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DISSERTATION

EFFECTS OF M&A ON SHAREHOLDER WEALTH: EVIDENCE FROM THE EUROPEAN BANKING INDUSTRY

VIKTOR SPANOVIC

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Abstract

This thesis investigates the impact of M&A activity on the wealth of shareholders. The study is focused on the European banking industry, during the 12-year period: 2008-2020. Using a sample of 25 M&A deals, involving 47 publicly traded European banks, the event study method is applied to analyse the abnormal returns to stocks of the involved banks around the deal announcement dates. The results show positive and statistically significant abnormal returns for the shareholders of target banks in the sample, while the results for the bidding banks shareholders were also positive, however not showing statistical significance. Finally, the overall wealth creation was assessed by analysing weighted abnormal returns for bidding and target bank as an imaginary combined entity. The results were positive and statistically significant, indicating that M&A activity in the European banking industry, during the analysed period, increased shareholders wealth.

JEL Classification: G14; G21; G34

Key Words: Merger and Acquisitions, Abnormal Returns, Cumulative Average Abnormal Returns, Wealth Creation, Banking

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Glossary

M&A – Merger and Acquisition

AR – Abnormal Return

AAR – Average Abnormal Return

CAR – Cumulative Abnormal Return

CAAR – Cumulative Average Abnormal Return

EMH – Efficient Market Hypothesis

US – United States

EU – European Union

MSCI - Morgan Stanley Capital International

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1. Introduction

The M&A activity between companies has always been one of the most popular topics of research in the world of finance. Over the past few decades, the volume of M&A activity has been increasing, especially in the banking sector. To explain such trend many authors propose theories of anticipated synergy benefits, which suggest that M&A activity will eventually result in some sort of value creation. In the banking industry, the most often cited motivating factors for M&A are the efficiency pursuit through the economies of scale and desire to diversify bank's portfolio through the exposure to new markets and customers (Focarreli et al., 2002).

However, the empirical research done on the wealth effects of M&A in the banking industry have often proved the benefit theories do not hold in the real world, reporting that consolidation does not create value, and can even destroy it, especially for shareholders of the bidding side. On the other hand, the shareholders of target bank seem to realize value gains from M&A activity, which is reported consistently across studies regardless of the time period or geography researched. Therefore, such results imply that instead of value creation through M&A, there is rather a transfer of wealth from shareholders of the bidding bank to shareholders of the target bank.

Nonetheless, the mentioned findings are referring to the studies done in the United States, where most of the available knowledge on the effects of banking M&A comes from. On the other hand, the M&A research in Europe, which is the focus of this thesis, have attracted much less scrutiny. Moreover, when reviewing the scarce literature available in Europe, one can find several studies which indicate that consolidation between banks does create value, even for the shareholders of the banks that were on the bidding side (e.g., Cybo-Ottone & Mugria, 2000; Lesnik & Maslennikova, 2008).

The fact that findings of such studies conducted in Europe oppose those reported by the US scholars, suggest that there may be a fundamental difference in the way markets react to M&A announcements in the two geographies. Therefore, it is important to increase the bulk of research in Europe, to have better understanding on how the M&A activity impacts shareholders wealth.

The aim of this thesis is to put to test the hypothesis of wealth creation through M&A activity in the European banking industry, from the shareholder perspective of the bidding bank, target bank as well as the imaginary entity combining the bidder and target. Using the sample of 25 M&A deals in the period 2008-2020, an event study method is applied to analyse the abnormal returns of the stocks around the deal announcement dates.

This paper is composed of 6 parts, first of which being the current, introductory section. Following, the second section provides a detailed elaboration on the literature related to the research question, where the prominent studies done on the same topic are reviewed. Section 3 focuses on the event study methodology which was applied in the empirical part of this dissertation. Afterward, the fourth section explains the process of data selection and provides the description of the final sample used in the study. Finally, the results of the study are discussed in the section 5, followed by the conclusions in the sixth section.

