obligation to increase the percentage of women in executive positions instead. I thus expect the acceptance level of the quota to be low.

However, I hypothesize that companies comply with the German economy's self-obligation. I thus expect that firms have established internal planning targets for women in management positions. I further assume that companies have implemented measures to identify and promote current and potential female managers internally.

3.4 Research Methodology

3.4.1 Survey methodology and data sources

I developed a preliminary version of the questionnaire in consideration of general principles for constructing web surveys, using the Tailored Design Method (Dillman, 2000). With respect to survey design and process, I have been also guided by Brau and Fawcett's (2006) survey of chief financial officers (CFOs) aiming at comparing theory and

practice of the initial public offering (IPO) process as well as Graham and Harvey's (2001) survey seeking to compare theory and practice in the fields of cost of capital, capital structure and capital budgeting. The following pretest was done in several steps. First, I asked academics from corporate finance for a critical review of the questionnaire. On the basis of their feedback on content and formulation of questions, I revised the questionnaire. The second version was sent out for further test runs to selected professionals from business and banking. In a last step, I requested feedback from experts in marketing and sociology. In several cases, I changed formats and formulations of questions in order to avoid the different kinds of measurement error that may occur in surveys such as bias resulting from misleading wording or response tendencies. These modifications were also intended to increase the response rate. Moreover, I had asked for documentation of the individual time required for processing the questionnaire and obtained an average of eleven minutes.

The final version of the questionnaire contains 43 questions, including six questions that followed previous filter questions. 13 of these questions refer to demographic features of the respondent and the relevant employer. 23 questions have the form of a closed question, eight thereof are questions of attitude. Four questions are semi-open and 16 questions are worded as open questions. The survey includes questions of attitude as I am interested in the respondents' personal view on the subject. I use four-point Likert scales for eight items. Respondents rate whether they agree or disagree with a certain statement (item) by ticking numbers from 1 ("I fully agree") to 4 ("I fully disagree). I choose the 4-point instead of a 3- or 5-point scale with the objective of avoiding a tendency towards the center in the answers. Questions of attitude appear randomized in order to minimize systematic cognitive bias in the form of a halo effect.

The survey was conducted in cooperation with DIRK – German Investor Relations Association. DIRK had 306 members at that time and, according to its own statement, represented around 85 percent of the capital listed on the stock exchange in Germany. 257 persons are corporate members, 59 are individual members. The majority of the corporate members are investor relations professionals (>90 percent), others belong to various fields of the finance department from the CFO's (>5 percent) to the treasurer's level. Employees from staff units and corporate communications for a third group. The individual members are predominantly investor relations professionals (approx. 50 percent) or consultants (approx. 40 percent). The remaining part of 10 percent is classified as "others". The survey was performed as an anonymous online survey during the period January 20, 2015 to February 10, 2015. In Germany, DIRK invited 1,055 addressees of its extended member distribution list members and newsletter subscribers to participate in the survey. I decided to remind addressees repeatedly at frequent intervals; timing of follow-up appears to have no significant impact on the response rate (Deutskens, De Ruyter, Wetzels & Oosterveld, 2004). After the expiry of a week, on January 27, DIRK sent out a reminder. On January 30, DIRK referred to the survey again in its regular newsletter. The two leading industry associations from Austria and Switzerland contributed as well. C.I.R.A. – Cercle Investor Relations Austria – sent out a first invitation to participate to 65 Austrian recipients on January 20 and a subsequent reminder to an extended number of 270 addressees on February 4. Swiss investor relations association IR club invited 60 members.

Table 3.1 summarizes the survey statistics.

invited for participation	1,385
- thereof in Germany	1,055 (76.17%)
- thereof in Austria	270 (19.49%)
- thereof in Switzerland	60 (4.33%)
gross participation	194
net participation	155
interrupted (interruption rate)	59 (30.57%)
survey completed (completion rate)	96 (49.48%)
response rate (1.385 invitations)	6.9%
page with most terminations	Page 1; number of terminations: 41
average processing time (arithmetic mean)	0h 12m 46.44s
average processing time (median)	0h 10m 48.5s
time of day with highest number of accesses	Hour 8; number of accesses: 42
average number of participants per day	12.12
average number of participants per week	48.50

Improving the response rate by material or non-material incentives (e.g. Goeritz, 2006; Marcus, Bosnjak, Lindner, Pilischenko & Schütz, 2007) was not feasible as the survey was designed as an anonymous web survey and by specifying personal data for potential prize allocation, respondents would have been identifiable. In addition, incentives are assumed to have less influence in online surveys than offline (Goeritz, 2004). DIRK periodically conducts surveys among its members. The most prominent example is the Stimmungsbarometer ("sentiment barometer"). On behalf of DIRK, the Association for Consumer Research (GfK) consults around 300 investor relations professionals employed at listed companies in Germany, Austria and Switzerland twice a year on their assessment of the current and future position of their company. According to information provided by DIRK, 80 responses on average come from Germany. Thus, the response rate to the Stimmungsbarometer is at least 26 percent. Several responses from Austria and Switzerland come on top of this number.

I adjust the data for incomplete or erroneous answers. The number of data sets originally amounted to 96. I delete two data sets to avoid defaults as the respondents had hardly answered any question. Second, I delete obviously faulty answers and leave the respective field empty in three cases. For instance, one respondent claims to have 13 female members on its executive board that has zero in

total. In another case, I identify a "7455%" share of female employees as a faulty answer. Third, when respondents state to have zero members on the executive board and/or supervisory board (in one case although claiming to be share and bond issuer), I delete the entries relating to the share of female board members and leave the fields without an entry in order to avoid bias. In the end, 93 evaluable data sets remain. A quantitative content analysis is used for evaluation of collected data, predominantly as univariate or bivariate frequency analysis.

3.4.2 Limitations of the survey method

The advantage of the present survey is clearly the exclusive access to a narrowly defined group of participants through leading professional associations. Almost 90 percent of the respondents are members of the investor relations department of a listed company. I believe that an IRO, who is usually highly specialized in finance and corporate governance, is in a daily dialogue with internal decision-makers and external stakeholders. Owing to this function as interface between the issuer and capital markets, the survey method provides direct insight in the attitudes on both sides towards the issue of gender diversity in top echelons.

However, the chosen survey method is subject to at least three limitations. First, the IRO himself could not have an appropriate insight into or understanding of top management's attitude towards the topic of women on executive levels. The same could be true for capital markets actors such as investors or research analysts.

Second, sample selection bias could be present. Sample selection bias can occur from several factors. To start with, the chosen survey period from mid-January to mid-February is traditionally a time of heavy workload as IROs contribute to the creation of the annual financial statements. Even so I decided to conduct the survey at this particular time as the women's quota was a hotly debated issue in the public exactly then. The rather low response rate of 6.9 percent, however, may indicate that a significant number of addressees did not participate in the survey due to time constraints. This could also mean that actual respondents are less involved in certain important tasks such as creation of financial reports and thus represent a certain subgroup of all IROs. The non-participating IROs' responses could have been quite different. On the other hand, representativeness does not automatically increase in-line with the response rate. Surveys with very low response rates may even provide more precise results than surveys with high response rates (Krosnick, 1999). Nonetheless, nonresponse bias could affect my results' validity.

Furthermore, self-selection is a possibility. A total of 41 terminations occurred at page 1. It is conceivable that only participants with a strong personal interest in the topic of gender diversity decide to continue. A disproportionate participation of women does not seem to be the case as the gender ratio is fairly balanced. Yet, respondents' individual involvement or experience could influence the likelihood of continued participation. It is also possible that participants mistrust the given guaranty of anonymity and thus decline or interrupt participation. Several missing entries regarding characteristics of the relevant company such as industry classification or total number of employees may be interpreted as evidence for distrust. For both reasons, the surveyed data could not be representative for the population.

Third, social desirability bias could be present due to the sensitive topic. Social desirability could impact responsiveness in both cases: when reflecting

the company's point of view and also when representing one's own opinion. I try to overcome this risk by ensuring anonymity. However, distrust in the survey's anonymity – obvious or latent - could increase the tendency to give socially desirable answers.

3.5 Results

3.5.1 Survey sample

The ratio of male and female survey participants is fairly balanced, the proportion of females does not significantly differ from the hypothesized value of 50 percent. Therefore, gender bias is unlikely. The vast majority of respondents is member of the investor relations department. The remaining respondents hold various other positions within their company such as CFO, holder, staff division, group communications or treasury. The following shows the summary of the respondents' characteristics.

Table 3.2: Summary of respondents' characteristics

	Freq.	Percent	Cum.	test statistic
Gender				Binomial test
Female	45	48.4	48.4	Expect k = 46.5
Male	48	51.6	100.00	Assumed p = 05.0000
				Observed p = 0.51613
				Pr(k <= 45 or k >= 48) = 0.835846
				(two-sided test)
Department affiliation				
Member of IR department	84	90.32	90.32	
Other department/position	9	9.68	100.00	
Headquarters				Chi-square goodness of fit
Germany	70	75.27	75.27	chisq(3) is 10.94, p = .0121
Austria	10	12.90	88.17	
Switzerland	12	10.75	98.92	
other country	1	1.08	100.00	

Three quarters of 93 companies surveyed have their headquarters in Germany. Presence of other countries is considerably weaker. Composition by location of headquarters in my sample does not differ significantly from the hypothesized values derived from distribution of invitations.
Industry distribution of the sample is well diversified. IT/media/telecommunications is the most strongly represented industry, followed by chemicals/synthetics and real estate/building industry. The automotive sector is represented weakest with only one company. Table 3.3 presents the industry distribution of the sample.

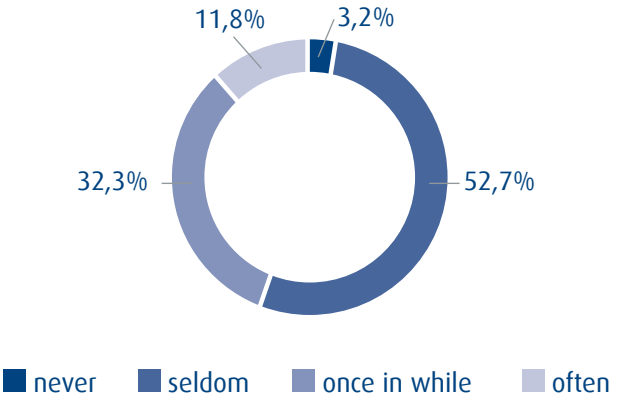
Table 3.3: Industry distribution of the sample

Industry classification	Freq.	Percent	Cum.
Financial services	8	8.60	8.60
IT/media/telecommunications	10	10.75	19.35
Automotive	1	1.08	20.43
Transport/logistics	6	6.45	26.88
Engineering/plant construction	3	3.23	30.11
Chemicals/synthetics	9	9.68	39.78
Healthcare/pharmaceuticals/life sciences	8	8.60	48.39
Energy/utilities	5	5.38	53.76
Capital goods/basic resources	6	6.45	60.22
Real Estate/building industry	9	9.68	69.89
Services/consulting	4	4.30	74.19
Technology/electronics/semiconductors	4	4.30	78.49
Insurances	3	3.23	81.72
Trade	3	3.23	84.95
Industry	6	6.45	91.40
Others	2	2.15	93.55
Not specified	6	6.45	100.00
Total	93	100.00	

3.5.2 Role and importance of diversity for investor relations and capital markets

The majority of IROs is only rarely concerned with the issue of diversity. Only one out of eight IROs reports to deal with the topic frequently. Figure 3.1 shows how frequently the IROs surveyed encounter the topic of diversity.

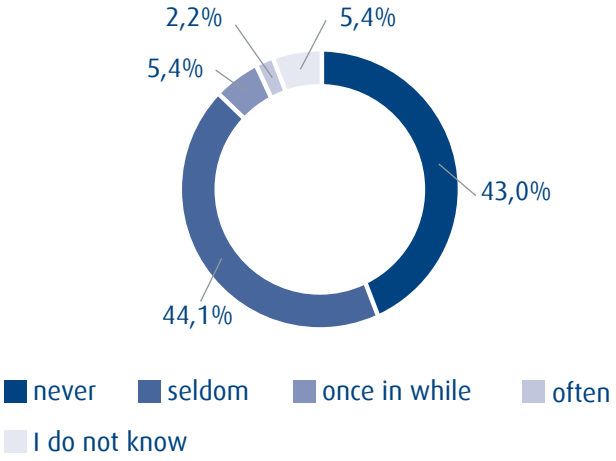
Figure 3.1: Frequency of diversity issues in everyday professional life



Results show that only a marginal number of investors expresses interest in diversity issues. 43 percent of survey participants respond that they never discuss the topic with investors. Inquiries on this topic are rare. Hence, my hypothesis of increased awareness of diversity on the part of investors cannot be confirmed.

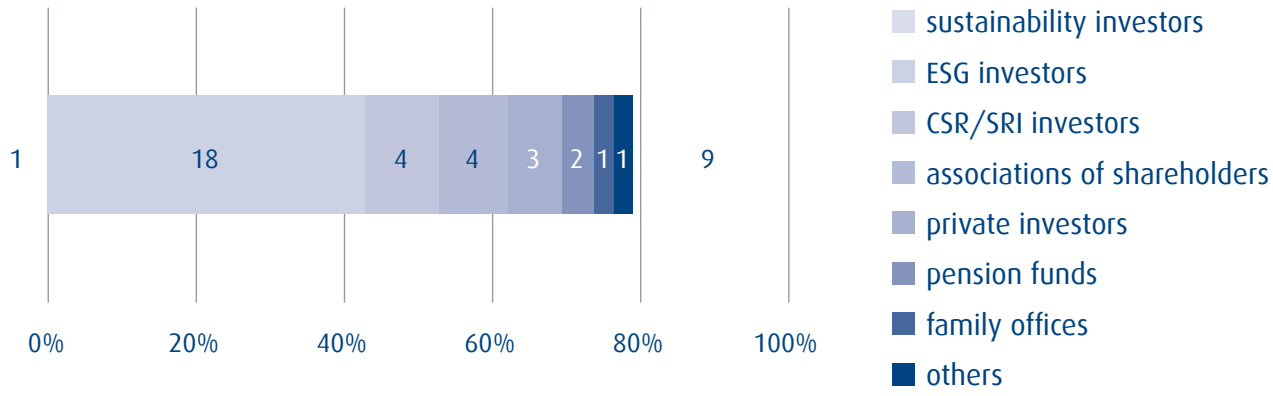
The question relating to the frequency of the diversity topic in the dialogue with investors is designed as a filter question. In case the answer is "never", respondents jump over the questions on investor types/locations as well as concrete demands of investors. Figure 3.2 illustrates the frequency of diversity issues in the dialogue with investors.

Figure 3.2: Frequency of the topic of diversity in dialogue with investors



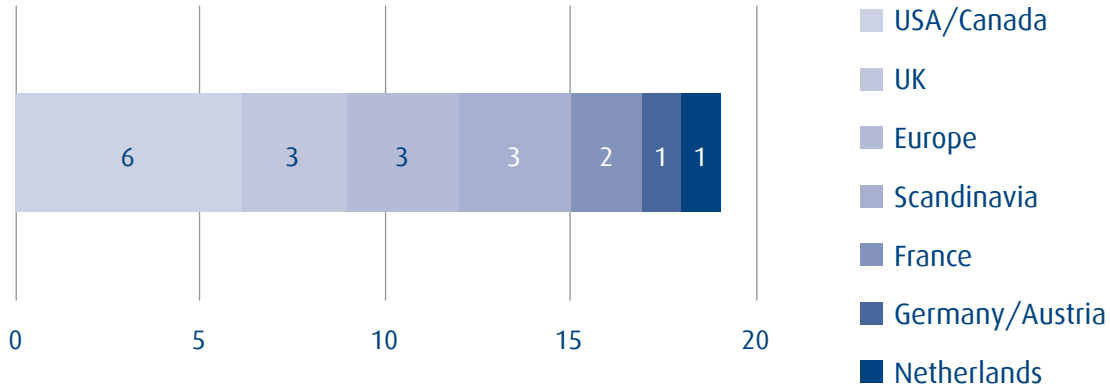
To an open question about the types of investors placing inquiries about diversity, respondents name primarily investors with a focus on sustainability, ESG (Environment, Social, Governance) and CSR (Corporate Social Responsibility)/SRI (Socially Responsible Investing). Other investor types including mainstream investors are of subordinate or no importance in this context. This refutes my hypothesis of increased awareness of diversity across a broader range of investor groups. The following figure 3.3 displays the number of inquiries by investor type.

Figure 3.3: Types of investors inquiring about diversity



In terms of geographical distribution, most inquiries related to diversity come from investors from the United States and Canada. This fact is not surprising considering that the topic of diversity had its origin in the United States - diversity and diversity management have been highly-regarded issues in North-America for 30 years now. It can thus be expected that awareness for the topic is higher among investors from this region. The United Kingdom, Scandinavia and France are also mentioned several times. German investors are of minor importance. Figure 3.4 displays the number of inquiries sorted by the location of investors.

Figure 3.4: Locations of investors inquiring about diversity



Due to the filter function, only 53 out of 93 respondents were asked the question on concrete investors' demands with regard to diversity. They had stated earlier to discuss the topic at least "seldom" with shareholders. 40 usable answers are available for analysis. Table 3.4 lists the investors' concrete demands or information requests.

Table 3.4: Inquiries of investors with regard to diversity

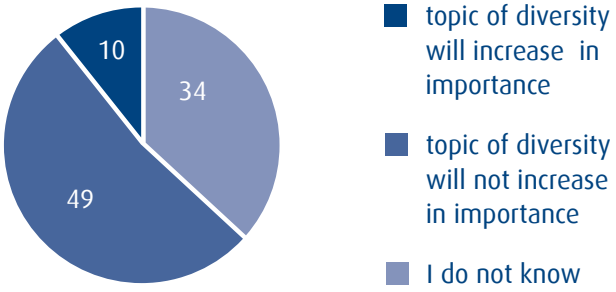
Inquiries	Mentions
No concrete demands but information requests	16
- about women's ratio on corporate boards and in leadership	4
- about corporate governance (experience and qualification of all board members, independence of supervisory board members)	2
- about diversity of staff in all its dimensions	2
- about share of disabled employees	1
Concrete demands	25
- for setting specific targets and formulating appropriate strategies	10
- for increasing the share of women on corporate boards and in management positions including concrete measures	8
- for reliable key figures as basis for measurability, comparability, evaluation	5
- for enhanced transparency with respect to targets/measures and justification in case of non-achievement	4
- for fulfillment of current and future regulatory requirements	4
- for increasing diversity on corporate boards and in management positions	2

(multiple answers allowed)

Concrete demands of investors support Hockerts & Moir's (2004) and Fieseler's (2011) assessment of capital market participants' (apparently predominantly specialized investors') expectations regarding IR messages. Investors' calls for specific diversity targets and strategies as well as for reliable key figures for measurability and evaluation suggest that the proposed IR communication strategy focusing on long-term prospects and shareholder value creation potential of diversity policies is justified.

After all, a third of respondents expects that the topic of diversity will increase in importance in the future. Figure 3.5 illustrates the distribution in detail.

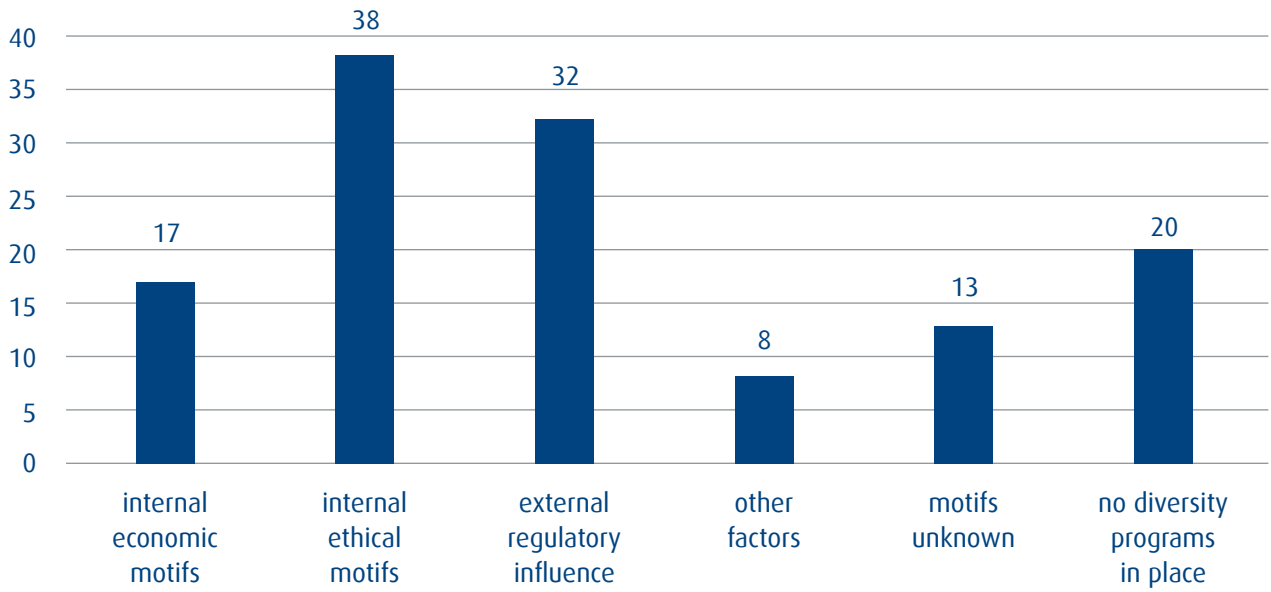
Figure 3.5: Expectation regarding future rising importance of diversity



3.5.3 Motivation behind the development of diversity promotion programs

The closed question on the main drivers behind the development of diversity programs allows for multiple answers. Most frequently mentioned drivers for developing diversity promotion programs are ethical motifs, whereas only one fifth gives economic objectives as a reason in this context. I assume that the respective companies consider diversity as a profitable value in economic terms. These results support my hypothesis that the majority of companies does not employ an economic perspective on the topic of diversity but follows the discrimination-and-fairness paradigm instead. A third of respondents indicates that external regulators are key drivers for planning and implementation of diversity programs. Although diversity programs in the latter case are likely rather an onerous fulfillment of an obligation than a success factor from a company's point of view, they prove the efficacy of political interference. This is opposed by another fifth of the surveyed companies, which has not implemented any diversity promotion measures to date. Figure 3.6 displays the frequency of motifs mentioned in graphical form.

Figure 3.6: Motifs for developing diversity promotion programs



(multiple answers allowed)

The item "other factors" is supplemented by free text answers in five cases. Three respondents state that the issue of sustainability in the broadest sense was currently gaining momentum. When journalists and politics focused on the topic, stock-listed companies could not evade it. Another company in the sample implemented a program of measures for sustainability that led to the development of diversity promotion programs. Diversity promotion programs were further developed as a response to a poor external rating or at the request of employees following an opinion survey. A fifth of respondents concretizes the company's internal economic motifs by indicating the objective to retain well-trained specialists within the work process and the company.

Consistent with the low percentage of firms that indicate economic motifs for the development of diversity programs and further supporting my hypothesis that firms generally do not employ an economic perspective on diversity, the number of companies that conducted a cost-benefit assessment for such initiatives is extremely small. No more than two respondents state that their company has appraised the benefits of diversity programs in relation to their costs, in one case with a positive result, that is, benefits exceed costs. More than half of the companies has not performed such an analysis; around 40 percent of the respondents are unable to provide these data.

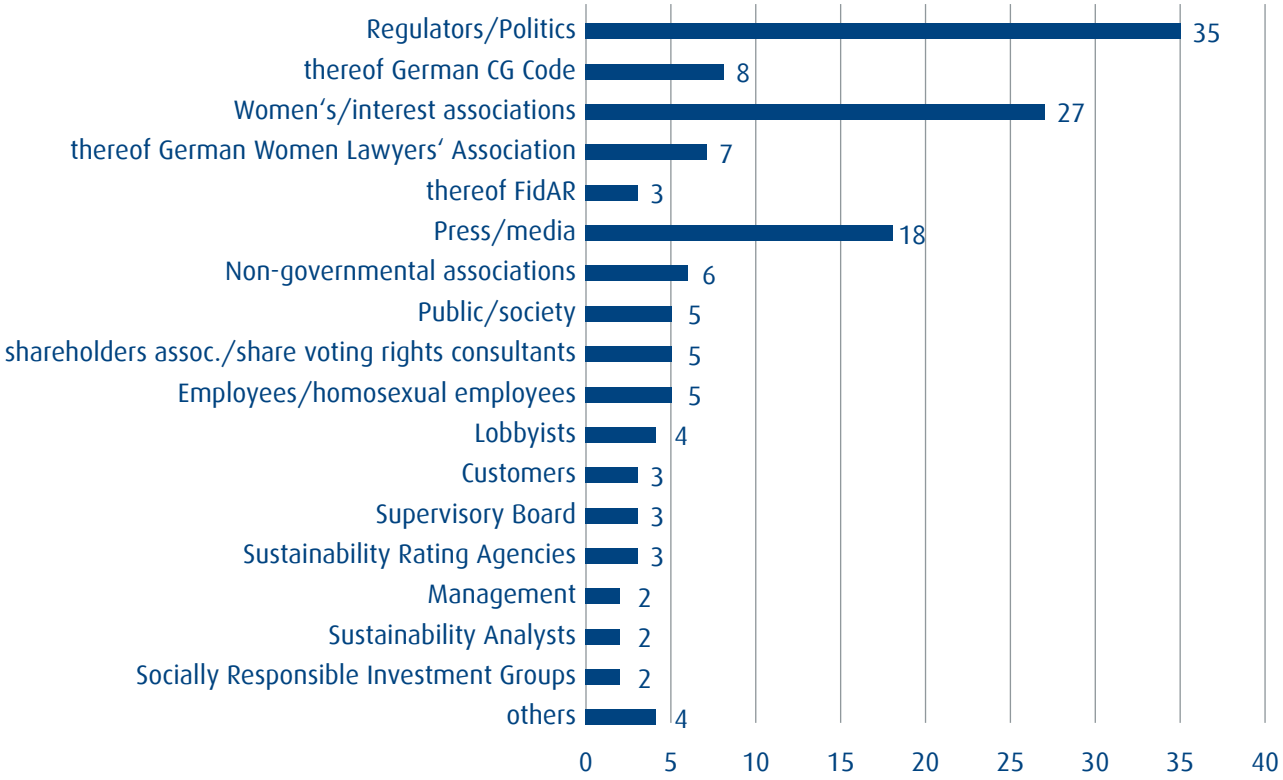
3.5.4 Other external stakeholders driving diversity promotion

Questioned in the form of an open question (allowing for multiple answers) on the influence of external stakeholders other than investors, 37.6 percent name politics/regulators ("above all: politicians") or the German Corporate Governance Code, respectively. This result verifies my hypothesis that external regulatory requirements gave cause to develop and implement diversity initiatives within organizations. The fact that regulators and politics are the most important driving force for corporate diversity promotion programs meets my expectation.

29.0 percent name interest groups and women's associations, more precisely the German Women's Lawyer Association (7.5 percent) and Women on Supervisory Boards (FidAR, 3.2 percent). 19.4 percent assign a vital role to the media or critical journalists.

Non-governmental organizations (NGOs), among them RespACT, UN Global Compact or BioDiversity, are cited being important external stakeholders by 6.5 percent, followed by the public/society, associations of shareholders/consultants on share voting rights and employees (5.4 percent each). Rating agencies with a focus on sustainability (such as imug) or similarly specialized research analysts are mentioned repeatedly. Customers in some cases also address this issue. The frequency of responses by stakeholder group is shown in figure 3.7.

Figure 3.7: External stakeholders driving diversity promotion



3.5.5 Women in Leadership

The ratio of women to total staff in the present sample varies by industry. Industry sectors healthcare, pharma and life sciences are clearly leading the field with an average women's ratio of 0.51 (median). Other industry sectors with a high percentage of female employees are services/consulting with a 0.57 median as well as financial services and insurances with a median ratio of 0.46 each. The trade sector follows with a median of 0.45. The lowest shares across all industries are registered in the building industry. At five companies from the construction sector, female employees account for only twelve to 15 percent. Similarly low ratios are recorded for the chemicals/synthetics sector (adj. median 0.20) and industry companies (adj. median 0.21). The remaining sectors are in the middle range of 25 to 40 percent.

The percentage of women on supervisory boards in my sample is below the 2015 FidAR figure for Germany (21.4 percent) but above the corresponding ratios for Switzerland (15 percent) and Austria (16.2 percent). The ratio of women on executive boards in my sample is lower than reported 2015 numbers for all three countries. However, distance to reported mean values is smaller. Swiss executive boards have the highest share of women in 2015 (6 percent). In second place come Austrian boards (5.9 percent), third German executive boards (5.2 percent). The following table 3.5 shows the female representation on the corporate boards of the sample's firms.

Table 3.5: Female representation on corporate boards

Variable	Obs	Mean	Std.Dev.	Min	Max	Percent
Executive Board						
members on executive board	*89*	*4.2*	*1.9*	*1*	*9*	
thereof female board members	*89*	*0.2*	*0.5*	*0*	*2*	*4.81%*
Supervisory Board						
members on supervisory board	*89*	*8.9*	*5.6*	*0*	*21*	
thereof female board members	*93*	*1.6*	*2.1*	*0*	*11*	*18.12%*
female shareholder representatives	*89*	*0.9*	*1.2*	*0*	*6*	*10.60%*
female employee representatives	*92*	*0.7*	*1.2*	*0*	*5*	*8.06%*

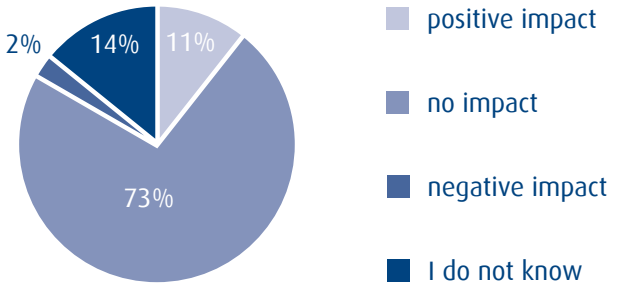
High women's ratios, particularly on supervisory boards, are more likely to be found in large listed firms (DAX- and MDAX companies and in Germany). I assume that many of these firms increased female representation on their supervisory boards in anticipation of a statutory quota as well as due to greater public pressure. Very large companies are underrepresented in my sample. 14 out of 93 companies have more than 50,000 employees, only four of them employ more than 100,000 staff. By contrast, 40 companies surveyed have less than 5,000 employees. This distribution possibly lowers the mean value. The size of the sample's firms defined by the number of employees is shown in table 3.6.

Table 3.6: Workforce size of the sample's companies

Number of employees	Freq.	Percent	Cum.
up to 5,000	*40*	*43.01*	*43.01*
>5,000 to 25,000	*32*	*34.41*	*77.42*
>25,000 to 50,000	*6*	*6.45*	*83.87*
>50,000 to 100,000	*10*	*10.75*	*94.62*
>100,000	*4*	*4.30*	*98.92*
not specified	*1*	*1.08*	*100.00*
Total	*93*	*100.00*	

Knowing and understanding the parameters for company valuation as well as underlying assumptions is essential for IROs. Therefore, I asked them to assess if gender diversity in leadership was a relevant parameter for company valuation by capital markets. Figure 3.8 presents the distribution of responses with respect to the assumed impact on external valuation by capital market players.

