Master Thesis

The Performance Effects of Mergers within the German Cooperative Banking Sector

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Table of Contents

Figures and Tables

List of Abbreviations

BaFin	-	Bundesanstalt für Finanzdienstleistungsaufsicht (Federal financial supervisory authority)
BVR	-	Bundesverband der Deutschen Volksbanken und Raiffeisenbanken (Federal association of German cooperative banks)
GenG	-	Genossenschaftsgesetz (Cooperative law)
GFV	-	Genossenschaftlicher Finanzverbund (Cooperative association)
IDR	-	Issuer default rating
IQR	-	Interquartile range
M&A	-	Mergers and acquisitions
NCUA	-	National Credit Union Administration
NCUSIF	-	National Credit Union Share Insurance Fund
SPS	-	Statute of the Protection Scheme (BVR, 2012)
UmwG	-	Umwandlungsgesetz (Transformation act)

Management Summary

In the following thesis I examine the performance effects of merger within the German cooperative banking sector on the basis of agency, synergy and market power related changes. Furthermore, from a strategic management perspective the role of strategic similarities is analyzed. Performance enhancing effects are found from a synergy and market power theory perspective in terms of a reduction in interest costs. Furthermore, problems with synergy gains in the area of personnel costs are discovered. These are so serious that they have hampered a significant change in overall bank performance. A change in market power is also measured in terms of a significant increase in other operating income. It is not possible to detect any significant change in agency related costs. Further, I describe that strategic similarities and size differences are not leading to increased profitability. Instead, differences in diversity of earnings are found to be performance enhancing. Therefore, the previously described increase in other operating income can also be facilitated by economies of scope: services that are originally only provided to the customers of one bank are in the post-merger period provided to the united institute's combined customer base.

1 Introduction

Bank mergers and acquisitions seem to be a well-investigated topic that is the focus of various research papers. But, the majority of M&A performance studies focus on listed banks and on the share price reactions of target and bidder banks around the merger event (Cyree, 2010). There is only a limited amount of papers that use a different context in terms of non-listed banks like German cooperative banks. During the last years, the German cooperative banking sector underwent extensive consolidation. The amount of banks has on the basis of M&A activities decreased from 1,794 since the year 2000 to currently 1,138 (BVR, 2011). This consolidation appears to be a response to increasing competitive pressure, developments in the integration of the European banking market, effects of the world financial crisis, changes in technological developments, political interventions and global regulation changes (Cabo and Rebelo, 2005; Altunbas and Marques, 2008; Davidson et al., 2009; Paul and Uhde, 2010). It is my goal to investigate if these mergers have been financially beneficial and therefore to contribute to this area of research. It has to be considered that current evidence on non-listed bank mergers in Germany is "virtually absent from literature", due to "unavailability of public equity and/or balance sheet data" (Koetter, 2008).

There are three theories that are often used in M&A research to explain changes in the financial performance of involved companies. The first of these theories, the agency theory, describes the relationship between owners of a company and its managers. The separation of ownership and control requires the usage of arrangements that are suitable to align the interest of both parties, counteract the management's opportunistic behavior and reduce informational asymmetries (Eisenhardt, 1989). But, all arrangements are connected with costs, which include compensation, monitoring expenditures and costs that arise from the managements' actions that are not in line with the owners' best interests. In this context, Carpenter et al. (2009) describe that mergers can be used "to discipline ineffective managers" and therefore facilitate a reduction of agency related costs, which is expected to be beneficial for the company's overall financial performance. Campa and Hernando (2006) support these expectations with empirical evidence and report "significant improvements in the target banks performance [….]" and

abnormal positive excess returns for target bank shareholders around the date of the announcement. From a bidder bank perspective, the mergers are neither beneficial for the shareholders nor performance enhancing measured in terms of ROE, which might indicate that the bidder‘s managers do not act in the best interest of their shareholders. The second theory that is used to describe M&A performance changes is the synergy theory, which explains M&A effects resulting from operational and financial synergies (Hankir et al., 2011). Davidson et al. (2009) conclude that “the merging banks benefited by exploiting operational and managerial synergies to improve their cost efficiency [….]”. Further, Altunbas and Marques (2008) describe that the “potential for scale economies is often one of the main reasons given by practitioners to justify M&A”. The third theory, the market power theory, predicts gains for banks on the basis of an increase in market power and therefore on the possibility to “appropriate more value from customers” and to “improve [….] interest expense ratios” (Carpenter et al., 2009; Davidson et al., 2009). A recent stock market based study from Hankir et al. (2011) is able to confirm the validity of this theory for 10.8% of all included merger cases.

As a starting point for the investigation of the financial performance changes, I use the research question: “**What is the change in financial performance following a merger in the German cooperative banking sector?”** According to the described theories, it is expected that performance changes can be facilitated by a reduction in agency cost, synergy effects and increased market power. Therefore, I use three subordinated research questions in order to investigate M&A performance effects: **“Is it possible to increase the merged banks’ financial performance by reducing agency costs?”, “Is it possible to increase the merged banks’ financial performance by tapping into synergy effects?” and “Is it possible to increase the merged banks’ financial performance by extracting more value from the customers?”.** In contrast to studies based on stock market data, it will not be possible to analyze share prices as an indicator for performance changes of the merger. The shares of cooperative German banks (*Geschäftsanteile*) are not traded on exchanges, but given back to the cooperative company in exchange for their value (*Geschäftsguthaben*). The leaving member has no right to receive any additional payments out of the cooperative’s reserves or other assets (§73 GenG). Therefore, it

will be necessary to focus on data from the cooperatives' annual statements, which is an established approach to value non-listed companies (Cyree, 2010).

In addition to the previously described performance research, I will investigate the expected variance of the performance change from a different perspective, namely on the basis of factors that have been identified in the strategic management literature. Although, the strategic management research has analyzed various moderating factors it is still "largely unexplained" what "impacts the financial performance of firms engaging in M&A activity" (Covin et al., 2004). The focus of this thesis lies on one of the major areas presented in the strategic literature, namely strategic similarities. They are expressed in terms of resource allocation patterns, which are used as an indicator of the underlying strategies that banks pursue. On the basis of the concept of strategic similarity it is expected that shared strategic characteristics result in superior performance, because firms with a similar set of competencies are better positioned to fully exploit synergies and avoid conflicts that are connected with merging dissimilar strategies (Ramaswamy, 1997; Altunbas and Marques, 2008). The literature also includes a contradicting perspective that predicts e.g. benefits in terms of a lower systematic risk for a "company's investment portfolio by investing in unrelated business" (Hellgren et al., 2011 based on Trautwein, 1990). Altunbas and Marques (2008) report empirical evidence for the first perspective and describe that higher strategic similarity e.g. in the earnings diversification strategy leads to an improvement in performance. The resulting research question is: **"Does higher strategic similarity between cooperative merging partners lead to increased performance?"** Further topics like different performance changes for mergers in different countries, cross-border and even between different types of banks are not considered, because cooperative banks cannot be merged (or only under very certain conditions) with banks outside the cooperative banking sector (Paul and Uhde, 2010). In line with this remark the newspaper Handelsblatt reports that all previous attempted mergers between cooperative banks and banks from other sectors have been cancelled (Drost and Köhler, 2008). Other major moderating factors that have been identified through the literature like e.g. acquisition experience of merging banks are not considered to limit the scope of the thesis.

This thesis contributes to the current M&A research in various ways: First, it focuses on the cooperative banking sector that is far less well investigated than the commercial banking sector due to the lack of suitable publicly available data (Koetter, 2008; Fitch Ratings, 2010; Kontolaimou and Tsekouras, 2010; Standard & Poor's, 2010). The data has only lately been published through the governmental service www.ebundesanzeiger.de, which allows free access to the annual financial data (years 2006-2010). Secondly, the validity of three important theories will be tested in a cooperative market context. Thirdly, the role of strategic similarities including a set of control variables like size and performance differences is also investigated.

The remainder of this thesis is organized as follows: chapter two includes a review of the relevant literature, chapter three describes the development of the hypotheses, chapter four the methodological approach and chapter five presents the empirical results and possible limitations. The dissertation's conclusion is presented in chapter six.

2 Literature Review

As the basis for the further development of the research approach, this chapter provides an overview of the current academic M&A literature dealing with financial performance changes and the role of strategic similarities in this context.

Due to the large amount of M&A research topics, such as target selection, approaching targets, legal aspects, managing the integration process or HRM topics, it is necessary to follow the approach of other researchers and focus on a specific research area, in this case the described financial performance changes (Rupert and Sherman, 2006; Davidson et al., 2009). In addition, I will also use the concept of strategic similarities to investigate the performance changes from the strategic management perspective. Once again, I will follow the approach of other researchers and focus on this specific aspect of the strategic management perspective (Ramaswamy, 1997; Altunbas and Marques, 2008).

The following subchapter (2.1) includes the theoretical foundations of performance changes and the role of strategic similarities. Afterwards, the latest empirical findings are described (subchapter 2.2), which are sorted according to their different approaches to find empirical evidence for the theory and within this structure from geographically broad (US and/or Europe) to narrow (Germany). Due to the fact that the financial industry is frequently used as context for M&A research, it is possible to follow the example of Campa and Hernando (2006), Rupert and Sherman (2006) and Koetter (2008) and focus solely on empirical evidence from this industry. As described in the introduction, it has to be considered that current evidence on non-listed bank mergers in Germany is “virtually absent from literature”, due to “unavailability of public equity and/or balance sheet data” (Koetter, 2008). The third subchapter deals with corresponding aspects of the German banking market and the cooperative financial sector.

2.1 Theory of M&A Performance Changes and Strategic Similarities

M&A research has developed along two major disciplinary lines in terms of financial and strategic management research. In the early stage of M&A research, financial researchers have focused on the share price effects of mergers and later also on performance changes expressed in accounting ratios. The variance in the performance changes around M&As is a subject of interest to the strategic management literature, which investigates the role of various variables that are expected to be moderating the M&A performance change (Cartwright and Schoenberg, 2006). This subchapter puts emphasis on three major theories that are used by financial researchers to explain performance changes: the agency, synergy and market power theory. Afterwards, the concept of strategic similarities is elucidated. Each of the following four subchapters starts with the foundations of the respective theoretical concept and continues with possible critique and a proposal on how the theory can be used in M&A research.

2.1.1 The Agency Theory

The first of the three theories that is used to explain performance changes is the agency theory. Eisenhardt (1989) describes the theory as follows: “Agency theory is directed at the ubiquitous agency relationship, in which one party (the principal) delegates work to another (the agent), who performs that work. Agency theory attempts to describe this relationship using the metaphor of a contract.” But there are two problems: The first problem, the agency problem, occurs when there is a goal conflict between the principals and the agents and it is problematic or costly for the principals to verify the agents’ actions. The second problem, risk sharing, occurs when both parties have different preferences towards taking risks. The theory is based on the following assumptions concerning “people (e.g., self-interest, bounded rational, risk aversion), organizations (e.g., goal conflict among members) and information (e.g., information is a commodity which can be purchased)”. Eisenhardt (1989) also describes the two general lines of the theory: the positivist agency theory and the principal-agent research. The first line deals with identifying conflicting circumstances and describing the possibilities to reduce the management’s (agent) self-interest behavior. In this context, the board of directors is also

included in the agency theory as a monitoring instrument of the stockholders over the management. The second line mentioned focuses on finding the optimal contractual solution that aligns the positions. A more current review of the agency theory by Shapiro (2005), which is partly based on Eisenhardt (1989), describes the theory in similar lines. Economic studies "typically focus on the relationship between owners and managers" and include the following aspects: Principals must ensure that the selected agents act on their behalf. But, this cannot be presupposed, because managers act opportunistically. To solve this conflict of interest and the information asymmetry between both parties the principal has several possibilities to monitor the agents' behavior (e.g., "boards of directors, auditors, supervisors (and) structural arrangements"). Further, the principals compensate the agents in terms of a "behavior-oriented contract" (salary) or an "outcome-oriented contract", which includes "commissions, bonuses, piece rates, equity ownership, stock options (and) profit sharing". Eisenhardt (1989) predicts that the second alternative is more suitable to align both positions or in other words, to ensure that the agent acts in the principal's interest. All arrangements are connected with costs. These agency costs include the compensation, monitoring costs and costs that arise from the agents' actions that are not in line with the principals' best interests. Further, it is described that "agents are risk averse" and "principals are risk neutral", due to the fact that agents are not able to diversify their risks. In addition to these descriptions that back up Eisenhardt's (1989) outline, Shapiro (2005) also includes some critical remarks. "The assumption that complex organizational structures and networks can be reduced to dyads of individuals", is one of them. Agents can serve multiple principals with heterogeneous goals and furthermore, they can be themselves "the principal in a long chain of principal-agent relationships both inside and outside the corporation." Further, the assumption of self-interest and the own profit maximization goals of agents are also questioned. Heracleous and Lan (2010) include most of these points of criticism and even go one step further and introduce a new perspective on the agency theory and recommend the adoption of the following key aspects to cope with current ideas of cooperate social responsibility and team production: "redefining the principal from shareholders to the corporation, redefining the status of the board from shareholder's agents to autonomous fiduciaries and redefining the role of the board from monitors to mediating

hierarchs". The shareholders are put into the team production unit that also includes other important stakeholders like employees and management.

Despite these critiques, the theory's benefit is its applicability in different areas of research. One of these areas is mergers and acquisitions, in which it is in general assumed that "resistance to takeover bids is not in the stockholder's interest, but it may be in the interest of managers because they can lose their jobs during a takeover" (Eisenhardt, 1989). Other authors like Carpenter et al. (2009) support this line of thinking and use the presented outline of the agency theory in a current M&A research model and mention that a majority of M&A researches operate "explicitly or implicitly" on this basis. It is e.g. used in the description of the market for corporate control: If companies are managed by ineffective agents, this will be reflected in the company's share price that will be lower in relation to a company that is managed by effective managers. These ineffective managed companies are described to be the target of takeovers, because of the expected possible gains for the acquirer. Therefore, "acquisitions may be value enhancing when they are used to discipline ineffective managers".

Besides the possibility to draw agency cost related conclusions from share prices, the topic can also be approached on the basis of the free cash flow perspective. According to the theory it is expected that agents who have vast amounts of free cash at their disposal tend to act opportunistically instead of investing in projects that are beneficial for their principals. It is stated that a reduction of free cash flow reduces such behavior, which can be achieved by countermeasures in terms of decreasing the amount of available cash by paying out dividends to the shareholders or paying interest for debt (Berger and Bonaccorsi di Patti, 2006; Aggarwal and Kyaw, 2010). "Payouts to shareholders reduce the resources under managers' control, thereby reducing managers' power, [….]" and their possibility to be involved in wasteful activities. The second alternative to downsize the amount of free cash flows differs from the first in a significant way: Dividend payments can be cut in the future because they are only a "promise" to the shareholders and not a legal obligation as interest payments for debt are. Holders of debt have the right to file for bankruptcy if a company fails to meet its obligation, which results in a loss of control for the involved management (Jensen, 1986). Therefore, "greater financial leverage (increasing the amount of borrowed funds in relation to capital) may

affect managers and reduce agency costs through the threat of liquidation, which causes personal losses to managers of salaries, reputation perquisites, etc., and through pressure to generate cash flow to pay interest expenses" (Berger and Bonaccorsi di Patti, 2006). Thus, "the threat cased by failure to make debt service payments serves as an effective motivating force to make […] organizations more effective" (Jensen, 1986).

Carpenter et al. (2009) and DeYoung et al. (2009) show circumstances, in which managers use acquisitions to satisfy their self-interest. On the basis of Eisenhardt (1989) and Shapiro's (2005) description of the agency theory it can be concluded that problems e.g. in terms of contractual or monitoring problems lead to such behavior. Ownership effects are explained to be relevant in this context. High and low levels of manager ownership in a company are described to be misaligning management's interest with shareholders' interests. It is stated that large shareholders fulfill external monitoring roles better and might trigger mergers to counteract poor management (Carpenter et al., 2009).

These descriptions are further supported by Collins et al. (2007) and their research model that links bank governance with acquisition performance. The authors describe that empirical M&A research shows that target shareholders usually benefit and that "very few studies detect positive returns to acquiring bank shareholders (in the US)." They assume that the poor results "point to poor governance arrangement" and describe three counter-measures in terms of executive compensation and managerial ownership incentives (fixed salary vs. performance related incentives; high vs. low level of stock ownership), board composition (amount of independent directors in relation to the overall amount) and board diversity (e.g. in terms of female or ethnic diversity).

In conclusion, the agency perspective explains the relationship between principals and agents and the instruments that align both positions. In the context of M&A it is used to explain changes in the financial performance of a company. Mergers are leading to performance enhancement, if they are used to discipline ineffective managers (Carpenter et al., 2009). But, it is also possible that mergers are misused by managers to satisfy their self-interest, if the principals' interests are not aligned with the agents' interests by instruments like monitoring,

management ownership and compensation (Collins et al., 2007). Furthermore, it is described that lower levels of free cash reduce the possibilities of agents getting involved in wasteful activities.

According to the previous descriptions, it is possible that one merger is simultaneously used to discipline ineffective managers and satisfy the self-interests of others, depending on the point of view: The agents of the targeted bank are disciplined or replaced by the agents of the bidder bank, but, at the same time, these managers of the bidder bank can fulfill their own opportunistic goals like increased job security. The former owners of the target might now benefit from increased agent performance, but are still dealing with a set of agents that act opportunistically, although their performance level might be higher than the level of the previous agents.

2.1.2 The Synergy Theory

The basic concept behind the synergy theory includes the utilization of different classes of resources to create value. According to the resource-based view, “which offers a useful approach to understand synergistic acquisitions”, the “amount of the resources held by the firm, relative to the total amount present in the economy and the availability of opportunities to utilize this resource” determine the amount of created value (Chatterjee, 1986; Krishnan et al., 2009). Therefore, “resources contribute to the advantage of one firm over another” (Krishnan et al., 2009). The literature includes different definitions of the term “resource” such as “inputs to the production process” or "stocks of available factors that are owned or controlled by the firm". Frequently, it is described that resources can be categorized as tangible resources like capital and buildings and intangible resources like skills and competencies. It has to be considered that this resource-based view is also criticized, because it focuses on the company’s internal potential as a source of competiveness and neglects “the need for external market orientation to achieve competitive success” (Broderick et al., 1998).

Nevertheless, the concept of synergies is frequently used in the context of M&A research (Altunbas and Marques, 2008). Chatterjee (1986) describes that there are three types of

synergies. These are described as “cost of production related (resulting in operational synergy)”, “cost of capital related (resulting in financial synergy)”, and “price related (resulting in collusive synergy)”. This overview can also be found in more current articles like Hankir et al. (2011). They describe that the synergy theory “explains M&A transactions motivated by the intention of realizing merger synergies that will boost future cash flows and enhance firm value” and include operational and financial synergies as an underling structure of the synergy theory. Both types of synergies are either achieved by “increased firm size (scale) or as a result of firm-specific combination advantages (scope)”. Chatterjee’s (1986) third element in terms of the collusive synergy is approached as a separate topic in Hankir et al. (2011), a circumstance that will be dealt with after a more detailed explanation of operational and financial synergies.

The first type of synergies - the operational synergies “can stem from combining operations of hitherto separate units (for example a joint sales force)” and the transfer of knowledge (Hellgren et al., 2011 based on Trautwein, 1990). Further, Hankir et al. (2011) describe in similar terms the possibilities for “revenue increases, resulting from cross and/ or up-selling (and) cost reductions due to efficiency gains”. Hellgren et al. (2011) explain that financial synergies result in lower costs of capital e.g. “by lowering the systematic risk by investing in unrelated business”, “increasing the company’s size, which may give it access to cheaper capital”, or the creation of an internal capital market that “may operate on superior information and therefore allocate capital more efficiently” (Trautwein, 1990). Hankir et al. (2011) adds to these points also “new opportunities in financial engineering, tax savings, or cash slack.”