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2. Literature Review

2.1 M&A Motives

The economic rationale and motivation behind the activity of M&A remains an important topic of research for many scholars who seek to study consolidation of firms. The pursuit for M&A between companies is typically motivated by the belief that merger will eventually result in some sort of value creation. Rationalization for this belief can be found in the well-documented theories of M&A benefits, out of which the more prominent ones are explained by DePamphilis (2017) [1]. Many authors identify the anticipated synergy gains between the bidder and target firms as the primary and most often cited motive in the M&A literature (Ferreira et al., 2014; Goergen & Renneboog, 2004). Regarding the M&A motives specific to the Banking Industry, Focarreli et al., (2002), highlights as dominant the efficiency pursuit through economies of scale and the desire to diversify bank's portfolio through the exposure to new markets and customers.

However, the empirical research done in the Banking Industry does not provide universal and conclusive support for the M&A benefit theories. The hypothesis that M&A activity between banks creates value for shareholders has been put to test in many empirical investigations, providing different results. As it will be shown in the literature review (Section 2.3), findings of scholars often suggest no additional value is created, and that there is rather a transfer of wealth from the shareholders of bidding bank to the shareholders of target bank.

Such findings of no overall value creation through M&A, and even value loss for the bidding bank shareholders, leave many wondering why the trend of mergers in banking continues. A potential explanation for this phenomenon can be found in the Hubris Theory, as explained by Roll (1986). Namely, this theory suggests that M&A activity may be driven by the overconfidence of the bidding firm's management, that leads to paying too much for the target firm. Therefore, upon the overvalued deal announcement, the market (assumed to be rational and efficient) will recognize the hubris and will not

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[1] For more detailed discussion on M&A motives, besides Depamphilis (2017) see also Berkovitch & Narayanan (1993) and Zhang (1998).

share the optimism of the bidding firm's management, leading to a decrease in the stock price.

Furthermore, an alternative explanation is provided by the Agency Theory (Jensen & Meckling, 1976). The Agency Theory suggests that the actions of a company, such as pursuit for M&A, can be motivated by the personal ambitions of the firms' management, which may not be aligned with the interests of the shareholders. A typical example of such motive would be the desire to increase the size of a firm, in order to increase the power and pay of the top executives.

However, the motivation behind M&A differs from deal to deal, depending on many factors coming from both internal perspective of the bidder/target, as well as from the external circumstances. The internal perspective can be explained by the above-mentioned theories but requires specific investigation on the characteristics of isolated M&A deals and firms involved in it. However, some of the external factors common to the whole industry or economy in a specific moment in time, can be identified as those that create an environment that can (dis)incentivize consolidation.

2.2 European Banking Landscape

During the 1980's, the Government interventions within the Banking sector across Europe were still significant, imposing many protective and competition-restrictive barriers. As a result, by the end of 1980's the European Banking sector was characterized by the lack of operational efficiency, low concentration, and overcapacity (Altunbaş et al., 2001). This situation would change in the years that followed, with the stream of regulatory changes and important events that reshaped the Banking Industry. Iasinskyi (2017), highlights the most important factors that influenced EU Financial System in the recent past to be: **Deregulation**[2], **Introduction of Euro** (See: Hartman et al., 2003), **Technological Evolution** (See: Frame & White, 2014 or Campanella et al., 2015) and **Globalization** (See: Goldberg, 2009).

The consequence of these changes and trends was the decrease in the level of geographical and legislative restrictions, and competition uptake in the European Banking

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[2] Referring to the *Second Banking Directive* (1989) and the *Capital Adequacy Directive* (1993). For more details see: Inzerillo et al., (2000).

Industry. The need to increase in size to achieve cost efficiency became a dominant objective and therefore, consolidation was seen as an obvious strategic response for many Banks in Europe (Lensink & Maslennikova, 2008). The volume of M&A activity in the banking industry peaked in the period 2002-2006[3], however the avalanche of mergers slowed down with the beginning of the Global Financial Crisis in 2007.