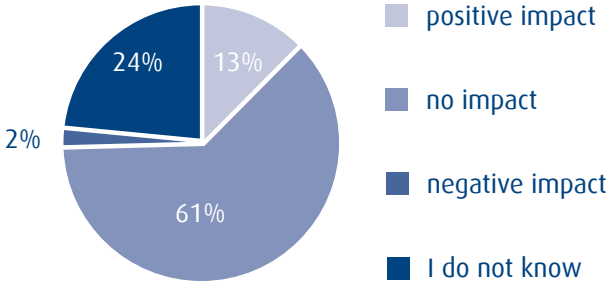
Figure 3.8: Assumed impact of corporate initiatives to increase the share of women in leadership on company valuation by capital markets



Three quarters of respondents believe that corporate initiatives to increase the ratio of women in executive positions do not impact company valuation by capital market players. Only about a tenth considers that a commitment to promote gender diversity in leadership has a positive impact on the valuation process. With regard to rating agencies, nearly two thirds believe that gender diversity promotion programs do not affect a company's rating. One respondent out of seven, however, assumes a positive influence. This assessment may partly be fostered by the growth in importance of rating agencies that are specialists in sustainability. A negative influence on the rating is expected by two IROs.

Results clearly refute my hypothesis that capital markets consider gender diversity in leadership as a relevant parameter for company valuation. Results also falsify my hypothesis that gender diversity in leadership means a relevant parameter for the agencies' rating process. Figure 3.9 shows how IROs assess the impact of initiatives promoting female leadership on external valuation by rating agencies.

Figure 3.9: Assumed impact of corporate initiatives promoting female leadership on company valuation by rating agencies



I hypothesized that companies comply with the German economy's self-obligation and thus expected that firms have established internal planning targets for women in management positions. Surprisingly, this hypothesis cannot be confirmed. Almost two thirds of all surveyed companies have not set any planning targets for the share of women in management positions. Around 17 percent have defined objectives, whereas 20 percent claim to have done so but would not disclose. More than half of the firms surveyed have not set themselves goals for female representation on corporate boards. Roughly a fifth of all companies has set targets for the share of women on supervisory boards but only three percent have formulated objectives for women on executive boards. The following table 3.7 displays the distribution of responses in detail.

Table 3.7: Existence of planning targets for women in leadership and on corporate boards

Variable	Freq.	Percent	Cum.
Planning targets for women in management positions			
Planning targets existent	*16*	*17.20*	*17.20*
Planning targets not existent	*57*	*61.29*	*78.49*
Planning targets existent/no disclosure	*19*	*20.43*	*98.92*
Missing/not specified	*1*	*1.08*	*100.00*
Total	*93*	*100.00*	
Planning targets for women on corporate boards (multiple answers allowed)			
Planning targets for women on executive board	*3*	*3.23*	
Planning targets for women on supervisory board	*20*	*21.51*	
Planning targets for boards existent/no disclosure	*10*	*10.75*	
Planning targets for boards not existent	*50*	*53.76*	
Not specified ("I do not know.")	*14*	*15.05*	

The following table 3.8 displays Pearson Chi-square values and indicates levels of significance for the relationships between the variable "share of female employees" and various other variables. There is no statistically significant relationship between the share of female employees and having planning targets for enhanced participation of women in management positions, for having planning targets for women on the executive board or supervisory board. Interestingly, there is also no statistically significant relationship between the share of female staff members and the number of female supervisory board members. However, there appears to be a significant relationship between the ratio of female employees and the number of women on the executive board.

Table 3.8: Relationship between share of female employees and planning targets/actual female representation in leadership

Variable 1	Variable 2	Obs.	Pearson chi-square	Degrees of freedom	p-value
	Planning targets for women in leadership	*88*	*13.4205*	*21*	*0.893*
Share of	*Planning targets for women on executive board*	*88*	*8.8034*	*7*	*0.267*
female	*Planning targets for women on supervisory board*	*88*	*7.9373*	*7*	*0.338*
employees	*Number of women on executive board*	*88*	*23.4096*	*14*	*0.054* *
	Number of women on supervisory board	*88*	*47.5610*	*63*	*0.926*

60 percent of participants responded to the question regarding assumed advantages of disclosing internal planning targets for women in management positions for companies, which was worded as an open question and thus allowed multiple answers. Table 3.9 shows what advantages and/or disadvantages the respondents assume and how frequently they are mentioned. 38 percent of respondents see benefits in the disclosure. Around half of these believe in an improvement of the company's public perception, supporting the findings of Bear et al. (2010) and Brammer et al. (2009). This reputation effect is assumed to work towards different stakeholders such as investors, the media or potential employees. Firms could position themselves as open and progressive and be a forerunner. In compliance with generally accepted professional standards of investor relations, transparency and liability towards stakeholders is considered to be a further advantage of disclosure. Setting concrete objectives for gender diversity would enable a target-actual comparison by external parties. Moreover, conducted measures for promoting diversity could be evaluated. The ensuing internal and external pressure of expectation (perceived as positive) would increase the probability of success for objective achievement as well as for the company's credibility. Furthermore, IROs assume an increase in the attractiveness as an employer in general and for women in particular.

23 percent of respondents, however, do not see any advantages to the company from the disclosure of internal planning targets for female representation in executive positions. Few IROs indicate that they disclose only for regulatory reasons, which means to fulfill the requirements of the German Corporate Governance Code. Others state it more sharply: the publication of planning targets for an enhanced participation of women served the purpose of "calming the waves". The publication represented no benefit to firms; companies bowed to the pressure "imposed by interested parties".

Questioned on the drawbacks of disclosure, 48 percent of respondents identify potential disadvantages. The number is significantly higher than the percentage of respondents that assumes benefits from disclosure. Almost half of IROs surveyed seem to associate more detriments than benefits with the disclosure of internally targeted aims. Most frequently mentioned is the originating pressure of fulfillment of the company's own objectives (here perceived as negative). Non-achievement of the self-imposed targets would lead to pressure for justification and to "unnecessary discussions". Main criticism is that publication of such figures created an additional pressure that was neither in the issuer's nor in the shareholders' interest. IROs surveyed also cite the risk of a reputational damage in case of non-achievement of targets. The possibility of wrong personnel decisions follows close behind. Respondents state that companies ran the risk of "waiving to choose from the very best candidates" when giving priority "to a quota over qualification". Moreover, women who were appointed to a post according to a quota would become subject to stigmatization and be perceived as "tokens".

Table 3.9: Assumed advantages and disadvantages of disclosing internal planning targets

Assumed advantages of disclosing planning targets (multiple answers allowed)	Mentions	Assumed disadvantages of disclosing planning targets (multiple answers allowed)	Mentions
benefits to company assumed	35 (37.6%)	disadvantages assumed	45 (48.4%)
no benefits to company assumed	21 (22.6%)	no disadvantages assumed	12 (12.9%)
positive reputational effect	15	pressure of fulfillment of own objectives and for justification	20
transparency and liability towards stakeholders	10	risk of wrong personnel decisions	10
increased attractiveness as employer	5	risk of reputational damage in case of non-achievement	5
fulfilment of regulatory requirements	4	stigmatization of women as tokens	3
higher valuation of the company	1	demotivation/insecurity of company's own employees	2
other advantages	1	other disadvantages	7
total number of responses to this question	56/93 (60.2%)	total number of responses to this question	57/93 (61.3%)

A further disadvantage is seen in the ensuing demotivation or insecurity of the respective company's (male) employees, if performance and capabilities were no longer the only relevant criteria when filling vacancies. Finally, diversity "must not be an end in itself".

With regard to the forthcoming statutory gender quota for German supervisory boards, a third of German companies in my sample had taken or were currently developing preparatory measures at the time of the survey to ensure achievement of the quota. Measures were concretized only in a very limited number of cases, such as "search for suitable female candidates" or "new election of a female supervisory board member by the Annual General Meeting (then replacing a man)". Another third of respondents – a relatively high proportion - indicated to have no knowledge of preparatory measures in anticipation of the quota. Most likely, such initiatives do not fall in the sphere of investor relations' activities and transparency of the process might be poor. It may further be assumed that these IROs had not received external requests on this topic yet and thus not researched it at the time of the survey. Table 3.10 reports the state of preparation with respect to fulfilment of the forthcoming gender quota for supervisory boards.

Table 3.10: State of preparations regarding the fulfilment of the coming gender quota for supervisory boards

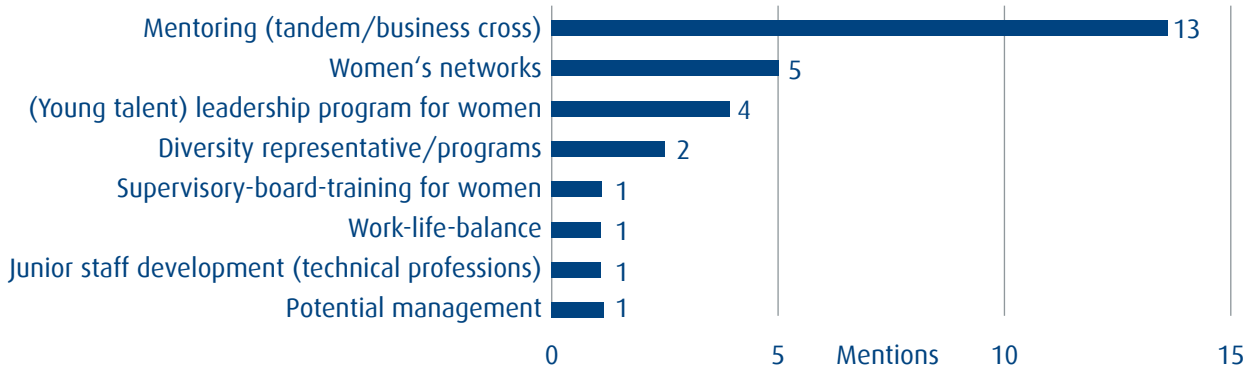
Corporate initiatives to date	Only Germany Freq.	Percent	Cum.	Total Sample Freq.	Percent
Measures taken	*10*	*14.29*	*14.29*	*11*	*11.83*
Measures currently being developed	*12*	*17.14*	*31.43*	*12*	*12.90*
No measures taken	*12*	*17.14*	*48.57*	*14*	*15.05*
I don't know	*22*	*31.43*	*80.00*	*27*	*29.03*
Quota does not apply to our firm	*14*	*20.00*	*100.00*	*29*	*31.18*
Total	*70*	*100.00*		*93*	*100.00*

3.5.6 Promotional measures for women in leadership and reconciliation of career-family life

Only 31 percent (28) of companies surveyed launched promotional programs for women in leadership and on supervisory boards. 52 percent (48) have not developed such programs yet. 17 percent (16) of respondents were unable to answer this question.

Separated by country, 29 percent (20) out of 70 German companies have promotional programs for women in leadership in place. The fact that two thirds of German companies surveyed have not implemented any concrete programs within a period of 15 years refutes my hypothesis that companies comply with the German economy's self-obligation by implementing measures to identify and promote current and potential female managers internally. Programs have been launched at five of ten Austrian companies and at two of twelve Swiss companies. The following figure 3.10 illustrates how many references were made to various corporate initiatives promoting female leadership.

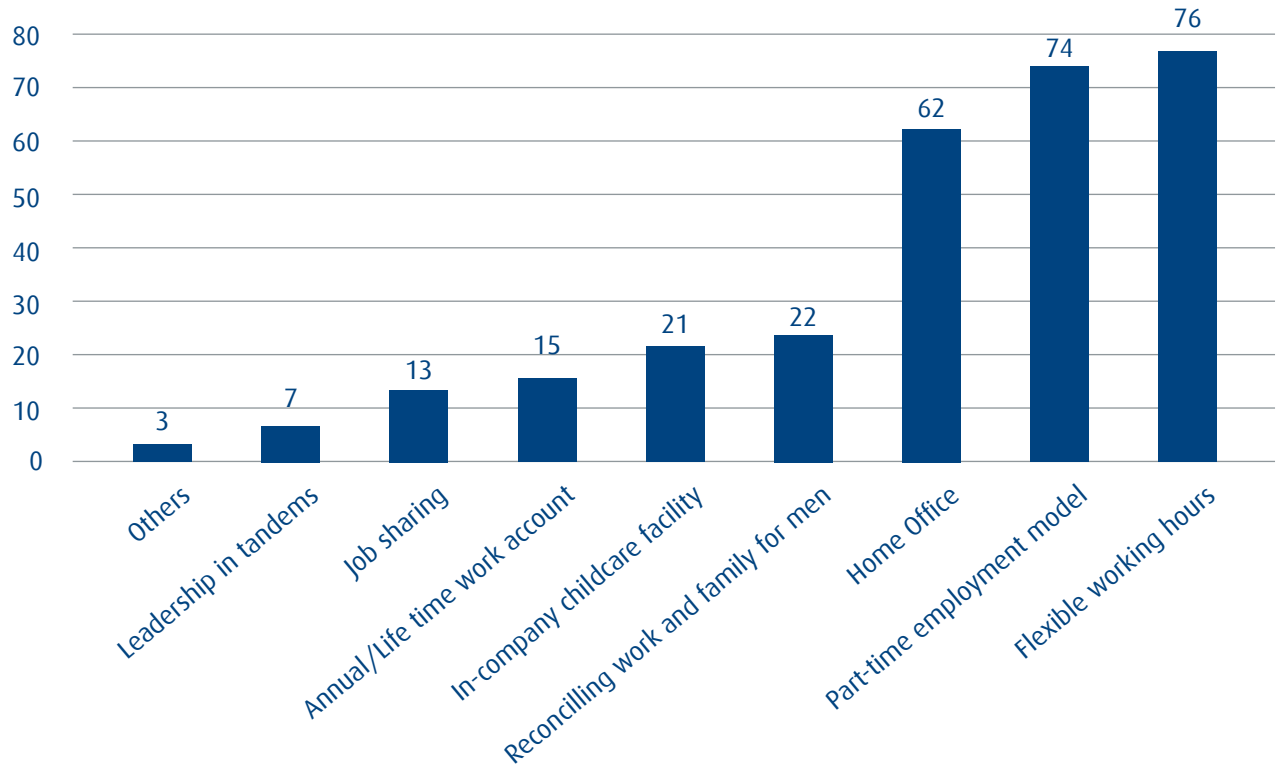
Figure 3.10: Corporate initiatives for promoting female leadership



Most frequently mentioned promotional measures for women are mentoring programs. These are often tandems, i.e. one Junior Executive (mentee) and one Manager (mentor) work together in tandem during mentoring. In order to ensure that dependencies do not impede an honest dialogue, mentee and mentor should ideally belong to different departments or sectors within the company or should be recruited from different companies or industries (business-cross mentoring). A "cadre of multiple mentors" is desirable (De Janasz, Sullivan & Whiting, 2003). These mentors advise on formation of intelligent networks, since "in the same way that organizations seek partnerships in an effort to capitalize on collaborative strengths, so can individuals at any level of an organization or any stage in their careers form facilitative mentor relationships" (De Janasz et al., 2003, p. 88). Women's networks, second most frequently mentioned program, are thus a promising approach to advance women's careers. However, particularly vocational mentoring (rather than personal mentoring) seems to be associated with mentees' career success and job satisfaction (Ensher, Thomas & Murphy, 2011; Orpen, 1995). Specific leadership programs customized to the needs of young female managers are also occurring quite frequently.

Despite many firms' stronger efforts to advance female careers and the various promotion programs already in place, the compatibility of family life and career remains an essential prerequisite for female leadership. Although measures to ensure flexible working conditions such as flexitime (flexible working times) or part-time arrangements and the option of working from home office appear to be common practice, programs tailored to the particular necessities of women in executive positions remain scarce. One example of such programs is facilitation of tandem leadership, provided by seven companies in my sample. Figure 3.11 illustrates how many references were made to various corporate measures for reconciling career and family life.

Figure 3.11: Existing measures for employees for reconciling career and family life



3.5.7 Questions of attitude towards diversity and gender diversity

Within the framework of questions of attitude, I ask to what extent respondents agree with certain statements (so-called items) on diversity in general and gender diversity in particular. The following table 3.12 presents these eight items on (gender) diversity. Three statements relate to empirical findings on diversity in business. Five statements concern the individually attached importance of diversity initiatives. The number of observations differs in each case due to the response option "not specified".

Table 3.12: Items on diversity and gender diversity

No.	Items
	Empirical findings
1	*Willingness for exchange of knowledge and information is greater within homogeneous management bodies than within heterogeneous ones.*
2	*Women on supervisory boards are stricter monitors than male board members.*
3	*Women often lack the requisite experience for an executive position owing to career breaks due to past family leaves.*
	Importance attached to diversity
4	*A binding women's quota is mandatory to increase the percentage of women on supervisory boards.*
5	*Still too little attention is being paid to the topic of diversity in German enterprises.*
6	*In case the costs of diversity measures exceed their benefits, enterprises should consequentially refrain from such activities.*
7	*When filling vacant posts in top echelons, diversity aspects should be irrelevant.*
8	*There are not sufficient adequate female candidates available for filling vacancies on supervisory boards in accordance with the women's quota from 2016 on.*

The following table 3.13 shows the acceptance levels for each of the eight items on diversity and gender diversity in leadership. Surprisingly, results show that respondents disagree with items formulated on the basis of empirical findings. Their mean rating on the willingness for exchange of knowledge and information does not confirm earlier findings. Respondents rather disagree with the statement that this willingness is greater within homogeneous than within heterogeneous management teams. Even stronger disagreement is expressed with the second item. On average, female supervisory board members seem to be not perceived as stricter monitors than male board members. Disagreement is strongest on the item of family leaves meaning an impediment for women's careers. In all three cases, ratings of female and male respondents did not differ to a statistically significant degree.

Results are different for items concerning the importance that respondents individually attach to diversity. Gender-specific differences are observed in ratings on all five items and are statistically significant. The mean value for the combined gender

groups expresses rather disagreement on the compelling necessity of a women's quota for supervisory boards, thus again confirming my hypothesis of a low acceptance level of the quota among IROs. The individual analysis of both groups gives a varying picture. Male respondents strongly disagree whereas female respondents rather agree. Gender differences can also be seen in the assessment of the female candidate pool for supervisory boards. Male respondents rather agree with the item that the number of adequate female candidates is insufficient. Female respondents rather disagree. Furthermore, ratings differ by gender when assessing the general importance of diversity in German enterprises. Women rather agree with the statement that still too little attention is being paid to the topic of diversity, men rather disagree. A similar pattern is observed for the item that diversity aspects should be irrelevant when filling vacant posts in top echelons. Male respondents rather agree with this view, whereas female respondents rather disagree. Gender differences for all three items could be statistically fixed at the 1 percent level by a two-sample t-test with equal variances and a two-sample Wilcoxon rank sum (Mann-Whitney) test.

Table 3.13: Level of acceptance for items on diversity and gender diversity in leadership

Item No./Obs.	Mean	Std. Dev.	Mean (male)	Mean (female)	t-test (P-value)	Wilcoxson Rank-Sum (Mann-Whitney)test	Min	Max
1 (73)	*2.863014*	*.9763177*	*3.02778*	*2.7027*	*T = 1.4326 (0.1564)*	*z = 1.125 (0.2607)*	*1*	*4*
2 (61)	*3.163934*	*.8201692*	*3.33333*	*3.0*	*T = 1.6077 (0.1132)*	*z = 1.797 (0.0724*)*	*1*	*4*
3 (84)	*3.357143*	*.6520192*	*3.33333*	*3.38095*	*T = -0.3329 (0.7401)*	*z = -0.377 (0.7063)*	*2*	*4*
4 (81)	*2.777778*	*1.048809*	*3.24390*	*2.3*	*T = 4.5133 (0.0000***)*	*z = 4.035 (0.0001***)*	*1*	*4*
5 (77)	*2.441558*	*.9527454*	*2.97297*	*1,95*	*t = 5.5558 (0.0000***)*	*z = 4.788 (0.0000***)*	*1*	*4*
6 (77)	*2.337662*	*.9263737*	*2.025641*	*2.657895*	*t = -3.1671 (0.0022**)*	*z = -3.090 (0.0020**)*	*1*	*4*
7 (83)	*2.349398*	*.9930703*	*1.97561*	*2.71429*	*t = -3.6311 (0.0005***)*	*z = -3.494 (0.0005***)*	*1*	*4*
8 (76)	*2.513158*	*.9590748*	*2.02703*	*2.97436*	*t = -4.9268 (0.0000***)*	*Z= -4.377 (0.0000***)*	*1*	*4*

1: "I fully agree."
4: "I totally disagree."

Gender-specific differences also become apparent in answers on the item relating to the cost/effectiveness ratio of diversity initiatives. The mean value for the combined groups of 2.34 indicates that IROs surveyed do apply an economic perspective on the issue of diversity. However, this mean value is driven by men's ratings. From the male perspective, economic benefit should be prerequisite for undertaking diversity initiatives. Men rather agree that if costs exceed benefits, companies should refrain from diversity activities. The female view differs significantly, expressing rather disagreement and indicating that women view diversity initiatives not solely under economic aspects.

3.6 Summary and conclusion

This study pursued three key objectives. First, it aimed at determining the significance of workforce diversity from the capital markets' perspective and at clarifying the question whether particularly gender diversity in leadership means a relevant parameter for external company valuation. Results suggest that staff diversity remains a niche topic for capital markets. Mainly specialized investors and rating agencies with a focus on sustainability, CSR and ESG respectively make inquiries relating to workforce diversity. So-called mainstream investors, who represent the majority, show little interest in the topic. Consequently, roughly two thirds of IROs surveyed believe that corporate initiatives for increased gender diversity in executive positions have no impact on external company valuation by capital market participants including rating agencies. However, investors with an interest in diversity call for specific targets and strategies as well as for reliable key figures for measurability and evaluation.

Second, I investigated whether the questioned listed companies employ an economic perspective on the topic of diversity and which internal and external stakeholders drive development and implementation of corporate diversity programs. My findings indicate that the vast majority of companies in German-speaking Europe does not consider diversity issues under economic aspects but predominantly under aspects of fairness and equality. Internal stakeholders pushing ahead diversity promotion - albeit of less importance - are employees, explicitly named homosexual employees and management. Most influential external stakeholders driving diversity initiatives are in this priority sequence government authorities and regulators, women's and interest associations and the media.

Third, I intended to gain an insight into strategy and progress regarding a stronger participation of women in executive positions. I investigated whether companies have implemented specific promotion programs for women in leadership and whether they have created an appropriate infrastructure for reconciling career and family life. Unexpectedly, half of the companies in my sample have not implemented specific promotion programs for women in leadership. Furthermore, only very few companies have launched specific measures targeted at female leaders to enable reconciliation of career and family life. Firms primarily offer flexible working hours and the opportunity to work from home. The survey also evaluated the status quo for internal planning targets for female representation in management positions. Almost two thirds of all surveyed companies have not set any planning targets, around a quarter has defined objectives, whereas a fifth claims to have done so but would not disclose. A positive reputational effect as well as transparency and liability towards stakeholders are the mostly mentioned assumed advantages of disclosure whereas pressure of fulfillment of own objectives and for justification and the risk

of wrong personnel decisions constitute assumed disadvantages of disclosure. More than 50 percent of the firms surveyed have not set themselves goals for female representation on corporate boards. Roughly a fifth of all companies has set targets for the share of women on supervisory boards but only a marginal share has formulated objectives for women on executive boards.

The introduction of a gender quota for German supervisory boards had been foreseeable for quite a while. It is therefore surprising that only a third of German companies in my sample had taken or were currently developing preparatory measures at the time of the survey to ensure achievement of the quota from 2016 on. The general acceptance of the quota from investor relations is rather low. IROs surveyed on average rather disagree with the view that a quota is mandatory to increase the percentage of women on supervisory boards.

However, I observe significant differences between male and female respondents in the assessment of diversity initiatives. On average, male IROs rather employ an economic perspective on the topic and they are of the view that firms already pay sufficient attention to diversity. They further believe that diversity aspects should be irrelevant when filling vacant posts in top echelons and they strongly oppose the quota. In addition, they are of the opinion that there are not sufficient adequate female candidates available for filling vacancies on supervisory boards in accordance with the women's quota from 2016 on. By contrast, female IROs on average believe in the need for diversity promotion programs - potentially also in the case of a negative cost-effectiveness-ratio - and that diversity aspects should play a role in recruitment for top management positions. They are of the opinion that still too little attention is being paid to that topic by companies. They do not oppose the quota to the same extent as their male colleagues and they disagree with the assessment that there are not sufficient female candidates available for filling vacant board posts.

I conclude that contrary to expectation, capital markets' perception of diversity issues has not materially changed within the past decade. The aim for investor relations must be to educate mainstream investors and rating agencies on the potential economic benefits stemming from workforce diversity in general and gender diversity in management in particular. IR communication strategy should focus on long-term prospects and shareholder value creation potential of diversity policies. In-depth analysis and performance measurement of a firm's diversity activities are necessary preconditions to obtain reliable information. Robust quantitative figures may constitute strong arguments for increased diversity to convince the mainstream. Raising awareness about the potential economic benefits must also take place within the organization. Employing an economic perspective on diversity issues is long overdue – not as a replacement but as an addition to the still dominant fairness-and-discrimination paradigm. Robust quantitative figures, derived from critical evaluation of existing diversity policies, may constitute convincing arguments for increased diversity also in the debate with internal skeptics and help to select measures that promise long-term success. The fact that regulators rank first among external stakeholders driving diversity promotion is proof of the effectiveness of political interference.

The majority of companies in my sample does not comply with voluntary commitments of the industry or corporate governance codes' recommendations, which are different in each country, but broadly comparable. There is significant pent-up demand with respect to programs to promote fe-

male leadership as well as with regard to appropriate offers facilitating reconciliation of family life and career, tailored to the needs of female executives. Corporate disclosure policy needs to be revised in order to enhance transparency. In light of these results, tighter reporting requirements regarding the participation of women in executive positions and stricter obligations to state reasons in the case of deviation or non-achievement (included in the German act adopted in 2015) will possibly accelerate this process.

There is reason to believe that those investor relations professionals who expect the topic of diversity to increase in importance in the future will be proven right.

4. Too close to the sun: CEO optimism and overconfidence as drivers for excessive growth. The Conergy Case

4.1 Introduction

Implementing a suitable management team and monitoring this team closely is one of the most important challenges with regard to personnel issues for every supervisory board. This challenge becomes even more crucial when the business environment is very dynamic, as is the case in the renewable energy sector. The present case study describes the rise and fall of Germany-based CONERGY AG, an integrated systems supplier in the field of renewable energies, during the years 1998 to 2007. Main reason for CONERGY's distress from which the company failed to recover was overly rapid expansion into international markets and new business sectors within very few years. The main responsibility for this excessive company growth lies with CONERGY's founder and Chief Executive Officer (CEO) Hans-Martin Rueter. In order to trace and comprehend the CEO's motivation and actions, I refer to findings of behavioral finance. I show how important insights of behavioral finance such as managerial optimism and overconfidence can provide an explanation for CONERGY's aggressive expansion strategy. I argue that being confident and driven by strong optimism, Rueter pushed the company successfully forward in its early stages but eventually fell victim to overconfidence. He was finally dismissed as CEO at the end of 2007. It appears that the supervisory board failed in its function to effectively monitor and control the CEO's actions. The close relationships and mutual trust between the CEO and some board members may have been detrimental: Rueter's uncle and co-founder was Chairman of the board, his brother a further board member.

I identify four major effects of Rueter's ambitious expansion strategy, which in combination caused CONERGY's severe crisis. First, the large number of newly founded subsidiaries as well as poorly targeted acquisitions generated rapidly rising costs, particularly personnel costs. Second, the growing complexity on the organizational level as well as on the technology and product level became hardly manageable. Third, increasing cash requirements and weak working capital management caused precarious shortfalls in liquidity, nearly resulting in insolvency. Moreover, CONERGY failed in procurement. It suffered repeatedly from delays in delivery of photovoltaic components leading to revenue losses and did not succeed in securing raw materials at economic costs to profitably operate its large-scale production facility in Eastern Germany.

The paper is structured as follows. In section 4.2, I give an overview of relevant behavioral finance literature, focusing particularly on the impact of CEO optimism and overconfidence on corporate strategy and development. Section 4.3 provides background information regarding structure and development of the German renewable energies sector. I show how government subsidies not only paved the way for the emergence of a new industry but triggered an unprecedented photovoltaics (PV) boom in Germany. Section 4.4 describes data and methodology. In section 4.5, I elucidate how managerial overconfidence may have driven excessive growth and investigate how complexity within the Group grew with both rapid organic growth and immoderate acquisitions. I shed light on capital markets' view on the company's expansion. I determine the factors that drove the inordinate increase of fixed costs, cash requirements and working capital and trace the company's procurement activities over time. The aftermath of the crisis and management's attempts to restruc-

ture the company are outlined in section 4.6. Section 4.7 summarizes my findings and concludes.

4.2 Literature Review

4.2.1 Irrational managers' behavior in behavioral corporate finance

The construct of Homo Economicus or economic man is a central assumption in economics, more precisely neo-classical economic theory. Human beings are understood as rational utility-maximizers. Their actions are aimed at optimizing individual well-being under the existing circumstances whereas well-being in this context is defined by the utility function that claims that utilities of possible outcomes are weighted by their probabilities. "Rationality" is attributed to the Homo Economicus as he pursues clearly defined objectives having stable preferences and making rational choices, striving to achieve the highest possible well-being or 'utility' given at minimal cost. Applying the neo-classical axiom to the firm, the prime aim must be maximizing cash flows at lowest possible cost based on rational-economic actions. Accordingly, firm managers (the 'agents') as well as investors should behave rationally.

Beginning in the 1950s, however, experimental evidence from the field of cognitive psychology toppled the theory of rational behavior. Allais (1953) criticizes the idea that a rational man must behave according to the Bernoulli principle or the expected utility hypothesis. He argues that decisions under risk in reality are made under the influence of additional (psychological) factors. Furthermore, probabilities can be significantly influenced and changed by subjective expectations. Social scientist Simon states that the concept of economic man was "in need of fairly drastic revision" (Simon, 1955, p. 99). He attempts to consider additional important variables of a complex decision-making situation in order to adequately define "rational behavior" in this specific situation.

The psychologists Kahneman and Tversky (1979) build on Allais' findings and develop an alternative model to expected utility theory: prospect theory. They show that people make choices among risky prospects that violate the basic principles of utility theory. The certainty effect, e.g., says that people tend to overweight certain outcomes with lower expected utility relative to uncertain or risky outcomes with higher expected utility, equivalent to risk aversion. However, if the probability of winning is minuscule, most people choose the option that provides the larger possible gain. Preferences among negative prospects mirror the preferences among positive prospects. People prefer uncertain negative outcomes, that is the risk of loss, rather than certain negative outcomes, meaning a sure loss. This observed risk seeking behavior is named reflection effect. Weinstein (1980), also from the field of psychology, provides support for the existence of an optimistic bias regarding future life events. People show a tendency to believe that the own prospects to experience positive events are better than the prospects of their peers. Vice versa they tend to believe that they are less likely to experience negative events. This assessment is further enhanced given high commitment and a controllable situation as they estimate their individual skills and competencies to be better than average.

Corporate finance focuses on the interaction of managers and investors. Its objective is to explain the financial contracts and the investment behavior that result from this interaction (Baker, Ruback & Wurgler, 2004). Understanding both parties' beliefs and preferences is a crucial prerequisite for the analysis of patterns (Baker et al., 2004).

Traditional capital market theory, as for instance Markowitz' (1952) portfolio theory and the majority of corporate finance research assumes rational behavior of market participants.