Besides operational and financial synergies, Chatterjee (1986) includes a third element (collusive synergy) that is also used by Hankir et al. (2011). But they use Chatterjee’s (1986) collusive synergy as a separated market power theory. I will follow this structure, which is also applied by other researches like Carpenter et al. (2009) and include the market power theory as a separate topic. Furthermore, one other element of the synergy theory is explained in Hellgren et al. (2011), labeled managerial synergies. They are achieved when “the bidder’s managers possess superior planning and monitoring abilities that benefit the target’s performance” (Trautwein, 1990). It is noticeable that this last concept of managerial synergies is similar to Carpenter et al. (2009) explanation of the agency theory. Trautwein’s (1990) further description of mergers as a

“disciplinary force” for agents supports this assumption. I follow Eisenhardt (1989) and Shapiro (2005) and attribute superior management performance as an agency related topic.

In conclusion, there are quite consistent descriptions of the synergy theory in M&A research papers concerning the existence of operational and financial synergies (Chatterjee, 1986; Trautwein, 1990; Hankir et al., 2011; Hellgren et al., 2011). Furthermore, Chatterjee (1986) describes the possibilities of collusive synergy, which will be treated as a separate approach in the following subchapter. Hellgren et al. (2011) also put emphasis on the possibilities to benefit from managerial synergies that are treated as agency related in the context of this thesis.

2.1.3 The Market Power Theory

This subchapter follows the previously established structure and starts with the definition of the theoretical concept: "Market power is the ability of a market participant or group of participants (persons, firms, partnerships, or others) to influence price, quality, and the nature of the product in the marketplace" (Shepherd, 1970 quoted in Montgomery, 1985). “In turn, market power can lead to […] high [….] profits” (Montgomery, 1985). Although, “empirical tests [….] show conflicting strands of results” in the context of M&A research, the market power theory is frequently used to analyze M&A performance changes accordingly. It includes “anticompetitive effects” as a result of mergers, or in other words, “takeovers will result in a lessening of competition and increasing market prices” (Hankir et al., 2011). Both, targets and bidders will be able to demand higher prices at the expense of their customers. Hellgren et al. (2011) based on Trautwein (1990) use similar descriptions as Hankir et al. (2011) and interpret (horizontal) mergers “as planned strategic action to achieve market power that creates a wealth transfer from customers to the owners.” The authors label this approach as the monopoly theory. Further support for these definitions is also included in Carpenter et al. (2009).

In summary, it can be stated that the descriptions of the market power theory predict a wealth transfer from customers to the company’s owners. This transfer is facilitated by an increase in the company’s market power in the context of M&A.

2.1.4 The Concept of Strategic Similarities

In addition to the previously described theories that are used to explain performance changes in the context of M&A, the strategic management literature has identified various variables that are described to be moderating the expected performance changes around M&A. A recent meta-study focusing on post-acquisition performance and the role of moderators includes four major areas of factors that have been analyzed in the literature like e.g. the companies' acquisition experience and the role of strategic similarities (Covin et al., 2004). As mentioned in the introduction, the focus of this thesis is limited to the second topic. On the basis of the concept of strategic similarity it is expected that having shared strategic characteristics will result in superior financial performance, because firms with a similar set of competencies are better positioned to fully exploit synergies and avoid conflicts that are connected with merging dissimilar strategies (Ramaswamy, 1997; Altunbas and Marques, 2008). The following paragraphs include the theoretical principles behind this concept and are based on the line of argumentation presented by Ramaswamy (1997), Covin et al. (2004) and Altunbas and Marques (2008).

The foundations of the strategic management literature go back to authors such as Miles and Snow or Porter and their typology including three strategic types of organizations (Defenders, Analyzers and Prospectors), or respectively in terms segmentation, differentiation and cost leadership strategy. A strategy is according to Porter (1991) the "act of aligning a company and its environment", or in other words, the alignment of a company's strategic strength (supply perspective) and strategic scope (demand perspective) in which the three strategies (in terms of segmentation, differentiation and cost leadership) can be found: cost leadership emphasizes "low cost relative to competitors", differentiation requires the focus on creating a "product or a service, that is recognized industry wide as being unique" and the focus strategy includes the concentration "on a particular group of customers, geographic markets, or product line segments" (e.g. described in Davis and Dess, 1984; Coleman et al., 1987; Porter 1991).

Since these articles, researchers have used resource allocation patterns to analyze the underlying strategic orientation of companies. Davis and Dess (1984) connect e.g. a high operating efficiency with Porter's low cost strategy and high costs for advertising with a

diversification strategy. One frequently mentioned point of criticism in this context is the measurement of the intended and the implemented strategy. Based on the companies' research allocation patterns it is possible to draw a conclusion about the currently implemented strategy, but problematic to assess the intended strategy. The intended strategy of a company can differ from an implemented strategy, because it has e.g. not been implemented properly or it is currently being adapted (Davis and Dess, 1984; Coleman et al., 1987).

More current research papers still deduct firm specific strategies from resource allocation patterns expressed in accounting ratios (Ramaswamy, 1997; Altunbas and Marques, 2008). "Consequently, if two firms exhibit very similar resource allocation patterns as measured across a variety of strategically relevant characteristics [….], they can be considered to be strategically similar" (Covin et al., 2004). The strategically relevant characteristics are in the context of M&As in the banking industry measured in terms of operational efficiency, emphasis on marketing activity, client mix, earnings diversification strategy, risk propensity, liquidity risk strategy, market coverage, technology and innovation (Ramaswamy, 1997; Altunbas and Marques, 2008).

The integration of two strategically similar companies leads to a higher post-merger performance, because such companies that are able to benefit from scale synergies. "For instance, if a firm competing on the basis of low cost and efficiency in operations were to merge with another organization with a set of similar competencies, the resulting firm would be better positioned to fully exploit the synergistic benefits of combining similar skills" (Ramaswamy, 1997).

Further, "business relatedness is said to enable the acquiring firm's managers to effectively employ their 'dominant logic'" (Covin et al., 2004). The dominant logic is described by Bettis and Prahalad (1995) as an information filter used by managers to process external data and to incorporate it "into the strategy, systems values, expectations, and to thus reinforce the behavior of the organization." A change of this dominant logic would require a learning process of the new logic, but also an unlearning of the old logic, which is described to be a long-lasting process.

The strategic management literature also includes a contradicting perspective that predicts e.g. benefits in terms of a lower systematic risk for a "company's investment portfolio by investing in unrelated business" (Hellgren et al., 2011 based on Trautwein, 1990). This possibility, which overlaps with the previous subchapter, will be addressed in subchapter 2.2.2 that includes two articles with contradicting empirical evidence. In this context, it is also noticeable that "acquisition performance increases when high-performing firms pair with low-performing targets." Carpenter et al. (2009) explain this on the basis that such targets still leave room for performance improvements. But, they also pinpoint that acquiring an underperforming target is connected with high risk and therefore, the possibility of failure.

2.1.5 Summary of the Theoretical Concepts

The previous subchapters include the theoretical foundations of three theories that are frequently used to explain merger performance effects: agency, synergy and market power theory. Firstly, it has been described that from an agency perspective mergers can either be performance enhancing if they are used to reduce agency costs or can reduce financial performance if the merger is used to satisfy managers' self-interests. Both situations can occur during one merger, depending on the point of view. Secondly, performance changes can be expected on the basis of the synergy theory that presents possibilities for operational and financial synergies. Thirdly, the market power theory predicts an increase in market prices. Furthermore, from the strategic management literature the concept of strategic similarities is used to explain varying M&A performance outcomes.

2.2 Empirical Evidence

After dealing with the theoretical foundations the current empirical evidence is described in the following subchapters. In a first step, the empirical evidence is presented from a performance perspective according to the three theories agency, synergy and market power. Afterwards, the articles analyzing the role of strategic similarities are included. It is the aim of these subchapter to underpin the presented theories with empirical data and therefore to confirm their validity. Each of the four topics is presented separately in one of the following subchapters.

2.2.1 The Agency Theory: Empirical Evidence

The focus of this first review lies on the agency perspective with its three major elements in terms of agents, principals and the instruments that align their interests. Azofra et al. (2008) test if poorly managed banks are more often likely to be acquired, which is in line with the assumption that mergers are a suitable instrument to protect shareholders from poor management (Eisenhardt, 1989; Carpenter et al., 2009). The authors are not able to confirm the hypothesis due to possible problems with the chosen sample. As the authors have indicated in their work, it is likely that "the motives behind financial M&As may be different in commercial banks, savings banks and cooperatives". Other researchers like Campa and Hernando (2006) report on the basis of a sample of European mergers in the financial industry (listed companies) support for the hypothesis that target banks are usually performing to a lesser degree in terms of a cost to income ratio than the industry average. A further article that deals with European commercial banks is Altunbas and Marques (2008). In which it is stated that: "Results from the descriptive analysis show that the overall statistical picture is of large, generally more efficient banks merging with relatively smaller and better capitalized institutions with more diversified sources of income." Koetter (2008) who based his findings on a sample of German cooperative and savings banks describes a similar finding concerning the efficiency of targets and acquirers on the basis of a cost and profit efficiency indicator. It should be remarked that the author's sample also contains multiple mergers in contrast to other authors that exclude such kinds of mergers to avoid possible bias (Cornett et al., 2006; Bauer et al., 2009).

A further research approach is applied by Bauer et al. (2009) who focus on the cooperative credit unions in the US. Their amount has decreased from 11,992 (end of 1994) to 8,362 federal insured unions (beginning of 2007). Credit union members, the principals, do not require return on equity capital. Instead they benefit from higher deposit rates and lower lending rates in comparison to competing banks. Further, it is mentioned, that due to this absence of leveraged equity owners, credit union mergers do not focus on the maximization of shareholder wealth e.g. in terms of increasing share prices and that the normal motivation behind merger decisions like synergy and agency are not fully established in a US cooperative environment. Therefore, the authors aim to investigate motives connected with mergers between credit unions further, by pinpointing three groups that might benefit from the mergers: the members of the acquired institute, the members of the acquiring credit union and the National Credit Union Administration (NCUA). The NCUA administrates the National Credit Union Share Insurance Fund (NCUSIF), which deals with failing credit unions ("all institutions [….] are jointly and severally responsible"). Bauer et al. (2009) report a positive ex post-merger performance increase for the target members, little effect on the acquiring firm's members and support for the thesis that "most mergers are instigated by regulators to avert using insurance funds to bail out failing institutions." The acquirer's members do not clearly benefit which can be explained on the basis of an agency problem in terms of aligning the interest of members and their agents (Collins et al, 2007). A second explanation can be described on the basis of the agency theory's weakness mentioned by Shapiro (2005), who explains that multiple principals might have different goals and therefore, that the individual power of the principals might matter. In this case it can be anticipated that the agents act on behalf of the most powerful principal in terms of the NCUA, who has more influence on the agents than the members. Bauer et al. (2009) do not include further empirical evidence in terms of the quality of monitoring instruments or information about the power of the different principals, which can be used for a further explanation of the found changes.

Performance changes measured in terms of abnormal stock returns in the context of the merger's announcement date are presented in Cornett et al. (2006). They report increasing target share prices and a negative abnormal return for bidder bank shareholders around the

announcement day. The asset quality in terms of allowance for loan losses to loans and loan loss provision to loans is increasing, which can be interpreted as reduction of risk and therefore as empirical evidence for the assumption that the acquiring bank's agents try to minimize their employment risk at the cost of the principals' return (Collins et al., 2007). Further information about the quality of the governance structures is not included. According to DeYoung et al. (2009) the finding of Cornett et al. (2006), based on a sample of US banks (1990-2000), is consistent with other US research literature prior to the year 2000. "Target shareholders earned strong positive abnormal returns (and) bidder stockholders earned marginally negative returns [….]." The consequences concerning the risk level are not presented in a similarly clear conclusion. Likewise, Campa and Hernando (2006) report for the EU a positive excess return for target shareholders and "essentially zero" excess returns for acquiring firm shareholders around the announcement date. The results have to be acknowledged with caution. Depending on the used event timeframe around the merger, the results vary for the target shareholders between significant and insignificant.

In contrast to the presented articles dealing with principals' performance changes, Anderson et al. (2004) focus on the CEOs' benefits from M&A. They analyze in their research the relationship between the CEOs' or agents' incentives and the principals' anticipated gains in terms of cumulative abnormal returns around the event. In contrast to the widespread assumption that "boards of directors naively follow a policy of benchmarking CEO compensation according to firm size and award CEOs of recently-merged banks an undeserved compensation windfall", Anderson et al. (2004) find a positive relation between anticipated gains and CEO compensation. The connection between "increases in asset size due to merger and post-merger changes in CEO compensation" is not supported. Further, it is noticeable that the amount of long-term CEO compensation (e.g. in terms of stock-options) in relation to the total amount of compensation has increased, which can be interpreted as a supporting argument for using outcome-oriented contracts to align the interests of principals and agents. This connection has already been anticipated in Eisenhardt (1989).

The previous paragraphs include four approaches to test M&A performance changes from an agency theory perspective. The first approach is presented by Azofra et al. (2008), Campa and

Hernando (2006), Altunbas and Marques (2008) and Koetter (2008). They test if poorly managed banks are more often the target in M&A than well performing ones on the basis of an EU sample. Three of the four articles include empirical evidence for this hypothesis and therefore for the concept of corporate control described by Carpenter et al. (2009). Only Koetter (2008) presents results for German cooperative and savings banks. The second approach is used by Bauer et al. (2009), who describe a positive ex post-merger performance increase for the target members, little effect on acquiring firm's members and support of the thesis that "most mergers are instigated by regulators to avert using insurance funds to bail out failing institutions." Thirdly, Campa and Hernando (2006) and Cornett et al. (2006) mention quite consistently for the US and EU that performance changes measured in abnormal stock market returns are found for target bank shareholders and that acquiring bank shareholders do not benefit or even have a negative abnormal return. This finding is in line with this work's concluding remarks of the theoretical foundations of the agency theory; it is possible that one merger can simultaneously be used to discipline ineffective managers and to satisfy self-interests of others, depending on the point of view. A fourth method is used in Anderson et al. (2004), who analyze the connection between agents' incentive and the anticipated gains and describe a positive relationship. Thus, most researchers present empirical evidence in line with the theoretical descriptions of the agency theory, which makes it a valid perspective for this thesis.

2.2.2 The Synergy Theory: Empirical Evidence

The following articles include empirical evidence for the second theoretical perspective, the synergy theory. The first paragraph focuses on operational synergies and the following on financial synergies.

Rupert and Sherman (2006) describe synergy effects on the basis of internal operating performance data of one US merger. In their underlying model they identify personnel and operating inputs and seven outputs including elements like teller transactions, marketing, night deposits and safe deposit visits. It is reported that the bank's branch operating savings are equal

to 7.8 % of the previously measured branch resources or 0.28 % of the banks overall operating expenses (after six months). Another study focusing on operating synergies is the work of Cornett et al. (2006). In comparison to Rupert and Sherman (2006), Cornett et al. (2006) base their findings on a broader US sample of 134 mergers (1990-2000) including publicly and non-publicly traded banks. The authors concluded that the increase in operating performance measured after a merger is statistically significant. The source of this change is also investigated and measured in terms of nine performance indicators that represent a cluster of accounting ratio. “Almost all of the operating efficiency measures change significantly before versus after the bank merger in a manner that suggests the merger results in significant cost cutting.” Revenue enhancements are also reported e.g. in terms of returns on loans. A third article describing the operating performance changes around mergers is the work of Davidson et al. (2009). They base their findings on a sample of thirty-five mergers between listed European banks (1992 - 1997) and also report a detailed overview of the changes of different operating ratios at an organizational level. In this market context the main performance indicator has not changed significantly after a merger. The found “positive and significant post-merger returns are not due to the merger itself but could be due” to the already higher pre-merger level. The profitability and capitalization ratios are decreased and in contrast to the prior US research, an improvement in cost-efficiency is reported (“enabled by exploiting operational and managerial synergies”), “although the improvement was not large enough to offset the profitability decrease”. The previously mentioned article of Koetter (2008) describes post-merger efficiency improvements for app. half of the investigated German mergers (cooperative and savings banks) in terms of improvements in cost and profit efficiency. The improvements of the cost indicator values are in comparison to the profit indicator only minor. In his terminology, a merger must fulfill two conditions to be labeled successful. “First, merged institutes must exhibit efficiency levels above the average of non-merging banks. Second, merged institutions must exhibit efficiency changes between merger and evaluation year above the efficiency changes of non-merging banks.”

According to the synergy theory, there are also different possibilities to benefit from financial synergies. These are facilitated by the reduction of the company’s systematic risk, an increase in

company size, the creation of an internal capital market, financial engineering, tax savings and cash slack (Trautwein, 1990; Hankir et al., 2011). I will focus on the possibility to lower "the systematic risk of a company's investment portfolio by investing in unrelated businesses" and scale effects, which might give "access to cheaper capital" to limit the scope of this thesis (Trautwein, 1990).

The investment in unrelated businesses is described to reduce the company's systematic risk (Trautwein, 1990). But, Ramaswamy (1997) shows that merging partners in the US suffer from negative performance consequences if the partners have a different client mix in terms of consumer and business loans. A more current analysis of risk related changes in cross-border mergers is presented by Amihud et al. (2002). But, the authors are not able to find any change in associated risk, in contrast to the prediction of the synergy theory.

Koetter (2008) reports minor cost efficiency improvements in the context of non-listed German banks in terms of an overall cost indicator that also includes "cost of borrowed funds". Due to the fact that he abstains "from drawing inferences on individual coefficients", it is not possible to attribute the detected increase in cost efficiency to one of the elements in his cost indicator that also includes fixed assets and personnel expenses, or to link the change to one of the theoretical explanations. Furthermore, it must be considered that it is not possible to "distinguish different sources of funding, such as customer deposits, bonds or interbank market funds, because interest expenses per liability category are unavailable".

A more direct conclusion concerning synergies that derive from scale economies can be drawn from Altunbas et al. (2001), who describe efficiency rates for seven different categories of banks in terms of asset size. In their empirical research, which is based on the German banking market, the authors describe that "within each ownership type the larger banks tend to realize greater economies" of scale. The authors base this conclusion on models including three input factors (the price of funds, labor and physical capital) and five output factors (mortgage loans, public sector loans, other loans, other earning assets, off-balance sheet items). Although, this research focuses not solely on financial synergies, it supports the existence of scale economies in the

described input and output terms, which also include the price of funds in terms of total interest expenses to total funds.

Four of the previously described articles deal with operational synergy effects. Rupert and Sherman (2006) and Cornett et al. (2006) report performance enhancement effects of US mergers and acquisitions. Davidson et al. (2009) also report an increase in cost-efficiency on the basis of a sample of European mergers and Koetter (2008) measures cost and profit efficiency improvements for half of the analyzed cooperative mergers, although the cost savings possibilities are only minor. Financial synergies are described in Ramaswamy (1997) and Amihud et al. (2002) on the basis of US and international mergers, but the authors are not able to present empirical support for the possibility to lower "the systematic risk of a company's investment portfolio by investing in unrelated businesses" (Trautwein, 1990). Koetter (2008) reports narrow possibilities on the benefit from cost reduction e.g. in terms of lower capital costs, but abstains "from drawing inferences on individual coefficients". Altunbas et al. (2001) describes the existence of scale economies in the German banking market. The presented empirical evidence backs up the existence of operational synergies in the context of bank M&A, but lacks conclusive support for financial synergies derived from a reduction of the systematic risk. The existence of scale economies is supported.