As the shock of the crisis settled down, the consolidation of the Banks in Europe continued. The European Banking sector has been contracting for 11 consecutive years, from over 8,500 Financial Institutions in 2008, to a reported figure of 5,981 in 2019 (EBF, 2020). However, although contraction of the banking sector continued, the annual number of M&A deals in Europe have not recovered to the pre-crisis figures and even exhibited a downwards trend since then (Heukmes & Guionnet, 2018).

2.3   Empirical Evidence

Vast majority of the conducted empirical studies that investigate value creation through M&A activity can be classified in one of the two categories, based on the methodology applied (Rhoades, 1994). First one is the **Event-study method**, in which the impact of the M&A activity on firm's value is analysed by using the data from financial markets. More specifically, the market reaction to a merger transaction is evaluated by estimating the abnormal stock returns around the time of the deal announcement. The abnormal returns can be assessed from the perspective of the Bidding Bank, Target Bank or Bidder and Target combined (assessing the overall value creation). The idea behind the event-study concept is that if the theories of M&A benefits are true, their effect will be visible through the financial market's reactions and appreciation of stock price, consequently increasing the shareholders wealth.

The second type of studies – **Operating Performance method**, focuses on the accounting data, analysing changes in profitability or productivity in order to measure the impact of financial integration on the bank's performance. For example, Berger and Humphrey (1992) investigate merger effects by analysing changes in cost efficiency, while Rhoades (1987) focuses on the changes in ratios of net income.

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[3] Banking consolidation peak in EU occurred synchronically with the sixth wave of M&A on the global level. For more details see: Alexandridis et. al, (2012).

According to MacKinlay (1997), the advantage of an event-study method is that the effects of an event such as M&A will be immediately reflected in the security prices, assuming rationality and efficiency in the financial market. In contrast, using accounting to evaluate performance may require months or years of observations, after which it becomes difficult to distinguish the consequences of M&A from the other factors and events that occurred during the observed period.

On the other hand, as noted by Pillof & Santomero (1997), an argument that is often raised in favour of accounting performance approach is the independence and accuracy of the accounting data. Namely, the proponents of this methodology suggest that the accounting data records the actual financial performance, while the data obtained from financial markets only reflects the expectations of investors. Therefore, to capture the true effects of value creation, the event-study methodology is said to be highly dependent on the assumptions of investors rationality and market efficiency. On the contrary, opposing point of view suggests that the accounting approach is the one which is unrealistic and inadequate in analysing true effects of an event such as M&A. Smith (1992) identifies specific issues related to accounting and merger activity, such as asset revaluation, goodwill accounting and M&A funding type and source.

Additional consideration to have in mind when doing a research over a geographical area that involves multiple countries, is that performance analysis may also bring difficulties arising from differences in country-specific financial reporting standards and regulations. However, the country-specific limitation is also present with the event-study method as countries have different levels of stock market efficiency.

Although both previously mentioned approaches have their specific (dis)advantages, the chosen methodology for the empirical research in this paper was the Event-Study method. Therefore, the following review of the empirical evidence will focus on the studies that have applied the same methodology.

2.3.1 Empirical Evidence: United States

Most of the available literature about the effects of M&A in the Banking industry has been published in the United States, where many researchers reported relatively similar findings. In the literature review of the topic at hand, Rhoades (1994) notes that a common feature seen across studies in US was the existence of positive and statistically significant

gains realized by the shareholders of the target banks. In addition, studies that separately estimated returns for bidders varied in findings, however most of them either reported negative or zero returns to the bidding banks. Finally, as only few of the studies reviewed in this paper analysed the net effects of bidders and targets combined, and offered contradicting results, Rhoades invited academic community to further research this issue before making conclusions.

Few years later, as the bulk of research grew, Pillof & Santomero (1997) published another literature review, also highlighting findings that were commonly reported by the American scholars. Moreover, authors also noticed that most of the studies fail to find a positive relationship between the M&A activity and gains in stockholder wealth for the bidding banks as well as regarding the net gains to bidders and targets combined, while the target banks recorded high returns (see: Hannan & Wolken, 1989; Houston & Ryngaert, 1994; Madura and Wiant, 1994;). This pattern seemed to suggest that there is no additional value created by the merger of banks in US, but that there is rather a transfer of wealth from bidders to targets.