Behavioral corporate finance research replaces the traditionally presumed rationality with possibly more realistic behavioral assumptions. The relevant literature is divided into two approaches. The first approach assumes that investors behave less than fully rational, the second approach is based on the assumption that managers behave less than fully rational (Baker et al., 2004). With regard to the first approach that assumes imperfection of securities market arbitrage and concentrates on irrational investors (coexisting with rational managers), the literature is very large (Baker et al., 2004). Research deals, among others topics, with the phenomena of optimism and overconfidence, which are of particular relevance for the present study. Investors' overconfidence and the effect on trading volumes, trading behavior and investment policy has been investigated to a noticeable degree (e.g. Barber & Odean, 2001; Kent, Hirshleifer & Subrahmanyam, 2001; Kent, Hirshleifer & Subrahmanyam, 1998; Odean, 1998; Statman, Thorley & Vorkink, 2006). An interesting finding for the present paper is that most people tend to claim the full credit for their own successes, which leads to overconfidence (Gervais & Odean, 2001). Overconfidence is dynamic and changes with successes and failures. Overconfidence should hence diminish with greater experience.

The second approach, in contrast, focuses on irrational managers operating in efficient markets. Irrational behavior is understood as deviating from rational expectations and presumed utility maximization on the part of the manager and is clearly distinguished from moral hazard behavior such as empire building (Baker et al., 2004). Instead, the manager himself believes that he actually pursues to goal of maximizing firm value successfully but in fact departs from his objective (Baker et al., 2004). In this context, the emphasis of literature is on the influence of optimism and overconfidence on corporate managers' behavior.

4.2.2 Managerial (CEO) optimism and overconfidence

The fact that individuals are usually (too) optimistic and overconfident has been often empirically confirmed (e.g. Weinstein, 1980). Optimism means that they overestimate the probability of outcomes favorable to themselves and overconfidence describes the tendency to overestimate one's own capabilities (Gervais, Heaton & Odean, 2002). This is also known as the "better-than-average" effect. From the shareholders' perspective, it is of vital importance whether managerial optimism and overconfidence are beneficial or detrimental to firm value. While moderate managerial optimism and overconfidence can in fact increase firm value as managers' greater willingness to take risks corresponds more closely to that of shareholders' (Gervais et al., 2002). Moreover, it is argued that overconfidence offers potential benefits such as encouraging entrepreneurship or attracting employees with similar beliefs by providing a strong vision (Malmendier & Tate, 2008)[5]. Malmendier, Tate and Yan (2007) extend their analysis of the impact of overconfident CEOs on corporate financial policies by additionally focusing on managerial beliefs and personal experiences. However, extreme forms of optimism and overconfidence have detrimental effects on the value of the firm (Gervais et al., 2002), which will be discussed in following subsections.

[5] See Bernardo and Welch (2001) and Van den Steen (2005).

4.2.3 Sources of CEO overconfidence

Hayward and Hambrick (1997) identify four main sources for CEO overconfidence. First, evidence suggests that firm performance is attributed to the organization's CEO. Not only will the CEO himself likely claim full credit for good firm performance (Gervais & Odean, 2001) but it will also be credited to him externally. Recent organizational successes will encourage CEO overconfidence and inter-organizational prestige (D'Aveni, 1990; Hayward & Hambrick, 1997; Meindl, Ehrlich & Dukerich, 1985). Interestingly, this holds true even when the successes could more objectively be attributed to other reasons. At the same time, poor performance is also attributed to the CEO, thus adversely affecting CEO's power and confidence (Hayward & Hambrick, 1997). Second, favorable attributions are also made by the media. Media praise will further foster CEO overconfidence (Hayward & Hambrick, 1997; Malmendier & Tate, 2009; Meindl et.al, 1985). A third source is the CEO's self-importance. The "better-than-average" effect is particularly pronounced, the evaluation of his or her own abilities distorted (Hayward & Hambrick, 1997). The fourth factor is weak board vigilance. This can be assumed, for instance, when duality of chairman and CEO position is given or the proportion of insiders on the board is high (Hayward & Hambrick, 1997).

4.2.4 Potential effects on acquisition activity

The concept of managerial overconfidence was initially introduced by Roll (1986) and for a long period of time stated as a reason for failed mergers. Takeovers in Roll's view reflect individual decisions. He finds that acquiring firms on average pay too high a price for their target. At least part of the paid premiums could be caused by valuation errors and hubris. The bidder, being too optimistic about potential synergies, may justify the premium to himself by attributing a higher value to the combined firm. Roll termed this phenomenon the "hubris hypothesis of corporate takeovers"[6]. The hypothesis predicts that managerial hubris will lead to heightened acquisitiveness with zero increase in value for both bidder and target as the target's rising share price is compensated by the bidder's falling share price.

Empirical evidence indicates that gender appears to be a relevant factor when discussing overconfidence (e.g. Barber & Odean, 2011; Huang & Kisgen, 2013; Levi, Li & Zhang, 2014). Huang and Kisgen (2013), for instance, examine corporate financial and investment decisions. Their evidence suggests that male executives exhibit relative overconfidence compared with female executives. Men undertake more acquisitions and issue debt more often than women. Moreover, announcement returns to acquisitions and debt issues made by firms with male executives are lower than to those made by firms with female executives. The findings of Levi et al. (2014) suggest that female directors, being less overconfident, less overestimate merger gains. As a consequence, companies with female directors are less likely to make acquisitions. In case these firms acquire, they pay lower bid premia (Levi et al., 2014).

Moreover, the size of bid premia are highly associated with the four indicators of CEO overconfidence, namely the recent performance of the acquiring company, recent media praise for the CEO, a measure of the CEO's self-importance, and the combination of these three factors (Hayward & Hambrick, 1997). Poor monitoring through the board of directors further strengthens the relationship between CEO hubris and paid bid premia, particularly when the proportion of inside directors is high (Hayward & Hambrick, 1997).

[6] Forbes (2009) provides a deeper insight into the field with his case study "Hubris at Work: The AOL-Time Warner Merger".

Malmendier and Tate (2008) further find that the probability for conducting an acquisition is 65 percent higher for CEO's classified as overconfident, confirming Roll's (1986) findings. In case the merger is diversifying and does not require external financing, the effect is even stronger. Interestingly, not only CEO overconfidence but also CEO dominance is important in explaining the decision to acquire another firm. CEO dominance appears to be at least as significant as overconfidence (Brown & Sarma, 2007).

There are other drivers that further promote acquisitiveness. Harford (1999) reports that firms with abundant internal resources show a greater willingness to attempt acquisitions than other firms, they are more inclined to make diversifying acquisitions and their targets are rather unattractive to other potential bidders. Harford (1999) finds abnormal declines in operating performance subsequent to mergers in which a cash-rich firm is involved.

Moreover, there are strong incentives for managers to grow the firm beyond the optimal size. By increasing resources and means under their control, growth enhances managers' power (Jensen, 1986). Following Baker et al. (2004), I distinguish irrational managers' behavior from moral hazard behavior. Nonetheless, both phenomena share common elements. An alternative explanatory model to overconfidence for managerial striving for growth can be so-called "empire-building" from the field of moral hazard behavior. The main common element is increased acquisitiveness at the expense of shareholders. Activities are particularly intense in both cases if internal cash reserves are high[7]. The substantial difference is that "empire-builders" act primarily to the personal benefit regarding power, wealth and status, which is likely to the detriment of shareholders whereas overconfident CEOs believe that they act in the interest of shareholders.

Working in committees, managers are even more prone to escalate their commitment to projects although outcomes have become uncertain (Shefrin, 2001). Behavioral obstacles external to the firm are psychologically induced errors of investors and analysts; they also may behave irrationally and push managers for takeovers that promise to build earnings but destroy economic value (Shefrin, 2001). Investors and analysts may place considerable pressure on managers.

4.2.5 Potential effects on investment policy

Heaton (2002) characterizes managers as optimistic when they systematically overrate the probability of a positive performance of their firm while underrating the probability of negative firm performance. Heaton (2002) discusses managerial optimism in relation to free cash flow available to the firm and explains two offsetting biases. Firstly, optimistic managers prefer internal financing. They believe that capital markets undervalue their risky securities. In case they depend on external financing, optimistic managers may thus miss projects even with a positive net present value (NPV). Second, they overvalue their own corporate projects as well as their own ability to manage these projects. Optimistic managers believe that the expected projects' NPVs are higher than realistic assumptions predict them to be. They are prone to invest in projects with a negative NPV (Heaton, 2002). Thus, managerial optimism predicts biased cash flow estimates[8] and also a pecking order capital structure decision.

Furthermore, firms with overconfident Chief Financial Officers (CFOs) use lower discount rates to value cash flows (Ben David, Graham & Harvey, 2007). They invest more and use more debt. The

[7] See also Malmendier and Tate (2005) and Jensen (1986).

[8] Statman and Tyejbee (1985) find that decision-makers in firms who evaluate forecasts consider those to be optimistically biased and that they adjust the figures accordingly.

probability that these firms pay dividends is lower, whereas the probability that they repurchase shares is higher. They tend to use proportionally more long-term than short-term debt (Ben David et al., 2007).

Malmendier and Tate (2005) find that overconfident CEOs have a heightened sensitivity of corporate investment to cash flow, especially among equity-dependent firms. As overconfident executives overestimate the returns to their investment projects and show bias against external financing, they tend to overinvest when having ample internal resources but refrain from investing when having to rely on external funds. Thus, overconfidence can indeed account for distortions in corporate investment.

However, overconfident managers are open to investing their own assets into their company. Malmendier and Tate (2005) even argue that CEOs' personal overinvestment in their own companies results only from overconfidence.

4.2.6 Potential effects on risk preferences

March and Shapira (1987) show that in contradiction with classical decision theory, managers generally are unlikely to decide on risk and risk taking on the basis of carefully calculated probabilities of possible outcomes. The executives use few key values rather than thorough probability calculations to assess and express their risk exposure. Furthermore, they view risk as crucial to success in decision making and risk taking as substantial part of the managerial role. Consistent with this view, risk is perceived to be manageable and controllable.

Contrary to the negative impact of managerial overconfidence and optimism on investment policy, cash flow estimates and capital structure decisions, Gervais et al. (2002) identify a positive role of managerial overconfidence and optimism. They compare rational, rather cautious managers with overconfident, optimistic managers. According to their findings, risk-averse, rational managers tend to postpone projects in order to analyze options carefully, often longer than in shareholders' interest. By contrast, overconfident managers underestimate risks. Overconfident and also optimistic managers thus undertake projects quickly. The authors draw the conclusion that moderate overconfidence and optimism can increase the value of the firm as these managers act in the interest of shareholders more than rational managers do[9].

4.2.7 Methods for identification and measurement of CEO overconfidence

Scholars in prior research have applied various methodologies to identify and measure CEO overconfidence. One popular method is content analysis of press coverage relating to the person of interest. For instance, articles from renowned newspapers and magazines that relate to the respective person are rated according to their overall tone, that is positive or negative (Hayward & Hambrick, 1997). Another possibility is to count words that indicate the presence of optimism and confidence and words with opposite meaning, respectively (Malmendier et al., 2007). The number of articles that portray the respective CEO as overconfident is then compared with the number of articles indicating opposite characteristics.

An alternative method is the survey-based approach. A direct survey of top executives allows for application of psychometric personality tests and thus insight into their underlying psychological traits and attitudes (Graham, Harvey & Puri, 2013). Previous research considers factors that foster CEO overconfidence and thus enhance the probability of its occurrence. These are for instance

[9] Confirming results are reported by Gervais, Heaton & Odean (2007).

prior positive firm performance and a high CEO's pay relative to other executives' pay (Hayward & Hambrick, 1997). Another factor considered is the moment of exercise of options with the firm's shares as underlying held by the CEO. These options are often part of the CEO's pay package. The CEO will be characterized as overconfident if he or she exercises his or her (not tradeable) options lately, because he expects a further increase of the share price (Malmendier & Tate, 2005). The narrowness of earnings forecasts may also indicate CEO overconfidence: point estimates are more likely to be given than range estimates (e.g. Ben David et al., 2012).

4.3 Background: The German Renewable Energies Sector - a state-funded boom

A detailed description of the German renewable energies sector's development is of vital importance for the present case study. The German state stipulated demand for renewable energies, particularly for photovoltaics, and created a new, strongly growing market for related products and services. Companies active in this sector benefited enormously for several years, not so much because of exceptional performance of their management but simply because of the state-funded boom. However, top management teams of these companies may have claimed the full credit for the strong results during the boom years. Claiming successes as one's personal accomplishment facilitates the emergence of overconfidence (Gervais & Odean, 2001).

The German government had started promoting the expansion of renewable energies in Germany in 1990 by passing the law on the sale of electricity from renewable energy sources to the grid ("Stromeinspeisungsgesetz" or Electricity Feeding Act)[10]. Renewable energies at that time comprised the sources water power, wind power, solar insulation, biomass, landfill gas, mine gas and gas from purification plants. The large utilities in Germany had often refused or heavily hampered the feed-in of electricity generated from renewable energy sources by mainly small producers (except hydro-electric power). The law now obliged utilities to grant access to the grid to operators of renewable energy plants with a maximum capacity of five megawatts peak (MWp) and guaranteed a minimum remuneration for the electricity fed in, linked to average electricity prices. The utilities were allowed to pass these costs on to consumers via the electricity bill. Initially, operators of wind power plants were the main beneficiaries as the guaranteed compensation roughly covered production costs. By contrast, costs for electricity from solar technology, primarily photovoltaics, were many times higher in these early days.

Originally designed as a wide-range test to assess the current "state of the art" for grid-connected PV plants with small capacities and the need for further development (Hoffmann, 2008), the former Ministry for Research and Technology introduced the joint federal and state government "1,000-roofs-program" in September 1990. The costly installation of a grid-connected PV plant was encouraged by the government through subsidies of up to 70 percent. While costs for generating electricity with a PV plant still amounted to 90 ct/kilowatthour (KWh) back in 1991, compensation for each KWh as defined by the Electricity Feeding Act was only 8.5 ct/KWh. At these prices, investors were far away from operating their photovoltaics plant on a break-even basis not to mention yielding any positive return. In order to achieve an economic benefit in addition to the indisputable environmental value, many plant owners used the generated electricity for their own domestic pur-

[10] The Federal Ministry of Economic Affairs and Energy provides detailed information on legislation in this field on its information portal http://www.erneuerbare-energien.de. The development of the market for renewable energies in Germany over time is described e.g. in Federal Ministry of Economic Affairs and Energy (2016).

poses instead of feeding it into the grid. However, in yield terms, the market for photovoltaics was clearly not an attractive option in the early nineties.

The German government eventually recognized the opportunities offered by solar technology and alternative renewable energy sources. In 1999, it launched the successor program "100,000 roofs" for the promotion of photovoltaics and later embedded it in the Renewable Energies Act ("Erneuerbare Energien Gesetz/EEG") aiming at supporting the expansion of the entire renewable energies sector. The "100,000-roofs-program" supported the installation of new PV plants by granting credits at reduced interest rates to private citizens, freelancers and small and medium-sized enterprises.

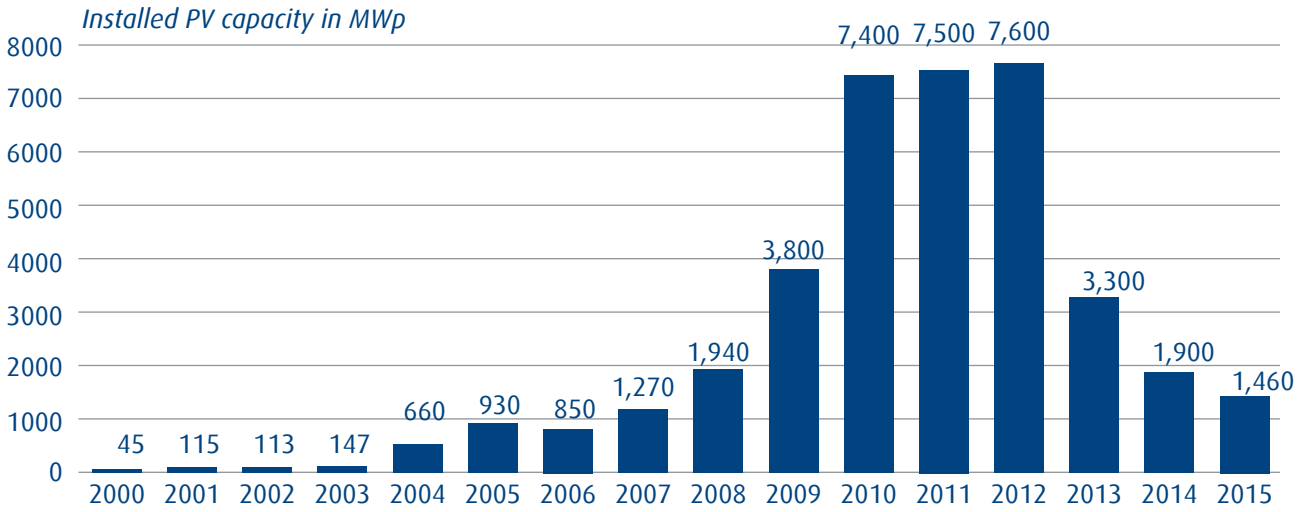
The Electricity Feeding Act was replaced by the Renewable Energies Act on April 1, 2000. The act's purpose was "to facilitate a sustainable development of energy supply in the interest of managing global warming and protecting the environment and to achieve a substantial increase in the percentage contribution made by renewable energy sources to power supply in order at least to double the share of renewable energy sources in total energy consumption by 2010, in keeping with the objectives defined by the European Union and by the Federal Republic of Germany" (Renewable Energies Act, 2000, Section 1). The law regulated the purchase of and remuneration for electricity generated exclusively from renewable energy sources by utility companies that operate grids for public power supply. Geothermal energy was additionally incorporated in the group of promoted renewable energies. Grid operators were obliged to connect renewable energy systems to their grid and to purchase the generated electricity as a priority at fixed prices for a period of 20 years after grid connection. Prices varied substantially according to the differing electricity production costs and also depended on the individual system size (Renewable Energies Act, 2000, Section 4 to 8). Except for water and gas, the act provided for a varying yearly degression of minimum remuneration with the objective to encourage a reduction of electricity production costs and an increase in efficiency over time[11]. The yearly degression was one percent for power from biomass and one and a half percent for wind power. The stipulated degression for photovoltaics was five percent, being effective going forward as of January 1 each year.

The 100,000-roofs-program ran out end of 2003, after the targeted 300 megawatts (MW) mark for newly installed PV power had been reached (Federal Environment Ministry, 2003, June 23). The government had fixed the upper limit for the promotion of PV plants at a total of 350 MWp. Adding the 50 MWp installed power of the 'pioneer plants, this limit was reached and promotion was due to expire at the end of the year. The amendment of the Renewable Energies Act was delayed and expected during the course of the year 2004. In order to prevent a slump in the photovoltaics market, the revised regulations for the promotion of solar power were brought forward to December 2003 (Federal Environment Ministry, 2003, Dec. 30). The Photovoltaic Interim Act ("Photovoltaik-Vorschaltgesetz") maintained the highly attractive subsidization rates for photovoltaics. The government continued to award low-interest loans for the installation of PV systems. Furthermore, continuous support was to be provided for research and development (total funding in 2003: EUR 27 million, Federal Environment Ministry, 2003, Dec. 30). The complete Renewable Energies Act was amended as planned in mid-2004.

[11] Frondel et al. (2010) argue that despite massive expenditures for the subsidy programs, German renewable energy policy has failed to develop a sustainable and competitive economic sector and also to encourage cost reduction and increases in efficiency on the part of industry.

The second amendment of the Renewable Energies Act was adopted in June 2008 and became effective in January 2009. While the promotion of renewable energies was continued in principal, a multitude of specifications and rules was added. Heat generation in addition to power generation was also incorporated into the law. The return on investment for a newly installed PV system was unalterably guaranteed for a period of 20 years. Hence, investing in a PV system was comparably attractive as investing in federal bonds. The government had created the basis for - although artificial - steady demand for power from solar insulation and other renewable energy sources. It can be stated that the Renewable Energies Act has decisively supported and fostered the power generation through renewable energies in Germany (Jacobsson & Lauber, 2006; Peters, Schmidt, Wiederkehr & Schneider, 2011). With respect to photovoltaics, the act even triggered an unprecedented boom during the years 2004 to 2011[12] due to highly favorable subsidies. The following figure 4.1 shows the development of photovoltaics installations in Germany over sixteen years.

Figure 4.1: Market data photovoltaics in Germany 2015



Source: Federal Solar Industry Association - Bundesverband Solarwirtschaft (BSW), 2016

However, effective 2009, the regulatory framework for photovoltaics was supplemented by the option of adjusting the following year's degression rate according to the actual number of new installations in the current year. The reasons for this regulation of market size lie in the growing criticism of PV subsidies in Germany[13] as well as significant decreases in PV system prizes due to dropped production costs while the number of installations grew considerably, burdening all German end customers via their electricity bill. 2009 was the year of first drastic changes to the incentive program. It marked the beginning of the industry's downturn.

The photovoltaics boom ended in 2010/2011. Competition had become fierce after Asian – mainly Chinese - producers had entered international markets with aggressive pricing. Prices for solar modules and primary products were significantly below those of German as well as other Europe-

[13] JFor a critical perspective, see Frondel, Ritter & Schmidt (2008).

[12] Jacobsson & Lauber (2006) explore the German diffusion of renewable energy technology and in particular the reasons for the rapid spread of solar cell technology until 2004.

an or US producers and thus soon found a strong demand. As a consequence, PV system prices fell quickly and steeply; given unchanged feed-in tariffs, investors' internal rates of return (IRR) increased inversely proportional. To counteract this development, the German government decided to lower the feed-in tariffs drastically within a very short time in order to adjust for the deterioration in prices. Moreover, the upcoming coalition between the parties CDU/CSU and FDP promoted the idea of extending the life of German nuclear power plants. The new amendment of the Renewable Energies Act, passed in 2011 and effective in 2012, was clearly to the detriment of German producers as it increased price pressure still further. Moreover, Germany had been the largest PV market worldwide up to that time. Thus, most of the German established players – amongst them former top stocks such as Q-Cells or Centrotherm - were displaced from the market and eventually experienced insolvency[14]. The German photovoltaics industry collapsed during 2012, with only very few players remaining, amongst them SMA Solar Technology or Solarworld. Similarly, CONERGY had once profited considerably from the boom in the photovoltaics sector. Its share price had risen up to EUR 173.41 with a target price of EUR 250, on May 15, 2006, being a top pick – albeit labelled "high risk) (Citigroup Equity Research, 2006, May 15). After a 1:3 stock split in June 2006, the stock price stood at EUR 45.70 at the end of 2006 (Dec. 15). However, the share price plummeted more than 80 percent within 18 months as a result of the company's crisis. It did not move out of the penny-stock range for several years until it filed for insolvency in July 2013.

Comparing CONERGY's share price with the benchmark indices DAX subsector Renewable Energy – consisting of numerous solar companies at that time - and the TecDAX - formerly also named the "SolarDAX" - over time, however, it becomes apparent that CONERGY's crisis emerged one year before the start of the industry's downturn. CONERGY started to stumble at a time when the vast majority of solar companies was at its height. I argue that CONERGY's failure is hence not to be causally attributed to the overall negative development in the renewable energy sector but rather to serious failures on the part of the management. Managerial over-optimism and overconfidence might partly explain the Group's rapid rise as well as its sharp fall. Since overconfidence is dynamic, it is likely that overconfidence further increased along with the company's success, enabled through the state-funded industry boom. Moreover, the supervisory board with Dieter Ammer as its Chairman failed in its duty to monitor and control the CEO's actions. Ammer was Rueter's uncle and also co-founder of Conergy AG. It appears that it lacked the necessary distance and that Ammer violated his duty of due care and diligence.

4.4 Data and methodology

The sample of the present case study consists of only one CEO and one company and is thus not representative. Methods for measuring overconfidence designed for large samples are inappropriate in a case study. Hence, I concentrate on content analyses of a wide range of documents. I focus on the investigation period January 1, 2002 to December 31, 2007. 2002 marks the beginning of the impressive rise of CONERGY AG, whereas 2006 and 2007 were the years of its steep fall. Moreover, Rueter resigned from his post as CEO in November 2007.

I examine press coverage on CONERGY following Malmendier et al. (2007) to evaluate if CEO Rueter is portrayed as being optimistic and confident

[14] Insolvencies of German solar technology companies: 12/2011: Solon, Solar Millennium; 02/2012: Ralos, Sun Concept; 03/2012: Odersun, Solar Hybrid, Scheuten Solar (German subsidiaries); 04/2012: Q-Cells, 05/2012: Sovello, Inventux, scn energy, Pairan; 06/2012: Solarwatt; 07/2012: Centrotherm, Global Solar Energy Deutschland

by the media. I use the Lexis-Nexis database to search for newspaper articles in German and English language published between 2002 and 2007. I use the same search terms as Malmendier et al. (2007), which are "confident" or "confidence," "optimistic" or "optimism," (while checking for the negated forms of "confident" and "optimistic") as well as "reliable," "cautious," "conservative," "practical," "frugal," or "steady." The equivalent terms in German language are "überzeugt", "selbstbewusst", "Selbstbewusstsein" and "optimistisch", „Optimismus" and the negated forms „nicht selbstbewusst", „nicht überzeugt", "nicht optimistisch". Words with the opposite meaning can be translated as „verlässlich", „vorsichtig, „konservativ", "pragmatisch", "bescheiden" or "beständig".

In order to capture capital market perception of Rueter as a person but also of his strategic decisions and his behavior, I analyze analyst reports, complemented by informal background discussions with research analysts. I also examine CONERGY's various publicly available company documents such as annual reports, ad-hoc announcements, corporate news and presentations for investors and analysts in order to trace the firm's development under the leadership of Rueter and to search for further indicators of optimistic bias and overconfidence. I elucidate what additional external factors accelerated the firm's decline. Furthermore, I analyze statements made by Rueter in company documents and in interviews to record his self-image.

4.5 Results

4.5.1 Portray of CEO Rueter in press coverage

Ten articles in total could be identified that use search terms that indicate the presence of optimism or confidence in direct relation with the person Hans-Martin Rueter within the relevant period of time. "Optimism" or "optimistic" is used six times, "confident" or "confidence" seven times. There was not one single article that associated a search word of the opposite group with Hans-Martin Rueter. Hence, following Malmendier et al. (2007), we can classify Hans-Martin Rueter as optimistic and confident.

There are further indicators that Rueter was not only optimistic and confident but also possessed charisma. Analysts attest a winning and charming character to Rueter. They perceived him as being markedly approachable, credible and trustworthy[15]. Rueter generally appeared optimistic and possessed great persuasiveness, in particular when presenting the 'big picture': market and strategy, successes achieved and growth prospects. It is said that he was always able to electrify people (Schwarzer, 2010, April 7). His demeanor was described as fresh and dynamic, radiating energy and confidence (BG, 2005, Dec. 31).

4.5.2 Rapid growth and quick successes in early years

Hans-Martin Rueter and Dieter Ammer had founded CONERGY in December 1998, shortly before the German government gave the renewable energies sector the decisive thrust forward. The founders initially focused the company on solar technology, particularly photovoltaics; an obvious decision considering Rueter's education and career history. Rueter, graduated with a Master's Degree in mechanical engineering, had been working on solar cells for satellites already during his studies at the University of Munich. Since the 1950s, solar cells had been used in space exploration for the power supply of satellites and space probes as their lifetime by far exceeded that of chemi-

[15] Personal conversations with analysts.

cal batteries. In 1993, he began his career as a consultant. Only three years later, Rueter entered the field of photovoltaics by founding his first business SunTechnics GmbH, providing design and installation services for photovoltaic power plants. At that time, Rueter gained hands-on experience in planning and mounting PV systems. SunTechnics was merged with CONERGY upon its foundation. Rueter was to head CONERGY from 1998 until the end of 2007.

The economist Dieter Ammer had started his career in 1976 as auditor and tax accountant with Arthur Andersen & Co. and became Head of the Hamburg branch office in 1988. In 1992, Ammer moved to the Board of Management of Zucker AG Uelzen-Braunschweig and was soon promoted to CEO. He also acted as Speaker for Nordzucker AG from 1993 to 1997. Ammer changed to Beck & Co. brewery in Bremen in 1997 and became its Commercial Director. Ammer acted as Chairman of CONERGY's supervisory board from the company's foundation until 2007. The relationship between the CEO and the supervisory board was insofar special as Ammer was Rueter's uncle. Andreas Rueter, brother of CEO Hans-Martin Rueter, served as member of the supervisory board several years until January 2009.

In its start-up phase, CONERGY obtained financing from the private equity (PE) companies 5r Private Equity KG and Grazia Equity GmbH. Both PE companies had been initially founded by so-called business angel and venture capital investor Alec Rauschenbusch in 1998 respectively 2000. Rauschenbusch studied aerospace engineering at the University of Munich at about the same time as Rueter and holds a MBA degree from Harvard Business School. It can be assumed that Rauschenbusch did not only possess the necessary resources but furthermore the technical and financial knowledge to recognize and assess the great potential of solar technology. CONERGY was clearly in the position to fully profit from the benefits of the improved promotional conditions for renewable energies and particularly for solar power.

CONERGY started as project developer for PV installations and wholesaler for solar technology without an own production. CONERGY's corporate vision was to become the leading systems provider for renewable systems of energy by offering every energy consumer worldwide the best solution appropriate to his needs (CONERGY AG, 2005, p. 53). The strategy aimed at enhancing the Group's flexibility by proactively establishing several pillars in the market in order to allow for compensation of fluctuations in regional demand. CEO Rueter pursued this "ambitious yet thoroughly realistic vision" (CONERGY AG, 2005, p. 5) through entering new regions by both establishing new subsidiaries and acquiring companies as well as diversifying the company's product range.

> *"This will help to expand access to customers internationally and supplement the product range of the CONERGY Group through additional complementary technologies. Through the consistent increase in its market share and its growth into the worldwide leadings supplier for renewable energy sources, the CONERGY Group expects synergies, e.g. in production, purchasing and distribution, which will be used for a significant increase in profitability"*
>
> (CONERGY AG, 2005, p. 53).

In line with the booming solar sector, CONERGY indeed achieved an impressive growth in its first decade after being founded in 1998. Revenues jumped from approximately EUR 1 million in 1999 to more than EUR 70 million in 2002. From

2002 to 2005, the year of the company's IPO, revenues grew at a CAGR of 94 percent. For the period 2002 to 2007, CAGR for Group revenues still was 58 percent. The following table 4.1 presents CONERGY AG's key financial figures from fiscal year 2002 to fiscal year 2007.

Table 4.1: CONERGY AG key financial figures for FY 2002 to FY 20071[16]

COMPANY FINANCIALS (in EUR million)	FISCAL YEAR 2002	FISCAL YEAR 2003	FISCAL YEAR 2004	FISCAL YEAR 2005	FISCAL YEAR 2006 (restarted)	FISCAL YEAR 2007 (restarted)
Total sales	*73.20*	*122.38*	*284.83*	*530.17*	*682.33*	*719*
Gross margin	*17.62%*	*35.05%*	*15.06%*	*16.13%*	*15.82%*	*14.03%*
EBITDA	*0.05*	*2.08*	*20.94*	*50.30*	*6.73*	*-163.20*
EBITDA margin	*0.07%*	*1.70%*	*7.34%*	*9.49%*	*0.99%*	*-22.70%*
EBIT	*-0.74*	*0.90*	*19.20*	*47.43*	*2.19*	*-213.30*
EBIT margin (ROS)	*-0.96%*	*0.74%*	*6.74%*	*8.95%*	*0.32%*	*-29.67%*
Net profit/loss	*-1.00*	*0.40*	*11.00*	*27.80*	*-0.64*	*-213.00*
Earnings per share	*-0.12*	*0.05*	*1.40*	*0.98*	*-0.01*	*-6.5*
Equity Ratio	*16%*	*28%*	*26%*	*44%*	*22%*	*12%*

Company growth was driven crucially by CEO Martin Rueter's aggressive expansion strategy, pursued through the establishment of a large number of subsidiaries throughout the globe as well as through numerous acquisitions.