2.2.3 The Market Power Theory: Empirical Evidence

The last theory that is used to explain M&A performance changes is the market power theory. A direct conclusion concerning this theoretical perspective can be drawn from Cornett et al. (2006). The authors measure on the basis of US data the net interest margin as a proxy for market power, defined as "interest income minus interest expenses as a percentage of book value of total assets" and report a significant increase. Although the underlying values are not reported, it can be concluded that mergers give the opportunity either to increase the interest-rates for debtors or to decrease the interest-rates for depositors, or both. Davidson et al. (2009) measure changes in interest costs and mention that a merger gives "ample opportunity to improve [….] interest expense ratios" for European banks. From this finding it can be concluded

that the banks have used their increased market power to reduce the interest payments. On the other hand, the authors see no change in the other income to interest income ratio. Of course it is possible that a change in other income, which would also be in line with an increase in market power, has hindered a possible detection of increasing interest income. Unfortunately, the underlying values are not accessible. Therefore, the market power theory is partly confirmed within the mentioned restrictions. For mergers in the German cooperative and savings banks sectors Koetter (2008) reports minor post-merger improvements, measured in terms of interest expenses over total interest-bearing liabilities. The previously mentioned limitations of determining interest expenses per liability category make it problematic to observe changes in customer interest payment. Bauer et al. (2009) investigate the merger effects for credit union members. The underlying concept in this cooperative framework in the USA is that "credit unions [….] (are) borrowing funds from one set of members/owners and lending those funds to others, seeking to benefit both sets of owners by offering below market loan rates and above market deposit rates." The authors report for the target members an improvement for both lenders and depositors, and for the acquiring credit union members benefits in terms of decreasing lending rates, but negative effects for depositors. Only this last mentioned negative effect for the acquiring depositors would be in line with the market power theory. But, in the case of US credit unions it has to be considered that members are both, customers and shareholders of the credit unions, which makes the classical market power theory problematic to adapt in this context. In contrast to the three previously described articles, Bauer et al. (2009) use a more direct approach and measure the interest-rates for lenders and depositors directly and not on the basis of interest expenditure or income.

The majority of the described empirical findings support the market power theory: Cornett et al. (2006) describe on the basis of US data an improvement in the net interest margin. A similar result is also found on the basis of a sample of European mergers, although some of the above mentioned constraints of this finding have to be considered (Davidson et al., 2009). On the basis of the German cooperative and savings banks data, Koetter (2008) reports a minor improvement in the cost efficiency indicator that also includes interest expenditures. Finally, Bauer et al. (2009) conclude for US credit unions that mergers lead to negative effects for the

acquiring depositors. Further evidence for the market power theory is not found, which might be due to the fact that customers are also the owners of the union.

2.2.4 The Concept of Strategic Similarities: Empirical Evidence

After presenting the empirical findings of M&A performance research, I will continue with two papers that focus on the impact of strategic similarities on performance changes and one paper that describes the impact of relative company sizes. Although, size is not characterized as a strategic variable, it is used as a control variable in Ramaswamy (1997) and Altunbas and Marques (2008). The first paper, Ramaswamy (1997), uses a sample of horizontal mergers in the US banking industry and ROA as performance indicator. The author investigates in his regression model the impact of two control variables and five strategic variables on the change in ROA and describes the following findings: The first control variable (relative size of the merging banks) is not significant, but the second control variable (pre-merger ROA) is found significant. The author explains in line with the remarks of Carpenter et al. (2009) that "since banks that were performing well prior to the mergers cannot be expected to improve their performance as much as banks that were performing poorly". On the basis of the found significance of four of the five strategic similarity variables, Ramaswamy supports his hypothesis that "strategic dissimilarities between target and bidder firms did have a negative influence on performance following mergers". The strategic realness is measured in the following areas: operational efficiency (overhead expenditure in relation to total bank revenues), emphasis on marketing activity (marketing related expenditures in relation to bank revenues), client mix (relation between business to consumer loans) and risk propensity (ratio of core capital to loans outstanding). Only the variable market coverage (amount of braches in relation to the overall amount of branches in a country) has no significant influence on the performance change.

The second research paper, Altunbas and Marques (2008), analyses the role of strategic similarities in the context of domestic and cross-border mergers. This review focuses on the domestic ones, because German cooperative banks are not merging internationally. The authors analyze the impact of similarities in six strategic areas on the change in ROE as major

performance indicator. The strategic relatedness is measured in the areas of earnings diversification strategy (other operating revenue to total assets, off-balance sheet activity to total assets), credit risk and loan-to-deposit profiles (loan loss provision divided by net interest revenue, total loans to total customer deposits, net loans to total assets), cost controlling strategy (costs to income), capital adequacy level (equity to total assets), liquidity risk strategy (liquid assets to customer and short-term funding) and technology/innovation (total costs excluding interest, staff and other overhead payments in relation to total assets). The authors conclude that "mergers between (European) banks exhibit similar strategic characteristics result in better performance than those involving strategically dissimilar banks". But, "differences in capitalization, technology and innovation strategies were found to improve performance". It is argued that the merging banks can benefit from "investments in financial innovation and technology made by their counterpart(s)". A better capital structure of target banks is also found to be performance enhancing. Altunbas and Marques (2008) use in their regression model the relative size and the pre-merger bidder performance level as control variables. A high performance level "on the part of the bidder tends to negatively affect the level of performance of the new entity after the merger". Size differences between the merging banks are found to be performance enhancing, because it is "easier [….] to impose cost restructuring and realize cost savings" when the target is smaller in comparison to the bidder.

Because of the unclear effect of the variable "relative size", the work of Campa and Hernando (2006) is used as an additional source of empirical evidence. These authors analyze on the basis of an EU sample of M&As during the period 1998-2002 the influence of several M&A deal characteristics on performance, which is measured in terms of abnormal excess returns. The authors report in line with Altunbas and Marques (2008) that "transactions involving firms more different in size (in most cases, a target significantly smaller than the acquirer) imply a higher return for targets". The authors conclude that these findings support the "hypothesis that the acquisition of a smaller target is less complex and thus value creation might be less problematic."

In sum, the empirical evidence supports the concept of strategic similarities. In both articles it is concluded that strategic dissimilarities between target and bidder firms do have a negative

influence on performance changes in the context of M&As (Ramaswamy, 1997; Altunbas and Marques, 2008). Only a limited amount of dissimilarity of strategic choices is found to be performance enhancing.

2.2.5 Summary of the Empirical Evidence

In sum, most papers present empirical evidence in line with the theoretical descriptions of the agency and market power theory. But, the empirical evidence lacks conclusive support for financial synergies derived from a reduction of the systematic risk. The existence of financial scale economies and operational synergies is supported. Furthermore, the concept of strategic similarities is also backed up by empirical evidence. Only a limited amount of dissimilarity of strategic choices is found to be performance enhancing.

2.3 The German Cooperative Banking Sector

In addition to the previously introduced theoretical and empirical lenses on M&A research, the following paragraphs also include structural information about the German banking market and the cooperative financial sector. This information is complemented by the description of local or so called primary cooperative banks and the role of the cooperative members. The data is used in the following chapter for hypotheses development.

According to Paul and Uhde (2010), the German banking industry has on the basis of 2009 figures the highest level of banks (3.1) per 100,000 citizens and also the highest amount of banks in overall terms in the EU-15. The market concentration, e.g. described as the market-share of the biggest five banks (based on balance sheet totals), is very low in comparison to the EU-15 average due to the high amount of savings and cooperative banks. Low profitably ratios are indicating that the general level of competition is already higher than in other European countries (Paul and Uhde, 2010). In the last years several changes in the European banking market have resulted in the possibility for European banks to open branches in other European

countries outside their home market, the formation of a Single European Payment Area and steps towards more competition at a retail level (Paul and Uhde, 2010).

The German banking system is made up of three categories of banks, namely commercial, savings and cooperative banks. Each category has a different ownership structure: commercial banks like Deutsche Bank are private, saving banks are state-owned and local cooperative banks are usually privately owned by their members. There exists no separation of commercial and investment banking; therefore the German banking system is categorized as a universal banking system (Norden and Weber, 2010; Paul and Uhde, 2010). The focus of this dissertation lies on the local cooperative banks or primary banks and excludes their national partners DZ Bank and WGZ Bank. The cooperative banks are united in their national central organization BVR (BVR, 2011b). Fitch Ratings and Standard & Poor's recognize the cooperative banking sector, with its cumulative balance sheet total of app. €727,9 billion at the year-end 2011 and app. 30 million customers, as a "cohesive economic group" that is made up of legally independent institutions with a common risk profile and award a long-term IDR of A+ (Fitch) / AA- (Standard & Poor's) for all cooperative banks "that form part of the GFV Protection Scheme", which functions as a mutual support trust and is administrated by the BVR (Fitch Ratings, 2010; Standard & Poor's, 2010; BVR, 2011a; BVR, 2011b, Standard & Poor's, 2012). In recent history, no member of a German cooperative bank that is a member of the GFV Protection Scheme has lost money due to bankruptcy (Fitch Ratings, 2010; BVR, 2011c).

The topic bank ownership is also linked to the topic efficiency: "Over the years, a considerable literature has developed on the relationship between industrial ownership and performance". It is assumed that "the lack of capital market discipline, common to mutual and public ownership, may indicate that management in these banks experience a lower intensity of environmental pressure and therefore may operate less efficiently than privately owned banks" (Altunbas et al., 2001). This assumption is supported by empirical evidence presented by Kontolaimou and Tsekouras (2010). They report for the European banking industry that the current performance level of cooperative banks is lower in comparison to the other two major groups of banks (commercial and savings). Furthermore, the authors recognize that the performance variance within the cooperative banking group is minor in comparison to commercial banks, which is due

to “considerable knowledge spillover effects within the cooperative bank type which are based on the high absorptive capacity and the intra-type orientation of the cooperative banking firms”. Altunbas et al. (2001) described a different situation for the German banking industry. They conclude that “public savings banks and mutual cooperative banks are relatively more cost and profit efficient than their private sector competitors”, which is “possibly a reflection of their lower cost of funds”. The authors conclude that there is no indication for an “agency problem for non-private banks operating within the German banking market”.

Further, it is noticeable that the non-listed cooperative and savings banks are independent from developments in the capital markets (Paul and Uhde, 2010). This circumstance has led to different consequences for the three categories of banks during the financial crisis. The primary institutions of the cooperative and savings sector are in general economically healthy and have even been able to gain market share during the crisis (Burghof et al., 2010). Some regional state banks (central institutions of the savings banks) and commercial banks had difficulties in surviving the crisis. Commercial banks like the Commerzbank are still (partially) nationalized. This has resulted into a distortion of competition, which affects the primary cooperative and savings banks in terms of a higher level of competition on the market for private and small business customers, their main customer group (Paul and Uhde, 2010). Despite the increasing level of competition from larger commercial banks Standard & Poor’s (2010) also pinpoints “mounting competition from low-cost niche players” [….]. These banks compete on the cooperatives’ core business activities like retail deposits and mortgage loans. The competition between the cooperative banks is constrained by the *Regionalprinzip*. This agreement “restricts their banking activities to a specific region, thus avoiding competition with institutions from the same sector” (Norden and Weber, 2010).

Before continuing with the internal structure of a cooperative bank, it is noticeable that the general German board system is different from the Anglo-Saxon model: “German companies have a two-tier board, in which the management board (*Vorstand*) is responsible for the day-to-day operations and the supervisory board (*Aufsichtsrat*) appoints and supervises the members of the management board on behalf of shareholders and the public interest” (Dittmann et al., 2010). The management board of a cooperative bank consists of two or more members if the

cooperative has at least twenty members. They are either volunteers or paid managers. See §9 and §24 till §28 GenG for further information and exceptions. Cooperatives with more than twenty members have also an *Aufsichtsrat* that consists of three or more members. These members are not allowed to be on the management board or to receive financial compensation that is linked to the cooperative's financial success (§36 and §37 GenG).

App. 16.7 million of the app. 30 million cooperative customers are also members of their respective cooperative bank (BVR, 2011b). They exercise their voting power at the *Generalversammlung*, which is comparable to a general meeting of shareholders of a public limited company with the exception that every member has in general only one vote, irrespective of the actual amount of shares (*Geschäftsanteile*). There are some exceptions mentioned in the §43 GenG. This democratic maxim is also included in the cooperative core values e.g. described by Novkovic (2008). If the cooperative has more than 1,500 members a *Vertreterversammlung* instead of the *Generalversammlung* can be established. In this meeting the rights of the individual members are exercised by elected representatives (§43a GenG). At the *Generalversammlung* the members elect the members of the supervisory and the management board (§24 and §36 GenG). Other election procedures can be established on the basis of the cooperative's by-law (§24 (2) GenG). Further, the *Generalversammlung* decides on the appropriation of profits and on major decisions like M&A (§48 GenG, §84 UmwG). See GenG and UmwG for more detailed descriptions and exceptions. The members have the right to participate in dividend payments according to §19 GenG. But, their shares (*Geschäftsanteile)* are not traded on exchanges, but given back to the cooperative bank in exchange for their value (*Geschäftsguthaben*). The leaving member has no right to receive any additional payments out of the cooperative's reserves or other assets (§73 GenG). Therefore, the value of a membership is in not increasing, but can in case of bankruptcy lose its value and result in further liabilities for the member. See paragraphs 6 and 73 GenG for more detailed descriptions and exceptions. These further liabilities (*Haftsumme*) are a preset amount of money that a member has to pay in case of bankruptcy (e.g. §87a and §119 GenG). A member who wishes to terminate his membership must in general request the termination at least 3 months before the end of the cooperative's fiscal year. The company can on the basis of its by-law determine a longer

timeframe of up to 5 years (§65 GenG). See paragraphs 65 till 77 GenG for more detailed descriptions and exceptions. Although, cooperatives are aiming to support the economy of their members (§1 GenG), it is not visible that cooperative banks offer credit or deposit conditions that are superior to the general market conditions as for example it is usual for credit unions in the US (Bauer et al., 2009). On the contrary, the statistical service of the Deutsche Bundesbank reports in its annual review of the German banks' profit situation that cooperative banks have a higher interest income ratio (measured in relation to the average balance sheet total) than all other German banks since the year 2003 (Deutsche Bundesbank, 2010). This phenomenon of increasing commercialization is also recognizable in other parts of Europe (Cabo and Rebelo, 2005).

"The absence of capital market forces makes it impossible for a cooperative bank to be subject to hostile takeovers implying lower environmental pressure faced by cooperative banking firms compared to stock-owned banking firms" (Kontolaimou and Tsekouras, 2010 based on Altunbas et al., 2001). Thus, it is not possible to acquire a cooperative bank against the will of its members or respectively against the will of their representatives. According to the UmwG, which offers different legal possibilities to merger, the amalgamation between two cooperative does in general not require the payment of cash for the shares of the targeted cooperation. Instead, its members receive shares of the bidder. In some cases it is possible that adjustments to the value of the shares require the compensation of members in terms of minor cash payments (§87 UmwG). Although the terms "bidder" and "target" are implying some hostility between the merging banks, these terms will also be used in the context of this thesis: "target institutions are defined as the smaller, and acquiring institutions are defined as the larger, of the two institutions involved in the merger" (Bauer et al., 2009). See UmwG for more information concerning legal aspects in the context of cooperative mergers.

Despite the absence of a market for takeovers, the "accountability of the managers of mutuals to their owners may be greater than that of the managers of private organizations simply because mutual claimholders can each independently exercise the right to withdraw funds when faced with evidence of managerial inefficiency" (Altunbas et al., 2001). At this point the role of the BVR should also be included: As described in the introduction of this thesis the

cooperative banks are members of a mutual support trust that bails out failing banks. It is administrated by the BVR (Fitch Ratings, 2010; Standard & Poor's, 2010). According to the statute of the Protection Scheme the member banks have to follow a wide range of regulations including the maxim "to conduct their business in accordance with the duty of care applicable to them under company law in order to prevent the need for financial support from the Protection Scheme" and "are obligated to permit the audits ordered by the BVR management" (§6 (1) and § 7 (1) SPS). If the BVR or the audit association have the impression that a cooperative bank acts against §6 SPS, the BVR has a wide range of restructuring competences e.g. in the areas of business policy and management (§12, §13, §16 (2) and §25 (5) SPS). See SPS for more detailed information.

2.4 Summary

The previous subchapters have provided an overview of M&A performance research including three theoretical perspectives and the corresponding empirical findings. Further, the concept of strategic similarity is introduced to explain possible variance in M&A performance changes according to the degree of strategic fit of the merging banks. The aspects are complemented by structural information about the German banking market and the cooperative banking sector. On the basis of these descriptions, this thesis will continue with the development of hypotheses in the following chapter.

3 Hypotheses

As described in the introduction, this thesis focuses on the research question: "**What is the change in financial performance following a merger in the German cooperative banking sector?"** The three resulting subordinated research questions are dealing with specific performance influencing aspects in terms of agency costs, synergy effects and market power. Furthermore, the role of strategic similarities and their influence on the financial performance change is handled as the focus of a fourth question. The following subchapters include the development of the hypotheses on the basis of the previously backed up theories and provided structural information.

3.1 Hypotheses Development

The first subordinated research question, **"Is it possible to increase the merged banks' financial performance by reducing agency costs?",** is approached on the basis of the agency theory, which predicts that mergers can change the financial performance of a company by changing agency related costs. As described above, it is possible that the interest of the principals and the agents can be aligned by instruments like monitoring, management ownership and compensation. An external market for corporate control is mentioned as a factor that puts pressure on ineffective managers. Furthermore, low levels of cash flow make it less likely that managers will act opportunistically.

Based on the described characteristics of cooperative banks it is expected that the existing monitoring instruments that align the members' interests with the management's interests are suitable to ensure that the merger is in the interest of the bank's owners and therefore results in a reduction of agency related costs. Firstly, it is likely that cooperative members (or their representatives) will only give their mandatory approval (§43a GenG; §84 UmwG), if the merger does not lead to economical drawbacks for them. Secondly, the *Aufsichtsrat* will also only support a merger if it is "on behalf of shareholders [….]" (Dittmann et al., 2010). And finally, the management has also to be sure that their actions are in line with the Protection Scheme's

maxim in terms of sound business policy (§6 (1) SPS). The topics, management ownership and compensation that are found to be relevant in the context of the agency theory cannot be discussed due to the lack of publicly available information. It is only certain that according to GenG the board members have to be members of the respective cooperative bank. But, their possibility to accumulate voting power to pursue their own goals is limited by the democratic maxim (one member, one vote) of cooperative banks and the GenG (Novkovic, 2008). The fourth instrument in terms of an external market of corporate control does not exist for cooperative banks. But, it has to be considered that the BVR has a wide range of restructuring competences and therefore is able to trigger mergers e.g. between a failing cooperative bank and a healthier bank. Furthermore, Altunbas et al. (2001) conclude on the basis of a comparison of efficiency scores for German cooperative, savings and private banks, that there are no "agency problems for non-private commercial banks operating within the German banking market". The last topic, free cash flows, has a different importance in a cooperative context than e.g. for public listed companies: As mentioned, a merger between two cooperatives does in general not require paying cash for the shares of the targeted cooperation. Instead, its members receive shares of the bidder. In some cases it is possible that adjustments to the value of the shares require the compensation of members in terms of minor cash payments (§87 UmwG). See GenG and UmwG for more detailed descriptions and exceptions.

Although the previous hypothesis development is lacking information concerning the management compensation, it is expected that mergers lead to performance increases facilitated by a reduction of agency related costs.

(H1) Mergers lead to a positive change in financial performance facilitated by a reduction of agency costs.

This expectation does not exclude the possibility that mergers are simultaneously used to satisfy managements' self interests. But, it is still expected that a reduction of agency costs is measureable.

The second subordinated research question, **"Is it possible to increase the merged banks' financial performance by tapping into synergy effects?",** is approached with the presented synergy theory and its two components, operational and financial synergies.

The theory predicts that it is possible to benefit from operational synergies, which "can stem from combining operations of hitherto separate units (for example a joint sales force)" and the transfer of knowledge (Hellgren et al., 2011 based on Trautwein, 1990). Further, Hankir et al. (2011) describe the possibilities for "revenue increases, resulting from cross and/or up-selling (and) cost reductions due to efficiency gains". Therefore, it is expected that a merger will lead to an increased financial performance facilitated by tapping into operational synergies.

This hypothesis is also backed up by the structural factors. As mentioned, the operating performance is already identified as the cooperative banks' greatest weakness (Standard & Poor's, 2010). Therefore, it is likely that this topic will receive special attention during the merger process. But, despite this supporting argument, it must be considered that the estimated increase in efficiency might be hampered by lower possibilities to benefit from the merger partner's best practice approaches due to low performance differences between cooperative banks (Kontolaimou and Tsekouras, 2010). Nevertheless, it is still expected that an increased efficiency can be found.

The second part of the synergy theory predicts that it is also possible to benefit from financial synergies facilitated by an increase in company size (Trautwein, 1990). Thus, I expect that a decrease in cost of capital leads to an increase in the financial performance. A general problem with the analysis of cost of capital in the context of cooperative banks is described in Koetter (2008): He includes the costs of borrowed funds as a major input factor for banks. But, as previously mentioned, it has to be considered that it is not possible to "distinguish different sources of funding, such as customer deposits, bonds or interbank market funds, because

interest expenses per liability category are unavailable". Due to the lack of further public data, this thesis will limit the consideration of financial synergies to Koetter's (2008) approach.

The possibility to reduce these costs of borrowed funds has to be seen in relation to the current costs that are for cooperative banks already lower than for commercial banks (Kontolaimou and Tsekouras, 2010). Altunbas et al. (2001) explain this circumstance by referring to the customer structure of "retail and small business customers that are perhaps less interest-rate sensitive than the depositors at commercial banks which are more corporate and wholesale oriented".

Trautwein's (1990) also describes the possibility to benefit from financial synergies "by lowering the systematic risk of a company's investment portfolio by investing in unrelated businesses". But, this assumption lacks conclusive empirical support (Ramaseamy, 1997; Amihud et al., 2002). Therefore, this approach is not investigated further. Even if this lack of empirical support would be ignored, the changes in systematic risk cannot be investigated further, due to the cooperative context. To measure changes in systematic risk of a company's investment portfolio (by investing in unrelated business) it is e.g. common for international bank mergers to measure the covariance of the security for a period before and after the merger with "bank return indexes". It is expected "that a cross-border merger would reduce the acquirer's beta with respect to the home bank portfolio and raise its beta with respect to the [….] host bank portfolio […]" (Amihud et al., 2002). But, this approach cannot be used for cooperative bank mergers, because they are non-listed, they do not merge internationally and they only merger with each other (Drost and Köhler, 2008; Koetter, 2008; Paul and Uhde, 2010). The academic literature provides possibilities to analyze changing betas for non-listed companies like the "comparable company analysis" (Bowman and Bush, 2006), but these companies are not members of a mutual trust arrangement, which might explain why this topic is not included in cooperative research (Koetter, 2008; Bauer et al., 2009).

In conclusion, it is expected that M&As lead to an increase in financial performance according to the synergy theory. This expectation is supported by the described possibility to increase current levels of operating performance. Furthermore, the costs of borrowed funds are also expected to decrease, due to scale economies. The expected increase in financial performance

might be affected by low performance differences between cooperative banks and the already lower costs of borrowed funds. The resulting hypothesis is:

(H2) Mergers lead to a positive change in financial performance facilitated by tapping into synergy effects.

The third subordinated research question, **"Is it possible to increase the merged banks' financial performance by extracting more value from the customers?",** is approached on the basis of the market power theory.

Market power is defined as "the ability of a market participant or group of participants (persons, firms, partnerships, or others) to influence price, quality, and the nature of the product in the marketplace" (Shepherd, 1970 quoted in Montgomery, 1985). It is explained that mergers lead to a reduction of firms and therefore to an increase in market power for the remaining companies (Carpenter et al., 2009). This facilitates higher market prices and therefore "a wealth transfer from customers to the owners" of the companies (Hankir et al., 2011; Hellgren et al., 2011 based on Trautwein, 1990). Therefore, it can be expected that from a theoretical perspective it is indeed possible to extract more value from customers. Structural arguments supporting this hypothesis are based on the *Regionalprinzip* and the low level of European integration in the banking market: Cooperative banks can benefit from high interest and commission revenues, because their local market is in general protected from cooperative competition by the *Regionalprinzip* (Altunbas et al., 2001, Norden and Weber, 2010). Furthermore, other European banks still hesitate to increase the level of competition further, despite the EU initiatives for a more integrated banking market (Paul and Uhde, 2010; Norden and Weber, 2010). But, there are also structural arguments that might hamper the possibilities of extracting more value from customers: As described under the topic financial synergies, the costs of borrowed funds are already lower for cooperative banks than for commercial banks. Therefore, the chance to reduce them further is expected to be limited. Commercial banks are also strong competitors and as Standard & Poor's (2010) point out, the cooperative banks face

"mounting competition from low-cost niche players" [….], which compete on the cooperatives' core business activities like retail deposits and mortgage loans. Nevertheless, I expect that it is still possible to increase the amount of extracted customer value. The resulting hypothesis is:

(H3) Mergers lead to a positive change in financial performance facilitated by extracting more value from the customers.

The fourth and final subordinated research question, **"Does higher strategic similarity between cooperative merging partners lead to increased performance?",** is approached on the basis of the concept of strategic similarity. Based on this concept, I expect that having shared strategic characteristics such as operational efficiency, emphasis on marketing activity, client mix and earnings diversification strategy results in superior financial performance. It is explained that strategically similar companies are in the position to fully exploit synergies and avoid conflicts that are connected with merging dissimilar strategies such as changes in the management's dominant logic (Ramaswamy, 1997; Covin et al., 2004; Altunbas and Marques, 2008).

(H4) A higher strategic similarity between merging partners leads to increased financial performance.

3.2 Summary

Four hypotheses are developed on the basis of theoretical and cooperative aspects. It is expected that mergers lead to improvements in the financial performance facilitated by reductions of agency related costs (H1), synergies (H2) and an increase in the amount of extracted customer value (H3). Furthermore, it is also expected that mergers between banks that share similar strategic characteristics lead to higher financial performance changes than mergers between banks that are strategically dissimilar (H4).

4 Methodology and Data

The following subchapters include the description of the different variables that are connected with the four previously developed hypotheses and the testing methods including sign-test, t-test and regression analysis. Further, the thesis' underlying empirical data is described including the pre- and post-merger values of the merging banks and a benchmark of banks that have not been involved in M&A activities. All values presented in the following subchapters such as profits or expenditures exclude taxes and extraordinary items.

4.1 Methodology

The testing of the formulated hypotheses requires the usage of two different approaches: The first approach, dealing with H1-H3, aims to compare different pre- and post-merger efficiency ratios. Afterwards, a regression analysis is used to determine their impact on performance indicators (ROE and ROA). The second approach, testing H4, requires the measurement of the pre-merger strategic similarities of bidders and targets and again a regression analysis to determine the influence of the similarities on the expected performance change.

The first approach aims to indentify performance changes, thus it is necessary to compare pre- and post-merger values. They are either presented in terms of separated two-year average values for target and bidder (pre-merger) or as combined two-year average values (Ghosh and Jain, 2000; Campa and Hernando, 2006). The separated values are calculated as follows:

$$X_{k,i}PRE = \frac{(X_{k,i}PRE2 + X_{k,i}PRE1)}{2} \qquad (1)$$

$X_{k,i}PRE$ is the pre-merger score for the *k*th variable for the *i*th merger, calculated as average of the *k*th variable two years (PRE2) and one year (PRE1) before the merger. As mentioned, the values are presented separately for targets and bidders (Campa and Hernando, 2006). The combined values are calculated as follows:

$$X_{k,i}PRE2_{combined} = \frac{(x_{T,k,i}PRE2 + x_{B,k,i}PRE2)}{(y_{T,k,i}PRE2 + y_{B,k,i}PRE2)} \qquad (2)$$

$X_{k,i}PRE2_{combined}$ is the pre-merger score for the *k*th variable for the *i*th merger, calculated as the ratio of the sum of the target's (T) and bidder's (B) *k*th variable's numerator (x) and sum of the target's and bidder's *k*th variable's denominator (y) two years before the merger (Ghosh and Jain, 2000). The same applies to the calculation of the pre-merger score one year before the merger. Both combined values are used to calculate a two-year average on the basis of the first formula.

The two-year average post-merger values of the merged cooperative banks are also calculated on the basis of the first formula.

The change is defined as the difference between the banks' two-year average post-merger score for the *k*th variable and the pro-forma combined two-year average pre-merger score for the *k*th variable (Ghosh and Jain, 2000; Altunbas and Marques, 2008). The definition of the variables is stated after the description of the benchmark and the regression analysis that are also used in the context of testing H1-H3.

The comparison of the pre- and post-merger values is approached on the basis of testing differences in terms of medians and means. The first test, a sign-test for matched pairs, is used to test the impact of the bank merger on the various ratios, or in other words, to test whether the median of the differences of pre- and post-merger values is zero (Cornett et al., 2006). Non-parametric analyses are not affected by outliers and do not rely on the nearly normal condition. Afterwards, a paired t-test (two-tailed) is conducted to test for differences between pre- and post-merger means (Cornett et al., 2006; Bauer et al., 2009).

It is common in M&A research to adjust pre- and post-merger values for economic fluctuations and events that might also have an impact on the performance results of the merging banks (Figure 1). This benchmark is created on the basis of mean values of a group of 51 randomly selected German cooperative banks that are not involved in M&A activities (Campa and Hernando, 2006; Davidson et al., 2009). See chapter 4.2 for further information concerning this benchmark.

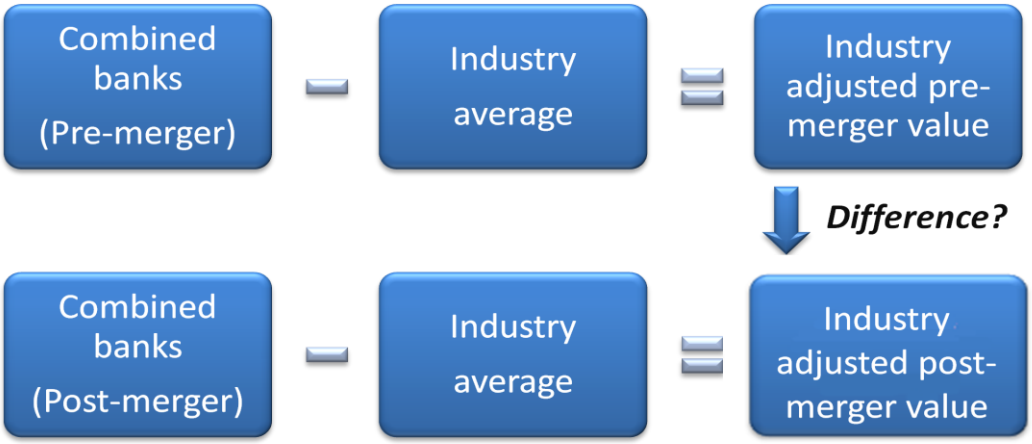

Figure 1: Methodology, based on Akben-Selcuk and Altiok-Yilmaz (2011)

The following regression analysis is used to analyze how changes in the agency, synergy and market power ratios influence the bank's overall financial performance, which is measured as the difference between the merged banks' two-year average ROE after the acquisition and the pro-forma combined ROE two-years before the acquisition (ΔROE). The regression analysis is repeated with the return on total assets (ΔROA) as dependent variable, which is also frequently used in M&A research as indicator of overall profitability (Cornett et al., 2006; Altunbas and Marques, 2008; Davidson et al., 2009):

$$\Delta ROE\ (\Delta ROA) = \beta_0 + \beta_1 x_{\Delta DIV/TI} + \beta_2 x_{\Delta DIV/ME} + \beta_3 x_{\Delta PE/TA} + \beta_4 x_{\Delta OAE/TA} + \beta_5 x_{\Delta FA/TA} + \beta_6 x_{\Delta TA/E} + \beta_7 x_{\Delta R/E} + \beta_8 x_{\Delta IE/IBL} + \beta_9 x_{\Delta II/TA} + \beta_{10} x_{\Delta IE/TA} + \beta_{11} x_{\Delta OOI/TA} + \beta_{12} x_{\Delta OOE/TA} \quad (3)$$

The next paragraphs include the description of the different variables that are used in the previously explained testing methods (Table 1). Afterwards, the methodological approach concerning the fourth hypothesis is explained.

According to H1 it is expected that a reduction of agency costs can be measured. But, as previously explained, cooperative members cannot benefit from rising share prices, because the *Geschäftsanteile* are not traded on exchanges, but given back to the cooperative bank in exchange for the original paid amount of money. Therefore, the value of a membership is not increasing, which makes it impossible to use price reactions as proxy. Instead, a dividend payout ratio is used as an indicator for a reduction in agency costs. This ratio (DIV/TI) uses the overall amount of dividend payments in relation to the bank's total income (Aggarwal and Kyaw, 2010). I expected that "dividends [….] help control the agency costs [….] if there are conflicts of interests between managers and stockholders". Effective managers are expected to provide higher dividends because they are not wasting the income on "organization inefficiencies" (Jensen, 1986).

A second possibility to measure changes in dividend payments is the relation between the paid dividends and the members' capital (DIV/ME). This second possibility is comparable with the measurement of the "dividend yield" of a listed company, which "is the dividend per share divided by the closing price per share" (Gaver and Gaver, 1993). As described, cooperative members cannot benefit from rising share prices.

Although, Jensen (1986) also describes the possibility to use leverage as proxy for agency cost, the indicator is frequently used in a different context in M&A research: Ramaswamy (1997), Azofra et al. (2008), Bauer et al. (2009) and Davidson et al. (2009) use it as proxy for the banks' capital adequacy. I will follow their approach and consider this variable in the context of H4 "as an indicator of a bank's risk propensity" (Ramaswamy, 1997). This circumstance is also mentioned by Altunbas and Marques (2008).

Variable	Symbol	Formula	Used in / Adapted from
Dividend payout	DIV/TI	Total Euro amount of dividends to total income	Gaver and Gaver (1993), Aggarwal and Kyaw (2010)
Dividend yield	DIV/ME	Total Euro amount of dividends to members' capital	Gaver and Gaver (1993)
Personnel cost intensity	PE/TA	Personnel expenses to total assets	Cornett et al. (2006), Davidson et al. (2009)
Administrative cost intensity	OAE/TA	Other administrative expenses to total assets	Cornett et al. (2006), Davidson et al. (2009)
Fixed assets	FA/TA	Fixed assets to total assets	Cornett et al. (2006)
Total assets	TA/E	Total assets to employees	Cornett et al. (2006)
Employee revenue	R/E	Revenue per employee	Cornett et al. (2006)
Capital costs	IE/IBL	Interest expenses to interest-bearing liabilities	Koetter (2008)
Interest income	II/TA	Interest income to total assets	Cornett et al. (2006), Davidson et al. (2009)
Interest expenses	IE/TA	Interest expenses to total assets	Cornett et al. (2006), Davidson et al. (2009)
Other operating income	OOI/TA	Other operating income to total assets	Altunbas and Marques (2008), Davidson et al. (2009)
Other operating expenses	OOE/TA	Other operating expenses to total assets	Altunbas and Marques (2008), Davidson et al. (2009)

Table 1: Performance ratios (H1 - H3)

According to the first hypothesis, I expected that the amount of dividend is increasing in relation to the total income and in relation to the members' capital.

The second hypothesis predicts that mergers lead to performance increase facilitated by synergy effects. Due to the limitations of annual statements it will not be possible to calculate operational synergies on the branch level as described in Rupert and Sherman (2006). Instead this thesis follows the approach of Cornett et al. (2006) and Davidson et al. (2009) and uses ratios that cover different operational/financial synergies at an institutional level.

In line with the theoretical descriptions of Hankir et al. (2011) in terms of revenue increase and cost reduction possibilities, I include personnel expenses to total assets (PE/TA) and other administrative expenses to total assets (OAE/TA). Cornett et al. (2006) use in addition factors including fixed assets and the numbers of branches. In acknowledgement of these different measurements, I use in addition to the presented ratios also fixed assets to total assets (FA/TA), total assets to employees (TA/E) and revenue per employee (R/E) ratios. Due to the lack of detailed branch data, it is not possible to include a branches to total assets ratio like in Cornett et al. (2006).

The possibilities to measure financial synergies are limited, due to the previously mentioned constraints concerning the interest expenses (Koetter, 2008). Therefore, the analysis will be limited to the interest expenses/total interest-bearing liabilities ratio (IE/IBL), as a major indicator for the costs of borrowed funds.

The operating efficiency indicators enable the detection of expected cost reduction and profit enhancement possibilities (Cornett et al., 2006; Koetter, 2008) facilitated by operational synergies in terms of combining the sales force, knowledge transfer, cross and/ or up-selling and efficiency gains (Hankir et al., 2011; Hellgren et al., 2011 based on Trautwein, 1990). It is expected that the above described ratios are reflecting a performance enhancement. In addition it is expected that the total assets to employees and revenue per employee ratios are showing that the amount of generated revenue and the handled asset per employee increases. Furthermore, the ratio fixed assets to total assets is expected to decrease, which is interpretable as a cost saving related to the closure of branches (Cornett et al., 2006). As mentioned above, data concerning the actual amount of branches is not available.

Financial synergies described by Hellgren et al. (2011) based on Trautwein (1990) in terms of access to cheaper capital are facilitated by increasing bank size and are measured in terms of an interest expenses indicator. It is estimated that interest costs are decreasing.

According to H3, I expect that a merger leads to increases in the amount of extracted customer value. This value will be measured in terms of four ratios, covering income and expenses from fee- and interest-based products (II/TA, IE/TA, OOI/TA, OOE/TA).

Once again it should be remarked on the fact that interest expenses and income are not only including customer interest payments, but also interest payments from bonds and interbank market funds (Koetter, 2008). On the basis of the described ratios it is expected that it is possible to increase the income and decrease expenses in relation to assets.