While the CONERGY Group had twelve national and nine international subsidiaries on January 1, 2003, it had expanded by a multiple at the end of 2007, now counting 27 national and 56 international subsidiaries. The CAGR from 2002 to 2007 for total staff was 72 percent and for international staff nearly threefold with 216 percent. As expected, international sales made a significant contribution to total sales from 2006 onwards and exceeded national sales by far after 2008.

Unfortunately, the expansion activities did not contribute to earnings to the same extent. Profitability, expressed through the EBIT-margin or return-on-sales (ROS) figure, developed in the opposite direction and remained in the red from 2006 onwards. The overly rapid expansion, organically and by acquisitions, was not only extremely costly but also increased complexity within the Group to an extent which posed a threat to the existence of the Group.

4.5.3 Heightened acquisitiveness and excessive expansion

Rueter used SunTechnics' business model, the design and installation of photovoltaic systems, as basis for CONERGY. Having secured the necessary liquidity, Rueter started to build up the company

[16] All financial statement data on CONERGY AG are taken from the annual reports of CONERGY AG as published on the company's website, http://www.CONERGY-group.com/investor-relations.aspx

substantially by acquisitions rather than expanding solely organically, thus enabling rapid growth and diversification according to the corporate vision. Already in the first year of CONERGY's existence, Rueter conducted two takeovers and acquired a manufacturer of solar installation equipment as well as a wholesaler for solar technology, Alternative-Energie-Technik GmbH (AET), both based in Germany. With its voltwerk AG joint venture, CONERGY also tapped into the market for project development of professional closed solar investment funds. In addition, the young company expanded to Austria. After only twelve months of business activity, annual sales in 1999 exceeded EUR 1.0 million. In 2000, CONERGY converted from a limited liability company into a stock corporation. This marked a first step towards future access to the capital markets. Founder Hans-Martin Rueter became CEO and decided on two further acquisitions. The technology portfolio was expanded horizontally by acquiring a German manufacturer of rainwater usage systems. The process of internationalization was driven forward by purchasing a Spanish solar wholesaler in Madrid, later continued under the brand name AET.

The chosen ambitious way to grow the company can be considered as an indicator for Rueter's optimism and confidence in his capability to successfully position CONERGY as a leading player in the dynamically growing renewable energy industry. It cannot be ruled out that - based on his education and his practical professional experience with SunTechnics - Rueter overrated the probability to experience positive events and overestimated his individual skills and managerial competencies. In this case, an optimistic bias as reported by Weinstein (1980) could be assumed. Being CONERGY's founder and CEO, Rueter was certainly highly committed to the company's development and in control of the process, two factors, which -according to Weinstein - further strengthen the optimistic assessment of the own prospects. Moreover, heightened acquisitiveness may be indicative of managerial overconfidence (Harford, 1999; Malmendier & Tate, 2008; Roll, 1986).

The company extended its business into the sector for wind power in 2001. Again, this was achieved by an acquisition; the wind power project development company Windcom was integrated into voltwerk AG. At the same time, the start of in-house development of electronic components for photovoltaics aimed at vertical expansion within the solar sector. Voltwerk's pioneer project in the investment-driven megawatt-class in Markstetten, Bavaria, was connected to the public grid. With a maximum output of 1.6 megawatt peak (MWp), it was also Germany's largest solar park to date. After the takeover of Swiss solar project developer Fabrisolar in 2002, CONERGY covered all three German-speaking countries. Two more solar power plants were connected to the grid in the same year, one of them the worldwide largest to date having a capacity of 4 MWp. The CONERGY Group achieved annual sales of more than EUR 70 million with less than 200 employees worldwide and reported an operating profit for the first time.

Growth remained moderate in 2003 in accordance with the sector's still subdued development. However, the industry's prospects were excellent. Expansion was primarily pushed forward in the field of solar technology; the business field rainwater usage systems was sold off. A production facility for solar energy collectors was opened in Southern Germany. The solar product portfolio was further extended by web-based and mobile measuring, documentation and monitoring systems for photovoltaic systems. The solar product line was now distributed under the CONERGY brand

using sanitary and specialist wholesalers as channels. Furthermore, CONERGY established a central technical and customer support center as well as a central logistic centre for the full solar product line. CONERGY again tapped a new market by the acquisition of a systems integrator for solar power plants in France. At the end of 2003, the Group had twelve national and nine international subsidiaries and employed a staff of 194. Sales reached EUR 122.4 million, EBIT was positive. CEO Rueter was afforded respect for his accomplishments. He was elected President of the Association of Undertakings in the Solar Industry (Unternehmensvereinigung Solarwirtschaft e.V.) and also received the Leadership Award "for outstanding management personalities" (CONERGY AG, 2003, November 7) of the Economic Forum Germany. These external recognitions of his successes and achievements adding up to his own assessment of successes in recent years may have possibly promoted the development of overconfidence (Gervais & Odean, 2001; Malmendier & Tate, 2009)[17], even though Rueter made it sound modest:

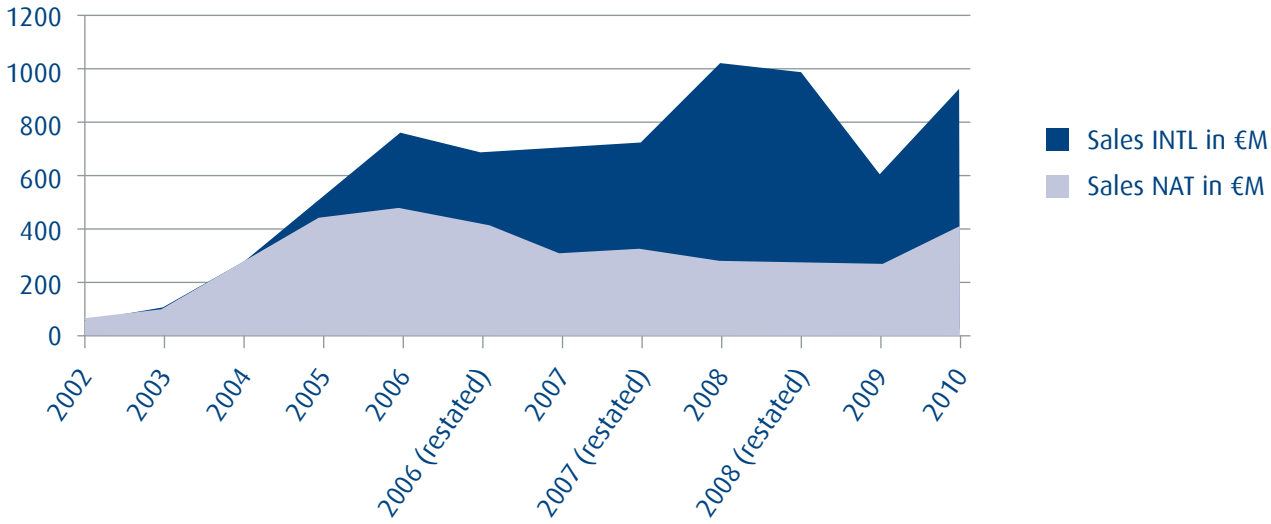
> *"This award is the second best in my professional career. However, we receive the best award every day from our clients. Their trust is confirmation and motivation for the passion that my employees and I go to work with"*
> (CONERGY AG, 2003, November 7).

Customer orientation being the core of CONERGY's strategy determined the business model's structure, which was focused on solar even though the company had cautiously started to expand to adjacent technologies. Four distinct brand worlds were created, according to its own accounts in order to satisfy the specific demands of four different target groups (CONERGY AG, 2005, p. 53). Rueter saw a decisive competitive advantage in this orientation of all distribution channels to the specific needs of different targets groups (CONERGY AG 2005, p. 4). From the customers' and business partners' perspective, however, it is likely that the segmentation diluted the profile of the company as it increasingly appeared as a confusing conglomerate. The brand CONERGY in the business segment 'Development, Manufacturing, Sales & Central Services (DMS&CS)' represented an original equipment manufacturer. CONERGY products were distributed indirectly via sanitary, heating and electrical wholesalers. These distribution channels meant the target groups. The brand AET belonged to the Group's business segment 'Wholesale'. AET was positioned as a leading, manufacturer-independent pan-European wholesaler with the target group installers, resellers and sales organizations. CONERGY, being a distribution partner for wholesalers but a competitor under the AET brand at the same time, possibly meant a trade-off and an obstruction for the Group. It is highly probable that wholesalers were reluctant to foster their competitor's business success through high-volume sales in the DMS&CS segment. SunTechnics, the third brand in the 'Engineering' segment, focused on private and commercial end customers. Engineering and installation represented the main services of the solar systems integrator. Finally, voltwerk in the business segment 'Projects' had been designed to attract investment from private and institutional investors for closed funds for renewable energies (CONERGY AG, 2005, p. 16f). Voltwerk was renamed Epuron GmbH as at January 1, 2007, a brand name better suited for international use. The company Epuron for project and development and structured financing developed, financed, realized and operates photovoltaic and wind parks (CONERGY AG, 2007, p. 44).

[17] See also Malmendier & Tate's (2009) evaluation "Superstar CEOs" on the (negative) impact of CEOs achieving superstar status on the performance of their firms.

The following figure 4.2 displays the development of the CONERGY Group's sales between 2002 and 2010. Growth accelerated considerably in 2004. On the basis of reinforced government support, newly installed PV capacity in Germany quadrupled from 147 MWp in 2003 to 660 MW within 2004 (Federal Solar Industry Association, 2016). In line with the sector's suddenly very dynamic development, CONERGY's sales more than doubled to EUR 284 million and EBIT jumped up from EUR 1 million to EUR 19 million, leading to a for the first time solid net profit of EUR 11 million. The number of employees nearly doubled to 350. M&A activities remained at a low level; voltwerk AG became a wholly-owned subsidiary of CONERGY and a Greek solar systems integrator was added to the AET subgroup through an acquisition. CONERGY emphasized its position as full service supplier for solar electricity and heating and promoted its 'all-inclusive' package.

Figure 4.2: Sales development CONERGY Group



Source: CONERGY AG Annual Reports 2002 - 2010

CONERGY stated in its annual report 2004 that it pursued a strategy that was "unequivocally focused on the customer" and aimed at offering "every consumer worldwide the most suitable technologies in those markets where renewable energy is an attractive option" (CONERGY AG, 2005, p. 16). While the focus had remained primarily on solar technology and on expanding to promising markets for solar energy throughout the globe so far, CONERGY now intensified its horizontal diversification via expansion of its renewable energy technologies portfolio. According to its own statements, CONERGY's broadly-based line-up aimed at identifying demand trends and new markets at an early stage to enable the development of suitable products and services:

"The aim is to firmly establish our evolution into the leading systems provider for renewables on additional levels as well. Diversification and internationalization will shape the company's

orientation in the future, allowing us to remain independent of developments in specific segments or the prevailing climate in individual markets" (CONERGY AG, 2005, p. 17).

However, reaching new technologies by own means usually means a long-term process with uncertain outcomes. CEO Rueter decided that horizontal diversification should be achieved through focused acquisitions of companies with expertise in complementary technologies in Germany and worldwide (CONERGY AG, 2005).

4.5.4 Abundant internal resources

Rueter was in need of additional funds in order to finance his ambitious growth and diversification strategy. From a behavioral finance perspective, CEO Rueter, clearly being a optimistic manager, should have preferred internal financing rather than accessing capital markets (Harford, 1999; Heaton, 2002; Malmendier & Tate, 2005). However, albeit the past successful years, CONERGY's capital cover was too thin and left Rueter little choice. In 2005, Rueter opened up new sources of funding by floating the company shares on the stock market. Timing was right given the bullish view of several research analysts on solar energy. Titled "the rise of a new power generation", one report judged the political support to enable the industry to develop into a "self-sustaining multi-billion euro industry" (Citigroup Equity Research, 2005, June 3), Germany leading the field, followed by markets like Italy and Spain, China or the United States. The CAGR for the installation of new PV systems was estimated at 20-25 percent (Citigroup Equity Research, 2005, June 3) or 25-31 percent (Deutsche Bank Company Research, 2005, April 27) until 2010 and valuated to be economically sustainable for ten up to 20 years. The key objective for the industry – becoming competitive and thereby independent of political support – was estimated to be achieved between 2010 and 2020. Analysts named as key risks the ongoing silicon supply shortage being the raw material for the major part of PV products, second the industry's dependence on subsidies and therefore thirdly adverse changes in political support (First Berlin Equity Research, 2005, April 6). With respect to CONERGY, leading analysts in 2005 expected the company to achieve a top-line compound annual growth rate (CAGR) of 50 percent until 2007 (Deutsche Bank Company Research, 2005, April 27).

The initial public offering (IPO) was an outstanding success. CONERGY listed its shares for trading on the Official Market at the Frankfurt Stock Exchange on March 17, 2005. Due to a monumental oversubscription by 29 times even at the upper-range issue price of EUR 54.0, CONERGY was unable to fully satisfy all allocation requests. The first trading price was EUR 71.0, up 32 percent. The net issuing proceeds amounted to some EUR 100 million. As the company had no net debt at that time, CONERGY intended to invest the IPO proceeds for the continuation of its diversification and internationalization strategy, focused on the most remunerative international markets for solar power. This stated objective is in line with the findings of Harford (1999) as well as Malmendier and Tate (2005) stating that internal funds are likely to further stimulate acquisition activities showing that firms with abundant internal resources show a greater willingness to attempt acquisitions than other firms and they are more inclined to make diversifying acquisitions.

Already three months after the IPO, the CONERGY share gained a fast entry listing in the TecDAX, the index for the 30 largest German technology issues, with a positive effect on the awareness of investors and research analysts for CONERGY. Until the end of the year, the share price increased to

EUR 80.90. In their initial assessments, analysts consistently made positive recommendations: CONERGY received a "strong buy" from First Berlin, a "buy" from Deutsche Bank or a "hold" from Citigroup (shortly after upgraded to "buy").

The CONERGY flotation in 2005 marked the beginning of a series of further IPOs of companies in the renewable energy industry and in particular in the solar industry: twelve solar companies entered the capital markets. Until 2011, a total of twenty solar companies had their shares listed at the Frankfurt Stock Exchange. The first stock-listed solar company had been Solon SE in 1999, followed by S.A.G. Solarstrom AG and Solarworld in the same year. The large companies were soon included in the TecDAX. When founded in 2003, not a single solar company had been present in the share index for the 30 largest German technology companies. The Solarworld share was the first to be included in 2004. Mid-2006, the TecDAX already contained five solar companies with CONERGY, Q-Cells, Solarworld, Ersol and Solon while the overall number of stock-listed solar companies from all levels of the value chain had increased to 17. Already in 2006, solar shares had the strongest weighting within the index and accounted for a substantial share of overall market capitalization, price gains were high (FAZ). The TecDAX was therefore also called the "SolarDAX". In 2007, solar shares accounted for about 30 percent of the TecDAX market capitalization and were stock market favorites.

Against the background of the hype about solar on capital markets and the impressive increase of the CONERGY share price in the first year after going public, CONERGY was riding on a wave of success, possibly further fostering overconfidence on Rueter's side. At the same time, Rueter faced a severe challenge: revenues generated in the German market exceeded international sales by far. Moreover, the major share of German revenues was attributable to the business area of solar technology: the German PV market grew by 40 percent to 930 MWp newly installed capacity in 2005 (Federal Solar Industry Association, 2016). In order to reduce its dependency on one product market and one geographic market and potentially spurred on by a well-filled cashbox (Harford, 1999; Malmendier & Tate, 2005 and 2008), Rueter further enhanced the diversification and internationalization strategy in 2005. The new offensive was labeled "50/50/08" and aimed at generating more than 50 percent of revenues abroad and more than 50 percent through regenerative products that complement solar technology by 2008. CONERGY continuously emphasized its aimed strategic positioning:

> *"it is our goal to strengthen our position as the leading systems provider for renewable sources of energy on additional levels"*
> (CONERGY AG, 2006, p. 72).

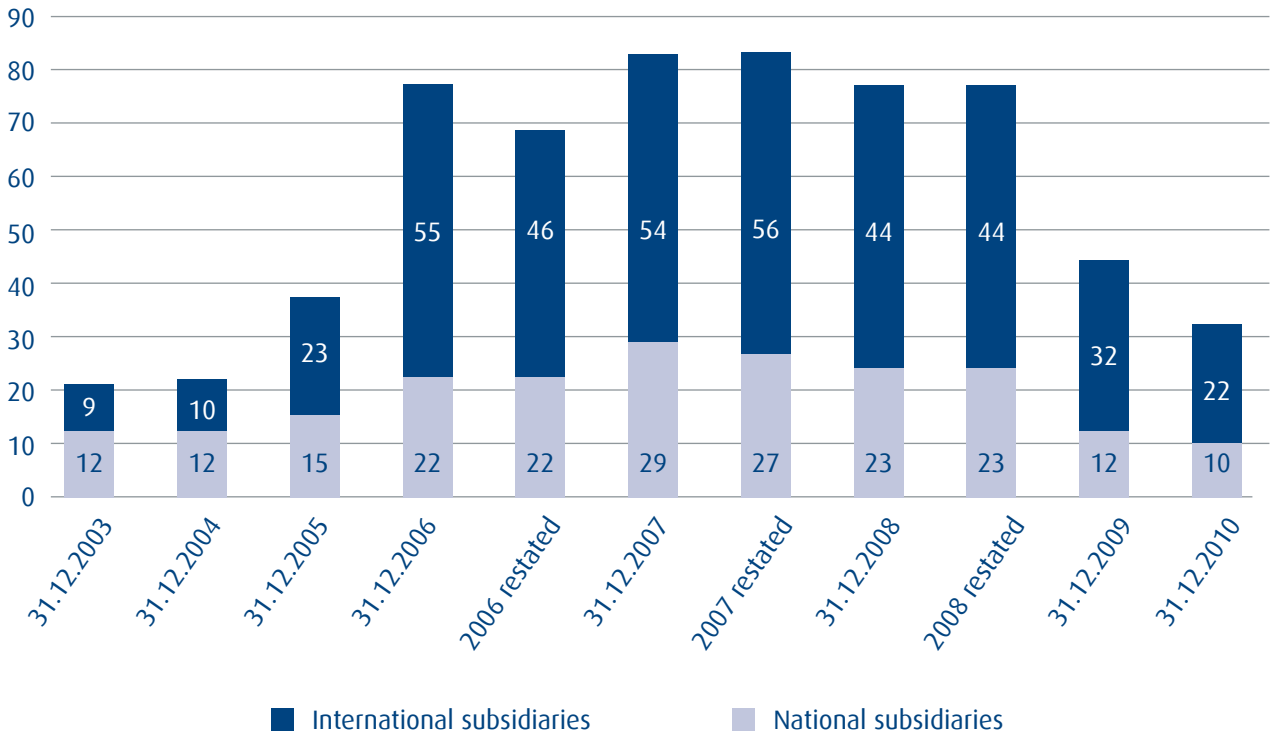
Solar cooling and solar heating but also wind energy and bio-energy were mentioned as such complementary products "above and beyond photovoltaics". Strategic goals as stated were to open up new sales and earnings potentials and to increase the company's flexibility in reaction to temporary fluctuations in demand by region and by product (CONERGY AG, 2006, p. 72).

4.5.5 High premia paid in acquisitions

Research has shown that managerial overconfidence will presumably lead to heightened acquisitiveness with no increase in value for both target and bidder (Roll, 1986). Having abundant IPO proceeds at his disposal, Rueter conducted several takeovers, five of them in the field of solar power (targets located in Switzerland, France, Australia

and USA) and one in the area of small wind turbines (Germany). It is unclear whether targets were unattractive to other potential bidders. In addition, Rueter founded eleven subsidiaries in Germany and abroad in 2005 and was now also present in Italy, Portugal, Mexico, Australia, India and the United States, claiming to pursue the 50/50/08 strategy. The CONERGY Group counted 15 national and 23 international subsidiaries at the end of the year. As a consequence, the number of employees had more than doubled to over 700 worldwide.
The rapid growth also meant a substantial increase in complexity as staff was employed at the headquarters in Hamburg but also at 38 subsidiaries, scattered in different regions and countries. Besides facing the challenge to harmonize different nationalities, CONERGY's management had to integrate varying corporate cultures into one since the company had substantially grown through acquisitions. Although differences in corporate culture generally conceal significant synergy potential, a carefully conducted and adequate integration must be guaranteed. Finally, the new businesses had to be integrated in the Group's existing IT, controlling and accounting systems. Figure 4.3 illustrates the growth in the number of subsidiaries.

Figure 4.3: Evolution of the number of CONERGY's fully consolidated subsidiaries



Source: CONERGY AG Annual Reports 2002 - 2010

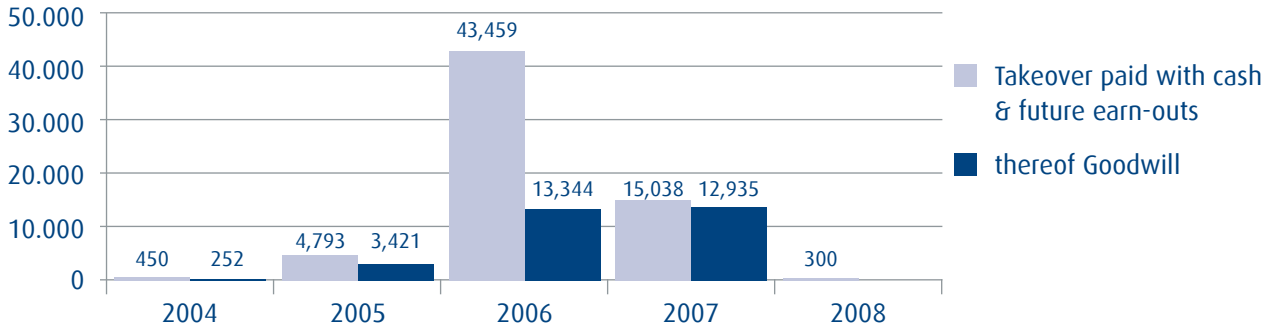
In order to „seamlessly and fully" integrate the new businesses, start-ups as well as acquisitions were carefully prepared and executed with close collaboration of the Management Board, the M&A department and the Group's central services such as IT, finance or marketing (CONERGY AG 2006, p. 53) – so the company claimed. It was further alleged that new companies were fully integrated into CONERGY within three months due to a firmly established process and by starting the integration process immediately after the acquisition. This claim appears ambitious in view of the high number of new businesses acquired or founded around the globe within a very short time and can thus again be taken as an indication of an optimistic bias (Weinstein, 1980). It may be assumed that presumably overconfident Rueter was convinced to be "better than average" and that risks were manageable and controllable (March & Shapira, 1987). The diversifying acquisitions of technologies in adjacent fields of the renewable energy industry yet posed a serious challenge to the Group. Although familiar with the specific conditions of the market for solar power, CONERGY was a newcomer in the markets for bio-energy, geothermal and wind power, competing with sophisticated companies with technology expertise and experience in the specific requirements of the market.
Nevertheless, Rueter remained unswervingly on track for further rapid expansion. It is a well-established phenomenon in behavioral finance that optimistic managers typically overestimate the probability of good firm performance and underestimate the probability of bad performance (Heaton, 2002). Summing up the year 2005 in his letter to shareholders, he displayed an optimistic attitude and gave reasons for continuing his strategy:

> *"Market share in the market for renewable energies will be distributed in the next five years. This means that now is the time to establish a presence in promising regions, build up strong brand names and offer cutting-edge technologies. Only companies that have reached a critical mass in both products and corresponding total sales will be able to remain independent. This means we must continue to outperform the market in future as well, using an approach that broadly covers all major types of energy with a focus on renewables. [...] We are increasing investments in research and development and plan to make further acquisitions of companies that offer uniquely capable system technology to ensure that we remain on this trajectory"*
> (CONERGY AG, 2006, pp.11).

Striving to achieve his vision of becoming world market leader in renewable energies, Rueter pressed ahead with unrestrained expansion also in 2006. According to the annual report 2006, the number of subsidiaries rose to 77 as a result of additional 26 start-ups and 13 new acquisitions of company share. Furthermore, five existing shareholdings were increased (2006 restated figures: 19 start-ups and 12 new acquisitions). Workforce grew in line with the high pace of expansion: staff totaled 1,480 at the end of 2006, one third of it employed at Group companies outside of Germany. In terms of the 50/50/08 strategy's objectives, CONERGY moved forward faster than expected. Foreign sales accounted for 37 percent instead of 25 percent as planned and also the percentage figure of 26 percent of non-PV products exceeded projections. However, growing by acquisitions was

costly. EUR 43.5 million were paid in total for the acquired shares, roughly a third of it was Goodwill (EUR 13.3 million). The following figure 4.4 shows the amounts of cash and future earn-outs paid in takeovers and reports the amount of goodwill separately.

Figure 4.4: Acquisitions paid with cash and future earn-outs and thereof goodwill (in EUR thousand)



Source: CONERGY AG Annual Reports 2002 - 2010

Optimism and overconfidence predict that corporate projects are undertaken quickly, which generally is in the interest of shareholders (Gervais et al., 2002). Certainly, quick action applied to Rueter. However, this goes along with an underestimation of risk. As shown by Heaton (2002) for optimistic managers, it cannot be excluded that Rueter did not only overvalue his own expansion strategy but also his ability to manage these projects. It is likely that he was prone to invest in his own projects although these might have had a negative net present value. With respect to the high number of acquisitions within very short time, it is doubtful whether Rueter carefully conducted a due diligence ahead of each acquisition and thorough market analyses when founding additional subsidiaries, in particular when considering the large number of disposals of subsidiaries that followed soon after the crisis year 2007. Furthermore, acquiring managers on average overpay for their targets (Roll, 1986). The paid premiums are at least partly attributable to valuation errors and hubris on the part of the bidder. Consistent with Roll's "hubris hypothesis of takeovers", Rueter, presumably being overly optimistic about potential synergies, may have overestimated the increase in value for the combined firm. This is supported by the fact that the majority of CONERGY's at the height of expansion 83 subsidiaries (both acquired and founded) was either discontinued, divested or liquidated after the company's crisis year of 2007.

Furthermore, adjustments on goodwill amounted to EUR -21.8 million in 2007 (restated numbers, CONERGY AG 2009, p. 142). Most attributed values at the date of acquisition were thus at least not sustainable if not unjustified.

Complexity within the Group was not only considerably increased by founding subsidiaries around the globe and acquiring horizontally and vertically but also by inflating the organizational structure through establishing a multitude of project companies as well as numerous intermediary holdings. Long-term project development was the core of the EPURON business area, including pro-

ject planning of power plants, technical realization and marketing to investors, who at a later stage participated in the project company. As of December 31, 2006, the number of project companies had reached 397 (55 thereof consolidated). At the end of 2007, the number had further increased to 442 (113 thereof consolidated). In addition, the Group had 41 intermediary holdings. Financial accounting for these project companies should soon become a serious problem for CONERGY. After the crisis year of 2007, these numbers were quickly decreased by disposals from the sale of companies and other disposals down to 187 project companies (14 consolidated) and 14 intermediary holdings at the end of 2010.

On November 12, 2006, CONERGY positively surprised capital markets with an unexpected strategy change. By announcing that it would build the 'world's first and only fully integrated mass production of wafers, cells and modules' in Frankfurt/Oder in Eastern Germany, creating more than 1,000 jobs, CONERGY was to transform from a wholesaling/distributing and project development company into a fully-integrated solar producer. Even though external procurement of solar components from third party suppliers was also to be continued, the Group intended to reduce its dependence from suppliers by its own production. Total investments for the new production plant were estimated at EUR 250 million, a significant sum considering CONERGY's revenues and profitability. Analysts' take was yet that this was "big and positive", re-iterating their buy-recommendation:

> *"This is a well thought-through and well planned decision by CONERGY meant to further support its distribution business rather than a complete reversal of strategy. CONERGY has been exploring and planning this opportunity for almost a year meaning that all relevant people and contracts are in place to have production up and running from mid-2007."*
> (Citigroup Company Flash, 2006, Nov. 13)

The CEO, responsible for strategy and marketing, apparently communicated the motivation behind and the preparations for its strategic decision with success. The analysts' positive assessment may have resulted partly from Rueter's communication skills and persuasiveness. The strategy change was also appreciated by other brokers as it was to improve CONERGY's positioning in the market:

> *"This change in strategy would make CONERGY comparable to integrated producers such as Solarworld with the advantage of a high quality distribution network with global reach. We regard control over quality and availability and mostly lower sourcing costs by innovative production processes to be the key motivation"*
> (Deutsche Bank Results Review, 2006, Nov. 14)

4.5.6 Failures in procurement and pressure to fully utilize production plant

In 2006, CONERGY had decided to build its own production plant for wafers, cells and modules in Frankfurt/Oder in Eastern Germany. Start of production was scheduled for the second half of 2007. The initial capacity of 50 MW in 2007 was to increase fivefold to 250 MW by 2008. Securing cost and leadership quality on the global market was the objective, "thus creating the foundation for further dynamic growth in its core business" (CONERGY AG, 2006, Nov. 12). Despite the enormous investment of EUR 250 million, a group of analysts assessed the return potential as being substantial, even under the assumption of eroding prices and margins (Citigroup Company Flash,

2006, Nov. 13). These analysts further reported that "the company has been in regular contact with all silicon manufacturers and feels very confident that supply will be secured for the entire facility well in advance" (Citigroup Company Flash, 2006, Nov. 13). They identified as a key risk a delayed ramp-up of production due to technical problems but also saw supply shortfalls as critical.

In January 2007, CONERGY unexpectedly released in an ad-hoc announcement (CONERGY AG, 2007, January 11) that the self-imposed sales goal could not be achieved due to delays in delivery of solar modules and wind turbines. Regarding the delayed delivery of special photovoltaic modules, CEO Rueter held Asian suppliers responsible. According to Rueter, this delay forced CONERGY to postpone bringing two major power plants to grid connection until 2007, resulting in a „shifting of revenues" of about EUR 53 million into the following year. Rueter made an attempt to counter this unpleasant situation. He presented the issue as a clear confirmation for his former decision to launch an in-house production facility in order to free the Group from its dependency on upstream suppliers. The decision for this vertical integration was in principle right as the limited availability of solar modules and their primary products, which was in turn due to the global shortage of solar silicon, had been the key limiting factor for photovoltaic installations in previous years. Moreover and contrary to other manufacturers, CONERGY could profit from its own high quality global distribution network. However, a sufficient supply of the extremely scarce raw materials for solar products was crucial to ensure profitable operation and thus amortization of the production plant.

At the same time, CONERGY also continued sourcing crystalline and thin-film solar modules from third-party suppliers. By securing supply for its construction sites all over the world, CONERGY aimed at accomplishing the planned growth and thus fulfil its self-imposed sales goal of EUR 1.25 billion for 2007. CONERGY signed several high-volume contracts with suppliers during 2007. In February, it closed a contract with China's largest solar cell and module manufacturer Suntech Power for delivery of solar modules worth at least USD 270 million within 2007 (CONERGY AG, 2007, February 12). The contract volume represented a multiplication compared with the previous year. In September, CONERGY doubled the volume of thin-film modules to be delivered by US-manufacturer First Solar in the years up to and including 2012 from 245 MW to 465 MW.

The strong volume increases can be seen as indicator of Rueter's overly optimistic expectations regarding the company's future growth rate, particularly taking into consideration the additional 50 megawatts, in perspective 250 megawatts capacity of the Frankfurt/Oder production facility. In April 2007, three months prior to the planned production start of the new Frankfurt/Oder plant, the Group concluded contracts with suppliers for the delivery of 80 percent of the required silicon and silicon-based production materials for full utilization of the plant's peak capacity of 50 megawatts – but only for the second half of 2007. CONERGY had claimed in an ad-hoc announcement that it could have secured long-term supply also for 2008 and beyond but had been hesitant as it expected more favourable procurement conditions by 2008 resulting from the silicon industry's substantial capacity increase (CONERGY AG, 2007, April 5). Analysts report that CEO Rueter repeatedly assured that CONERGY had principally secured the required production materials and could access them if necessary.

Surprisingly, the Management Board in October signed a long-term contract with US-based wafer manufacturer MEMC Electronic Materials for the future supply of solar wafers from July 2008 onwards up to 2018 with a total value of US$ 7 to 8 billion (CONERGY AG, 2007, Oct. 25). Volumes were to increase every twelve months whereas prices were to "decline steadily over the period of the agreement" in order to secure a "normal manufacturer's margin" when prices for solar systems would start to erode as expected. The optimism behind the decision to conclude a nearly 8-billion-dollars-contract was at conflict with the company's profitability situation and is hence again indicator of overconfidence. Rueter pursued his growth plans with total determination.

Although the decision in general enjoyed a positive market response (Citi, 2007, Oct. 29), this contract should prove fatal for the company's fate. Rueter's decisions on these various capital-intense long-term commitments with suppliers but particularly with MEMC amaze in view of his awareness of the overall market development. There is reason to presume that it was an act of desperation, driven by the fear for insufficient supply for its Frankfurt/Oder plant. Price erosion for solar silicon products was expected in the near future due to the global increase in silicon capacity - even according to CONERGY's own statements. International competition was becoming fiercer, mainly due to the market entry of low-cost producers from Asia. Solar markets worldwide and particularly in Europe were to be flooded with low cost silicon, wafers, cells and modules. Back in 2007, there were clear signs for a considerable ramp-up of production capacities for solar technology in Asia, although it was unclear when exactly the low-cost products would hit the established PV markets worldwide.

Serious difficulties occurred at CONERGY in 2007, nearly leading to the Group's collapse. The way how they were managed expresses Rueter's hubris. Only one day after having announced it would become a fully-integrated solar producer, CONERGY had confirmed its sales and profit forecast for fiscal year 2006 stating that full order books had put CONERGY "fully on course" (CONERGY AG, 2006, Nov. 13). The respective ad-hoc announcement was later basis for accusing the management of market manipulation.

In January 2007, CONERGY released a profit warning – a bitter surprise. In contrast to its own claims and although revenues had increased by 42 percent to EUR 752.2 million in 2006, CONERGY missed its sales target and also its net income target of EUR 40 million. Due to delays in delivery of solar modules and wind turbines, so the company claimed, CONERGY had to postpone the completion of two important projects power plants until 2007, meaning a „shifting of revenues" of about EUR 53 million into the following year. The company now guided for a net income of between 2005's EUR 27.8 million and the originally expected EUR 40 million. Analysts showed "only a yellow card for now" (Citigroup Company in-depth, 2007, Jan. 15) but stated that CONERGY's credibility had been "negatively affected" and that their confidence was shaken. Table 4.2 presents CONERGY AG's key financial figures for the years 2006 to 2011.

Table 4.2: CONERGY AG key financial figures for FY 2006 to FY 2011

COMPANY FINANCIALS (in EUR million)	FISCAL YEAR 2006 (restated)	FISCAL YEAR 2007 (restated)	FISCAL YEAR 2008 (restated)	FISCAL YEAR 2009	FISCAL YEAR 2010	FISCAL YEAR 2011
Total sales	*682.33*	*719.00*	*975.30*	*600.90*	*913.50*	*754.10*
Gross margin	*15.82%*	*14.03%*	*13.52%*	*19.57%*	*23.74%*	*16.88%*
EBITDA	*6.73*	*-163.20*	*-147.40*	*-10.70*	*30.10*	*-84.10*
EBITDA margin	*0.99%*	*-22.70%*	*-15.11%*	*-1.78%*	*3.30%*	*-11.15%*
EBIT	*2.19*	*-213.30*	*-181.90*	*-36.80*	*-13.80*	*-182.80*
EBIT margin (ROS)	*0.32%*	*-29.67%*	*-18.65%*	*-6.12%*	*-1.51%*	*-24.24%*
Net profit/loss	*-0.64*	*-213.00*	*-306.60*	*-79.30*	*-44.90*	*-162.10*
Earnings per share	*-0.01*	*-6.5*	*-3.47*	*-0.2*	*-0.84*	*-1.67*
Equity Ratio	*22%*	*12%*	*44%*	*18%*	*12%*	*6%*

Capital markets' trust in CONERGY further dwindled when in November the same year the company announced that its accounts were to be checked by German officials:

> *"The outlook for the current year is subject to a critical examination of the balance sheet valuation principles of CONERGY AG as well as to the results from various working groups, which are currently analyzing the CONERGY's business areas. In this context, the German Financial Reporting Enforcement Panel (FREP) has informed CONERGY that it will examine the accounts for 2006 and for the first six months of 2007"* (CONERGY AG, 2007, Nov. 7).

The company's accounts had to be restated after the FREP had scrutinised the 2006 and 1HY07 accounts. One accusation was that interim profits of several project companies were unduly included in the balance sheet. Another said that revenues with company subsidiaries were falsely stated. It was also alleged that a property deal was recognized incorrectly. Among others, all three allegations became subject of criminal proceedings against six ex-top-managers beginning in 2011. The charges were false accounting, market manipulation and insider trading (e.g. Murphy & Reuters, 2011, June 14; Werner, 2011, July 19).

The sales figure for 2006 was down about 70 million from EUR 752.2 million to now EUR 682.3 million. Expenditures had risen in line with Rueter's excessive expansion. In addition to the high acquisition costs of EUR 43.5 million, costs for continued internationalization had been EUR 8.7 million. Personnel costs had increased disproportionately from EUR 27.0 million (2005) to EUR 55.4 million, other operating expenses had almost tripled to EUR 63.2 million (2005: EUR 22.8 million). Further material items in 2006 had been investments in the development of complementary technologies as well as in the set-up of the new production plant. The EBIT figure for 2006 had to be corrected downward from EUR 52.1 million to EUR 2.2 mil-

lion. CONERGY's 2006 restated EBIT-margin or return-on-sales ratio (ROS) of 0.3 percent (originally 6.9. percent) indicates poor operational efficiency and profitability, notably as it was hugely surpassed by the corresponding double-digit figures of its peers: Q-Cells for example achieved a 24 percent EBIT-margin and Solarworld presented 35 percent, both with comparable annual revenues above EUR 500 million and rapid organizational growth. Although Phoenix Solar remained on a low level with an EBIT-margin between 4 and 8 percent, the company at least managed to maintain this level until the industry's collapse in 2009/2010. The comparison of the return-on-sales ratios not surprisingly shows strong analogies to the comparison of CONERGY's share price with the benchmark indices. The following figure 4.5 shows the development of the return-on-sales figures of CONERGY and selected peers over time.

Figure 4.5: Return-on-sales ratios of CONERGY AG and selected peers

Source: Companies' annual reports 2002 - 2010

Despite all these alarming signals for CONERGY's negative development and probably not corresponding to reality, CEO Rueter in February 2007 experienced the height of his career. He received the "Entrepreneur of the Year Award" from the European Business Award.

Due to the substantial past investments in its expansion, CONERGY's solid capital base had shrunk significantly since the IPO. In order to strengthen the capital base and to finance further growth, the company successfully placed 2,999,999 shares in an equity issue without subscription rights to German and international investors in March 2007. The placing price had been EUR 50 per share. The proceeds of the transaction amounted to approximately EUR 150 million and thus even exceeded IPO proceeds. Proceeds were to have been used for up-front investments to secure supplies of solar grade silicon and to reduce purchasing prices as well as for further acquisitions.

While revenues improved only marginally from EUR 682.3 million to EUR 719.0 million in 2007, costs grew considerably. Headcount had increased fourfold from 579 employees in 2005 to 2,317 in 2007 (CONERGY AG, 2008, April 8). Personnel expenses in 2007 stood at EUR -112.3 million. Other operating expenses again almost tripled to EUR 179.3 million (2007), which was essentially due to two positions. Within only one year, value adjustments on receivables increased from EUR -1.4 million to EUR -28.2 million (mainly related to the MEMC contract but also to customers' lack of creditworthiness) and miscellaneous operating expenses rose dramatically from EUR -16.0 million to EUR -44.9 million, encompassing "a multitude of numerically minor individual items related to the Group's 68 consolidated companies" (CONERGY 2009, p. 133).

4.5.7 Dramatic increase in working capital

Working capital had increased more than fivefold within only one year from EUR 46 million in 2005 to EUR 274 million in 2006. The company had failed to reduce working capital in the following year. It stood unchanged at EUR 273 million. Expressed as a percentage to sales, the working capital ratio jumped from 8 percent in 2005 to 40 percent in 2006 and came down only marginally to 38 percent in 2007. Generally speaking, a targeted ratio should be below 25 percent in order to increase profitability, reduce tied capital and secure sufficient liquidity. CONERGY had assured to strive for a 20 percent ratio but failed to do so.

A first reason for the working capital increase was a sharp rise in inventories. The value of inventory amounted to EUR 55 million in 2005, more than doubled to EUR 135 million in 2006 and rose to EUR 342 million in 2007. High inventories mean tied capital, high storage costs and, as time progresses, a threat of write-downs. Second major reason for the considerable increase was the imbalance between a high level of accounts receivables and an inappropriate level of accounts payables. This discrepancy resulted from generous payment terms of six months for customers, allowed for at the end of Q4/2006 in order to attract new business. At the same time, payment terms for CONERGY were very unfavorable. Due to the ongoing shortage of silicon, suppliers were in the position to require up-front payment at that time. These cash outflows before delivery led to shortfalls in liquidity of some customers, amongst them CONERGY, as they had to bridge the interim period until they in turn were repaid for the finished products by their customers. The proceeds of the March 2007 capital increase were to be used for up-front investments to secure supplies of solar grade silicon and to reduce purchasing prices.

4.5.8 Liquidity Crisis

CONERGY did admit that it was in a precarious situation only when facing the preliminary figures for the first nine months of 2007. On October 25, the company released its second profit warning within one year. The announcement came unexpected and left capital markets "shell-shocked" (Citi Company Focus, 2007, Oct. 29). Analysts now showed the red card and responded with downgrades from "buy" to "hold" or "sell". After the first nine months of 2007, consolidated net income was negative at EUR -8.8 million with revenues of EUR 641.1 million (CONERGY AG, 2007, Oct. 25). Once again, delays in deliveries of modules allegedly had led to revenue losses of EUR 130 million. Furthermore, personnel costs, other operating expenses and working capital were given as reasons for the "unsatisfying earnings performance" (CONERGY AG, 2007, Oct. 25). The working

capital target was no longer regarded as achievable. CONERGY now guided for an EBIT of EUR 40 million earnings though set against expected risks between EUR 30 and 50 million, resulting in a net loss. Earnings were to be affected by consequences from delivery delays as well as "difficult business conditions" in the bio-energy sector. Risks were seen in the progress of major projects, currency hedging transactions and the expected impact of write-downs of inventories and receivables. In an attempt to change course at the last minute, the Board of Management announced that it was

> *"launching a comprehensive company-wide programme focussing on profitable growth with the aim of achieving a sustainable improvement of the company's efficiency and profitability. The core elements of the programme are the strategic focus on profitable areas of business, a stronger alignment towards profitable growth in the photovoltaic sector together with an improvement in cost and business structures. Initial measures, starting with a comprehensive analysis of international activities, the business sectors and the corporate structure, are to be implemented during the current business year already"*
>
> (CONERGY AG, 2007, Oct. 25).

The response to the alarming development of profitability came too late: "a short-term shortfall in liquidity {had} developed following CONERGY's strong growth" (CONERGY AG, 2007, Nov. 7). The liquidity crisis posed a threat to the Group's existence. CONERGY could only overcome this precarious situation through an inflow of funds of EUR 100 million at very short notice, a third thereof through an additional credit line and two thirds through a capital increase under exclusion of shareholders' subscription rights. The capital increase was subscribed by members of Management and Supervisory Board, family members and by Leemaster Ltd., controlled by Dr. Otto Happel. The critical examination of CONERGY's accounts by the FREP was also announced in the respective ad-hoc.

Finally, due to obvious and compelling reasons, founder and CEO Rueter was dismissed after almost ten years at the head of the Group. He left as a wealthy man: his fortune stems from the IPO proceeds and the sale of a share package shortly before the company's near collapse and is estimated at EUR 50 million (Schwarzer, 2010). Rueter was to leave the company on November 15 and Dieter Ammer (who had apparently failed in his function as Chairman of the Supervisory Board) was to become interim CEO until appointment of a successor. In an interview (Waldermann, 2007, Nov. 7), Rueter defended his past diversification strategy from photovoltaics to further renewable energies such as wind or biomass by stating that CONERGY required several pillars and that it was simply a matter of portfolio composition.

4.6 The aftermath of the crisis

CONERGY issued a third profit warning in December 2007, now expecting sales below EUR 1 billion and estimating EBIT to be between EUR -150 and -200 million. Following the 2007 crisis, management had to deal with the consequences of Rueter's excessive growth strategy. 2008 should become a transition year. In a presentation for capital markets in April 2008, CONERGY admitted that its expansion had been "too much, too soon, too ambitious". The company retrospectively specified the reasons for the 2007 crisis: "Excessively fast growth; significant increase in cash requirements; rapid growth in organisational structure, high overheads. IT and Controlling Systems don't grow in

line with complexity. Delays in deliveries of contracted modules" (CONERGY AG, 2008, April 8).
The new management decided on a change in strategy, thereby focusing on the core PV business and on key markets. The new strategy provided for the withdrawal from unprofitable markets, countries and the small projects business as well as the divestment of discontinued operations, more precisely solar thermal, bio-energy activities and wind activities. Further elements of the restructuring strategy were a flexible and lean organization, effective cost structures in labor, material costs and processes, the introduction of best practice IT systems and the reduction of working capital. The Frankfurt/Oder production plant was seen unchanged as "key strategic decision to secure the business model". CONERGY now targeted profitable operation in the second half of 2009.
CONERGY successfully bargained the total contract volume down to US$ 4 billion mid-2008 but in return had to accept higher pricing (CONERGY AG, 2008, July 10). Silicon prices started to fall from US$ 450 to 500 per kilogram in 2008 down to US$ 60 to 80 during 2009 and further down to US$ 50 in 2010 (Rentzing, 2010, June 18) but CONERGY was obliged to pay the agreed full price irrespective of the real need for wafers as it had signed a "take-or-pay" contract. Furthermore, CONERGY claimed that the contract included clauses that meant barriers to competition (Murphy, 2009, Sept.23). As neither quantities nor pricing were appropriate to the changed market conditions in CONERGY's view, CONERGY filed a lawsuit against MEMC at a court in New York in April 2009. After 20 months, CONERGY succeeded in January 2010 and achieved an adjustment of the contract in an out-of-court settlement (CONERGY 2010, January 24). The main responsibility for this situation posing a threat to the Group's existence rests with former CEO Rueter under whose leadership (and hubris) the contract had once been negotiated.
During the years 2008 to 2012, the company experienced multiple changes in the composition of the Management Board. It was required to restate its accounts 2007 and 2008, performed two further capital increases with significant volumes at the end of 2008 and in July 2011, received new or prolonged bridging financing and achieved extension of loans from the lending banks and twice had to give notice that a loss amounting to half the share capital of CONERGY AG had occurred (2011 and 2012). Eventually, CONERGY AG declared insolvency in 2013.
The Hamburg prosecutor had filed suits against Rueter and Ammer as well as against other former managers in 2011. Subjects of the suits were insider trading, accounting fraud and market manipulation. They were accused of having sold share packages between December 2006 and April 2007. The actual trial, however, began only in spring 2015. Penalties were lenient. Ammer as former Chairman of the Supervisory Board was acquitted in October 2015; Rueter and other members of the executive board were also acquitted or sentenced to a fine for a regulatory offence.
CONERGY's share price had fallen by more than 50 percent during the crisis year of 2007. On January 12th, the day after the first profit warning, the share price had stood at EUR 48.69 and some analysts adhered to their "buy"-recommendation with target prices above EUR 60 respectively EUR 70. After the third profit warning in December, the share price had come down to EUR 22.90. Target prices were now below EUR 20. The share price never recovered again. Since mid-2008, it has remained below EUR 10 and kept falling. The share price was as little as EUR 0.32 on November 7, 2012, and it remained a penny stock until 2013.

4.7 Conclusion

In this paper I analyze the history of CONERGY, an integrated systems supplier in the field of renewable energies, over the period from 1998 to 2007. From its beginnings as a private-equity-financed start-up, CONERGY rapidly grew to a globally operating Group, focusing on the lucrative because state-promoted sector of solar technology. The Group expanded to international markets and diversified into adjacent renewable energy technologies by both numerous acquisitions and foundation of subsidiaries. Since 2002, Group sales had grown at an annual rate of 57 percent while the GAGR of staff was even 72 percent. In 2007, CONERGY achieved annual sales of EUR 719.0 million with nearly 80 subsidiaries worldwide and employed roughly 2.500 people. However, 2007 marked the year of CONERGY's fall. Due to delays in delivery on the suppliers' side, the Group suffered from revenue losses in the area of EUR 130 million. Fixed costs and other operating expenses had risen sharply so that CONERGY's profitability was deep in the red with EUR -210.0 million. Its working capital to sales ratio stood at disastrous 38 percent. At the same time, cash requirements were very high. The Group experienced a severe liquidity crisis, which nearly led to its insolvency.

I find that CONERGY's aggressive expansion was advanced first and foremost by founder and CEO Martin Rueter. I refer to key findings of behavioral finance to understand Rueter's strategy and behavior and show how over-optimism and overconfidence likely impacted Rueter's decisions. My analysis yields several insights that may have contributed to CONERGY's severe crisis in 2007 from which it has failed to recover. Firstly, Rueter, presumably subject to an optimistic bias, may have overestimated his own prospects for success as well as his individual skills and competencies. Consequently, he could have overvalued his own expansion strategy and his ability to manage his projects. Second, there are numerous indicators of overconfidence. That means that Rueter could have underestimated potential risks or at least perceived these to be manageable and controllable. Third, the supervisory board apparently failed in its function to monitor and control the CEO's actions. It lacked the necessary professional distance between the CEO and the board with Rueter's uncle being the Chairman and his brother being a board member. Fourth, being cash-rich after the IPO in 2005, Rueter advanced with unrestrained expansion, also through heightened acquisitiveness, which is again indicative of overconfidence. His overinvestment in company growth led to a sharp rise in costs, cash requirements as well as a significant increase in complexity within the Group. Having abundant internal resources at his disposal, Rueter conducted a large number of acquisitions with doubtful strategic sense and lacking sustainable value, thus decreasing enterprise value.

Striving to achieve his vision of becoming world market leader in renewable energies, founder and CEO Rueter can be held responsible for both the spectacular rise and fall of the CONERGY Group.

5. Layoffs and shareholder wealth effects. Evidence from the banking industry[18]

5.1 Introduction

The banking industry in the United States and in Europe has experienced fundamental restructuring since the beginning of the millennium, further accelerated by the global financial crisis and the ensuing recession. After the millennium change, EU-15 banks' profitability fell for two consecutive years but improved in 2003 (ECB, 2004). Main sources for profit improvement were cost-cuttings, non-interest income and reduced provisioning. The positive development, attributable to "aggressive restructuring" (ECB, 2004), continued in 2004.

When banks come under pressure to reduce costs, induced by macroeconomic factors, tightened regulation or mismanagement, the most obvious and straightforward solution is a reduction in workforce. During the 1999 to 2009 period, the share of personnel expenses in operating costs ranged from about 54 percent for banks based in Luxemburg, Germany and Ireland up to 61 percent in Spain and even 63 percent for banks based in Switzerland (OECD, 2010). Through layoffs, banks can save operating costs and potentially improve efficiency. The key efficiency figure in banking is the cost-income ratio. Driving down costs improves the ratio. The lower the ratio value, the higher the bank's efficiency (e.g. Beck, Demirgüç-Kunt & Levine, 2009). Moreover, operationally efficient banks are more profitable than banks with a lesser degree of operational efficiency (Dietrich & Wanzenried, 2011). Banks' cost-cutting efforts were thus, inter alia, concentrated on staff expenditure over the past years. The global financial sector has seen massive layoffs during the past decade. The first wave of layoffs in 2008 is closely linked to the global financial crisis. The second wave started in 2011 and is related to the European sovereign debt crisis.

The large cross-country differences in the percentage of personnel expenses may indicate that banks face various degrees of restriction regarding the adjustment of labor costs (Mamatzakis, Tsionas, Kumbhakar & Koutsomanoli-Filippaki, 2015). These restrictions are presumably imposed by national labor law. In the past and still today, layoffs could be executed quite quickly in the United States due to the employer-friendly labor law (OECD, 2016a). The United Kingdom has the least stringent legislation in Europe, followed by Ireland. Banks that are headquartered in these countries will most likely realize improvements in efficiency through layoffs in the short-term at moderate costs. In other European countries, particularly in Portugal, the Netherlands and Italy but also in Germany, execution will presumably be more difficult, lengthier and costly due to relatively strict employment protection regulation (OECD, 2016a).

As a result of the 2008 financial crisis, regulatory requirements for banks were tightened in order to ensure stability of the financial system. Over recent years, Euro zone banks steadily strengthened their balance sheets and improved their resistance to negative shocks (ECB, 2015). The higher capital requirements and cuts in trading profits partially explain declines in bank profitability (IMF, 2015). Bank profitability as measured by return on equity (ROE) has fallen in all advanced economies, from an average of about 13 percent during the 2000-06 period down to 8 percent in 2014 (IMF, 2015). While North-American banks' profitability had reached its lowest point in 2008 and recovered to reasonable levels by 2014, Euro area banks' aggregate ROE reached its trough in 2011 and remained in the low single digits in 2014. Given a strengthened regulatory and prudential environment, historically low interest rates and low macroeconomic growth prospects, banks today still find it difficult to enhance operating

[18] This chapter is largely based on a joint working paper with Sascha Kolaric and Dirk Schiereck.

performance and thus continuously strive to reduce operating costs (ECB, 2015).

The question arises whether collective dismissals by exchange-listed financial institutions are in the interest of their shareholders. Value-oriented corporate management is a central task for leaders of companies active on the international capital markets, whereby value means primarily shareholder value. Key objective is the sustainable increase of the company's equity value. The equity's market value is reflected in the share price. Capital markets evaluate management's decisions and actions based on this premise of an increase in value. Management actions may take the form of merger and acquisitions, entry in new markets or areas of business as well as staff-related measures. The latter are frequently staff reductions in the course of restructuring with the objective of cutting costs. Empirical evidence indicates that changes in cost efficiency are associated with changes in the stock price. Cost efficiency is likely to be rewarded with outperformance of the stock price relative to inefficient counterparts (Beccalli, Casu & Giradone, 2006).

The aim of this paper is to investigate the effects of layoff announcements by US-American and European banks on shareholder wealth over the period 2004 to 2014. Furthermore, I will examine if these effects differ depending on the strictness of national labor law. To my knowledge, no study to date has conducted such an investigation. In addition, I aim at addressing the question what factors generally drive investors' assessment of bank layoffs. The findings of investigations into the factors that influence capital markets' perception of layoff announcements and thus direction and magnitude of the share price reaction are of importance for both management and shareholders. Moreover, shareholders form only one group of a corporations' stakeholders that comprise customers, suppliers, the public or employees. Focusing solely on the shareholders' interest regularly conflicts with acting in the interest of other stakeholders. With regard to layoffs, one could argue that shareholders benefit at the expense of employees (Fraunhoffer, Mietzner, Schiereck & Schneider, 2014). Results are significant also in terms of this debate. The remainder of the paper is structured as follows: section 5.2 gives an introduction into the specific characteristics of the banking sector. Section 5.3 presents previous research findings and develops the research hypotheses. Section 5.4 describes the data set and section 5.5 explains the methodology, while section 5.6 presents the empirical results and its implications. Finally, section 5.7 summarizes the main findings and concludes.

5.2 Background: the banking sector

5.2.1 Banking sector characteristics

The banking sector is characterized by a series of specific features that make it a particularly interesting subject of study. Firstly, there are major differences in the balance sheet structure of banks and nonfinancial firms. The asset structure is fundamentally different. While nonfinancial firms hold physical assets such as inventories and machines, financial intermediaries hold financial claims as assets (Greenbaum & Thakor, 1995). With regard to liabilities and equity on the balance sheet, the essential difference between financial intermediaries and other types of business is that the former tend to be more leveraged; equity ratios are particularly low. Typically very low levels of equity capitalization and off-balance-sheet liabilities increase banks' (systematic) risks. Second, while non-service providers rather rely on their physical capital, firms from the services sector, including financial

services providers, primarily depend on their human capital (Elayan, Swales, Maris & Scott, 1998). The banking industry is resource-intensive and dependent on its employees' qualification like almost no other sector. Large-scale staff reductions thus bear the risk of losing valuable human capital. Third, banks are subject to a high degree of regulation. In their function as financial intermediaries, they are of crucial importance for the overall economic system. Strict bank regulation thus aims at ensuring banking sector stability at all times. Fourth, the sector has undergone major crises that led to massive layoffs during the past decade. The financial crisis that started in 2007 in the United States had a severe impact on the global financial sector. Moreover, it has shown that financial markets and institutions are closely linked together internationally and likewise to corporations operating in the "real economy". In the wake of the crisis, bank regulation was further tightened.

5.2.2 Effects of the global financial crisis on the banking sector

The crisis adversely affected the financial condition of banks involved at various levels of the market by inevitable, considerable write-downs and high bad debt provisions (Marshall, McColgan & McLeish, 2012). Financial institutions recorded enormous losses and faced immense cost pressure. A large number of institutions was directly threatened with insolvency. Several banks went bankrupt; the most famous case is certainly the collapse of US-American investment bank Lehman Brothers in 2008. Central banks around the globe found themselves forced to supply the system with liquidity and made massive amounts of capital available in order to prevent the collapse of the financial sector. Banks that were considered "systematically relevant" received government aid. In return, the states acquired a stake in the bank concerned (e.g. AIG, Allied Irish Banks, Commerzbank, Lloyds Banking Group, UBS). The financial services sector subsequently experienced a series of mergers and acquisitions (M&A). Troubled banks were absorbed completely (e.g. Bear Sterns acquired by J. P. Morgan in March 2008, Merrill Lynch acquired by Bank of America in September 2008, Sovereign Bancorp acquired by Santander in October 2008) or broken up and partly bought up by healthier institutions. Mass layoffs took place throughout the global financial sector.

Due to the banks' high complexity, their business activities and close ties with each other and various market players around the globe as well as in some cases simply their enormous size, the crisis generated spill-over effects to the broad financial and real economy and even whole states. Already suffering from severe contagion effects from the US subprime crisis, the euro zone ran into a sovereign debt crisis in late 2010. For the time being, the "euro crisis" had its peak in 2012. After several policy measures were taken at the European and national levels, investor confidence in euro area financial markets gradually returned from mid-2012 on (ECB, 2014).

In response to the global financial crisis, the Bank for International Settlements, more precisely the Basel Committee on Banking Supervision (BCBS), had decided in December 2010 on enhanced fiscal governance and strengthened financial sector regulation. The new regulations formalized in "Basel III", replacing the former "Basel II" provisions, aim at promoting a more resilient banking sector and at improving its ability to absorb shocks resulting from financial and economic stress, thus limiting financial contagion effects on the real economy (BCBS, 2010). Basel III was revised in January 2013 and October 2014. According to the

Committee, lacking high-quality equity and poor liquidity risk management on the part of banks substantially contributed towards the development of the crisis. Key reforms of the Committee were stricter requirements with regard to banks' common equity and liquidity. The "Common equity Tier 1" ratio was increased from a 2 percent minimum that had been required by Basel II to a 4.5 percent minimum. Adding a "Capital Conservation Buffer" of 2.5 percent (which may fall below in times of crisis) results in a required common equity ratio of 7 percent. New regulation striving to improve liquidity comprised "Principles for Sound Liquidity Risk Management and Supervision" and, in addition, two minimum standards for funding liquidity. The Liquidity Coverage Ratio (LCR) is short-term oriented securing high-quality liquid assets to survive an acute stress scenario of one month whereas the net stable funding ratio (NSFR) has a time horizon for one year and shall provide for a sustainable maturity structure of assets and liabilities (BSBS, Dec. 2010).

5.2.3 Costs and cost savings potential in the financial services sector

Since banks were required to accumulate capital reserves, they have remained under strong cost pressure also in the years following the crisis. Cutting operating costs - to a great extent personnel expenses - continues to be a straightforward solution. The cost-income ratio compares overhead costs with gross revenues and is a central indicator of bank efficiency. Higher ratios indicate low levels of cost efficiency. Cost-income ratios of banks based in high-income countries are typically lower than in poorer countries (Beck et al., 2009). The cost-income ratio of banks remained relatively stable during the period 1995 to 2007. Overhead costs of banks, however, have been in decline across all income groups.

In fact, labor costs in financial services differ considerably from those in other industry sectors. Labor costs across the whole economy excluding public administration in the European Union (EU 28) amounted to 24.12 euros per hour worked (Eurostat, 2015). Labor costs in the financial and insurance sector exceeded the average across all industries by 70 percent. Costs were only two percent higher in the manufacturing industry. By contrast, they were nine percent below the average in the construction industry and even 41 percent lower in the accommodation and food service sector. The equivalent average figure for the Eurozone, which comprised 18 member states of the European Union in 2012 (EU-18)[19], stood at 28.98 euros with similar industry-specific variations (Eurostat, 2015). Average hourly employer costs per employee compensation in the United States for all civilian workers[20] were 30.83 US dollars in 2012 (2015[21]: 33.35 US dollars). In the private industry, employee compensation costs stood at 28.85 US dollars in 2012 (US Bureau of Labor Statistics, 2016a) and 31.52 US dollars in 2015. Industry-specific differences are of approximately the same magnitude. Average hourly total compensation costs in 2015 in the financial and insurance sector were 48.16 US dollars[22] (US Bureau of Labor Statistics, 2016b). Labor costs amounted to 37.24 US dollars in the manufacturing industry (US Bureau of Labor Statistics, 2016c), 36.87 US dollars in the construction industry (US Bureau of Labor Statistics, 2016d) and 13.47 in the leisure and hospitality sector (US Bureau of Labor Statistics, 2016e). One could argue that qualification levels, fields of activity and work content in banking and financial services differ significantly from other sectors. In contrast to non-service firms, there are neither work banks nor assembly lines or packaging stations. Also in comparison with other service

[19] 19 Lithuania was the nineteenth country that adopted the euro, effective from January 1, 2015. The Eurozone now comprises 19 member states.

[20] Includes workers in the private nonfarm economy excluding households and the public sector excluding the Federal government.

[21] 21 Q1-Q3 2015

[22] Figures refer to Q3/2015.

sectors, the financial sector assumes a special position. Financial services are not low-skill but rather sophisticated services. Job opportunities for low-qualified and low-paid workers are in fact scarce, thereby giving rise to the average salary level. It could also be argued that employees in banking raise, manage and move enormous sums of money and thus bear great responsibility. Yet, persisting notably high salary levels in the financial sector remain a controversial issue, particularly since investment bankers worldwide played a crucial role in causing the recent global financial crisis.