After explaining the methodology and the variables that are used for H1 - H3, this subchapter continues with the methods that are used to analyze H4. This fourth hypothesis predicts that **a higher strategic similarity between merging partners leads to increased performance.**

In a first step, it is necessary to measure the strategic similarity of the merging banks (pre-merger). I follow Ramaswamy (1997) and Altunbas and Marques (2008) and use the following formula:

$$SI_{k,i} = \sqrt{(X_{T,k,i}PRE - X_{B,k,i}PRE)^2} \qquad (4)$$

$SI_{k,i}$ is the pre-merger similarity index for the *k*th variable for the *i*th merger. $X_{T,k,i}PRE$ and $X_{B,k,i}PRE$ are the scores of the bidder (B) and the target bank (T) for the *k*th variable. The calculated differences between various strategic variables, which are described in the following paragraphs, are used as explanatory or predictor variables. Again, they are regressed against the change in return on equity (ΔROE). The regression analysis is repeated with the return on total assets (ΔROA) as dependent variable (Davidson et al., 2009):

$$\Delta ROE\ (\Delta ROA) = \beta_0 + \beta_1 x_{COST/INC} + \beta_2 x_{BADL/INT\_INC} + \beta_3 x_{CA/TA} + \beta_4 x_{OOR/TA} + \beta_5 x_{RSIZE} + \beta_6 x_{PREROE\_B} + \beta_7 x_{TIME} \qquad (5)$$

The described regression model includes four variables that are indentified in the M&A literature as strategic variables and three control variables. The COST/INC variable (total costs to income) shows the banks' "emphasis on minimizing costs by relating expenditures to revenues". "As a result of economies of scale and scope stemming from the combination of similar skills, a firm competing on the basis of low cost and operating efficiency is expected to benefit from merging with another organization characterized by a set of similar competencies" (Altunbas and Marques, 2008). The BADL/INT_INC (loan loss provisions to net interest revenues) ratio allows drawbacks concerning the banks' credit quality and the CA/TA ratio (core capital to loans) is used to examine the banks' risk propensity: "Conservative banks ensure that they have a large cushion between the volume of capital and the volume of loans outstanding, and aggressive banks push their lending volume to the maximum limit that is feasible within the general guidelines" (Ramaswamy, 1997; Altunbas and Marques, 2008). The fourth variable OOR/TA (other operating revenues to total assets) is used to characterize the banks' possibility to generate "other sources of income apart from the traditional net interest revenues" (Altunbas and Marques, 2008).

Variables	Symbol	Formula	Used in / Adapted from
Efficiency	COST/INC	Total costs to income	Altunbas and Marques (2008)
Credit risk	BADL/INT_INC	Loan loss provisions to net interest revenues	Altunbas and Marques (2008)
Capitalization	CA/TA	Core capital to loans	Ramaswamy (1997)
Diversity of earnings	OOR/TA	Other operating revenues to total assets	Altunbas and Marques (2008)
Relative size	RSIZE	Total assets of target to total assets of bidder	Altunbas and Marques (2008)
Pre-merger performance	PREROE_B	Return on equity of the bidder (pre-merger)	Ramaswamy (1997)
Time dummy	TIME	Year of merger (0 = 2007, 1 = 2008)	Altunbas and Marques (2008)

Table 2: Strategic variables (H4)

Furthermore, the following three control variables are used in the regression model: relative size, pre-merger performance and TIME. As described in the second chapter of this thesis, the effect of the relative size (total assets of target to total assets of bidder) of the merging partners might influence the complexity of the integration process and therefore also the expected performance change. The second control variable considers the pre-merger return on equity of the bidder. It is expected that well performing banks have fewer possibilities to increase their performance than their low performing counterparts (Ramaswamy, 1997). Although, the thesis' underlying data only includes mergers in the years 2007 and 2008, a TIME dummy is included to cope with possible general economic effects.

Other strategic variables such as the emphasis on marketing activity, market coverage or the client mix as presented in Ramaswamy (1997) cannot be measured on the basis of the available cooperative balance sheet data.

4.2 Data

In a first step, a timeframe is set in which mergers within the cooperative sector in Germany are investigated. If two years post-merger and two years pre-merger around the event year are used, the years 2007 and 2008 are the most current years where annual statements can be considered. In M&A research that is based on accounting data it is quite common to use a period of two years around the merger event, although some researchers argue that it

necessary to include longer timeframes up to eleven years to cope with long-lasting performance changes (Cornett et al., 2006; Altunbas and Marques, 2008; Koetter, 2008). But, due to the possibility that other performance influencing events occur during such a long period, the two year period around the merger will be used in the context of this thesis. The year of the merger, defined as the year where the accounting records merge as suggested by Bauer et al. (2009), will not be included in the analysis as it is also common in M&A research (Cornett et al., 2006; Beccalli and Frantz, 2009).

The BVR reports for the year 2007 twenty-three mergers and for 2008 thirty-five mergers between primary cooperative banks (BVR, 2011b). The identification of these mergers is problematic, due to the absence of a public database. The BVR is not willing to give access to this information as several of the subordinated cooperative central organizations. Only one of these subordinated central organizations has provided information about three mergers in one limited geographic area in Germany. The remaining mergers are identified on the basis of a database that is originally used to update banking software on an annual basis. The different annual versions of the databank are combined in one database to detect changing bank names or bank codes as an indicator for a merger. Afterwards, the identified potential mergers are double-checked with the official annual statements of the respective banks. This approach enabled the identification of the remaining mergers. As described in the introduction of this thesis the annual statements have only lately been published through the governmental service www.ebundesanzeiger.de, which allows free access to the annual financial statements data (years 2006-2010).

If a bank is involved in multiple mergers during the timeframe it is excluded from the data set of merging banks to avoid possible bias (Cornett et al., 2006). This precaution results in an elimination of twelve mergers. Further mergers (six) are excluded, because of other circumstances that might also bias the outcome like an additional change of the bank's legal form or the founding/liquidation of a subsidiary. Another reason for the exclusion of data would be a merger with a bank outside the cooperative banking sector. But, as already mentioned, it is uncommon that cooperative banks merge with banks outside the cooperative banking sector, which is also reflected by the data. Furthermore, all ratios are adjusted for outliers and extreme

outliers. The first are defined as values that fall below Q1 - 1.5 x IQR or above Q3 + 1.5 x IQR and the second as values that fall below Q1 - 3 x IQR or above Q3 + 3 x IQR. The unchanged values are described in Table A1 (Brant, 1990).

Further, the annual numbers of the merging banks are also adjusted by the mean performance changes of the industry, to cope with industry wide effects in the German cooperative banking sector (Campa and Hernando, 2006; Davidson et al. 2009). Due to the fact that the cooperative banking sector is recognized as a cohesive economic group of legally independent institutions with a common risk profile, the benchmark is based on a group of fifty-one randomly selected German cooperative banks that are not involved in M&A activities in the years 2005 till 2010 according to their annual statements (Table 3). The terms benchmark and industry are used interchangeably in the context of this thesis.

The data is obtained from a private source and manually cross-checked with the annual statements provided by www.ebundesanzeiger.de. If a bank is excluded on the basis of the described reason it is replaced by another bank that is also randomly selected.

Variable	2005	2006	2007	2008	2009	2010
ROE	0.10210	0.11527	0.06994	0.05191	0.10416	0.11645
ROA	0.00594	0.00713	0.00437	0.00306	0.00632	0.00751
DIV/TI	0.01328	0.01210	0.01256	0.01187	0.01191	0.01144
DIV/ME	0.05656	0.05576	0.05635	0.05551	0.05449	0.05042
PE/TA	0.01451	0.01484	0.01347	0.01261	0.01302	0.01217
OAE/TA	0.00761	0.00733	0.00718	0.00619	0.00639	0.00646
FA/TA	0.01719	0.01685	0.01630	0.01505	0.01446	0.01449
TA/E	4,346,899	4,439,226	4,654,936	5,094,300	5,358,215	5,519,646
R/E	25,804	31,638	20,344	15,604	33,859	41,454
IE/IBL	0.02324	0.02346	0.02606	0.02779	0.02303	0.01890
II/TA	0.04498	0.04382	0.04527	0.04497	0.04326	0.04023
IE/TA	0.02189	0.02201	0.02443	0.02615	0.02163	0.01768
OOI/TA	0.00880	0.01423	0.00941	0.00840	0.00808	0.00865
OOE/TA	0.00111	0.00110	0.00096	0.00111	0.00112	0.00179

Table 3: Industry mean values (2005 - 2010)

Furthermore, it would be possible to use the cumulative data of all cooperative banks, which is provided by the Deutsche Bundesbank. But, due to the fact that this data also includes the numbers of the merging institutes, this approach is turned down to avoid possible bias. The

Bundesbank data also does not include any numbers of the paid dividends, which will be used to measure agency related aspects. A local benchmark as presented in Koetter (2008), which includes all other banks in the municipality of the merging banks, cannot be created due to missing data.

4.3 Summary

The previous subchapters describe the different approaches that are used to test the four hypotheses. Testing H1 till H3 requires the comparison of pre- and post-merger performance data, which is approached on the basis of sign-tests, t-tests and a regression analyses. The last hypothesis, the impact of strategic similarities on performance changes (H4), is also analyzed in terms of a regression analysis. Furthermore, the data collection process and the thesis' underlying data are described. The presentation of the descriptive statistics follows in the subsequent chapter.

5 Empirical Results

This chapter includes detailed description of the thesis' underlying data and the results of the described testing methods. The first subchapter focuses on H1 - H3 and the second on H4. Afterwards, the findings are discussed and put into perspective. Possible limitations concerning the findings are mentioned in the fourth subchapter.

5.1 Empirical Results (H1 - H3)

Table 4 includes the descriptive outlier adjusted pre-merger data for targets (T) and pre- and post-merger data for the bidders (B). According to the comparison of mean pre-merger profitability values (ROE T 0.08276, B 0.09341, ROA T 0.00530, B 0.00687), bidders are more profitable than the targets, but pay fewer dividends to their members in relation to their total income (DIV/TI T 0.01222, B 0.01208). The bidders' dividend to members' equity ratio is higher (DIV/ME T 0.05087, B 0.05433). Bidders are on average more cost effective in the areas of personnel (PE/TA T 0.01703, B 0.01596) and administrative costs (OAE/TA T 0.00834, B 0.00752). They have less fixed assets in relation to total assets (FA/TA T 0.01690, B 0.01684) and are able to administrate more assets per employee (TA/E T 3,968,200, B 4,087,240). Furthermore, bidders also generate more revenue per employee (R/E T 19,641, B 28,074), but their interest expenses in relation to interest-bearing liabilities are higher (IE/IBL T 0.02337, B 0.02355). Targeted banks' interest/other operating incomes (II/TA T 0.04567, B 0.04552, OOI/TA T 0.01247, B 0.01233) are higher and their interest expenses are lower in relation to total assets (IE/TA T 0.02159, B 0.02200). The other operating expenditures are nearly equal (OOE/TA T 0.00112, B 0.00114). See Table A1 for outlier unadjusted values.

Target								
Variable	**N_Valid**	**Minimum**	**Q1**	**Median**	**Q3**	**Maximum**	**Std. Dev.**	**Mean**
ROE	39	-0.03473	0.05007	0.07637	0.11227	0.20056	0.04689	0.08276
ROA	39	-0.00272	0.00279	0.00492	0.00733	0.01321	0.00338	0.00530
DIV/TI	39	0.00000	0.00757	0.01217	0.01624	0.02288	0.00533	0.01222
DIV/ME	37	0.02853	0.04538	0.04966	0.05767	0.06985	0.00893	0.05087
PE/TA	36	0.01241	0.01578	0.01704	0.01813	0.02174	0.00204	0.01703
OAE/TA	38	0.00603	0.00755	0.00805	0.00939	0.01131	0.00128	0.00834
FA/TA	38	0.00657	0.01075	0.01526	0.02092	0.03960	0.00790	0.01690
TA/E	36	2,732,997	3,257,336	3,978,844	4,502,278	5,884,986	786,053	3,968,200
R/E	36	-8,358	13,099	18,726	25,605	44,797	12,081	19,641
IE/IBL	36	0.01991	0.02218	0.02329	0.02417	0.02727	0.00167	0.02337
II/TA	39	0.03827	0.04354	0.04534	0.04818	0.05247	0.00337	0.04567
IE/TA	38	0.01740	0.02047	0.02160	0.02265	0.02571	0.00182	0.02159
OOI/TA	39	0.00669	0.01016	0.01301	0.01450	0.01904	0.00308	0.01247
OOE/TA	40	0.00046	0.00088	0.00106	0.00137	0.00192	0.00034	0.00112

Bidder pre-merger								
Variable	**N_Valid**	**Minimum**	**Q1**	**Median**	**Q3**	**Maximum**	**Std. Dev.**	**Mean**
ROE	39	0.01380	0.06903	0.09787	0.12096	0.17285	0.03794	0.09341
ROA	40	0.00062	0.00402	0.00631	0.00967	0.01428	0.00361	0.00687
DIV/TI	39	0.00293	0.00859	0.01152	0.01514	0.02314	0.00434	0.01208
DIV/ME	36	0.04057	0.04960	0.05470	0.05915	0.06935	0.00600	0.05433
PE/TA	37	0.01150	0.01448	0.01607	0.01735	0.01988	0.00190	0.01596
OAE/TA	39	0.00547	0.00689	0.00756	0.00821	0.00912	0.00102	0.00752
FA/TA	39	0.00548	0.01082	0.01487	0.02115	0.03597	0.00781	0.01684
TA/E	38	2,830,053	3,683,822	410,6053	4,445,976	5,495,923	605,812	4,087,240
R/E	40	1,740	17,188	26,701	39,068	56,455	14,182	28,074
IE/IBL	35	0.02022	0.02278	0.02347	0.02435	0.02663	0.00138	0.02355
II/TA	39	0.04114	0.04305	0.04537	0.04713	0.05268	0.00278	0.04552
IE/TA	36	0.01878	0.02119	0.02206	0.02279	0.02467	0.00134	0.02200
OOI/TA	38	0.00787	0.01083	0.01216	0.01343	0.01722	0.00224	0.01233
OOE/TA	39	0.00045	0.00084	0.00114	0.00142	0.00189	0.00037	0.00114

Bidder post-merger								
Variable	**N_Valid**	**Minimum**	**Q1**	**Median**	**Q3**	**Maximum**	**Std. Dev.**	**Mean**
ROE	38	0.03154	0.06529	0.07675	0.10371	0.16035	0.02907	0.08266
ROA	39	0.00205	0.00406	0.00613	0.00728	0.01195	0.00232	0.00585
DIV/TI	40	0.00241	0.00765	0.01037	0.01428	0.02223	0.00462	0.01107
DIV/ME	38	0.02363	0.04332	0.05267	0.05931	0.08086	0.01219	0.05034
PE/TA	39	0.01079	0.01312	0.01497	0.01560	0.01864	0.00173	0.01464
OAE/TA	40	0.00460	0.00596	0.00661	0.00754	0.00927	0.00123	0.00673
FA/TA	39	0.00779	0.01034	0.01387	0.01912	0.02934	0.00559	0.01501
TA/E	39	2,978,849	4,138,909	4,701,758	4,959,375	5,984,242	607,350	4,606,769
R/E	37	10,382	16,993	26,816	31,350	50,768	10,114	25,776
IE/IBL	40	0.01461	0.01884	0.02031	0.02411	0.02801	0.00332	0.02106
II/TA	40	0.03560	0.03958	0.04362	0.04592	0.05038	0.00360	0.04298
IE/TA	40	0.01401	0.01751	0.01883	0.02270	0.02604	0.00307	0.01959
OOI/TA	40	0.00639	0.00825	0.00932	0.01082	0.01330	0.00182	0.00948
OOE/TA	39	0.00067	0.00092	0.00136	0.00180	0.00265	0.00054	0.00140

Table 4: Descriptive statistics (H1 - H3), outlier adjusted

In conclusion, target banks are on average less profitable (app. 1% ROE), although they are able to generate relatively more interest and operating income than bidders. The revenue per employee for targets is only two-thirds of the bidders' value (R/E T 19,641, B 28,074). This can e.g. be explained on the basis of higher personnel and administrative expenditures. The comparison of the pre- and post-merger data follows after the presentation of the industry adjusted values. See chapter 4.2 for information concerning the industry benchmark.

Table 5 shows that banks that are involved in M&A activity are performing lower than the industry average measured in terms of mean ROE (T -0.02592, B -0.01527). ROA performance levels for targets are in line with this description, but the bidders' values are just above industry average (T -0.00123, B 0.00034). Targets and bidders have lower DIV/TI (T -0.00026, B -0.00040) and DIV/ME (T -0.00529, B -0.00183) ratios. Furthermore, they are less cost effective (PE/TA T 0.00236, B 0.00129, OAE/TA T 0.00087, B 0.00005), but have less fixed assets to total assets (FA/TA T -0.00012, B -0.00019). Merging banks administrate less total assets in relation to the number of employees (TA/E T -424,862, B -305,823) and generate less revenue per employee (R/E T -9,080, B -647). Their interest expenditures to interest-bearing liabilities are also higher than the benchmark (IE/IBL T 0.00002, B 0.00020). Merging banks have higher interest income ratios (II/TA T 0.00126, B 0.00112) and higher OOI/TA (T 0.00096, B 0.00081) in comparison to the benchmark. Targets' mean interest expenditures are lower and the bidders are relatively higher (IE/TA T -0.00035, B 0.00006). Additionally, the merging partners have higher other operating expenditures (OOE/TA T 0.00001, B 0.00003).

Target								
Variable	**N_Valid**	**Minimum**	**Q1**	**Median**	**Q3**	**Maximum**	**Std. Dev.**	**Mean**
ROE	39	-0.14341	-0.05862	-0.03231	0.00359	0.09188	0.04689	-0.02592
ROA	39	-0.00925	-0.00374	-0.00161	0.00079	0.00668	0.00338	-0.00123
DIV/TI	39	-0.01269	-0.00512	-0.00030	0.00390	0.01055	0.00536	-0.00026
DIV/ME	37	-0.02763	-0.01078	-0.00650	0.00151	0.01369	0.00893	-0.00529
PE/TA	36	-0.00226	0.00111	0.00236	0.00345	0.00707	0.00204	0.00236
OAE/TA	38	-0.00144	0.00008	0.00059	0.00192	0.00384	0.00128	0.00087
FA/TA	38	-0.01045	-0.00627	-0.00176	0.00390	0.02258	0.00790	-0.00012
TA/E	36	-1,660,065	-1,135,727	-414,218	109,215	1,491,924	786,053	-424,862
R/E	36	-37,080	-15,622	-9,995	-3,116	16,076	12,081	-9,080
IE/IBL	36	-0.00343	-0.00117	-0.00006	0.00082	0.00392	0.00167	0.00002
II/TA	39	-0.00613	-0.00086	0.00094	0.00378	0.00807	0.00337	0.00126
IE/TA	38	-0.00455	-0.00148	-0.00035	0.00071	0.00377	0.00182	-0.00035
OOI/TA	39	-0.00482	-0.00136	0.00150	0.00298	0.00752	0.00308	0.00096
OOE/TA	40	-0.00064	-0.00022	-0.00004	0.00027	0.00081	0.00034	0.00001

Bidder pre-merger								
Variable	**N_Valid**	**Minimum**	**Q1**	**Median**	**Q3**	**Maximum**	**Std. Dev.**	**Mean**
ROE	39	-0.09488	-0.03965	-0.01081	0.01228	0.06417	0.03794	-0.01527
ROA	40	-0.00591	-0.00251	-0.00022	0.00314	0.00775	0.00361	0.00034
DIV/TI	39	-0.00976	-0.00374	-0.00082	0.00252	0.01045	0.00431	-0.00040
DIV/ME	36	-0.01559	-0.00656	-0.00146	0.00299	0.01319	0.00600	-0.00183
PE/TA	37	-0.00317	-0.00019	0.00140	0.00268	0.00520	0.00190	0.00129
OAE/TA	39	-0.00200	-0.00057	0.00009	0.00074	0.00165	0.00102	0.00005
FA/TA	39	-0.01155	-0.00620	-0.00215	0.00413	0.01895	0.00781	-0.00019
TA/E	38	-1,563,009	-709,240	-287,009	52,913	1,102,861	605,812	-305,823
R/E	40	-26,981	-11,533	-2,020	10,347	27,734	14,182	-647
IE/IBL	35	-0.00313	-0.00057	0.00012	0.00100	0.00328	0.00138	0.00020
II/TA	39	-0.00326	-0.00135	0.00096	0.00273	0.00828	0.00278	0.00112
IE/TA	36	-0.00317	-0.00076	0.00011	0.00084	0.00272	0.00134	0.00006
OOI/TA	38	-0.00364	-0.00069	0.00065	0.00191	0.00571	0.00224	0.00081
OOE/TA	39	-0.00065	-0.00026	0.00004	0.00031	0.00078	0.00037	0.00003

Bidder post-merger								
Variable	**N_Valid**	**Minimum**	**Q1**	**Median**	**Q3**	**Maximum**	**Std. Dev.**	**Mean**
ROE	39	-0.07876	-0.02907	-0.01200	0.00406	0.05960	0.03146	-0.01217
ROA	40	-0.00486	-0.00165	-0.00016	0.00185	0.00666	0.00259	0.00002
DIV/TI	40	-0.00927	-0.00402	-0.00152	0.00244	0.01056	0.00462	-0.00069
DIV/ME	38	-0.03061	-0.01109	-0.00040	0.00468	0.02840	0.01224	-0.00312
PE/TA	39	-0.00181	0.00052	0.00222	0.00295	0.00582	0.00174	0.00196
OAE/TA	40	-0.00183	-0.00040	0.00025	0.00121	0.00298	0.00124	0.00036
FA/TA	39	-0.00668	-0.00442	-0.00073	0.00464	0.01486	0.00558	0.00042
TA/E	38	-1,596,218	-1,087,512	-727,642	-379,761	592,711	546,877	-699,776
R/E	38	-27,275	-13,579	-4,954	3,631	37,169	13,598	-4,510
IE/IBL	40	-0.00661	-0.00328	-0.00159	-0.00033	0.00260	0.00211	-0.00168
II/TA	40	-0.00652	-0.00239	0.00046	0.00237	0.00864	0.00328	0.00029
IE/TA	40	-0.00580	-0.00315	-0.00169	-0.00043	0.00215	0.00197	-0.00176
OOI/TA	40	-0.00198	-0.00012	0.00102	0.00246	0.00494	0.00183	0.00116
OOE/TA	39	-0.00072	-0.00024	-0.00002	0.00035	0.00120	0.00044	0.00009

Table 5: Descriptive statistics (H1 - H3), outlier and industry adjusted

Therefore, merging banks are on average less ROE effective than their industry counterparts that are not involved in M&A activities. They are also less cost effective in terms of personnel and administrative costs and generate more interest and commission income than the benchmark. The following table includes the comparison of the industry and outlier adjusted pre- and post-merger data. Due to the fact that the focus is on the change and not on the underling pre- and post-merger values, the outliers are adjusted on the basis of the former.

Table 6 shows a general mean performance decline (ΔROE -0.00428, ΔROA -0.00036) in comparison to the industry and in contradiction to the expected performance increase. The agency costs measured in terms of mean ΔDIV/TI (-0.00041) and mean ΔDIV/ME (-0.00031) increase (H1). The expected benefits from synergy effects (H2) are not conclusive: personnel expenses are increasing (PE/TA 0.00002), other administrative expenses to total assets are decreasing (ΔOAE/TA -0.00008), fixed assets to total assets increases (ΔFA/TA 0.00058) and total assets to employees decreases (ΔTA/E -329,313) as revenue per employee (ΔR/E -4,072). Only the change in other administrative expenses is in line with H2 as the change in interest expenses to interest-bearing liabilities (ΔIE/IBL -0.00099).

The possibility to benefit from increased market power is supported by a reduction in interest expenses (ΔIE/TA -0.00094) and an increase in other operating income to total assets (ΔOOI/TA 0.00020). But the changes in interest income (ΔII/TA -0.00032) and other operating expenses (ΔOOE/TA 0.00002) are in contradiction to H3. See Table A2 for the industry unadjusted values.

Variable	N_Valid	Minimum	Q1	Median	Q3	Maximum	Std. Dev.	Mean
ΔROE	39	-0.09322	-0.03829	-0.00607	0.01665	0.09103	0.04178	-0.00428
ΔROA	39	-0.00612	-0.00206	-0.00031	0.00161	0.00681	0.00274	-0.00036
ΔDIV/TI	37	-0.00752	-0.00194	0.00016	0.00119	0.00555	0.00278	-0.00041
ΔDIV/ME	35	-0.02530	-0.00566	0.00181	0.00549	0.01432	0.00998	-0.00031
ΔPE/TA	39	-0.00265	-0.00095	0.00012	0.00085	0.00352	0.00132	0.00002
ΔOAE/TA	38	-0.00133	-0.00060	-0.00023	0.00045	0.00146	0.00066	-0.00008
ΔFA/TA	39	-0.00317	-0.00082	0.00049	0.00181	0.00529	0.00200	0.00058
ΔTA/E	39	-1,222,086	-578,770	-300,076	-134,230	200,082	303,447	-329,313
ΔR/E	38	-32,811	-13,617	-3,024	3,896	30,350	12,202	-4,072
ΔIE/IBL	40	-0.00411	-0.00200	-0.00071	0.00008	0.00162	0.00145	-0.00099
ΔII/TA	38	-0.00428	-0.00176	-0.00021	0.00108	0.00276	0.00186	-0.00032
ΔIE/TA	40	-0.00381	-0.00179	-0.00065	0.00003	0.00156	0.00136	-0.00094
ΔOOI/TA	40	-0.00327	-0.00091	0.00023	0.00128	0.00291	0.00146	0.00020
ΔOOE/TA	37	-0.00062	-0.00016	0.00002	0.00022	0.00073	0.00033	0.00002

Table 6: Descriptive change statistics (H1 - H3), outlier and industry adjusted

After dealing with the descriptive statistics, the changes are tested with sign- and t-tests. The sign-tests (t-tests) are used to analyze if the pre- and post-merger medians (means) are different. As described in Table 7, not all changes are significant like the change in overall performance measured in ROE and ROA. The sign-tests are based on industry adjusted values and the paired t-tests data is also outlier adjusted.

A significant change in agency costs (H1) is not detectable on the basis of median or mean changes in DIV/TI or DIV/ME. Synergy related changes (H2) are found on the basis of significant median and mean changes in total assets to employees (ΔTA/E) and interest expenses to interest bearing liabilities (ΔIE/IBL). R/E mean changes are also significant. The other H2 mean and median changes are not significantly different from zero. Changes in market power are supported by significant changes in median and mean interest expenses to total assets (ΔIE/TA). The remaining H3 mean and median changes are not significantly different from zero.

The significant decrease in total assets per employee (ΔTA/E -329,313) can be compared with a setback of 1 ½ -years in the development of the merging banks' TA/E efficiency in contrast to the industry. According to the mean industry values (Table 3), banks that are not involved in M&A activities in the years 2005 till 2010 have been able to increase the amount of administrated assets per employee by app. 230,000 Euros per year. The decrease in revenue per employee (ΔR/E -4,072) equals nearly 14.5% of the mean six-year R/E industry average. The savings from the decrease in capital costs (ΔIE/IBL -0.00099) is equal to app. 4.2 % of the mean six-year IE/IBL industry average. Interest expenditures (ΔIE/TA -0.00094) are decreasing app. 4.2% of the respective six-year benchmark mean.

	Paired T-Test		Wilcoxon Signed Rank Test	
	DF	T-Score	# Positive	Z-Score
ΔROE	38	0.64049	19	-0.51078
ΔROA	38	0.82042	17	-0.63175
ΔDIV/TI	36	0.90184	20	-0.44356
ΔDIV/ME	34	0.18399	23	-0.17474
ΔPE/TA	38	-0.11790	21	-0.24195
ΔOAE/TA	37	0.77660	16	-1.22317
ΔFA/TA	38	-1.81424	23	-1.26350
ΔTA/E	38	6.77732**	7	-4.40880**
ΔR/E	37	2.05718*	15	-1.39791
ΔIE/IBL	39	4.33236**	10	-3.57543**
ΔII/TA	37	1.04872	18	-1.16941
ΔIE/TA	39	4.39331**	10	-3.68296**
ΔOOI/TA	39	-0.86849	21	-0.81993
ΔOOE/TA	36	-0.47598	22	-0.52422

** Significant at the 0.01 level
* Significant at the 0.05 level

Table 7: Test results (t-tests, sign-tests, H1 - H3)

Before the results of the regression analysis are presented, the correlation among the different variables is examined. Due to the fact that some variables share the same numerator or denominator it is expected that correlation will be detected. The Pearson correlation coefficients, which measure the linear correlation, are described in Table 8.

The following variables are correlated: both dividend ratios (ΔDIV/TI, ΔDIV/ME), personnel expenses, assets to employees and other operating expenses (ΔPE/TA, ΔTA/E, ΔOOE/TA), fixed assets and revenue per employee (ΔFA/TA, ΔR/E), total assets to employees and interest income (ΔTA/E, ΔII/TA), interest expenses to interest-bearing liabilities to interest income, interest expenditure and other operating income (ΔIE/IBL, ΔII/TA, ΔIE/TA, ΔOOI/TA), interest income to total assets to interest expenditures (ΔII/IBL, ΔIE/TA) and interest expenditures to other operating income (ΔIE/TA, ΔOOI/TA).

	ΔDIV/TI	ΔDIV/ME	ΔPE/TA	ΔOAE/TA	ΔFA/TA	ΔTA/E	ΔR/E	ΔIE/IBL	ΔII/TA	ΔIE/TA	ΔOOI/TA	ΔOOE/TA
ΔDIV/TI	1											
ΔDIV/ME	0.79171**	1										
ΔPE/TA	0.02368	0.05540	1									
ΔOAE/TA	0.18388	0.15276	0.35117*	1								
ΔFA/TA	0.12848	0.22357	0.01441	0.15008	1							
ΔTA/E	0.01370	-0.03453	-0.43863**	-0.27184	-0.05263	1						
ΔR/E	0.23141	0.12699	0.00604	0.04887	0.40751*	0.21048	1					
ΔIE/IBL	-0.11563	0.09727	0.17762	-0.16798	-0.10777	0.10021	-0.11084	1				
ΔII/TA	0.06982	0.09279	0.14261	0.07363	0.14596	-0.38751*	-0.21378	0.37893*	1			
ΔIE/TA	-0.14005	0.09979	0.16522	-0.20961	-0.10574	0.11797	-0.12102	0.99641**	0.37595*	1		
ΔOOI/TA	-0.11056	0.01577	0.12967	0.00382	0.08648	-0.07067	0.17901	0.32144*	0.12698	0.32780*	1	
ΔOOE/TA	-0.02829	0.06158	0.06940	0.32199	0.09043	-0.14636	-0.08844	-0.12005	-0.30389	-0.13367	0.05362	1

** Correlation is significant at the 0.01 level (2-tailed)

* Correlation is significant at the 0.05 level (2-tailed)

Table 8: Correlation matrix for explanatory variables (H1 - H3)

The following paragraphs include the description of the regression analyses. The first and third regression models include all independent variables and change in ROE (Table 9/Model I) and ROA (Table 9/Model III) as dependent variables. Due to the found correlation between some ratios, the regression analyses are repeated with a stepwise approach, which is also used by Altunbas and Marques (2008) for their strategic similarity model: Model II includes change in ROE as dependent variable and Model IV change in ROA as dependent variable. The analyses are based on industry and outlier adjusted numbers. Missing values are replaced with means.

The first regression model (Table 9/Model I) includes all independent variables and the change in ROE as dependent variable. The variability in ΔROE is accounted for by the variation in ΔPE/TA (-5.05841* (2.42958)), ΔR/E (0.0000032410** (0.0000002684)), ΔIE/IBL (-81.86788** (26.84124)) and ΔIE/TA (89.43531** (29.45244)). The inclusion of both interest expense ratios, ΔIE/IBL as negative regression coefficient and ΔIE/TA as a positive regression coefficient, indicates a problem with this regression model. As previously described, it is not possible to "distinguish different sources of funding, such as customer deposits, bonds or interbank market funds, because interest expenses per liability category are unavailable" (Koetter, 2008). Thus, both indicators share the same numerator, reflect nearly the same level of mean change (ΔIE/IBL -0.00099, ΔIE/TA -0.00094, Table 6) and are highly correlated (0.99641**, Table 8). Therefore, it is questionable whether ΔIE/IBL is a negative regression coefficient and at the same time whether ΔIE/TA is a positive regression coefficient. Due to this problem, I abstain from drawing conclusions from Model I (Table 9). The same applies to the third regression model (Table 9).

Instead, I focus on the stepwise regression models: Model II (Table 9) includes despite the intercept (0.00845** (0.00303)) also ΔR/E (0.0000031277** (0.0000002437)) as an independent variable based on the probability of F-to-enter of 0.05 and a probability of F-to-remove of 0.10.

The change in the revenue per employee indicator is used as a proxy for synergy gains (H2) and therefore as a possibility to increase the overall financial performance of a company. Although, the overall profitability of cooperative merging banks is decreasing in terms of industry adjusted mean ΔROE and ΔROA (see Table 6), the significant positive regression coefficient ΔR/E

(0.0000031277** (0.0000002437)) supports the hypothesis that an increase in personnel efficiency results in a positive increase in ΔROE. Model IV (Table 9) supports Model II in terms of the significance of ΔR/E (0.0000002041** (0.0000000137)). The coefficient is also significant at the 0.01 level and is positive as in Model II. Furthermore, the second stepwise regression model also includes a significant intercept (0.00042* (0.00017)) and ΔOOI/TA (0.26312* (0.11157)) as a significant regression coefficient. In line with the predicted possibility to benefit from increased market power (H3) the other operating income to total assets coefficient is positive.

	Model I (ΔROE)	Model II (ΔROE)	Model III (ΔROA)	Model IV (ΔROA)
Intercept	0.00449 (0.00471)	0.00845** (0.00303)	-0.00004 (0.00024)	0.00042* (0.00017)
ΔDIV/TI	-1.17715 (1.45173)		-0.0061 (0.07423)	
ΔDIV/ME	0.10756 (0.40412)		-0.00103 (0.02067)	
ΔPE/TA	-5.05841* (2.42958)		-0.10111 (0.12424)	
ΔOAE/TA	8.06683 (5.44016)		-0.18458 (0.27818)	
ΔFA/TA	0.75645 (1.53124)		0.1165 (0.0783)	
ΔTA/E	0.00000 (0.00000)		0.00000* (0.00000)	
ΔR/E	0.00000** (0.00000)	0.00000** (0.00000)	0.00000** (0.00000)	0.00000** (0.00000)
ΔIE/IBL	-81.86788** (26.84124)		-4.28332** (1.37254)	
ΔII/TA	-1.08916 (1.94515)		0.0495 (0.09947)	
ΔIE/TA	89.43531** (29.45244)		4.55128** (1.50606)	
ΔOOI/TA	1.8207 (1.96663)		0.19733 (0.10056)	0.26312* (0.11157)
ΔOOE/TA	-9.79333 (9.58537)		0.0677 (0.49015)	
R^2 adj	0.85223	0.80764	0.91019	0.86224
F-value	19.7431**	164.74531**	33.93689**	123.0555**

** Significant at the 0.01 level (2-tailed, 1-tailed for the F-value)
* Significant at the 0.05 level (2-tailed, 1-tailed for the F-value)
The standard errors of the unstandardized regression coefficients are in brackets

Table 9: Results of the regression analyses (ΔROE, ΔROA, H1 - H3)

All other variables have been excluded from the stepwise regression models. They are presented in Table A3. A repetition of the stepwise regression analyses with the exclusion of missing values and ΔROE as dependent variable also supports Model II concerning ΔR/E. Likewise, a second additional test with the exclusion of missing values and ΔROA as dependent variable supports Model IV. Both, ΔR/E and ΔOOI/TA, are included as significant independent variables. Furthermore, this last model also includes ΔTA/E, which is not included in Model II and IV.

5.2 Empirical Results (H4)

Table 10 includes the descriptive statistics of the unadjusted pre-merger strategic characteristics of targets and bidders. The outliers are excluded from the similarity index (Table 11), which is at the centre of this analysis.

As described in the previous subchapter, the bidders are more profitable in terms of ROE and ROA and they are also more cost effective measured as staff- and administrative-costs, this is also reflected by the overall COST/INC ratio, which is used as a proxy for the cost controlling strategy (T 0.98140, B 0.88949). The bidders' loan loss provisions to net interest revenues (BADL/INT_INC T 0.41080, B 0.22789) are lower and their capitalization is higher (CA/TA T 0.06946, B 0.07507). Targeted banks have more diversified sources of income (OOR/TA T 0.01174, B 0.01144) and they are on average three times smaller based on mean sizes (T 207,025,271, B 610,395,016).

Target								
	N_Valid	Minimum	0.25	Median	0.75	Maximum	Std. Dev.	Mean
COST/INC	40	0.80656	0.88496	0.92224	0.95269	3.53473	0.41698	0.98140
BADL/INT_INC	40	0.02123	0.14281	0.24341	0.32406	7.17472	1.10289	0.41080
CA/TA	40	0.04348	0.05865	0.06825	0.07846	0.10855	0.01612	0.06946
OOR/TA	40	0.00547	0.00923	0.01174	0.01359	0.02726	0.00385	0.01174
SIZE	40	31,528,733	64,008,138	136,015,184	303,007,795	1,058,291,894	202,348,063	207,025,271

Bidder								
	N_Valid	Minimum	0.25	Median	0.75	Maximum	Std. Dev.	Mean
COST/INC	40	0.78718	0.84936	0.89629	0.93139	0.98937	0.05390	0.88949
BADL/INT_INC	40	0.03121	0.14248	0.23708	0.30107	0.44055	0.10087	0.22789
CA/TA	40	0.04392	0.06196	0.06961	0.08382	0.12379	0.01929	0.07507
OOR/TA	40	0.00688	0.00989	0.01131	0.01233	0.01687	0.00242	0.01144
SIZE	40	90,736,199	206,013,949	410,284,336	702,138,005	2,951,310,657	606,530,350	610,395,016

Table 10: Strategic characteristics of targets and bidders (H4)

In conclusion, target banks are smaller, have higher credit risks and have slightly more diversified sources of income. Bidder banks focus on a cost controlling strategy, which shows "the emphasis on minimizing costs by relating expenditures to revenues" (Altunbas and Marques, 2008).

The similarity index table (Table 11) shows the four strategic variables COST/INC, BADL/INT_INC, CA/TA and OOR/TA, which can ”directly be interpreted as a measure of (outlier adjusted) dispersion between merging partners in the units of the underlying variable” (Altunbas and Marques, 2008). Furthermore, it includes the control variables relative size and pre-merger performance of the bidders.

	N_Valid	Minimum	Q1	Median	Q3	Maximum	Std. Dev.	Mean
COST_INC	39	0.00628	0.02380	0.04041	0.09728	0.14986	0.04305	0.05765
BADL/INT_INC	39	0.00279	0.03788	0.11034	0.15647	0.33820	0.08374	0.11274
CA/TA	38	0.00051	0.00413	0.01031	0.01658	0.03745	0.00935	0.01173
OOR/TA	39	0.00006	0.00096	0.00192	0.00346	0.00632	0.00169	0.00244
RSIZE	39	0.03396	0.25376	0.37593	0.52045	0.93689	0.20388	0.39188
PREROE_B	39	0.01380	0.06903	0.09787	0.12096	0.17285	0.03794	0.09341

Table 11: Similarity index (H4), outlier adjusted

The correlation among the various variables is included in Table 12. COST/INC is correlated with BADL/INT_INC and CA/TA. Further, it is noticeable that the control variable PREROE_B is correlated with the TIME dummy and CA/TA. Due to the correlation between some ratios, a stepwise regression analysis is used in addition to the standard enter-method, as suggested by Altunbas and Marques (2008). The analysis is based on outlier adjusted numbers. Missing values are replaced with means.