5.3 Literature review and hypotheses development

5.3.1 Theoretical considerations

I build upon the pure efficiency hypothesis and the decreased demand hypothesis presented by Lin and Rozeff (1993) and empirically supported by Palmon, Sun and Tang (1997). According to the efficiency hypothesis, the market response will be neutral or positive for layoffs, which investors regard as efficiency-enhancing. Positive changes in utilization and organization, cost structures and processes are to be expected. Viewed in isolation, layoffs as a cost-cutting measure induced by decreased demand should benefit shareholders and give rise to the share price, because this decision improves wealth to reduce costs (Lin & Rozeff, 1993). In combination with fallen demand, however, the effect is a reduced level of net cash flows and a lower share price, because decreased demand results in lower sales und thus rising costs in the short term and subsequently, costs are at best restored to their original level (Lin & Rozeff, 1993). Therefore, the decreased demand hypothesis predicts a negative market response. Lin and Rozeff show that layoff announcements are associated with negative share price reactions, which provides support for the decreased demand hypothesis. Palmon, Sun and Tang (1997) provide support for both hypotheses as they find negative abnormal returns for firms that announce dismissals that are motivated by decreased demand and positive abnormal returns for firms that announce staff cuts that are motivated by efficiency improvement.

Elayan et al. (1998) similarly build upon the efficiency hypothesis but compare it with the declining investment opportunities hypothesis. The declining investment opportunities hypothesis predicts a negative market response if a layoff announcement provides negative information about a firm's future perspectives and shareholders thus view the planned redundancies as indicator for a worse-than-expected operating performance and poor investment opportunities. Announcement effects of the total sample suggest that announcements of staff cuts reveal negative information about a firm, consistent with the declining investment opportunities hypothesis (Elayan et al., 1998).

Overall, previous empirical findings on capital markets' reaction to announcements of planned redundancies show a clear tendency. The majority of 48 publications on layoff announcements' effects using the event study method analyzes announcements across several industries and in a particular geographical region. Only very few studies focus on a particular industry. On the whole, capital markets respond to layoff announcements with significant negative abnormal returns in narrow event windows around the announcement date (e.g. Chen, Mehrotra & Sivakumar, 2001; Hallock, 1998; Lee, 1997; Wertheim & Robinson, 2000). When focusing on financial institutions, findings are inconsistent. Some older empirical evidence suggests that announcing firms experience a

negative and significant share price reaction (Madura, Akhigbe & Bartunek, 1995; Elayan et al., 1998), hence supporting the decreased demand or declining investment opportunities hypothesis. More recent evidence points in the opposite direction. By indicating that announcing banks on average experience a positive and significant share price reaction, it supports the efficiency hypothesis (Cagle, Sen & Pawlukiewicz, 2009). Other findings provide support for both concepts as share price reactions differ depending upon the investigation period. In pre-crisis years (2005-06), banks and financial services experience a positive but not significant share price reaction whereas returns are strongly negative and highly significant in crisis year 2008 (Marshall et al., 2012).

Empirical evidence further suggests that the layoff size, the stated reason for the planned redundancies as well as stock market conditions at the announcement date constitute factors that influence direction and magnitude of the share price reaction. Findings suggest that market reactions to large layoffs are stronger and more negative than to small layoffs (Elayan et al., 1998; Hillier, Marshall, McColgan, and Werema, 2007; Worrell, Davidson & Sharma, 1991). Numerous studies classify the provided reasons for the planned dismissals into the groups "proactive strategies" and "reactive strategies", whereby the definitions may vary. Mergers and acquisitions or restructuring of the organization, for instance, can be considered as proactive strategies whereas a fall in demand or poor past financial performance can be classified as reactive strategies. Stock market reaction to reactive strategies tends to be negative and statistically significant (e.g. Capelle-Blancard & Tatu, 2012; Elayan et al., 1998; Lee, 1997; Neus & Walter, 2009), whereas market reactions to proactive strategies tend to be positive (e.g. Fraunhoffer et al., 2014; Hahn & Reyes, 2004; McKnight, Lowrie & Coles, 2002). Moreover, the number of layoff announcements closely follows the general business cycle (Farber & Hallock, 2009). Dismissals during declining markets are likely to be perceived as reactive to economic conditions and poor prospects. By contrast, staff cuts during economic expansion and rising markets are rather perceived as proactive and efficiency enhancing. Indeed, market reaction tends to be positive during rising stock markets and negative in declining markets (Marshall et al., 2012).

5.3.2 Shareholder wealth effects of reductions-in-workforce announcements

Corporate finance research has been dealing intensively with the effect of corporate announcements of staff downsizing on shareholder wealth. Since the early 1990s, scholars have examined the effects of announcements of large-scale reductions in workforce on the share price of stock-listed corporations and potential explanatory factors for the observed stock price reactions.

Gerpott (2007) identifies a total of 37 publications on layoff announcements' effects using the event study method that cover the investigation period January 1978 to August 2001. The vast majority of studies (25) focuses on the Anglo-Saxon area (i.e. the United States and the United Kingdom). On the whole, capital markets respond to layoff announcements with significant negative abnormal returns in narrow event windows around the announcement date. The fact that such notifications on average are not followed by positive abnormal returns suggests that the potential for economic benefits such as cost reductions and subsequent increases in profitability, eventually increasing free cash flows and thus shareholder wealth, is not acknowledged by the stock markets. Instead, announcements of planned redundancies in their typical

pattern are likely to reduce shareholder value (Gerpott, 2007). Past studies investigate the influence of numerous factors on variations in the magnitude of the reaction. Most examined factors are the stated reasons for the dismissals and/or the purposes specified in the announcement. Findings indicate that certain contents, such as diminishing demand as a rationale for layoffs or the number of redundancies relative to the total workforce, are associated with a stronger negative market reaction.

The present paper builds on Gerpott's survey. I review empirical evidence from eleven publications on the effects of layoff announcements on shareholder wealth in the period January 2007 to December 2015. These publications cover the investigation period 1970 to 2012. Empirical evidence is mixed, showing negative and positive share price reactions to layoff announcements.

Similarly to the publications reviewed by Gerpott, the majority of subsequent studies from the period 2007 to 2015 analyzes announcements across several industries during a certain period and in a particular geographical region. Only few studies focus on a certain industry. Goins and Gruca (2008), for instance, examine layoff announcements in the US oil and gas industry from 1989 to 1996. Fraunhoffer et al. (2014) concentrate on announcements of workforce reductions in the global aviation industry during the period from 2003 to 2012.

The dominance of cross-sectional studies is surprising as there is evidence showing variations between industries in the stock price reaction to layoff announcements (e.g. Elayan et al., 1998; Hallock, 1998). Variations between industries are confirmed, for instance, by Hallock (1998) who points out that certain industries stand out against the average having rather large negative abnormal returns on the announcement date, including general merchandise stores (-1.8 percent) and business services (4.3 percent). Likewise, the results of Elayan et al. (1998) vary notably for different industries. While positive average abnormal returns are observed for industries such as "manufacturing process product", "mining and extraction" or "transportation and utility", other industries on average experience negative and significant stock price reactions, e.g. "consumer products" or "hotel, business, health and educational services". The authors note that an alteration of a firm's human capital is likely to have a greater impact on companies in the service industry than on those in manufacturing industries since the former are highly dependent on their human capital. Manufacturing or transportation and utilities, by contrast, rely more on physical capital and are thus less sensitive to measures in the field of human resources. The impact is expected to be particularly high in the personnel-intensive financial services sector.

The following table 5.1 compliments the overview in Gerpott (2007). It presents event studies concerned with layoff announcements and published between 2007 and 2014. Two prior studies are additionally considered because they focus on the financial sector.

Table 5.1: Average abnormal returns for event studies

Authors (Year)	Sample size	Period	Region	Industry Sector
Madura et al. (1995)[a]	*48*	*1984-1992*	*USA[S][b]*	*banks*
Elayan et al. (1998)	*646*	*1979-1991*	*USA[S]*	*cross-sector analysis*
	87			*thereof financial institutions*
Brookman et al. (2007a)	*229*	*1993-1999*	*USA [S]*	*cross-sector analysis*
Brookman et al. (2007b)	*356*	*1993-2003*	*USA [S]*	*cross-sector analysis*
Hillier et al. (2007)	*322*	*1990-2000*	*UK*	*cross-sector analysis excl. Financial firms*
Goins & Gruca (2008)	*71 [57][c]*	*1989-1996*	*USA*	*oil and gas industry*
Cagle et al. (2009)	*42*	*1994-2003*	*USA*	*banks& bank holding companies*
	21			*security brokers& dealers*
	15			*other financial services*
Farber & Hallock (2009)	*4,273*	*1970-1999*	*USA[S]*	*cross-sector analysis*
Neus & Walter (2009)	*265*	*1995-2006*	*D*	*cross-sector analysis*
Knauer & Lachmann (2011)	*136*	*2000-2009*	*D*	*cross-sector analysis*
Capelle-Blancard & Tatu (2012)	*1,605 [677]*	*2002-2010*	*EU member states and Norway*	*cross-sector analysis*
Marshall et al. (2012)	*67*	*2005-2006*	*UK*	*cross-sector analysis*
	76	*2008*		
	10	*2005-2006*		*thereof banks and financial services*
	9	*2008*		
Fraunhoffer et al. (2014)	*84 [22]*	*2003-2012*	*Global*	*ation industry*

a) Studies or subsamples within cross-sector analyses concerning the financial sector are presented in italics.
b) Referring to Gerpott (2007), the label [S] indicates that the respective analysis uses a the following standard design: determination of events primary or exclusive from the Wall Street Journal, use of share price data from Center of Research in Security Prices (CRSP), University of Chicago, for estimation of abnormal returns with the market model.
c) Figure in square brackets indicates the number of different companies surveyed.
d) CAAR = Cumulative average abnormal return, CAR = cumulative abnormal return, CER = cumulative excess return

Return definition[e] [Event Window]	Strategy	Abnormal return (%)	Return definition [Event Window]	Abnormal return (%)
AAR [0]		*-0.88***	*CAAR [-5;-2]*	*0.01*
CAER [-1;0]	*all*	*-0.64****	*CAER [-20;-2]*	*-1.423****
CAER [-1;0]		*-1.60****		
CAR [-1;0]	*all*	*0.25**	*CAR [-5;0]*	*0.60***
CAR [-1;0]	*all*	*0.20*	*CAR [-5;0]*	*0.18***
CAR [-1;+1]	*all*	*-0.81***		
CAR [-1;0]	*all*	*-0.15*	*CAR [-5;5]*	*-1.03*
CAR [-1;+1]		*1.31**** (mean)*	*CAR [-1;0]*	*1.27**** (mean)*
		*-0.89**		*-1.17** (mean)*
		-1.21		*-1.22** (mean)*
CER [-1;+1]	*all*	*-0.315*		
AR [0]	*all*	*-0.37***	*CAR [-5;0]*	*-0.56*
	proactive	*0.03*		
	reactive	*-0.76%***		
CAR [-1;+1]	*all*	*-0.36*		
	proactive	*0.25*		
	reactive	*-0.72*		
CAAR [-1;+1]	*all*	*-0.177*		
	proactive	*0.782****		
	reactive	*-0.883****		
CAR [-1;+1]		*0.51**	*CAR [-2;+2]*	*0.80***
		*-1.75****		*-1.95***
CAAR [-1;+1]		*-0.07*	*CAAR [-2;+2]*	*-0.78*
		*-6.99***		*-10.58****
CAAR [-1;+1]	*all*	*1.054*	*CAAR [-5;+1]*	*1.59*
	proactive	*2.37%***		*4.64***
	reactive	*-0.98*		*-3.14*

In light of their special importance for the present paper, I present investigations that relate to the financial sector in more detail even if they were published earlier than 2007. I identify four relevant studies.

The first analysis specifically concerning the banking sector was conducted by Madura et al. (1995). The timeframe for their event study is 1984 to 1992, research subject are 48 layoff announcements by US banks that are listed on the ASE or NYSE at the time of the event. Assuming that banks share many similar features due to high regulation within the sector, the authors expect intra-industry effects of bank layoff announcements. General sector conditions such as falling demand for bank services eventually leading to restructuring measures including layoffs should apply for all institutions. Provided that the underlying causes for layoffs are industry wide, a layoff announcement may have a signal function for competitors' future performance and thus lead to a revaluation of the rivals' shares (Madura et al., 1995). Announcing firms experience a negative and significant share price reduction on the announcement day. The analysis further yields positive and significant intra-industry effects. Share price reactions for rival banks are positive on the announcement day. The authors see support for the theory that competitive effects dominate over contagion effects. Announcements of staff cuts may signal an opportunity for rival banks to gain market share or valuable human capital[23]. These spill-over effects are more advantageous if announcing and rival banks are established in the same region and also in time periods characterized by high banking industry earnings.

Elayan et al. (1998) investigate 646 layoff announcements in the United States from 1979 to 1991 in a cross-sector analysis. The cumulative average abnormal return (CAAR) for the total sample is 0.64 percent during the [-1;+0] event window and significant. The subsample "financial institutions" comprises 87 announcements with a stronger negative and highly significant CAAR of 1.60 percent. The findings indicate that announcements of planned redundancies convey negative information about a firm's current status and possibly also its prospects including poor investment or growth opportunities or uncertain future cash flows and are thus consistent with the declining investment opportunities hypothesis. The negative market reaction results from a downwards revaluation by shareholders induced by the unexpected bad news.

Cagle et al. (2009) analyze notifications of US financial institutions during the period 1994 to 2003. Their sample is divided by firm type into three subgroups, namely banks and bank holding companies (42 announcements), security brokers and dealers (21) and others, including non-depositary financial institutions (15). Contrary to Madura et al. (1995), banks in their sample on average experience a positive and significant CAAR of 1.31 percent during the [-1;+1] event window. Stock price reaction for the second group of brokers and dealers is negative but only weakly significant. No significant share price reaction can be observed for the third group comprising other financial institutions. The favorable returns for banks remain after controlling for firm and layoff size, stated reason and governance structure. Thus, evidence is provided for inter-financial-services-industry differences in share price reaction to layoff announcements (Cagle et al., 2009). Furthermore, the results support the idea that strict regulation affecting banks reduces asymmetric information associated with layoff announcements while that is not the case for brokers and dealers and other financial institutions. Capital markets may thus perceive bank notifications on

[23] Goldman Sachs, for instance, is believed to dismiss employees "in order to pick the best talent available at some of its rivals. Even though the company is planning to cut its workforce soon, it is believed that the group is expecting its overall headcount to increase this year"(Global Banking News, 2008, June 16).

staff cuts as being in the interest of shareholders rather than announcements of the other subgroups (Cagle et al., 2009). Marshall et al. (2012) examine announcements of UK listed stock corporations including financial institutions from 2005 to 2006 and in 2008. Their total sample consists of 143 announcements, thereof 19 by banks and financial services providers. By consideration of two distinct time periods, namely pre-crisis years versus the year of the global financial crisis, the study aims at determining differences in the reaction in dependency on general financial market conditions. Marshall et al. refer to Farber and Hallock (2009) who note that the frequency of redundancies is closely associated with the general business cycle. The number of dismissals will thus most likely increase during the crisis. In reference to the efficiency hypothesis, market reaction to layoffs assessed as efficiency-enhancing is expected to be neutral or positive. According to the declining investment hypothesis, market reaction to layoffs indicating poor investment opportunities is expected to be negative. Whereas the pre-crisis cross-sector analysis reveals a positive market reaction during the three-day event window around the announcement, the market response in crisis year 2008 is clearly negative. Concentrating on banks and financial service providers, pre-crisis average return is positive in the three-day event window and in the five-day event window (0.78 percent) but not significant. In the year of the crisis, however, the negative impact on financial institutions is notably stronger than that on other industry sectors. Banks and financial services experience a highly significant and negative CAAR of 6.99 percent in the [-1;+1] day event window and 10.58 percent in the [-2;+2] event window. Evidence indicates that share price reaction in fact varies with stock market conditions (Marshall et al., 2012).

5.3.3 Explanatory factors for effect variations

5.3.3.1 Reasons for layoffs

Layoff announcements serve as a signal for a company's financial situation and capital markets seem to be sensitive to the reasoning behind the planned redundancies (Worrell et al., 1991). The firm's motivation for the layoffs is thus found to have a crucial impact on the share price reaction following such announcements.

The substantive reasons for reductions in staff provided by the announcing firm are the most researched subject in 32 publications analyzed by Gerpott (2007) and also in those 11 reviewed in the present paper. 30 studies investigate the strategic thrust behind the planned layoffs, 20 of them operationalize it (solely or in addition to a more detailed distinction) as a dichotomous variable.

These studies distinguish between only two main types of motivation, for instance efficiency enhancement versus declining demand (Palmon et al., 1997), similarly restructuring versus low demand (Hahn & Reyes, 2004) or improved efficiency versus other reasons (Cagle et al., 2009). Five studies in Gerpott and four recent studies published after 2006 (Capelle-Blancard & Tatu, 2012; Fraunhoffer et al., 2014; Knauer & Lachmann, 2011; Neus & Walter, 2009) use a dichotomous variable to differentiate between "proactive" and "reactive" strategic corporate behavior.

Proactive vs. reactive strategy

One possible distinction is to define a proactive strategy as realizing hidden efficiency reserves and a reactive strategy as reducing overcapacities given declining markets (Neus & Walter, 2009). Proactive layoffs can be defined as an element of an overriding strategy, reactive layoffs as reaction to poor financial performance (Lee, 1997). Several studies group reasons together and label the newly crea-

ted categories "proactive" and "reactive" strategy. The logic behind this categorization is that given reasons such as efficiency increase, cost reduction or implementation of new technologies are viewed as proactive strategies whereas layoffs in response to a fall in demand, weak market/sector conditions and poor past financial performance are seen as reactive strategies (Capelle-Blancard & Tatu, 2012; Lee, 1997). Other studies strive to objectify this assessment by clear criteria, e.g. sales growth (proactive) versus sales decline (reactive) during the year prior to the announcement (Fraunhoffer et al., 2014).

Proactive layoffs are likely to have a positive impact on future cash flows. Moreover, they may be an indication for a prudent, strategically acting management team, which anticipates changes in the environment (McKnight, Lowrie & Coles, 2002). Investors should thus consider proactive layoffs as a positive sign. Reactive layoffs, in contrast, convey new information on potentially critical market conditions and a firm's difficult financial situation. They can be perceived as a sign for management's poor assessment of market development and its inability to cope with uncertainties. Shareholders will likely view reactive layoffs as a negative sign. Empirical evidence indeed points to a different assessment of both strategies by capital markets. Stock market reaction to reactive strategies tends to be negative and statistically significant (Capelle-Blancard & Tatu, 2012; Elayan, 1997; Hahn & Reyes, 2004; Lee, 1997; McKnight et al., 2002; Neus & Walter, 2009). Market reactions to proactive strategies tend to be positive (Capelle-Blancard & Tatu, 2012; Fraunhoffer et al., 2014; Hahn & Reyes, 2004; McKnight et al., 2002) or at least less negative (Lee, 1997), although in some cases statistically insignificant (McKnight et al., 2002; Lee, 1997).

Hypothesis 1:

Stock price reaction will be positiveto proactive layoffs and negative to reactive layoffs.

Gerpott (2007) points out the methodological weaknesses in operationalizing strategic thrusts or reasons. Problems may occur due to a significant amount of imprecision in announcements and most likely a high degree of overlap. Layoffs defined as proactive often contain elements that theoretically indicate a reactive layoff. The need for cost reduction and improvements in efficiency, for instance, is closely, if not inseparably, linked with most other reasons (e.g. Iqbal & Shetty, 1995).

Farber and Hallock (2009) define three categories of reasons for layoffs, namely reorganization, plant closing and cost issues. Other scholars extend the range of stated reasons up to four, such as non-profitable operations, restructuring, labor-management dispute and discontinued operations/products (Elayan et al., 1998). Hillier et al. (2007) classify stated reasons for layoffs into six major categories: reorganization, plant/branch closure, poor performance, fall in demand, cost cutting and merger or acquisition. Additional redundancy reasons of relevance may be technological innovation (Madura et al., 1995), increased competition (Brookman, Chang & Rennie, 2007b) or offshoring/outsourcing (Marshall et al., 2012). It should be further noted that some announcing firms cite a variety of reasons thus preventing an unambiguous classification, while other firms do not provide any specific reasons for the planned layoffs.

Reorganization/cost reduction

Reorganization efforts and cost reductions are likely to produce benefits and increase efficiency. Empirical evidence shows that investors react less negatively (Elayan et al., 1998) or even positively

to layoff announcements related to restructuring efforts (Hahn & Reyes, 2004) and also positively when the reason given is an efficiency gain (Palmon et al., 1997). Stock price reaction tends to be less negative given the stated reason is cutting costs instead of unprofitable operations (Elayan et al., 1998).

Plant/branch closure

Research on plant closures has shown that respective announcements allow for conclusions regarding the firm's financial and competitive position as problems causing the closing may affect the firm's entire operations (Gombola & Tsetsekos, 1992). Diminishing demand or production costs as underlying causes support the declining investment hypothesis. Shareholders may be driven to revise their expectation for future cash flows downwards. Gombola and Tsetsekos (1992) show that firm-wide problems become apparent in reduced profitability in conjunction with a drop in employment, asset acquisition and dividend growth in the announcement year and the following year. Poor financial performance is consistent with an observed negative stock price reaction to the notification. Negative reactions are more pronounced if the closings concern large-size plants.

The situation is different with regard to the financial services sector as there are no production sites but only branches. Branch closures in the banking sector are often part of internal restructuring strategies or a result from mergers and acquisitions (Madura et al., 1995), a consequence from the withdrawal from particular markets and business areas or lacking efficiency of the branches concerned. Moreover, jobs in banking may become superfluous due to technological innovation (Madura et al., 1995). During the past years, the change from "analog" banking with direct customer contact at the branch towards internet-based "digital" banking has picked up pace. Hence, branch networks are being continually downsized while online banking services are further expanded with the aim to prepare the banks' structures for the future (ECB, 2015). Withdrawals from unprofitable markets, elimination of overlapping capacities and closures of loss-making branches should generally serve to enhance efficiency and are likely to be assessed positively by capital markets.

Mergers and acquisitions

Redundancies usually occur following mergers and acquisitions. Reduction of these redundancies is necessary in order to ensure cost and efficiency optimization. Synergy costs savings may be obtained. It can be assumed that market participants expect layoffs as a consequence of mergers and that effects have thus already been largely factored into market prices (Fraunhoffer et al., 2014; Knauer & Lachmann, 2011) at the time of the merger or acquisition announcement.

Poor performance

Poor financial performance may be given as a reason for layoffs by the announcing firm itself. Poor financial performance can also be defined based on financial performance measures, for example, by either a significant decrease in earnings per share (EPS) or negative EPS (Worrell et al., 1991), below-industry average ROE, net income or sales per employee (Elayan et al., 1998) or negative ROE in conjunction with a recent bond downgrade (Iqbal & Shetty, 1995). All definitions usually refer to one or two years prior to the announcement date. Empirical evidence regarding the influence of a firm's financial position on investors' perception of layoffs is contradictory. Hillier et al. (2007) and Chen et al. (2001) show that layoff announcing

firms significantly underperformed the market during the three-year period prior to the announcement. It seems as if investors were at least partly aware of the firm's poor financial condition. Elayan et al. (1998) find negative abnormal returns for their total sample. The results support the declining investment hypothesis. Firms with a performance[24] below the industry average in the two years prior to the announcement experience no significant market reaction suggesting that poor performance was already factored in and staff cuts were anticipated. Negative market reactions to notifications from firms with a prior performance above the industry average indicate that capital markets were taken by surprise and had to revise their forecasts downwards (Elayan et al., 1998). Iqbal and Shetty's (1995) findings, in contrast, indicate that financially weak firms experience a positive market reaction whereas stock returns of financially healthy firms are negative and lower. Their interpretation is that from the investors' perspective, the potential benefits of staff cuts are less for financially sound firms. The authors conclude that those firms should consider alternative solutions to dismissals such as pay cuts, working time reduction or job sharing (Iqbal & Shetty, 1995). Worrell et al. (1991) show that both groups of firms experience negative share price reactions, whereby the layoffs related to financial distress are significantly more negative.

Fall in demand

Declining demand for the bank's products and services may make it necessary to reduce staff and costs (Madura et al., 1995). Decreasing demand may be caused by poor product quality, reduced competitiveness, weakened brand reputation or general shifts in demand. It may also be initiated by a recession with declining stock markets. In the case of US banks, for instance, the subprime crisis and the collapse of the US housing market led to an extreme fall in demand for mortgage loans. Layoffs occurred as a result of mortgage banks, specialized branches and bank business units or special-purpose entities responsible for securitization of loans. Layoffs in response to a fall in demand can be classified as a reactive measure. Market reaction to layoffs justified with a slump in demand is rather negative (Hahn & Reyes, 2004; Palmon et al., 1997).

Hypothesis 2:

Market reactions to layoff announcements will differ depending on the stated reason.

Hypothesis 2a:

Market reaction will be positive for the stated reasons reorganization, cost cutting and branch closure.

Hypothesis 2b*:*

Market reaction will be neutral for stated reason mergers and acquisitions.

Hypothesis 2c:

Market reaction will be negative for stated reasons fall in demand and poor past performance.

5.3.3.2 Business cycle/stock market conditions

Farber and Hallock (2009) find that the number of layoff announcements closely follows the general business cycle. From the investors' viewpoint, layoffs during recession and declining markets are likely to be perceived as reactive to economic conditions and poor future prospects (Marshall et al., 2012). The financial sector was severely impacted by the financial crisis that began in late 2007, thus the stock price reaction to layoff announcements is expected to be materially different from that of

[24] Measured by Return on Equity (ROE), reflecting the firm's performance and efficiency and by Net Income per Employee (NI/EM) and Sales per Employee (SL/EM), both reflecting the efficiency of the firm's labor force.

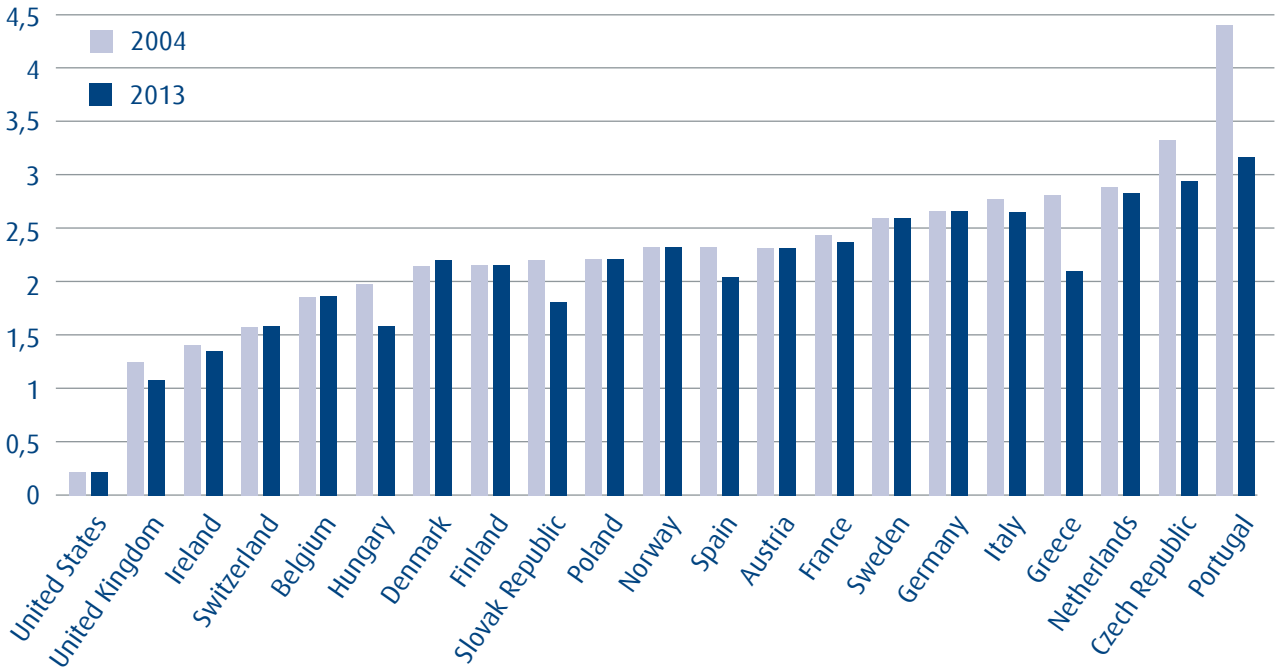
other industries. Layoffs during economic expansion and rising markets, however, are being considered rather as proactive and efficiency enhancing. Marshall et al. (2012) find that capital markets respond positively to layoffs during prosperous markets in the period from 2005 to 2006. Market reaction to layoffs undertaken during the 2008 financial crisis lead to negative capital market reactions. The price effects are consistent regardless of the reason for the staff reduction and the industry of the announcing firm.

Hypothesis 3: *Market reactions to layoff announcements will be zero or positive during rising financial markets and negative during the period of the financial crisis.*

5.3.3.3 Influence of employment protection legislation

Comparing the United States with member states of the European Union, the two countries from the Anglo-Saxon area have the least stringent employment protection legislation (OECD, 2016a). In 2004, legislation on individual and collective dismissals was by far least strict in the United States, followed by the United Kingdom. Ireland came third. By contrast, OECD data shows that strictness was highest in Portugal, followed by the Czech Republic, the Netherlands ranking third. In 2013, the situation was nearly identical, only Latvia replaced Greece on rank four (OECD, 2016a). The indicator of strictness of employment protection with respect to collective dismissals "measures additional costs and procedures involved in dismissing more than one worker at a time (compared with the cost of individual dismissal)" (OECD, 2016b) and incorporates four data items. The OECD recommends that this data should not be used in isolation from the indicators that refer to individual dismissals.
The following figure 5.1 depicts variations in strictness of employment protection for the United States and European OECD member states.

Figure 5.1: Strictness of employment protection – individual and collective dismissals



Source: own diagram/OECD, 2016a[25]

[10] "The OECD indicators of employment protection are synthetic indicators of the strictness of regulation on dismissals and the use of temporary contracts. For each year, indicators refer to regulation in force on the 1st of January. The OECD indicators of employment protection legislation measure the procedures and costs involved in dismissing individuals or groups of workers and the procedures involved in hiring workers on fixed-term or temporary work agency contracts. The indicators have been compiled using the Secretariat's own reading of statutory laws, collective bargaining agreements and case law as well as contributions from officials from OECD member countries and advice from country experts" (OECD, 2016b).

It can be deduced that layoffs can be executed faster and at relatively lower costs in countries with less stringent employment protection legislation. In countries with strict legislation, on the other hand, dismissals are likely to extend over a long period of time, they will most likely cause significantly higher costs, and resistance from employees and unions is to be expected.

Hypothesis 4:

Market reactions to layoff announcements will differ depending on the strictness of employment protection legislation.

Hypothesis 4a:

Market reaction to layoff announcements will be positive in countries with less stringent employment protection legislation.

Hypothesis 4b:

Market reaction to layoff announcements will be negative in countries with strict employment protection legislation.

5.3.3.4 Absolute and relative layoff size

According to Gerpott (2007), the magnitude of staff cuts is the second most frequently investigated characteristic of reductions in workforce programs in studies up to and including 2006 and it remains a variable frequently examined in subsequent studies (e.g. Brookman et al., 2007b; Cagle et al., 2009; Hillier et al. 2007). The relative layoff size is determined as the ratio of the number of workers to be released to total staff at the beginning of the year of the announcement.