	COST/INC	BADL/INT_INC	CA/TA	OOR/TA	RSIZE	PREROE_B	TIME
COST/INC	1						
BADL/INT_INC	0.45282**	1					
CA/TA	0.39993*	0.22386	1				
OOR/TA	-0.07084	-0.13371	0.26279	1			
RSIZE	-0.07281	0.07802	0.05221	-0.00673	1		
PREROE_B	0.18311	0.13023	0.35673*	-0.14100	0.00400	1	
TIME	0.00440	-0.19209	-0.01649	0.07288	0.17093	-0.31677*	1

** Correlation is significant at the 0.01 level (2-tailed)
* Correlation is significant at the 0.05 level (2-tailed)

Table 12: Correlation matrix for explanatory variables (H4)

Table 13 includes four regression models that use the change in ROE as dependent variable. The variability in industry unadjusted ΔROE in Model I is accounted for by the variation in the two control variables PREROE_B (-0.45269* (0.1873)) and the TIME dummy (0.02727* (0.0134)). The stepwise approach (Model II) includes the same ratios (PREROE_B -0.44538* (0.16612), TIME 0.03001* (0.01246)) and in addition OOR/TA as significant independent variables (7.87062* (3.54913)). They are included based on the probability of F-to-enter of 0.05 and a probability of F-to-remove of 0.10. Due to the inclusion of the TIME variable as an independent variable, I suspect performance variety between the 2007 and 2008 mergers. To investigate this circumstance further, the Models III and IV are conducted with industry adjusted values. The TIME variable is omitted due to the included industry adjustment in ΔROE.

Once again it is possible to find support for the strategic similarity index in the area of diversity of earnings (7.57172* (3.50598), Model IV) and the pre-merger level of bidder performance (-0.41056* (0.17573), Model III, -0.41491* (0.15638), Model IV).

The strategic similarity index value other operating revenues to total assets (OOR/TA) is consistently positive (Table 13, Models II and IV) and therefore in conflict with the hypothesis that **a higher strategic similarity between merging partners leads to increased performance.** Thus, merging banks do benefit if one of the partners is able to generate higher non-interest revenues than the other. The available cooperative data shows that the target banks have usually more diversified sources of income (Table 10). The second included value (Models I-IV), the pre-merger return on equity of the bidder, is also identified by Altunbas and Marques (2008) as a significant variable: The bidder pre-merger ROE beta is in line with Altunbas and Marques (2008) negative, thus less pre-merger bidder performance leads to a reduction of performance decrease, or in other words, bidders with a lower level of pre-merger performance are able to increase their performance.

All other variables including the remaining three strategic variables and the control variable SIZE have been excluded based on the probability of F-to-enter of 0.05 and a probability of F-to-remove of 0.10 in the four described models. The variables SIZE and the CA/TA are inconsistent concerning the possible positive or negative influence on performance changes. The betas of

the cost indicator COST/INC and the risk indicator BADL/INT_INC are consistently negative (Table 13, Model I-IV). The excluded variables are described in Table A4.

A repetition of the regression Models I-IV, without the mean adjustment for missing values, also supports PREROE_B as a significant independent variable, but excludes OOR/TA. The TIME variable is also significant in the re-run of the Models I and II.

	Model I (ΔROE)	Model II (ΔROE)	Model III (ΔROE)	Model IV (ΔROE)
Intercept	0.01451 (0.02732)	-0.00082 (0.02243)	0.03137 (0.02458)	0.01597 (0.01878)
COST/INC	-0.12502 (0.17347)		-0.1653 (0.17064)	
BADL/INT_INC	-0.08373 (0.08532)		-0.05109 (0.08219)	
CA/TA	0.38069 (0.82733)		0.37975 (0.81839)	
OOR/TA	6.59556 (3.95062)	7.87062* (3.54913)	6.40867 (3.92198)	7.57172* (3.50598)
RSIZE	0.00586 (0.03091)		-0.00543 (0.03001)	
PREROE_B	-0.45269* (0.1873)	-0.44538* (0.16612)	-0.41056* (0.17573)	-0.41491* (0.15638)
TIME	0.02727* (0.0134)	0.03001* (0.01246)		
R^2 adj	0.34916	0.37566	0.18664	0.22704
F-value	3.98898**	8.82186**	2.49156*	6.72754**

** Significant at the 0.01 level (2-tailed, 1-tailed for the F-value)
* Significant at the 0.05 level (2-tailed, 1-tailed for the F-value)
The standard errors of the unstandardized regression coefficients are in brackets

Table 13: Result of the regression analyses (ΔROE, H4)

On the basis of the empirical results H4 is not supported. Instead, the only strategic variable that is described to be significant is OOR/TA and it shows an effect that is contrary to the predicted one (Table 13, Model II and IV).

A re-run of the regression models with ΔROA as dependent variable is not able to provide further support for OOR/TA (Table 14, Models I and II). Due to the fact that the TIME variable is once again included in both models, a second set of analyses with industry adjusted values is conducted to investigate the role of strategic similarities independent from this variable. The only variable that is included in all of these four models is again PREROE_B (Table 14). The excluded variables from the stepwise regression models (Table 14, Models II and IV) are described in Table A5.

A repetition of regression Model I-IV (Table 14), without the mean adjustment for missing values, also supports PREROE_B as a significant independent variable, but excludes OOR/TA. The TIME variable is also significant in the re-run of Model II.

	Model I (ΔROA)	Model II (ΔROA)	Model III (ΔROA)	Model IV (ΔROA)
Intercept	0.00174 (0.00166)	0.00104 (0.00124)	0.00227 (0.00167)	0.00244* (0.00107)
COST/INC	-0.00137 (0.01052)		-0.00943 (0.01162)	
BADL/INT_INC	-0.00756 (0.00517)		-0.00306 (0.0056)	
CA/TA	0.02894 (0.05016)		0.02307 (0.05573)	
OOR/TA	0.19798 (0.23953)		0.29864 (0.26705)	
RSIZE	-0.00123 (0.00187)		-0.0004 (0.00204)	
PREROE_B	-0.02988* (0.01136)	-0.02994** (0.01025)	-0.02762* (0.01197)	-0.02994** (0.01066)
TIME	0.00179* (0.00081)	0.00198* (0.00077)		
R^2 adj	0.34164	0.33731	0.1233	0.15008
F-value	3.89111**	10.92554**	1.9142	7.88671**

** Significant at the 0.01 level (2-tailed, 1-tailed for the F-value)
* Significant at the 0.05 level (2-tailed, 1-tailed for the F-value)
The standard errors of the unstandardized regression coefficients are in brackets

Table 14: Result of the regression analyses (ΔROA, H4)

5.3 Summary

This subchapter summarizes the previous findings, which are based on forty cooperative mergers and relates them to the current M&A literature. The following paragraphs start with a description of the general performance changes. Afterwards, the sources of the change are analyzed according to the previously used order: agency, synergy, market power and strategic similarities. Further, inferences are drawn from the presented findings.

The general performance level (Table 4) of targets is lower in comparison to bidder banks measured as mean return on equity and return on assets (ROE T 0.08276, B 0.09341, ROA T 0.00530, B 0.00687). Table 5 shows that banks that are involved in M&A activity are performing lower than the industry average measured in terms of mean ROE (T -0.02592, B -0.01527). ROA performance levels for targets are in line with this description, but the bidders' values are just above industry average (T -0.00123, B 0.00034). As shown in the change statistics (Table A2), ROE and ROA mean values decreased (ΔROE -0.00518, ΔROA -0.00057). Thus, the post-merger performance decreased in comparison to the pre-merger values. The industry adjusted change

values are slightly better than unadjusted values (Table 6), but still negative (ROE -0.00428, ROA -0.00036). This performance decrease, which is in contrast to the expected effect of mergers, is statistically not significant (Table 7). This finding is in contrast to Altunbas and Marques (2008), but in line with Campa and Hernando (2006). The first paper reports for a sample of domestic bank mergers (EU) a performance increase of 1.22 %. It is not mentioned if this not industry adjusted value is significantly different from zero or not. The second paper describes that "median differences in ROE relative to the industry slightly declines", which is in line with the presented findings in Table 6. The only research that is dealing with a comparable sample of non-listed German banks, Koetter (2008), does not report ROE and ROA changes.

To investigate the general performance decrease further, the following paragraphs focus on the different performance sub-areas that are analyzed in the context of this thesis.

On the basis of the first hypothesis, it is expected that **mergers lead to a positive change in financial performance facilitated by a reduction of agency costs.** Agency costs are measured in the context of this thesis in terms of total Euro amount of dividends to total income (DIV/TI) and total Euro amount of dividends to members' capital (DIV/ME).

According to a comparison of mean pre-merger values (Table 4), bidders pay fewer dividends to their members than the targeted banks (DIV/TI T 0.01222, B 0.01208). The bidders' dividend to members' equity ratio is higher (DIV/ME T 0.05087, B 0.05433). In comparison to the benchmark (Table 5), merging banks pay fewer dividends (DIV/TI T -0.00026, B -0.00040, DIV/ME -0.00529, B -0.00183). The outlier adjusted change values (Table A2) show a general decline in both ratios (ΔDIV/TI -0.00113, ΔDIV/ME -0.00372). A decline is also detectable if the values are compared with banks that have not been involved in M&A activities: ΔDIV/TI -0.00041 and ΔDIV/ME -0.00031 (Table 6). The changes are not significantly different from zero (Table 7). Both variables are also not included in the conducted regression analyses. Therefore, it can be concluded that there is not enough evidence to support the hypothesis that mergers lead to a positive change in financial performance facilitated by a reduction of agency costs.

As previously described, it is problematic to compare these results with other findings that are based on the German cooperative banking industry. In the context of cooperative mergers in

the US, Bauer et al. (2009) report gains to the members of the targets, but not for the members of the bidders. Although, members of US cooperative banks do not receive dividend payments, but benefit from advantageous credit and deposit conditions, it can be concluded that it is not uncommon in M&A research to find no overall improvement in agency cost related performance indicators for the combined banks. A second research paper, Campa and Hernando (2006), reports a similar conclusion for a sample of listed EU-banks. On the basis of excess return for shareholders, they describe a positive return for target shareholders and "essentially zero" excess returns for acquiring firm shareholders around the announcement date. Depending on the used event timeframe around the merger, the results vary for the target shareholders between significant and insignificant.

According to the second hypothesis, it is expected that **mergers lead to a positive change in financial performance facilitated by tapping into synergy effects**. These are measured in terms of personnel expenses to total assets (PE/TA), other administrative expenses to total assets (OAE/TA), fixed assets to total assets (FA/TA), total assets to employees (TA/E), revenue per employee (R/E) and interest expenses to interest-bearing liabilities (IE/IBL). Bidders are on average more cost effective than the targeted banks (Table 4) in the areas of personnel (PE/TA, T 0.01703, B 0.01596) and administrative costs (OAE/TA T 0.00834, B 0.00752). They have less fixed assets in relation to total assets (FA/TA T 0.01690, B 0.01684) and are able to administrate more assets per employee (TA/E T 3,968,200, B 4,087,240). Bidders also generate more revenue per employee (R/E T 19,641, B 28,074), but their interest expenses in relation to interest-bearing liabilities are higher (IE/IBL T 0.02337, B 0.02355).

Furthermore, merging banks are less cost effective (Table 5) than the benchmark (PE/TA T 0.00236, B 0.00129, OAE/TA T 0.00087, B 0.00005), but have less fixed assets to total assets (FA/TA T -0.00012, B -0.00019). Merging banks administrate less total assets in relation to the number of employees (TA/E T -424,862, B -305,823) and generate less revenue per employee (R/E T -9,080, B -647). Their interest expenditures to interest-bearing liabilities are also higher than the benchmark (IE/IBL T 0.00002, B 0.00020). The outlier adjusted change values (Table A2) show a general decline in mean PE/TA (-0.00174), OAE/TA (-0.00108), FA/TA (-0.00158) and IE/IBL (-0.00245). TA/E (562,877) and R/E (316) values increase. The industry adjusted change

values (Table 6) show a different picture: PE/TA (0.00002), FA/TA (0.00058) are increasing and OAE/TA (-0.00008) is decreasing as TA/E (-329,313), R/E (-4,072) and IE/IBL (-0.00099).

Significant changes are found on the basis of median and mean changes in TA/E, IE/IBL and R/E (only mean). It has to be considered that mean changes are analyzed on the basis of an outlier adjusted sample. The other H2 mean and median changes are not significantly different from zero (Table 7). Based on the industry adjusted descriptive data and the sign- and t-test, it can be concluded that two indicators including the number of employees show a significant performance decrease (TA/E, -329,313, R/E -4,072) in contradiction to the second hypothesis. Only the significant change in IE/IBL is based on the descriptive data (-0.00099) in line with H2.

Both stepwise regression models (Table 9, Models II and IV), which either use industry adjusted ΔROE or ΔROA as dependent variable, include the H2 variable ΔR/E (0.0000031277** (0.0000002437), 0.0000002041** (0.0000000137)) and the intercept (0.00845** (0.00303), 0.00042* (0.00017)) as significant elements of the equation. Model IV also includes ΔOOI/TA (0.26312* (0.11157)) as a significant independent variable.

In line with the hypothesis that **mergers lead to a positive change in financial performance facilitated by tapping into synergy effects,** the unstandardized R/E regression coefficient is consistently positive. Thus, if a bank is able to increase the revenue per employee, e.g. by increasing the amount of revenue or by decreasing the amount of employees, the regression model predicts a positive change in ROE (ROA). But, according to the mean change values, cooperative banks are on average not able to improve their R/E ratio (Table 6), which explains why the overall performance of cooperative banks in the contexts of M&A does not improve. Two additional regression models, without the mean adjustment for missing values, support the presented findings of both stepwise regression models (Table 9, Models II and IV).

The decrease in the personnel efficiency related ratios (TA/E, R/E) is in contrast to the synergy effects described in Cornett et al. (2006) and Davidson et al. (2009) in terms of a significant performance increases in fixed assets to employees and revenue to employees. This can be explained on the basis of the cohesion literature (e.g. Casey-Campbell and Martens, 2009). It is assumable that the different levels of group cohesiveness between shareholders and employees

versus cooperative members and employees might influence synergy gains in the area of personnel costs. Shareholder of a listed bank might care less about possible layoffs of redundant employees than members of a cooperative bank that live in the same municipality as the employees. Consequently, cooperative members are more likely to support a merger (§48 GenG, §84 UmwG) if their agents guarantee that employees, who might share the same spare time activities and/or are members in the same local societies as the members, are not laid off. This connection is supported by the model used in Brown et al. (2001), which describes "personal recognition" as a predecessor of further interaction in terms of personal connection, care and trust. The only available research paper that uses the same context as this thesis, abstains "from drawing inferences on individual coefficients" like personnel costs, thus it is not possible to support the presented inferences further (Koetter, 2008). Therefore, it is also possible that e.g. the power of employee representatives and/or the German employment protection act are also influencing M&A performance changes in the area of personnel costs.

The decrease in IE/IBL is in line with the expected reduction of capital costs, but due to the described high collinearly between IE/IBL and IE/TA (Table 8) the remarks in the following H3 paragraph concerning the change in interest expenses have to be acknowledged.

In sum, the findings concerning H2 include a decrease in personnel efficiency (TA/E, R/E) and a decrease in IE/IBL. The decrease in personnel efficiency is in contradiction to other papers (e.g. Cornett et al., 2006) and thus might be the reason, why in the context of this thesis an overall success of mergers in the cooperative banking sector is not identifiable. But, before it is possible to draw a final conclusion, the **performance change facilitated by an increase in market power** has to be analyzed, which is measured in terms of interest income to total assets (II/TA), interest expenses to total assets (IE/TA), other operating income to total assets (OOI/TA) and other operating expenses to total assets (OOE/TA).

Based on a comparison of pre-merger values (Table 4), the targets' mean interest/other operating incomes (II/TA T 0.04567, B 0.04552, OOI/TA T 0.01247, B 0.01233) are higher and their interest expenses are lower in relation to total assets (IE/TA T 0.02159, B 0.02200). The other operating expenditures are nearly equal for targets and bidders (OOE/TA T 0.00112, B

0.00114). Merging banks have higher interest income ratios (II/TA T 0.00126, B 0.00112) and higher OOI/TA (T 0.00096, B 0.00081) in comparison to the benchmark (Table 5). Targets' mean interest expenditures are lower and the bidders' are relatively higher (IE/TA T -0.00035, B 0.00006). Additionally, the merging partners have higher other operating expenditures (OOE/TA T 0.00001, B 0.00003).

The outlier adjusted change values (Table A2) for II/TA (-0.00231), IE/TA (-0.00231) and OOI/TA (-0.00318) show a general decline in all mean numbers. Only OOE/TA is increased (0.00031). In contrast to the industry, II/TA (-0.00032) and IE/TA (-0.00094) are also declining, but OOI/TA (0.00020) and OOE/TA (0.00002) show an increase (Table 6). The change in median and mean IE/TA is significant (Table 7).

The stepwise regression analysis with ΔROA as dependent variable (Table 9, Model IV) identifies ΔOOI/TA as a significant variable (0.26312* (0.11157)). An additional analysis without mean adjustments for missing values and ΔROA as dependent variable also supports this finding. In line with the third hypothesis, that mergers lead to an increase in market power and therefore to the possibility to increase overall performance, the independent variable is positive. The variable IE/TA, which has changed significantly (Table 7), is not included as an independent variable in Models II and IV.

The first part of the presented result concerning an increase in other operating income is in contradiction to Davidson et al. (2009), who report a significant decrease in other operating income to average assets. Thus, the finding is revised after availability of the strategic similarity research results (H4).

The second part, the significant change in IE/TA, which is in line with the H2 indicator IE/IBL negative, supports the previously described possibility to benefit from a reduction in interest costs, facilitated by an increase in market power. A second explanation for this change is based on lower cost of capital (H2), facilitated by scale economies. As previously mentioned, it is not possible to "distinguish different sources of funding, such as customer deposits, bonds or interbank market funds, because interest expenses per liability category are unavailable"

(Koetter, 2008). Thus, the result can either be interpreted as support for one of the theories or for both at the same time.

Both interpretations are in line with the hypotheses and current empirical findings: Koetter (2008) reports minor cost efficiency improvements in the context of non-listed German banks in terms of an overall cost indicator that also includes this thesis' cost of borrowed funds ratio. Further support for financial synergies is provided by Altunbas et al. (2001), who describe that "the larger banks tend to realize greater economies" of scale. Increases in market power are supported by Cornett et al. (2006), who describe on the basis of US data an improvement in the net interest margin and Davidson et al. (2009). They measure changes in interest costs and mention that a merger gives "ample opportunity to improve [….] interest expense ratios" for European banks.

In sum, the thesis includes evidence for an increase in market power in terms of increases in OOI/TA and decrease in IE/TA. Once again it should be remarked that interest expenses and income are not only including customer interest payments, but also interest payments from bonds and interbank market funds (Koetter, 2008). It is not possible to attribute the decrease in interest costs either to scale economies (H2) or to an increase in market power (H3). Thus, the result can either be interpreted as support for one of the theories or for both at the same time.