The size of a firm's planned job cuts is one important signal to the market as it is an indication for the gravity of the company's financial situation (Lee, 1997). Very low downsizing ratios are not likely to induce a noticeable market reaction. Empirical evidence shows that market reactions to large layoffs are stronger and more negative than to small layoffs (Elayan et al., 1998; Hillier et al., 2007; Worrell et al., 1991).

However, there is no established definition of a threshold. As Gerpott (2007) points out, the threshold value varies between 0.5 percent (Nixon, Hitt, Lee & Jeong, 2004) and 5.0 percent (Iqbal & Akhige, 1997) whereas Hahn and Reyes (2004) use the absolute figure of 1,000 employees to be released. Hillier et al. (2007), for example, report clearly stronger negative CAARs for layoff sizes above their sample's median relative layoff size of 4.10 percent. The median relative layoff sizes in analyses of the financial sector vary considerably. The average percentage of employees released by banks in Cagle et al.'s (2009) analysis is 8.14 percent for the period of 1994 to 2003, Marshall et al. (2012) report an average of 2.5 percent for banks and financial services for the time period 2005 to 2006 and an average percentage of 4.7 percent for the crisis year 2008.

Large-scale staff cuts create the highest risk of losing valuable human capital with a probable negative impact on future cash flows (Nixon et al., 2004). This is particularly relevant for the labor intensive services industry including the financial sector (Elayan et al., 1998). The relative share of highly qualified and valuable employees is higher in large-scale dismissals than in selective layoffs (Worrell et al., 1991). Layoffs by banks are thus expected to induce a strong negative stock price reaction.

In Marshall et al.'s (2012) sample, the relative size of layoffs increases in almost all surveyed industries from 2005-2006 to 2008. Unsurprisingly, these increases are strongest for banks and financial services but also for the media as well as the consumer products and the mining industry. The largest

layoffs in relation to the total sample during the financial crisis period can be observed in the sectors financial services, services as well as mining and telecoms and utilities. Firms from these industries appear to be the most adversely affected by the crisis.

Hypothesis 5:

Market reaction to large bank layoff announcements will be negative and increase with layoff size.

5.4 Data

I build my sample from the lists of the largest US and European banks provided by BankScope. During my investigation period 2004 to 2014, the banking sector saw a large number of insolvencies, mergers and acquisitions. In order to capture all banks of relevance during the investigation period, I search for the largest banks at two different points in time: December 31, 2004 and December 31, 2014. I restrict my sample to banks with total assets of no less than 100 billion US dollar at the end of 2004 and/or at the end of 2014. I search Lexis-Nexis and the Reuters database for layoff announcements by the selected stock-listed banks from January 1, 2004 to December 31, 2014. The initial sample consists of 495 announcements by 20 US banks and 42 European banks. I collect stock data from Datastream. I exclude the two largest Russian banks as the search does not yield reliable data. This reduces the number observations to 491. Controlling for confounding events in the [-5;+5] event window around the announcement date such as simultaneously reported losses, recent poor financial performance, a profit warning or a merger announcement further reduces the number to 301 announcements. I further exclude announcements of less than 100 redundancies as I consider this information as being irrelevant to firm financial performance and thus also to stock prices. In case the number of redundancies is given in form of a range, I use the figure at the upper end of the range. Given that only the first announcement on a planned workforce reduction conveys new information to the market (Hallock, 1998; Hillier et al., 2007), follow-up messages are thus not taken into consideration. After applying these additional filters, the sample comprises 210 layoff announcements by 18 US banks and 31 European banks.

The 49 banks in my sample announced a total of 554,158 redundancies during the investigation period 2004 to 2014. US banks account for 52.6 percent with 291,531 planned layoffs. Banks headquartered in Europe announced 262,627 layoffs. In terms of the number of employees to be laid off, I observe two peaks, namely in 2007/2008, the years of the global financial crisis, and in 2013, during the European sovereign debt crisis. This result is in line with previous findings showing that the frequency of redundancies is closely associated with the general business cycle (Farber & Hallock, 2009; Fraunhoffer et al., 2014; Marshall et al., 2012). The banks under review announced an average of 2,800 redundancies. This corresponds to almost 3 percent of their total workforce. The following table 5.2 shows the temporal distribution of announcements on planned staff cuts during the investigation period.

Table 5.2: Temporal distribution of announcements on planned layoffs by banks

Year	No. of Announcements	Percent	Layoffs	Layoffs (mean)	Layoff ratio (mean)
2004	*8*	*3.81*	*34,850*	*4,356*	*3.9%*
2005	*8*	*3.81*	*22,600*	*2,825*	*4.1%*
2006	*4*	*1.90*	*10,740*	*2,685*	*3.3%*
2007	*24*	*11.43*	*101,544*	*4,231*	*3.5%*
2008	*28*	*13.33*	*96,605*	*3,450*	*4.1%*
2009	*31*	*14.76*	*43,509*	*1,389*	*2.1%*
2010	*18*	*8.57*	*32,030*	*1,779*	*2.3%*
2011	*28*	*13.33*	*40,842*	*1,459*	*1.8%*
2012	*20*	*9.52*	*33,238*	*1,662*	*4.6%*
2013	*25*	*11.90*	*94,528*	*3,781*	*3.5%*
2014	*16*	*7.62*	*43,671*	*2,729*	*2.0%*
Total	*210*	*100*	*554,157*	*2,639*	*2.9%*

This table shows the temporal distribution of announcements on planned reductions in workforce by banks in absolute values and percentages. Column "Layoffs" displays the total number of planned layoffs per year, whereas column "Layoffs (mean)" presents the mean value for the number of employees to be made redundant. The mean value for the planned staff reduction as a percentage of total staff is displayed in column "Layoff ratio (mean)".

The announcements are further analyzed regarding the rationale behind the layoffs and affected divisions. Special consideration is firstly given to the stated reason for the planned redundancies. The stated reasons are in fact not mutually exclusive. Classification is performed based on the primary reason for the reduction in workforce. The main given reasons for staff cuts are mergers and acquisitions, general restructuring of the organization, efforts to reduce costs, declining demand or poor past financial performance. Further arguments are recognized under "other reasons".

Derived from the provided arguments, the staff cuts can be classified as proactive or reactive measures. The procedure largely follows that of Lee (1997), Capelle-Blancard and Tatu (2012) and Fraunhoffer et al. (2014). A layoff is categorized as proactive if it is carried out on the bank's own initiative, typically aiming at reducing costs or increasing efficiency. However, cost reductions and reorganization can also be reactive measures if undertaken in response to a crisis situation. Layoffs in response to a fall in demand or poor past financial performance are always categorized as reactive layoffs. Moreover, I examine whether investment banking is affected. I am particularly interested in the capital market reactions to dismissals of employees from this division as salary levels are notably high within this division but its employees are valuable human capital from the bank's perspective. In a third of all cases, banks announce that employees from this division are to

be released. I also analyze whether the redundancies resulted from branch closures. Almost a fifth of announcements provides branch closures as the major reason for the planned layoffs. The respective country's strictness of employment protection legislation is determined according to OECD data covering the years 2004 to 2013 (2016a). The OECD indicator takes into account legislation on individual and collective dismissals.

The most mentioned reasons for staff cuts are cost cutting (60) and reorganization (57). Declining demand (22) is the least mentioned reason apart from "other reasons" (14). In the pre-crisis years 2004 to 2006, a period of rising stock markets, cost reduction (7) and reorganization (7) are the main reasons for staff cuts whereas no references are made to a fall in demand or poor past performance. The picture changes considerably during the crisis years 2007 to 2009; reactive reasons dominate this period. While cost cutting and restructuring remain major reasons (17 each), 16 announced layoffs are attributable to poor past financial performance and ten have their source in declining demand. In post-crisis years 2010 to 2014, proactive strategies clearly dominate. Cost cutting and reorganization are named three times more frequently than all other reasons.

I further consider firm-specific financial figures such as return on equity (ROE), the cost-income ratio or personnel expenses per employee as control variables in my analysis. The following table 5.3 presents descriptive sample statistics.

Table 5.3: Descriptive sample statistics

	n	Mean	Median	Std. Dev.	Min	Q25	Q75	Max
Event-specific variables								
Number of people affected	210	2,637	1,000	5,514	100	425	2,300	45,000
Percentage layoff	210	0.031	0.014	0.040	0.000	0.004	0.042	0.287
Pre-crisis	44	0.210	0	0.408	0	0	1	1
Crisis	49	0.233	0	0.424	0	0	1	1
Post-crisis	117	0.557	0	0.498	0	0	1	1
Strict labor law	59	0.281	0	0.451	0	0	1	1
Investment banking	68	0.324	0	0.470	0	0	1	1
Branches	39	0.186	0	0.390	0	0	1	1
Reasons for layoffs								
M&A	30	0.143	0	0.351	0	0	1	1
Reorganization	57	0.271	0	0.446	0	0	1	1
Cost Cutting	60	0.286	0	0.453	0	0	1	1
Fall in Demand	22	0.105	0	0.307	0	0	1	1
Poor past performance	27	0.129	0	0.336	0	0	1	1
Other reasons	14	0.067	0	0.250	0	0	1	1
Layoff strategy								
Proactive	109	0.519	0	0.501	0	0	1	1
reactive	101	0.481	0	0.501	0	0	1	1
Firm-specific control variables								
Total assets (USD)	210	1,347,908	1,188,749	886,934	97,411	625,709	2,127,539	3,777,312
Assets/Employee	210	15	14	10	2	7	19	62
Sales/Employee	210	700	480	495	155	391	796	3,576
Personnel Exp./Employee	210	133	93	121	16	63	133	663
Return on equity (in %)	210	8.88	9.58	12.47	-43.14	3.68	16	49.76
Cost-income ratio (in %)	210	66.86	64.2	15.94	43.03	57.02	73.12	151.89
Employees	210	120,179	97,125	96,525	5,456	33,988	170,961	375,000
United States	79	0.376	0	0.486	0	0	1	1
Europe	131	0.624	1	0.486	0	0	1	1

This table presents the descriptive sample statistic of my final sample comprising 210 layoff announcements by banks, split by event-specific variables, reasons for layoffs, layoff strategy and firm-specific variables. Number of people affected is the number of employees to be made redundant. Percentage layoff indicates the number of redundancies relative to the total workforce. Pre-Crisis comprises events in the time-frame before the financial crisis that is January 2004 to November 2007. Crisis is the number of events that occurred during the recent global financial crisis and is defined as the time period from December 2007 to June 2009 (see also National Bureau of Economic Research, 2010).

Table 5.3 (continued)

*Post-Crisis covers events during the period after the financial crisis, defined as July 2009 to December 2014. Strict labor law is a country's strictness of employment protection legislation according to OECD data (2016a). Countries with a value of below 2 are coded „non-strict", countries with a value of 2 or above are coded „strict". Investment banking indicates if employees from this division are to be made redundant. Branches indicates if layoffs occur in the course of branch closures. M&A are layoff announcements linked to merger and acquisition activities whereas Reorganization comprises announcements related to restructuring efforts. Cost Cutting indicates that cost reduction is the primary layoff reason. Fall in Demand indicates that the announced layoffs are response to a decline in demand for the bank's products and Poor Past Performance indicates that staff cuts are attributable to poor recent financial performance. Other reasons includes reasons that cannot be assigned to one of the other categories. Proactive is a reduction in workforce carried out on the bank's own initiative. Reactive is a reduction in workforce in response to a crisis situation that has already occured. Total assets (WC02999) are the total assets of the firm in thousands of US dollars (USD) on the last trading day in the year prior to the layoff announcement. Assets/Employee (WC08406) is total assets in thousands of USD divided by the total number of employees on the last trading day in the year prior to the layoff announcement. Sales/Employee (WC08351) is net sales per employee in thousands of USD. Personnel Exp./Employee is personnel expenses in thousands of US divided by the total number of employees on the last trading day in the year prior to the layoff announcement. Return on equity (WC08301) is (Net Income – Bottom Line - Preferred Dividend Requirement) / Average of Last Year's and Current Year's Common Equity * 100. Cost-income ratio is: total non-interest expenses/(total non-interest operating income + equity-accounted profit/loss operating + net interest income). Employees (WC07011) is the number of employees on the last trading day in the year prior to the layoff announcement. United States are layoffs by banks headquartered in the United States of America. Europe are layoffs by banks headquartered in Western Europe.*

5.5 Methodology

The event study methodology goes back to Fama, Fisher, Jensen and Roll (1969) and is still employed today very frequently. The event study measures the impact of new, unexpected information on a company's share price. Assuming information efficiency on capital markets, it is to determine whether the disclosure of new information leads to excess returns on the announcement date or within an event window. The excess or abnormal return $AR_{i,t}$ of a layoff announcement i represents the difference between the actual return $R_{i,t}$ on the event day t and the expected return $E(R_{i,t})$.

$$(1) \qquad AR_{i,t} = R_{i,t} - E(R_{i,t})$$

The expected return is composed of two parts: the market return and the stock-specific return. Several options for estimating the market return are available, including the market model, the market-adjusted model and the constant mean return model (Neus & Walter, 2009). The present study uses the market model. I use the value-weighted market index for each relevant country (Total Return Index) provided by Thomson Financial Datastream as market return. The Total Return Indices represent country-specific price indices, adjusted for changes in capital structure and dividend payments. The two components market return and stock-specific return can be displayed using a linear regression model from historical return data. The share of the expected return that is driven by overall stock market performance is expressed by the product $\beta_1 * R_{m,t}$. The share that reflects the average stock-specific return independent of market movements is measured by α_i.

$$(2) \qquad E(R_{i,t}) = \alpha_i + \beta_1 * R_{m,t} + \varepsilon_{i,t}$$

Parameters α_i and β_1 can be estimated for every event by an ordinary-least-squares-model (OLS-model) using an interval of 250 trading days prior to the event window (Fraunhoffer et al., 2014; Hillier et al., 2007; Knauer & Lachmann, 2011; Nixon et al., 2004). This interval comprises approximately a full calendar year. The exact

definition of the event date is crucial but often difficult (Farber & Hallock, 2009). I use the first announcement or report on a planned reduction in workforce by a bank from my predefined group. However, it is possible that information on the planned layoffs leaked through at an earlier point in time. In this case, the analysis will not capture the full impact of the staff cut announcements on share prices (Farber & Hallock, 2009).
The average abnormal return (AAR) in my sample with "N" observations is calculated for a event day τ using the following formula:

$$(3) \qquad AAR_{\tau} = \frac{1}{N} \sum_{i=1}^{N} AR_{i,\tau}$$

In order to calculate the cumulative abnormal return, the daily abnormal returns of an event i are summed up over the event window $[\tau_1; \tau_2]$. This calculation reflects the change in asset value within the event period (Gerpott & Jakopin, 2006; Fraunhoffer et al., 2014).

$$(4) \qquad CAR_{i,[\tau_1;\tau_2]} = \sum_{\tau=\tau_2}^{\tau_2} AR_{i,\tau}$$

Eventually, the cumulative average abnormal return (CAAR) over all N announcements is calculated on the basis of the CARs of each announcement.

$$(5) \qquad CAAR_{i,[\tau_1;\tau_2]} = \frac{1}{N} \sum_{i=1}^{N} CAR_{i,[\tau_1;\tau_2]}$$

For evaluation of statistical significance, I initially apply a t-test as a parametric method. In addition, I adopt the parametric test method presented by Boehmer, Masumeci and Poulsen (1991) in order to control for higher variances of stock returns in the event window induced by the layoff announcements. Furthermore, I apply the non-parametric rank test set out by Corrado (1989) and the Wilcoxon Signed Rank Test. The influence of announcement- and company-specific factors on the direction and magnitude of the stock price reaction is examined by means of an OLS regression.

5.6 Results

5.6.1 Univariate analysis of the announcement effect

The first interest is directed at the question if an announcement of planned job cuts conveys information, which is new to shareholders and relevant to the valuation. I strive to determine direction and magnitude of the stock price reaction as previous findings for layoff announcements by financial institutions are inconsistent.
Cumulative average abnormal returns (CAARs) for the total sample are clearly negative. This result supports the declining investment opportunities hypothesis: the announcements convey negative information on the issuers' current status and perspectives. Shareholders are pessimistic about the banks' future prospects and anticipate a negative impact on cash flows. They perform a downwards revaluation in response to the unexpected bad news. My results are in line with the findings of Madura et al. (1995) and Elayan et al. (1998) and in contradiction to the results of Cagle et al. (2009). Hypothesis 1 states that stock price reactions will be positive to proactive layoffs and negative to reactive layoffs. Contrary to my expectations, returns are negative for both subsamples albeit insignificant for proactive layoffs. Thus, the results do not support hypothesis 1. The negative stock price

reaction is most pronounced for reactive layoff strategies and least negative for proactive layoff strategies. The results suggest that layoff announcements by banks generally have a decreasing effect on shareholder value. It seems reasonable to conclude that capital markets recognize and assess the risk associated with the loss of human capital. Through releasing employees, banks risk losing both their key source of earnings and their main links to the customers. Reductions in equity value are likely to be highest if stock markets perceive the reasoning behind the planned staff cuts as reactive. Moreover, I observe that the stock price reaction occurs prior to the actual event day. This observation is in line with previous findings and indicates leakage of information (Lin & Rozeff, 1993). Table 5.4 presents the stock price reactions by underlying strategy for different event windows.

Table 5.4: Event study: Banks' abnormal stock returns by underlying strategy

	(Cumulative) abnormal return		t-test	Boehmer	Corrado	Wilcoxon Signed Rank	N
Event window	mean	median	t-value	z-score		z-score	
Panel A: total sample							
[0;0]	-0.25%	-0.16%	-1.561	-1.280	-2.096**	-2.167**	210
[-1;0]	-0.45%	-0.50%	-2.008**	-1.726*	-2.741***	-2.552**	210
[0;+1]	-0.45%	-0.27%	-1.952*	-1.732*	-2.243**	-2.236**	210
[-1;+1]	-0.65%	-0.55%	-2.368**	-2.137**	-2.859***	-2.857***	210
[-5;-1]	-0.69%	-0.44%	-2.250**	-2.131**	-2.348**	-2.424**	210
[-5;+5]	-1.39%	-1.17%	-2.724***	-2.521**	-3.384***	-3.474***	210
Panel B: proactive layoff strategies							
[0;0]	-0.05%	-0.09%	-0.229	-0.419	-0.966	-0.945	109
[-1;0]	-0.06%	-0.30%	-0.193	-0.510	-0.823	-0.579	109
[0;+1]	-0.05%	-0.26%	-0.155	-0.518	-1.169	-1.338	109
[-1;+1]	-0.06%	-0.26%	-0.156	-0.603	-1.069	-1.002	109
[-5;-1]	-0.37%	-0.11%	-0.982	-0.750	-0.049	-0.540	109
[-5;+5]	-0.16%	-0.33%	-0.250	-0.309	-0.451	-1.054	109
Panel C: reactive layoff strategies							
[0;0]	-0.48%	-0.17%	-1.878*	-1.373	-2.120**	-2.119**	101
[-1;0]	-0.88%	-0.90%	-2.577**	-1.941*	-3.240***	-2.952***	101
[0;+1]	-0.89%	-0.29%	-2.499**	-1.931*	-2.124**	-1.875*	101
[-1;+1]	-1.30%	-0.85%	-3.108***	-2.479**	-3.156***	-3.034***	101
[-5;-1]	-1.03%	-0.95%	-2.111**	-2.166**	-3.578***	-2.617***	101
[-5;+5]	-2.73%	-2.21%	-3.402***	-3.107***	-4.601***	-3.633***	101

	Difference Panel B - Panel C	t-test	Difference Panel B - Panel C	Wilcoxon-Rank-Sum test
Event window	mean	t-value	median	z-score
[0;0]	0.43%	1.322	0.08%	1.068
[-1;0]	0.82%	1.834*	0.60%	-2.166**
[0;+1]	0.85%	1.832*	0.03%	-0.600
[-1;+1]	1.24%	2.273**	0.59%	-1.796*
[-5;-1]	0.66%	1.080	0.84%	-1.943*
[-5;+5]	0.0257	2.544**	0.0188	-2.482**

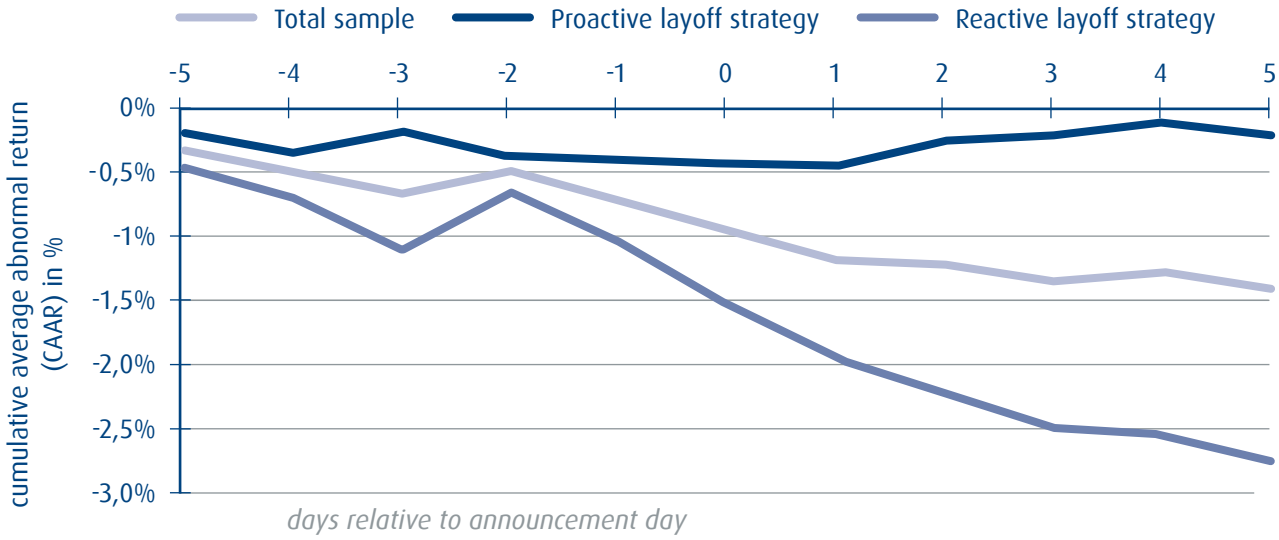
*This table presents (cumulative) abnormal stock returns of banks over several event windows around the layoff announcement date. Abnormal stock returns are computed using the market model. Panel A reports (cumulative) abnormal stock returns for the total sample. Panel B reports (cumulative) abnormal stock returns for proactive layoff strategies. Panel C reports (cumulative) abnormal stock returns for reactive layoff strategies. T-test and Boehmer test are applied as parametric tests. Corrado and Wilcoxon signed rank test are applied as non-parametric tests. Statistical significance of differences in mean and median values between Panel B and C is tested with parametric standard t-test and Wilcoxon rank sum test. ***, **, and * denote statistical significance at the 1%, 5% and 10% level.*

Results for the total sample are statistically significant for all event windows (Panel A in Table 5.4). Yet, the separate consideration of the two layoff strategies shows that the observed CAARs for proactive layoffs are not statistically significant (Panel C in Table 5.4). These findings contradict evidence from previous studies suggesting that stock price reactions to proactive layoffs are positive and significant (Capelle-Blancard & Tatu, 2012; Fraunhoffer et al.; 2014). The analyses of Knauer and Lachmann (2011) as well as Neus and Walter (2009), however, similarly yielded no significant results for proactive layoffs.

The observed CAARs for reactive layoffs in my analysis are negative and statistically highly significant, consistent with the findings of Capelle-Blancard & Tatu (2012) and also Neus and Walter (2009). Capital markets assess job cuts by banks in response to adverse conditions or poor past performance as value-decreasing measures. I observe the strongest share price decline of -2.73 percent in the 11-days event window [-5;+5] (Panel C in Table 5.4). The magnitude of the reaction is far greater in comparison with prior findings but still substantially below the level for crisis year 2008 shown by Marshall et al. (2012), when bank shares fell up to -10.58% in reaction to layoff announcements.

Figure 5.2 displays the stock price reaction to layoff announcements by banks in the United States and Western Europe. The graphs show the share price reaction in an event window of eleven days around the announcement day for the total sample as well as for layoffs that are a proactive measure and for layoffs that are a reactive measure.

Figure 5.2: Stock price reactions to bank layoff announcements by underlying strategy



Hypothesis 3 states that stock price reactions will be zero or positive during rising financial markets and negative during the financial crisis. Capital markets' reactions in fact differ notably depending on the period observed. Stock price reactions are positive yet not significant during the pre-crisis years (January 2004 to November 2007) and negative and significant during the crisis years (December 2007 to June 2009), in line with my hypothesis and consistent with the findings of Marshall et al. (2012). The negative reaction is most pronounced in the eleven-days event window [-5;+5] with a CAAR of -2.35 percent. The following table 5.5 shows the stock price reaction during pre-crisis, crisis and post-crisis periods.

Table 5.5: Event study: Banks' abnormal stock returns in different periods

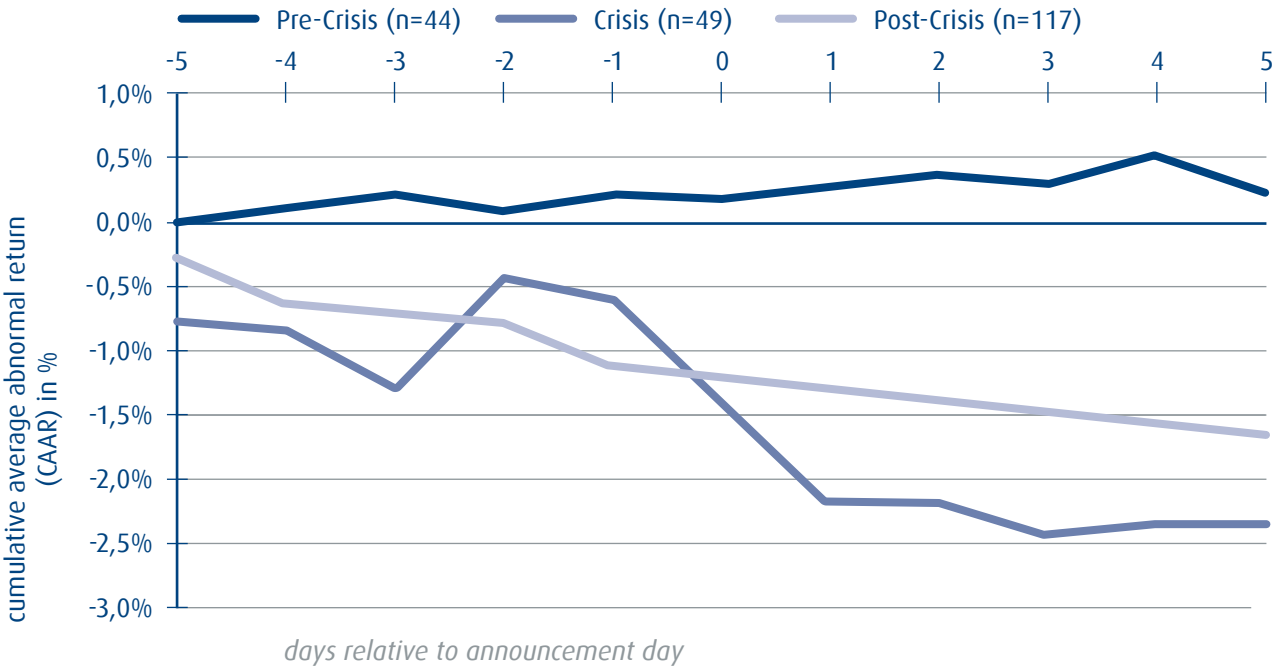
	(Cumulative) abnormal return		t-test	Boehmer	Corrado	Wilcoxon Signed Rank	N
Event window	mean	median	t-value	z-score		z-score	
Panel A: Pre-Crisis							
[0;0]	-0.03%	-0.30%	-0.160	-0.293	-0.856	-1.109	44
[-1;0]	0.08%	-0.35%	0.305	0.162	-0.407	-0.140	44
[0;+1]	0.09%	-0.22%	0.250	0.113	-0.330	-0.654	44
[-1;+1]	0.20%	-0.20%	0.559	0.389	-0.108	-0.163	44
[-5;-1]	0.24%	-0.21%	0.566	0.365	0.203	-0.397	44
[-5;+5]	0.27%	-0.07%	0.491	0.388	-0.257	-0.140	44
Panel B: Crisis							
[0;0]	-0.86%	-0.89%	-1.697	-1.532	-2.703***	-1.845*	49
[-1;0]	-1.06%	-1.42%	-1.418*	-1.076	-2.588***	-1.845*	49
[0;+1]	-1.59%	-0.98%	-2.360*	-2.196**	-3.485***	-2.144**	49
[-1;+1]	-1.78%	-0.77%	-2.092**	-1.798*	-3.398***	-2.313**	49
[-5;-1]	-0.58%	-1.21%	-0.596	-0.492	-1.610	-0.562	49
[-5;+5]	-2.35%	-2.16%	-1.294	-1.065	-2.612***	-1.706*	49
Panel C: Post-Crisis							
[0;0]	-0.08%	-0.05%	-0.443	-0.258	-0.728	-0.948	117
[-1;0]	-0.40%	-0.40%	-1.689*	-1.635	-2.066**	-1.960*	117
[0;+1]	-0.18%	-0.20%	-0.673	-0.631	-0.787	-1.285	117
[-1;+1]	-0.50%	-0.56%	-1.626	-1.769*	-1.909*	-2.174**	117
[-5;-1]	-1.08%	-0.57%	-3.268***	-3.328***	-2.549**	-2.664***	117
[-5;+5]	-1.62%	-1.19%	-3.453***	-3.505***	-3.104***	-3.638***	117

	Difference Panel B - Panel C	t-test	Difference Panel B - Panel C	Wilcoxon-Rank-Sum test
Event window	mean	t-value	median	z-score
[0;0]	0.04%	0.137	-0.25%	-0.044
[-1;0]	0.48%	1.147	0.05%	1.060
[0;+1]	0.27%	0.547	0.27%	0.248
[-1;+1]	0.70%	1.278	0.36%	1.125
[-5;-1]	1.32%	2.205**	0.36%	1.477
[-5;+5]	1.89%	2.258**	1.12%	2.282**

*This table presents (cumulative) abnormal stock returns of banks over several event windows around the layoff announcement date. Abnormal stock returns are computed using the market model. Panel A reports (cumulative) abnormal stock returns for announcements during the pre-crisis period (Jan. 2004 to Nov. 2007). Panel B reports (cumulative) abnormal stock returns for announcements during the period of the financial crisis (Dec. 2007 to June 2009). Panel C reports (cumulative) abnormal stock returns for announcements during the post-crisis period (July 2009 to Dec. 2014). T-test and Boehmer test are applied as parametric tests. Corrado and Wilcoxon signed rank test are applied as non-parametric tests. Statistical significance of differences in mean and median values between Panel A and C is tested with parametric standard t-test and Wilcoxon rank sum test. ***, **, and * denote statistical significance at the 1%, 5% and 10% level.*

The findings for the pre-crisis and the crisis period are in accordance with the observed variations in the reasons for the layoffs over time. In pre-crisis times, proactive strategies aiming at achieving cost reduction or efficiency increases clearly dominate. Capital markets consider these as positive. By contrast, they consider layoffs in times of crisis - when undertaken for the most part as a response to distress - as negative. In the aftermath of the financial crisis, stock price reaction continues to remain negative and highly significant. Again, the negative reaction is strongest in the largest event window [-5;+5] with an average -1.62 percent price loss. The difference between pre- and post-crisis is statistically significant in the larger event windows that include five days prior to the announcement. The observed price effect could be a sign for a nervous sentiment in financial markets. It could also indicate that the crisis still persists as the real underlying problems of the European debt crisis are not resolved yet. Hypothesis 3 holds under the assumption that financial markets have been rather stagnating than rising since 2009. The following figure 5.3 displays the stock price reaction during pre-crisis, crisis and post-crisis periods graphically.

Figure 5.3: Stock price reactions to bank layoff announcements in different periods



The influence of the country-specific strictness of employment protection law is tested through univariate and multivariate analyses. According to OECD data (OECD, 2016a), the level of strictness is by far lowest in the United States, which means that individual and collective dismissals can be undertaken quickly and easily. The difference to the United Kingdom, the European State with the least stringent legislation is great: the OECD-figure for the UK is more than four times higher. For the univariate analysis, I thus distinguish between US banks and Non-US banks.

The univariate analysis of abnormal returns following announcements of US-based banks versus those of Europe-based banks presents an unambiguous picture. Although shareholders in both

cases assess staff cuts as value-decreasing measures, I find distinctly more negative returns for layoff announcements made by non-US banks. However, the differences between both subsamples are statistically insignificant. Results from the univariate analysis do not provide support for hypothesis 4, predicting that market reactions to layoff announcements will differ depending on the strictness of employment protection legislation. Therefore, it has to be rejected. The following table 5.6 shows the stock price reaction by the banks' headquarter.

Table 5.6: Stock price reactions to bank layoff announcements by bank location

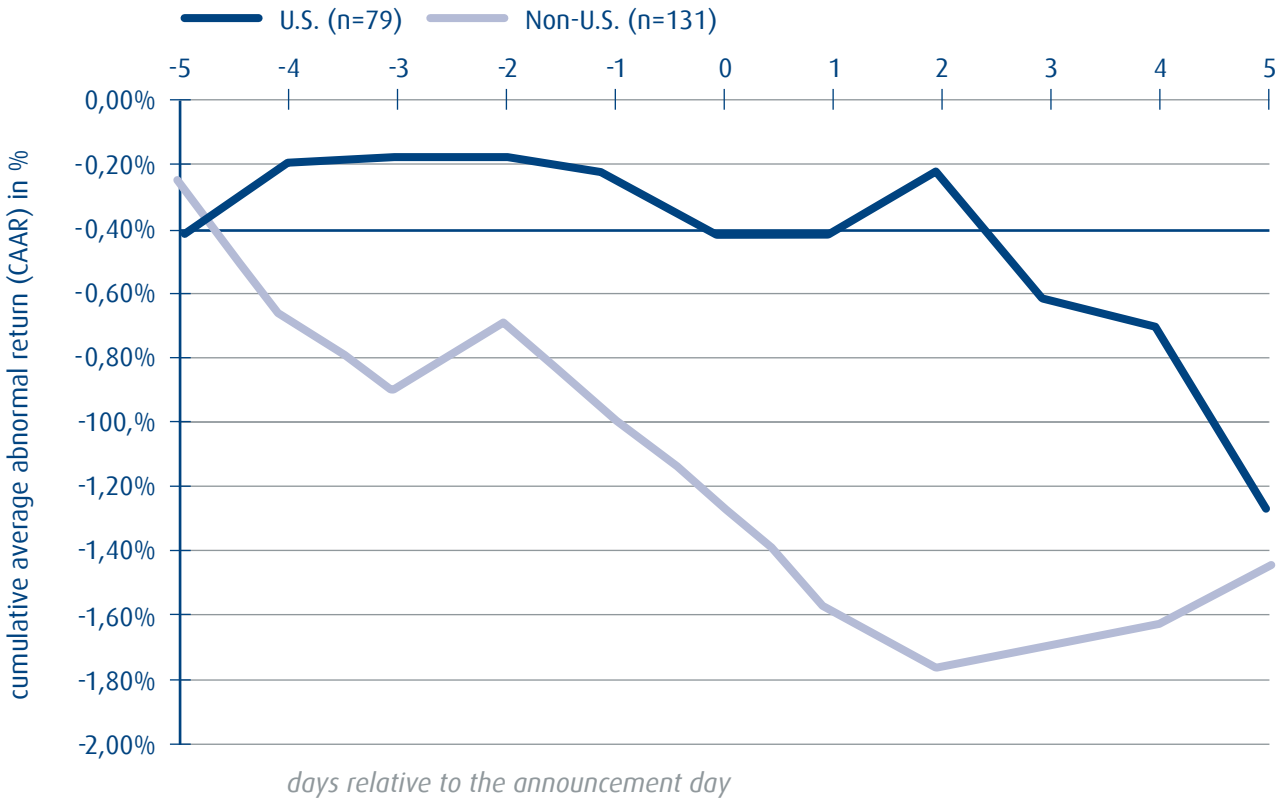
	(Cumulative) abnormal return		t-test	Boehmer	Corrado	Wilcoxon Signed Rank	N
Event window	mean	median	t-value	z-score		z-score	
Panel A: US banks only							
[0;0]	-0.20%	-0.09%	-0.690	-0.483	-0.896	-1.095	79
[-1;0]	-0.25%	-0.29%	-0.705	-0.282	-0.815	-0.870	79
[0;+1]	-0.18%	-0.03%	-0.519	-0.266	-0.329	-0.694	79
[-1;+1]	-0.24%	-0.26%	-0.598	-0.147	-0.416	-0.767	79
[-5;-1]	-0.23%	-0.18%	-0.464	-0.251	-0.987	-0.523	79
[-5;+5]	-1.28%	-0.89%	-1.528	-1.361	-1.995**	-1.745*	79
Panel B: Non-US banks only							
[0;0]	-0.29%	-0.17%	-1.464	-1.274	-1.999**	-1.971**	131
[-1;0]	-0.57%	-0.67%	-1.976*	-1.989**	-2.891***	-2.518**	131
[0;+1]	-0.62%	-0.45%	-2.020**	-1.944*	-2.627***	-2.224**	131
[-1;+1]	-0.90%	-0.80%	-2.446**	-2.530**	-3.351***	-2.970***	131
[-5;-1]	-0.97%	-0.62%	-2.467**	-2.465**	-2.252**	-2.646***	131
[-5;+5]	-1.46%	-1.27%	-2.255**	-2.140**	-2.803***	-3.053***	131

	Difference Panel B - Panel C	t-test	Difference Panel B - Panel C	Wilcoxon-Rank-Sum test
Event window	mean	t-value	median	z-score
[0;0]	0.09%	0.274	0.07%	0.363
[-1;0]	0.32%	0.686	0.38%	1.118
[0;+1]	0.43%	0.900	0.41%	0.905
[-1;+1]	0.66%	1.161	0.54%	1.421
[-5;-1]	0.74%	1.173	0.44%	1.224
[-5;+5]	0.17%	0.165	0.38%	0.602

*This table presents (cumulative) abnormal stock returns of banks over several event windows around the layoff announcement date. Abnormal stock returns are computed using the market model. Panel A reports (cumulative) abnormal stock returns for announcements by banks headquartered in the United States. Panel B reports (cumulative) abnormal stock returns for announcements by banks headquartered in Western Europe. T-test and Boehmer test are applied as parametric tests. Corrado and Wilcoxon signed rank test are applied as non-parametric tests. Statistical significance of differences in mean and median values between Panel A and B is tested with parametric two-sample-test and Wilcoxon rank sum test. ***, **, and * denote statistical significance at the 1%, 5% and 10% level.*

Figure 5.4 displays the stock price reaction to layoff announcements by banks in the United States and by banks headquartered in Western Europe in an event window of eleven days around the announcement day.

Figure 5.4: Stock price reaction to bank layoff announcements by bank location



5.6.2 Multivariate analysis of the announcement effect

Hypothesis 5 predicts that the stock price reaction to large bank layoff announcements will be negative and increase with layoff size. This effect has been shown in several studies (Elayan et al., 1998; Hillier et al., 2007; Nixon et al., 2004; Worrell et al., 1991). I test the impact of layoff size on CAAR through a multivariate regression. The negative coefficient indicates that capital markets do not consider large-scale dismissals as a value-enhancing measure. It is reasonable to assume a negative effect of absolute and relative layoff size on shareholder value. Consequently, large-scale staff cuts lead to lower positive abnormal returns respectively stronger negative abnormal returns. While the natural logarithm of the number of employees affected has no effect on the announcement day [0;0] and only marginal negative impact in the larger event windows, the effect of the percentage is more pronounced and largest in the eleven-days-window with a value of -0.214 (Model V). However, none of the observed effects of layoff size on returns is statistically significant. Thus, hypothesis 5 has to be rejected.

With respect to the variable investment banking,

I observe a positive effect on abnormal returns, in line with my expectations. The effects are statistically significant at the 10-percent level (Model III) on the announcement day and at the 5-percent-level (Model II and III) in the three-days-event window. From the shareholders' perspective, the assumed positive effects of releasing employees from the investment banking division dominate the potential negative effects. Expected positive effects are most likely the substantial cost savings due to the high salary levels in investment banking. An expected reduction of risks associated with the release of employees involved in investment banking might also play a role here.

I also observe a positive effect of proactive layoff strategies on CAAR suggesting that capital markets expect higher future cash flows to result from the planned cuts in personnel expenses. In contrast to the results of the univariate analysis, results are statistically significant. In the three-days-event window [-1;+1], I find statistical significance on the 10-percent-level (Model II, V and VI). In the eleven-days-window [-5;+5], coefficients for all relevant models are stronger positive and statistically significant at the 5-percent-level. The multivariate analysis' results therefore provide support for hypothesis 1.

Hypothesis 2 states that market reactions to layoff announcements will differ depending on the stated reason. At first glance, results meet my expectations with regard to the coefficients sign. In case the announcing bank provides cost cutting (hypothesis 2a) as main rationale for the dismissals, capital markets assess the measure as value-enhancing. In case given reasons are a fall in demand or poor past performance (hypothesis 2c), shareholders perceive the layoffs as a value-decreasing measure. M&A (hypothesis 2b) and reorganization (hypothesis 2a) as given reasons lead to varying results: coefficients have positive and negative signs in different event-windows. Similarly, the analysis of the stated reason branch closure (branches, hypothesis 2a) yields an inconsistent picture. While coefficients are negative in all models on the announcement day and the three-days-event window, their sign changes to positive for all models in the eleven days window. Yet, all findings are statistically insignificant. Consequently, I reject hypotheses 2, 2a, 2b and 2c.

I further examine the influence of employment protection legislation through multivariate analysis. I use an alternative model to the univariate analysis of US versus all non-US countries. Strict labor law is a country's strictness of employment protection legislation according to OECD data (2016a). I consider the values in 2004 and 2013[26]. The minimum value in both years is 0.25 for the United States, maximum values are 4.4 in 2004 and 3.2 in 2013, in each case for Portugal. I determine mean values. Countries with a value of below 2 (the sample's mean) are coded „non-strict", including the United States, the United Kingdom, Ireland, Switzerland and Belgium. The remaining countries with a value of 2 or above are coded „strict". The following table 5.7 presents the determinants of the abnormal stock return on the announcement day [0;0].

The coefficients are small and statistically insignificant across all event windows and do therefore neither provide support for hypothesis 4 nor for 4a and 4b. The negative sign may be an indicator that in case the announcing bank is subject to strict employment protection legislation, abnormal returns will be lower or stronger negative. As the univariate analysis has already shown for US versus non-US banks, capital markets are aware of legal barriers and anticipate associated costs. This results in a downwards revaluation of future cash flows.

[26] Figures for 2014 were not available at the time of creation of this paper.

Table 5.7: Determinants of the abnormal stock return on the announcement day

AR [0;0]	Model I	Model II	Model III	Model IV	Model V	Model VI
Event-specific variables						
Constant	0.000 (0.07)	-0.007 (-0.71)	-0.001 (-0.60)	0.006 (1.09)	0.005 (0.79)	0.002 (0.21)
Employees affected (LN)	-	0.001 (0.41)	-	-	-	0.000 (0.09)
Percentage layoff	-0.016 (-0.31)	-	-0.008 (-0.15)	-	0.041 (0.62)	-
Crisis	-0.008 (-1.47)	-0.008 (-1.52)	0.008 (-1.49)	-	-	-
Strict labor law	-0.003 (-0.86)	-	0.001 (0.17)	-	-0.000 (-0.82)	0.000 (0.09)
Investment banking	0.005 (1.33)	0.005 (1.48)	0.007* (1.93)	-	0.004 (1.06)	0.006 (1.46)
Branches	-0.006 (-1.43)	-0.006 (-1.48)	-0.004 (-1.00)	-	-0.01 (-1.3)	-0.004 (-0.86)
M&A	0.001 (0.02)	-	-	-	-	-
Reorganization	0.000 (0.06)	-	-	-	-	-
Cost Cutting	0.004 (0.53)	-	-	-	-	-
Fall in Demand	-0.009 (-1.33)	-	-	-	-	-
Poor past performance	-0.003 (-0.42)	-	-	-	-	-
proactive	-	0.003 (0.84)	-	-	0.003 (0.79)	0.003 (0.84)
Firm-Specific control variables						
Δ Assets/Employee	-	-	-0.029* (-1.83)	-0.029 (-1.6)	-	-0.029 (-1.58)
Δ Sales/Employee	-	-	0.008 (0.86)	0.005 (0.53)	-	0.006 (0.64)
Δ Personnel expenses/Employee	-	-	0.006 (1.58)	0.006* (1.91)	-	0.007*** (3.07)
Δ ROE	-	-	0.001 (0.74)	0.001 (0.87)	-	0.001 (0.90)
Δ Cost/income	-	-	0.014 (1.41)	0.016 (1.55)	-	0.016 (1.41)
Year-fixed effects	-	-	-	yes	yes	yes
Obs.	210	210	210	210	210	210
Adj. R^2	0.022	0.0261	0.068	0.045	0.004	0.043
	2.20%	2.61%	6.80%	4.49%	0.36%	4.26%
F-statistic	F(10, 199)	F(5, 204)	F(10, 199)	F(15, 194)	F(15, 194)	F(20, 189)
	1.66	1.53	1.19	1.58	0.99	1.16
Prob > F	0.094	0.183	0.298	0.083	0.471	0.289

Furthermore, I find statistically significant results for various financial performance figures. The positive effects of personnel expenses per employee may be interpreted as meaning that capital markets perceive the announced layoffs as a necessary adjustment of increased personnel expenses. My findings are consistent with the results of Knauer and Lachmann (2011) regarding the personnel expenses ratio but in contrast with the results of Nixon et al. (2004). The variable can also be seen as a proxy for investment banking.

Similarly, positive effects are observed for the variable cost-income ratio. Increasing cost-income ratios indicate decreasing efficiency of the organization. A reduction in workforce is likely to be perceived as a measure which is liable to improve the cost-income ratio and hence the bank's efficiency. In both cases, staff cuts may be considered as long overdue.

The negative effects of the variable assets per employee indicate that capital markets assess the planned dismissals by a solidly capitalized bank as a negative sign. Releasing employees that generated these assets in the past likely means a loss of valuable human capital. I find no significant results for changes in return on equity and (net) sales[27] per employee.

The following table 5.8 presents the determinants of the abnormal stock return in the three-days-event window [-1;+1].

[27] "Net Sales" represent specifically for banks: interest and fees on loans, interest on federal funds, interest on bank deposits, interest on state, county and municipality funds, interest on U.S. government and federal agencies securities, federal funds sold and securities purchased under resale agreements, lease financing, net leasing revenue, income from trading accounts, foreign exchange income, investment securities gains/losses, service charges on deposits, other service fees, trust income, commissions and fees.

Table 5.8: Determinants of the cumulative abnormal stock returns [-1;+1]

CAAR [-1;+1]	Model I	Model II	Model III	Model IV	Model V	Model VI
Event-specific variables						
Constant	0.001 (0.09)	-0.004 (-0.27)	-0.05 (-1.04)	0.007 (1.22)	0.004 (0.54)	0.017 (1.05)
Employees affected (LN)	-	-0.001 (-0.49)	-	-	-	-0.003 (-1.19)
Percentage layoff	-0.045 (-0.61)	-	-0.048 (-0.62)	-	-0.068 (-0.8)	-
Crisis	-0.015 (-1.56)	-0.013 (-1.46)	-0.156* (-1.82)	-	-	-
Strict labor law	-0.007 (-1.08)	-	0.000 (-0.03)	-	-0.008 (-1.16)	-0.001 (-0.16)
Investment banking	0.012* (1.89)	0.013** (2.21)	0.015** (2.40)	-	0.009 (1.48)	0.012* (1.91)
Branches	-0.007 (-0.89)	-0.007 (-0.94)	-0.005 (-0.70)	-	-0.007 (-0.98)	-0.005 (-0.67)
M&A	-0.008 (-0.63)	-	-	-	-	-
Reorganization	-0.002 (-0.14)	-	-	-	-	-
Cost Cutting	0.003 (0.24)	-	-	-	-	-
Fall in Demand	-0.008 (-0.68)	-	-	-	-	-
Poor past performance	-0.013 (-1.01)	-	-	-	-	-
proactive	-	0.011* (1.87)	-	-	0.014* (2.06)	0.012* (1.92)
Firm-Specific control variables						
Δ Assets/Employee	-	-	-0.055* (-1.73)	-0.067* (-1.86)	-	-0.069* (-1.86)
Δ Sales/Employee	-	-	0.028 (1.47)	0.019 (1.07)	-	0.022 (1.18)
Δ Personnel expenses/Employee	-	-	0.008 (0.48)	0.008 (0.62)	-	0.009 (0.68)
Δ ROE	-	-	0.000 (0.38)	0.000 (0.42)	-	0.001 (0.65)
Δ Cost/income	-	-	0.037* (1.79)	0.041* (1.92)	-	0.041* (1.87)
Year-fixed effects	-	-	-	yes	yes	yes
Obs.	210	210	210	210	210	210
Adj. R^2	0.029	0.0458	0.093	0.073	0.0244	0.0912
	2.90%	4.58%	9.30%	7.30%	2.44%	9.13%
F-statistic	F(10, 199)	F(5, 204)	F(10, 199)	F(15, 194)	F(15, 194)	F(20, 189)
	2.22	2.68	1.58	1.5	1.24	1.23
Prob > F	0.018	0.023	0.116	0.1096	0.244	0.232

5.7 Conclusion

The present paper analyzes the effect of layoff announcements by banks headquartered in the United States and Western Europe on shareholder wealth. On the whole, capital markets do respond to layoff announcements with significant negative abnormal returns in event windows up to eleven days around the announcement date. The observed negative market response supports the declining investment opportunities hypothesis. From the capital markets' perspective, the announcements of planned redundancies convey negative information about a bank's current status and also its future prospects including poor investment or growth opportunities or uncertain future cash flows. Capital markets seem to recognize and assess the risk associated with the loss of human capital. Through releasing employees, banks risk losing both their key source of earnings and their main links to the customers. Hence, the detriments associated with the staff cuts weigh more heavily compared with the potential benefits from cost savings.

One exception to this is investment banking: shareholders consider dismissals of employees from this division as positive. Results are significant in the three-days-event window. Expected positive effects are most likely the substantial cost savings due to the high salary levels in investment banking as well as a reduction of risks associated with the shrinking of the division.

Furthermore, capital markets seem to be sensitive to the reasoning behind the planned redundancies. Indeed, the negative share price reaction is less pronounced if the planned layoffs are perceived as a proactive measure aiming at reducing costs or increasing efficiency. The negative market response is more pronounced if the underlying strategy is perceived as reactive to adverse market conditions or poor past financial performance. Shareholders might perceive large-scale dismissals rather as an act of desperation than as a chance for a turnaround.

Surprisingly, the layoff size does not have a significant impact on direction and magnitude of the abnormal stock return.

Contrary to my expectations, the country-specific strictness of employment protection legislation appears to be no relevant factor to valuation. I analyze abnormal returns following announcements of US-based banks known to have the least stringent employment protection legislation versus those of Europe-based banks. This univariate analysis yields as a result that returns for layoffs announcements made by non-US banks are notably stronger negative. However, the differences between both subsamples are statistically insignificant. The multivariate analysis uses an alternative model and considers additional countries besides the US as having strict employment protection laws. It produces similar results. I also find no statistically significant effect of the strictness of national employment protection law on abnormal stock returns.

In summary, the results suggest that layoff announcements by banks generally have a decreasing effect on shareholder value. The owners of the firm do not benefit from collective dismissals at the expense of employees – at least in the short term. Contrary to popular opinion, capital markets do not perceive a reduction in workforce as a value-enhancing measure.

6. Concluding remarks

The present dissertation focuses on selected corporate governance and personnel management issues of topical importance and offers an in-depth analysis of capital market perceptions and associated effects on shareholder wealth. The issues under investigation are the role and effects of gender diversity on corporate boards, female leadership, CEO overconfidence and layoff decisions.

The promotion of increased female representation on corporate boards and of women in leadership positions are topics of current social and political relevance in Germany but also on the European level today. In German-speaking Europe, the promotion of women in such positions has been formalized as a recommendation in corporate governance codes and as a self-imposed objective in voluntary commitments of the industry. It is only recently that firms are obliged by law to have a certain share of female board members in the form of statutory gender quotas for supervisory boards. The present dissertation offers valuable insights into the economic relevance of this often controversially discussed topic.

The role of corporate governance for the management of CEO overconfidence is an important research subject as extreme overconfidence can have serious economic consequences for the firm when board vigilance is weak. In the case of insolvency, the shareholders may even face a total loss of the capital invested. The recent case of CONERGY AG and its former CEO Hans-Martin Rueter, which is examined in this study, shows that this is an issue of topical importance.

Finally, the effects of corporate layoff decisions on shareholder wealth are a topic of current relevance as several industries experienced waves of layoffs in recent years in the wake of the global financial crisis. The banking sector is naturally often at the center of corporate finance research but furthermore of high relevance as it was affected particularly badly. The examination of the capital market reactions to announcements of large-scale layoffs by banks allows for conclusions to be drawn with respect to the economic advantageousness of this personnel measure for the banks' shareholders. By including the years preceding and following the crisis into the investigation, the study controls for potential effect variations owed to the crisis.

Section 2 reviews the findings of 44 empirical studies published between 1996 and 2014 on the effects of increased female representation on corporate boards and stronger participation of women in leadership positions on firm performance and shareholder wealth. The guiding question of the review is if previous research does provide empirical evidence for economic benefits of increased female representation in top management positions. The findings of almost 20 years of research on a direct link between the variables of interest are ambiguous. Regression models in a great variety are the most frequently used methodologies, followed by event study methodology and interaction analyses. 15 studies find empirical evidence for a positive relationship between gender diversity and financial performance, 13 studies report mixed evidence regarding the relationship. 14 studies cannot establish any link and five studies report evidence for a negative relationship. Thus, the research question cannot be answered categorically. Evidence suggests that the relationship between female representation in top management positions and financial firm performance or shareholder wealth appears to be more complex than originally assumed. Rather, certain boundary conditions and moderating factors have to be taken into consideration.

To begin with, performance effects vary between different business sectors. Firms which benefit from increased female representation with respect to performance are from the technology or telecommunications sectors or generally operating in complex business environments. Furthermore, organizational strategic orientation is of vital importance. A strategic focus on innovation or a strong growth orientation are most advantageous. Another relevant factor is the degree of women's education with positive and stronger performance effects for female CEOs with a university degree. Moreover, the quality of corporate governance is decisive. Gender diversity on the board has a positive impact on the performance of firms that otherwise have weak governance and shareholder rights as intensified monitoring can enhance firm value. Finally, according to critical mass theory, it needs a critical mass of women between 30 and 40 percent to realize the potential benefits from increased gender diversity. The relationship between gender diversity and firm performance appears to be curvilinear instead of simple and linear. This evidence could be one explanation for the ambiguous findings in previous research. Critical mass theory also gives an indication for the "right" level of gender diversity and lends support to the statutory gender quotas for supervisory boards at levels between 30 and 40 percent.

Against the background of the statutory gender quotas for supervisory boards, **section 3** analyzes the acceptance level of the quota in firms in German-speaking Europe. It further examines compliance with corporate governance codes' recommendations and industry's objectives for the promotion of female leadership. Areas under investigation also include capital markets' perception of corporate gender diversity initiatives, the major drivers for the development of programs and the perspective on the subject of diversity. For this purpose, an anonymous survey among investor relations professionals in Germany, Switzerland and Austria is conducted, which yields almost 100 analyzable data sets. Findings suggest that staff diversity remains a niche topic for capital markets. Primarily specialized investors and rating agencies with a focus on sustainability, CSR or ESG make inquiries relating to workforce diversity. Accordingly, corporate initiatives for increased gender diversity in executive positions are believed to have no impact on external company valuation by capital market participants. The vast majority of companies does not consider diversity issues under economic aspects but predominantly under aspects of fairness and equality. Most influential external stakeholders driving diversity initiatives are government authorities and regulators, women's and interest associations and the media. The general acceptance of the quota from investor relations is rather low. Half of the companies have not implemented specific promotion programs for women in leadership and almost two thirds of all surveyed companies have not set any planning targets.

Section 4 shows the potential adverse effects of failures in corporate governance by the example of CEO overconfidence. Within the scope of a case study, it traces the development of (male) overconfidence on the part of CEO Hans-Martin Rueter with fatal consequences for the firm CONERGY AG, eventually leading to its insolvency. The comprehensive content analysis of press reports, official company documents and analyst reports yields several indicators of optimism and overconfidence. The content analysis of press reports clearly shows that Rueter is portrayed as optimistic and confident. Furthermore, he is described as charismatic, eloquent and persuasive while credible and trustworthy at the same time. Media praise both

indicates and will foster overconfidence. Moreover, heightened acquisitiveness in conjunction with large amounts of paid goodwill can be observed. The paid premiums are at least partly attributable to valuation errors and hubris on the part of the bidder. Rueter was presumably overly optimistic about potential synergies and overestimated increases in value. This is supported by the fact that the majority of CONERGY's at the height of expansion 83 subsidiaries (both acquired and founded) was either discontinued, divested or liquidated after the company's crisis year of 2007. Adjustments on goodwill amounted to EUR -21.8 million in 2007, which equals roughly two thirds of total goodwill accumulated since 2004.

In addition, there are several promoting factors for optimism and overconfidence. The state-funded boom of the German and European solar sector in the first decade of the new millennium led to very successful years for CONERGY. It is most likely that Rueter himself claimed full credit for the organizational successes and it was also credited to him externally, for instance by research analysts. This attribution encourages CEO overconfidence and inter-organizational prestige.

A very important source of overconfidence, however, is weak board vigilance. The supervisory board has the decisive duty to monitor and control management's actions. It should be aware of the potentially serious risks of extreme managerial overconfidence and it must exercise control. The supervisory board, with Rueter's uncle being Chairman and his brother being a board member, did not effectively constrain the CEO's excessive expansion. Four major effects of this expansion in combination caused CONERGY's existential crisis in 2007 and 2008. First, personnel and infrastructure costs rose rapidly due to the newly founded subsidiaries as well as poorly targeted acquisitions. Second, the growing complexity on the organizational level as well as on the technology and product level became hardly manageable. Third, increasing cash requirements and poor working capital management caused precarious shortfalls in liquidity, nearly resulting in insolvency. Finally, CONERGY failed repeatedly in procurement. CONERGY did not recover from the crisis and filed for insolvency in 2013.

Section 5 provides an analysis of the wealth effects of layoff decisions by banks. Large-scale layoffs are personnel measures that are executed proactively or reactively for various reasons. The effect on stock prices and thus on the shareholders' equity is examined by applying event study methodology to a sample of 210 layoff announcements issued by banks in Western Europe and the United States between 2004 and 2014. Results refute the thesis of a stakeholder conflict in which several stakeholders are affected, but only shareholders benefit from the staff cuts at the expense of employees. Capital markets on the whole respond to layoff announcements with significant negative abnormal returns in event windows up to eleven days around the announcement date, supporting the declining investment opportunities hypothesis. From the capital markets' perspective, the announcements of planned redundancies convey negative information about a bank's current status and also its future prospects including poor investment or growth opportunities or uncertain future cash flows. Banks belong to the financial services industry, their employees are their key source of earnings and their main links to the customers. Capital markets appear to realize and assess the risk associated with the loss of human capital. The detriments associated with the mass layoffs hence weigh more heavily compared with the potential benefits from cost savings. Solely dismissals of employees from the investment banking division

are considered as positive by capital markets, most likely owed to the associated reduction of risks and the substantial cost savings due to the high salaries in this division. Furthermore, the negative share price reaction is less pronounced if the planned layoffs are perceived as a proactive measure aiming at reducing costs or increasing efficiency but more pronounced if they are perceived as reactive to adverse market conditions or poor past financial performance. In summary, the results suggest that layoff announcements by banks generally have a decreasing effect on shareholder value. Hence, the owners of the firm in the short term do not benefit from collective dismissals at the expense of employees.

In summary, corporate governance and strategic personnel management can impact firm value substantially. This is supported by the evidence provided across the four sections of this dissertation. The effects can be positive or negative. This dissertation shows under which boundary conditions increased gender diversity on corporate boards and in top management teams can but does not necessarily have positive effects on firm value. It also outlines associated potentials for improvement of quality and effectiveness of corporate governance through. In contrast, the present work discusses the risks of weak board vigilance, thereby emphasizing the relevance of corporate governance. Failures in monitoring and control through the supervisory board can severely affect firm value. Finally, this dissertation focuses on the personnel measure of layoffs and provides evidence for negative effects on firm value and thus shareholder wealth.

I recommend several areas for future research. Additional research is required regarding the boundary conditions and moderating variables that influence the relationship between increased gender diversity on corporate boards and firm performance. This includes research with respect to the critical mass approach and the assumption of a curvilinear relationship. From the academic aspect, a thorough understanding of this complex relationship is mandatory prerequisite for resolving evidence contradictions, for drawing correct conclusions and also for issuing recommendations for action to policy makers. In practical terms, it is highly relevant for the development and design of appropriate measures for the promotion of gender diversity by companies.

With respect to the survey on the status quo of and the attitudes towards diversity promotion in firms, further research efforts may be invested in surveying other target groups. The survey presented in this dissertation was directed at investor relations professionals. They were asked for their experiences and estimations how diversity issues are perceived by investors, research analysts and rating agencies. Scholars of finance or related disciplines could consult capital market participants directly and survey them regarding their valuation of diversity promotion initiatives in general and women on boards and in leadership positions in particular. Scholars might also investigate on possible changes in the assessment in the recent past in view of the increased awareness of the topic. Qualitative individual interviews instead of or supplementing an online-survey would enable direct communication and open-ended questioning. This format would also allow for adjustments or intervention by the interviewer. Thereby, greater depth may be achieved. A comparison of these results with those of the present dissertation would be insightful.

A third starting point for future research is the event study methodology applied in this dissertation. The method could be advanced in several respects. First, the sample size could be extended by integrating Asian, South-American and Eastern

European banks. Second, the analysis could be extended to other sectors from the services industry that also rely heavily on their human capital. Third, as the present event study does only report short-term effects, deeper research is needed into the long-term effects of layoff decisions on shareholder wealth. While a buy-and-hold strategy would be one conceivable approach, research could also consider changes in key performance and efficiency figures. Fourth, future research could focus on the identification of further determinants of the stock price reaction to layoff announcements other than those considered in the present analysis as well as of early signals for large-scale layoffs in the bank's accounting ratios.

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