The preliminary results include the following aspects: there is not enough evidence to support a reduction of agency related costs (H1). But, there is evidence for the existence of synergy effects. Four stepwise regression models (Table 9), which include ΔR/E as a significant independent variable (H2), show that increases in personal efficiency would result in an increase on overall performance. But, according to the mean change values, cooperative banks are on average not able to improve their R/E ratio (Table 6), which explains why the overall performance of cooperative banks in the contexts of M&A does not improve. This problem with personnel efficiency is also reflected by a significant decrease in TA/E (Table 6). The merging banks are able to benefit from a reduction of interest payments, but it is not possible to attribute the effect to the decrease in capital cost (H2) or the decrease in interest expenditures (H3). An increase in market power is also supported by two stepwise regression models that

include OOI/TA (H3). Due to the fact that this finding is in contradiction to Davidson et al. (2009), it is revised after availability of the strategic similarity research results.

Therefore, in line with the previously drawn conclusion, it is assumable that cooperative mergers would on average have been performance enhancing, if the increase in personnel costs had not canceled out the increased income from market power (OOI/TA, IE/TA) and/or financial synergies (IE/IBL). The implication of this finding will be discussed in the thesis' final chapter after dealing with H4.

As described in Tables 6 and 7, the industry adjusted change in ROE is not different from zero, but some banks show a positive increase in comparison to the other merging banks (e.g. the maximum increase of 0.09103). Thus, some banks have been more successful than others. This circumstance is investigated further on the basis of the concept of strategic similarities. According to H4, it is expected that **a higher strategic similarity between merging partners leads to increased performance.**

The pre-merger data reflects the following situation: as described in the previous paragraphs, the bidders are more profitable, which is also reflected by the COST/INC ratio (T 0.98140, B 0.88949) present in Table 10. Loan loss provisions (BADL/INT_INC) are lower for bidders (0.22789) than for targets (0.41080) and bidders have also more capital in relation to total assets (T 0.06946, B 0.07507). The targets have more diversified sources of income, although the differences are only minor (T 0.01174, B 0.01144) and they are on average three times smaller (T 207,025,271, B 610,395,016).

On the basis of sixteen regression models, it is not possible to support the concept of strategic similarities. Instead, the only strategic variable that is described to be significant is OOR/TA and it shows an effect that is contrary to the predicted one: strategic dissimilarities in the area of OOR/TA are in general performance enhancing (Table 13, Models II and IV). Likewise, pre-merger performance of the bidding banks is included in four regression models (Table 13, Models I-IV) as a significant independent control variable, which can be interpreted as further support for Altunbas and Marques (2008) finding that less pre-merger bidder performance leads to a reduction of performance decrease, or in other words, bidders with a lower level of pre-

merger performance are able to increase their performance. The result concerning the pre-merger bidder performance is supported by a re-run of the regression, without the mean adjustment for missing values and a re-run with the change in ROA as dependent variable (Table 14, Models I-IV).

The control variable "relative size" is in line with Ramaswamy (1997) not significant. Therefore, there is no support for Altunbas and Marques (2008) conclusion that "transactions involving firms more different in size (in most cases, a target significantly smaller than the acquirer) imply a higher return for targets".

To connect the findings of the performance research and the concept of strategic similarities, it is necessary to see the previously described market power increase (H3) in the area of other operating income from the perspective of the findings concerning the other operating revenues to total assets strategic variable.

It is assumable that the increase in other operating income is not only based on an increase in market prices e.g. through higher fees. Instead, it is likely that the increase is also attributable to additional commission gains from services that only one bank has offered its customers during the pre-merger period and which are now provided to all customers of the united institution. This conclusion is backed up by the reported performance enhancing effect of strategic dissimilarities in the area of other operating revenues. It is in line with Altunbas and Marques (2008) who report for international mergers "enhanced revenues derived from scope economies". This means for cooperative mergers that banks that e.g. are able to provide stock market related services to their customers are able to provide this service to the merging partner's customers. This might also be applicable for other service areas like insurances, real estate and foreign trade support. It has to be acknowledged that Altunbas and Marques (2008) finding concerning domestic M&A is different in terms of the performance enhancing effect of diversity of earnings.

Therefore, the previously described increase in market power (OOI/TA) can also reflect a performance gain facilitated by economies of scope, thus as a synergy effect. This result can either be interpreted as support for one of the theories or for both at the same time.

5.4 Remarks

The following remarks are dealing with the limitations of this work, which are attributed to the limited access to cooperative data. This affects the calculated number of employees, dividend payments and the sample size.

As described, the underlying data is extracted from the annual statements 2006 - 2010. Thus, the 2005 data has been collected from the 2006 reports, which lack information concerning the amount of paid dividend and the number of employees in 2005. Therefore, the pre-merger two-year averages of all banks that have merged in the year 2007 are calculated on the basis of dividend/employee numbers of 2006. The 2008 mergers are not affected. The same applies to the benchmark indicator.

The number of employees presented in the cooperative annual statements consists of two values including the amount of full-time employees and the amount of part-time employees. The second one is multiplied with the factor 0.5 and added to the amount of full-time employees, although it might be possible that part-time employees work more or less than the assumed 50% of a full-time employee. I do not expect that these decisions influence the thesis' validity, because this approach has been consistently applied to the merging banks and the banks that have not been involved in M&A activities.

Although, the total number of mergers in this study is forty, which is less than in other quantitative research papers, it was ensured that banks that are involved in multiple mergers during the timeframe are excluded from the sample. Therefore, it is unlikely that the factor merger experience, which is identified by the strategic management literature as an influencing factor, affects the outcome of this study (Covin et al., 2004). The same applies to other influencing events like the founding or liquidation of a subsidiary.

6 Conclusion

This thesis examines the performance effects of mergers within the German cooperative banking sector and the role of strategic similarities. Based on the governmental service www.ebundesanzeiger.de it has been possible to create a reliable database and therefore to overcome the shortcoming of missing public cooperative data, which has been hindering research in this area of the German banking industry. In a first step, three theories are described and validated that are used to explain performance changes based on agency, synergy and market power changes. Furthermore, the concept of strategic similarity is explained and used as a framework to analyze variance of M&A performance changes.

Based on statistical testing methods, I find no change in agency related costs (H1) and preliminary support for the synergy theory (H2) and the market power theory (H3). The results concerning the concept of strategic similarity (H4) are in contrast to the described hypothesis:

Both indicators for agency costs (DIV/TI, DIV/ME) do not change significantly based on a comparison of pre- and post-merger values (H1). H2 variable R/E has been included in four regression models and supports the hypothesis that synergy in the area the personnel efficiency would result in a positive change in ΔROE (ΔROA), if a bank is able to increase the revenue per employee. But, according to the mean change values, cooperative banks are on average not able to improve their R/E ratio (Table 6), which explains in line with a significant decrease in TA/E why the overall performance of cooperative banks in the context of M&A does not improve. Furthermore, a significant change in IE/IBL is found according to H2, although this result is not supported by the conducted regression analyses. This change is in line with the reduction of the H3 indicator IE/TA. Due to the limitations concerning the available cooperative data, it is not possible to attribute the decrease in interest costs either to scale economies (H2) or to the increase in market power (H3). Thus, the result can either be interpreted as support for one of the theories or for both at the same time.

The merging banks are also able to benefit from an increase in market power (H3), which is supported by three of four regression models that include OOI/TA. Therefore, it is at this point assumable that cooperative mergers would on average have been performance enhancing, if

the decrease in personnel efficiency has not canceled out the increase in income from synergy and/or market power changes. Furthermore, it is on the basis of sixteen regression models not possible to support the concept of strategic similarities (H4). Instead, the only strategic variable that is described to be significant is OOR/TA and it shows an effect that is contrary to the predicted one.

This last finding has to be seen in connection to the previously discovered change in other operating income (H3): I assume that the increase in other operating revenues is not only based on an increase in market prices e.g. through higher fees per service. Instead, it is likely that services, which only one bank (pre-merger) has offered its customers are in the post-merger period provided to the combined customer base of the united institute. This conclusion is backed up by the reported performance enhancing effect of strategic dissimilarities in the area of other operating revenues. Therefore, the previously described increase in market power can also be characterized as economy of scope, thus as a synergy effect.

Furthermore, the bidders' pre-merger ROE performance level has been identified as a significant control variable, thus less pre-merger bidder performance leads to a reduction of performance decrease, or in other words, bidders with a lower level of pre-merger performance are able to increase their performance in the context of cooperative mergers.

In sum, the answer to the main research questions is that there is no significant change in performance following a merger in the cooperative banking sector, although it is possible to reduce interest expenditures (IE/IBL, IE/TA) facilitated by scale synergies (H2) or an increase in market power (H3). The expected performance change is hampered by a decrease in personnel efficiency (H2). Further, it is possible to benefit from an increase in market power in the area of other operating income (H3). This last increase can also reflect a performance gain facilitated by economies of scope. It is not possible to support the hypotheses that a reduction of agency costs and higher strategic similarity facilitate an increase in performance.

This thesis contributes to the current M&A research in three ways: First, it focuses on the cooperative banking sector that is far less well investigated than the commercial banking due to missing public data. In comparison to Koetter (2008), the change has not only been analyzed in

broad overall terms, but also in terms of more detailed accounting ratios. Secondly, the validity of the synergy theory and the market power theory is supported in a cooperative market context and problems with synergy gains in the area of personnel costs are discovered. Thirdly, it has been described that strategic similarities and size differences do not influence performance changes. Instead, differences in the area of other operating revenues are found to be performance enhancing.

The findings of this thesis are relevant for practitioners, because it has been discovered that merging with a partner, who is different in terms of diversity of incomes is performance enhancing. Thus, the pre-merger target selection process might be influenced on the basis of this criterion. Secondly and in contrast to the widespread assumption that mergers result in an increase of agency costs as e.g. described in Anderson et al. (2004) it is not possible to measure any significant changes in agency related costs, which might be an argument to convince cooperative members concerning the referendum about a planned merger. Thirdly, practitioners are encouraged to handle personnel matters more cost effectively to insure the overall financial success (see Lakshman, 2011 and others).

Other researchers might use the presented findings as a starting point for further quantitative research, which might include a larger sample size. It would also be interesting to investigate on the basis of a qualitative research, e.g. as to which arrangements are suitable to ensure a more cost-effective handling of personnel matters. Furthermore, an analysis could be carried out as to what kinds of commission-income-generating-services are used by some of the merging banks to boost non-interest income.

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Appendix

Table A1: Descriptive Statistics (H1 - H3), with Outliers

Target								
Variable	**N_Valid**	**Minimum**	**Q1**	**Median**	**Q3**	**Maximum**	**Std. Dev.**	**Mean**
ROE	40	-3.04134	0.04841	0.07511	0.11209	0.20056	0.49613	0.00465
ROA	40	-0.38229	0.00273	0.00492	0.00728	0.01321	0.06137	-0.00439
DIV/TI	40	0.00000	0.00794	0.01228	0.01691	0.06530	0.00990	0.01354
DIV/ME	40	0.00000	0.04497	0.04970	0.05888	0.35738	0.05048	0.05845
PE/TA	40	0.01099	0.01578	0.01708	0.01849	0.02689	0.00300	0.01744
OAE/TA	40	0.00603	0.00757	0.00809	0.00954	0.03095	0.00391	0.00907
FA/TA	40	0.00657	0.01084	0.01553	0.02292	0.05988	0.01192	0.01896
TA/E	40	2,732,997	3,328,390	4,081,759	4,609,501	12,769,247	1,795,944	4,442,493
R/E	40	-2,870,295	13,099	20,103	29,859	57,381	457,630	-49,867
IE/IBL	40	0.01852	0.02212	0.02329	0.02426	0.04074	0.00349	0.02372
II/TA	40	0.03827	0.04357	0.04540	0.04848	0.08911	0.00763	0.04675
IE/TA	40	0.01740	0.02055	0.02168	0.02282	0.03594	0.00303	0.02211
OOI/TA	40	0.00669	0.01029	0.01312	0.01453	0.02772	0.00388	0.01286
OOE/TA	40	0.00046	0.00088	0.00106	0.00137	0.00192	0.00034	0.00112

Bidder pre-merger								
Variable	**N_Valid**	**Minimum**	**Q1**	**Median**	**Q3**	**Maximum**	**Std. Dev.**	**Mean**
ROE	40	0.01380	0.06922	0.09956	0.12207	0.20396	0.04133	0.09617
ROA	40	0.00062	0.00402	0.00631	0.00967	0.01428	0.00361	0.00687
DIV/TI	40	0.00293	0.00862	0.01190	0.01515	0.02501	0.00474	0.01241
DIV/ME	40	0.03435	0.04960	0.05484	0.05917	0.09830	0.01284	0.05689
PE/TA	40	0.01150	0.01475	0.01619	0.01751	0.02491	0.00261	0.01647
OAE/TA	40	0.00547	0.00690	0.00756	0.00834	0.01184	0.00121	0.00763
FA/TA	40	0.00548	0.01090	0.01513	0.02122	0.04974	0.00930	0.01766
TA/E	40	2,338,038	3,682,844	4,106,053	4,461,738	5,658,809	699,964	4,082,799
R/E	40	1,740	17,188	26,701	39,068	56,455	14,182	28,074
IE/IBL	40	0.01724	0.02250	0.02346	0.02435	0.02974	0.00231	0.02340
II/TA	40	0.03603	0.04303	0.04535	0.04713	0.05268	0.00313	0.04529
IE/TA	40	0.01581	0.02086	0.02195	0.02279	0.02783	0.00212	0.02177
OOI/TA	40	0.00787	0.01099	0.01242	0.01382	0.01827	0.00255	0.01262
OOE/TA	40	0.00045	0.00085	0.00115	0.00144	0.00286	0.00045	0.00118

Bidder post-merger								
Variable	**N_Valid**	**Minimum**	**Q1**	**Median**	**Q3**	**Maximum**	**Std. Dev.**	**Mean**
ROE	40	0.03154	0.06602	0.08020	0.10715	0.20177	0.03652	0.08782
ROA	40	0.00205	0.00408	0.00620	0.00742	0.01357	0.00259	0.00605
DIV/TI	40	0.00241	0.00765	0.01037	0.01428	0.02223	0.00462	0.01107
DIV/ME	40	0.01490	0.04097	0.05267	0.05938	0.08635	0.01437	0.05035
PE/TA	40	0.01079	0.01320	0.01498	0.01579	0.02147	0.00202	0.01481
OAE/TA	40	0.00460	0.00596	0.00661	0.00754	0.00927	0.00123	0.00673
FA/TA	40	0.00779	0.01036	0.01395	0.01963	0.03453	0.00632	0.01550
TA/E	40	2,978,849	4,143,346	4,711,289	4,968,760	7,457,629	750,067	4,678,040
R/E	40	10,382	17,786	27,505	33,024	74,826	14,584	28,764
IE/IBL	40	0.01461	0.01884	0.02031	0.02411	0.02801	0.00332	0.02106
II/TA	40	0.03560	0.03958	0.04362	0.04592	0.05038	0.00360	0.04298
IE/TA	40	0.01401	0.01751	0.01883	0.02270	0.02604	0.00307	0.01959
OOI/TA	40	0.00639	0.00825	0.00932	0.01082	0.01330	0.00182	0.00948
OOE/TA	40	0.00067	0.00093	0.00136	0.00187	0.00326	0.00061	0.00145

Table A2: Descriptive Change Statistics (H1 - H3), Outlier Adjusted

Variable	**N_Valid**	**Minimum**	**Q1**	**Median**	**Q3**	**Maximum**	**Std. Dev.**	**Mean**
ΔROE	39	-0.10177	-0.04298	-0.01137	0.02370	0.10873	0.04703	-0.00518
ΔROA	38	-0.00607	-0.00244	-0.00044	0.00140	0.00570	0.00287	-0.00057
ΔDIV/TI	37	-0.00832	-0.00267	-0.00065	0.00048	0.00489	0.00278	-0.00113
ΔDIV/ME	36	-0.02868	-0.00889	0.00023	0.00252	0.01136	0.01075	-0.00372
ΔPE/TA	38	-0.00421	-0.00259	-0.00165	-0.00093	0.00079	0.00121	-0.00174
ΔOAE/TA	37	-0.00215	-0.00148	-0.00114	-0.00067	0.00042	0.00056	-0.00108
ΔFA/TA	39	-0.00543	-0.00301	-0.00177	-0.00045	0.00319	0.00200	-0.00158
ΔTA/E	38	29,233	305,141	596,208	758,187	1,035,245	268,922	562,877
ΔR/E	37	-22,110	-5,829	1,259	9,517	21,063	11,999	316
ΔIE/IBL	40	-0.00791	-0.00524	-0.00376	0.00160	0.00321	0.00353	-0.00245
ΔII/TA	39	-0.00908	-0.00391	-0.00208	-0.00036	0.00162	0.00250	-0.00231
ΔIE/TA	40	-0.00737	-0.00495	-0.00352	0.00141	0.00302	0.00327	-0.00231
ΔOOI/TA	40	-0.00673	-0.00422	-0.00323	-0.00202	-0.00036	0.00147	-0.00318
ΔOOE/TA	40	-0.00070	-0.00003	0.00013	0.00067	0.00163	0.00052	0.00031

Table A3: Excluded Variables (H1 - H3), Models II and IV

	Model II (ΔROE)			Model IV (ΔROA)		
	Beta In	**t**	**Sig.**	**Beta In**	**t**	**Sig.**
ΔDIV/TI	-0.11566	-1.64202	0.10906	-0.04647	-0.74934	0.45852
ΔDIV/ME	0.00622	0.08698	0.93116	0.01726	0.28520	0.77713
ΔPE/TA	-0.08085	-1.15636	0.25494	-0.02709	-0.44694	0.65760
ΔOAE/TA	-0.05389	-0.76235	0.45069	-0.09670	-1.66376	0.10484
ΔFA/TA	0.06825	0.89711	0.37546	0.12268	1.98444	0.05487
ΔTA/E	-0.03421	-0.47392	0.63835	-0.10517	-1.77945	0.08361
ΔIE/IBL	0.01041	0.14555	0.88507	-0.05476	-0.85610	0.39761
ΔII/TA	0.03291	0.45507	0.65172	0.06884	1.12514	0.26798
ΔIE/TA	0.02881	0.40300	0.68927	-0.03742	-0.57910	0.56613
ΔOOI/TA	0.10772	1.53643	0.13294			
ΔOOE/TA	-0.05136	-0.72406	0.47358	-0.02073	-0.34264	0.73386

Table A4: Excluded Variables (H4), Models II and IV (Table 13)

	Model II (ΔROE)			Model IV (ΔROE)		
	Beta In	**t**	**Sig.**	**Beta In**	**t**	**Sig.**
COST/INC	-0.15708	-1.22903	0.22726	-0.18275	-1.28989	0.20531
BADL/INT_INC	-0.18101	-1.41206	0.16676	-0.16077	-1.13055	0.26572
CA/TA	-0.02085	-0.14265	0.88739	-0.02413	-0.14918	0.88224
RSIZE	0.02206	0.16920	0.86661	-0.01752	-0.12277	0.90297

Table A5: Excluded Variables (H4), Models II and IV (Table 14)

	Model II (ΔROA)			Model IV (ΔROA)		
	Beta In	**t**	**Sig.**	**Beta In**	**t**	**Sig.**
COST/INC	-0.08902	-0.66719	0.50890	-0.16972	-1.13813	0.26238
BADL/INT_INC	-0.23747	-1.84292	0.07359	-0.16897	-1.14169	0.26092
CA/TA	0.07406	0.52275	0.60435	0.06368	0.39865	0.69245
OOR/TA	0.17522	1.34621	0.18665	0.22749	1.55577	0.12828
RSIZE	-0.10944	-0.82229	0.41633	-0.02369	-0.15838	0.87502