Following the wave of increased M&A activity in 1990s, the amount of research on the topic also grew, yet the findings of scholars in US remained mostly unchanged. For example, Houston et al. (2001) found that in the banking mergers that occurred during the period 1985-1996, bidding banks realized negative returns, targets experience significant gains, while the combined returns are close to zero.

In some of the more recent studies, Christopoulos & Vergos (2012) investigated the effects of largest bank-to-bank M&A deals during the period of 2005-2011. This paper is particularly interesting considering that the study is conducted around the time of global financial crisis in which the banks played a crucial role. However, despite the peculiar timing of their research, Christopoulos & Vergos also find that on average, announcement of M&A deals did not create significant positive returns for the bidders and targets combined. Furthermore, findings of this study are in line with the prior literature, showing significant positive gains for targets and negative returns for the acquirers.

Nevertheless, despite the seeming consensus among the findings of the US scholars, there are several studies which stand out from the rest, reporting opposing findings. For example, Zhang (1995) examined 107 deals in the US during the period of 1980 to 1990

and found that both bidders and targets shareholders experienced value gains. In addition to Zhang (1995), there were other US studies which found positive gains for bidders (e.g: James & Weir, 1987), however they remain significantly outnumbered by the authors who reported negative or near-zero returns for the bidding banks.

2.3.2 Empirical Evidence: Europe

Unlike in the US, where there is abundance of literature on the wealth effect of M&A within the Banking Industry, the empirical research on this topic in Europe is rather scarce. Most of the studies that were done in Europe focused on the M&A deals of specific countries, such as Silva & Diz (2005) in Portugal, or Liargovas & Repousis (2011) in Greece. According to Leonard et al (1992), the reason for the lack of research on a continental level can be found in methodological difficulties arising from the nature of the Europe's fragmented banking market. Moreover, the scarcity of research in Europe is particularly troubling when seeing that findings of the few studies that were conducted, often differ in conclusions from the US studies.

In one of the firstly published papers dealing with this topic in Europe, Cybo-Ottone & Murgia (2000) conducted an event study of 54 M&A deals in 14 European banking markets for the period 1988-1997. This study found a positive and significant increase in the combined value of bidder and target at the time of the announcement, contradicting the findings seen in the US literature. Authors intuitively suggest that the reason for the difference, may be attributed to the structure and regulation of EU banking market, which is much different when comparing to the US. Moreover, Cybo-Ottone & Murgia presented their findings for bidders and targets separately, reporting returns to the bidders to be positive and statistically significant for the shorter event windows.[4] The average returns for the target banks are highly positive and significant, same as seen in the US studies.

Additionally, Lesnik & Maslennikova (2008) examined the value gains to the acquirers during the merger wave in European banking in the period of 1996-2004. Same as Cybo-Ottone & Murgia (2000), the results of this study show that there are positive and

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[4] Cybo-Ottone & Murgia's finding of positive and significant returns for the bidding Banks is seen when using the General Market Index as a benchmark. The authors also used the Bank sector index, where results did not confirm the significant and positive effect for the bidders.

statistically significant abnormal returns for the bidding banks around the time of the deal announcement. Furthermore, the findings of this study identify domestic deals as more successful, while the cross-border merger activity on average did not create shareholder value.

In another event-study involving Banking M&A in Europe in the period 1991-2001, Lepetit et al (2004) found positive and significant abnormal returns for their whole sample. Therefore, they conclude that through the M&A activity European banking industry resulted with significant increase in the overall value. However, when observed individually, less than 10% of the deals ended up with positive abnormal returns, suggesting that the market has optimistic expectations only for small number of announced M&A deals. In line with the other literature, this study also confirms the positive returns recorded by target banks.

Although not completely aligned, some of the studies in Europe found results closer to those of US scholars. For instance, Tourani & Van Beek (1999) find that the stock appreciation gains are only noticed for the target banks, while the bidding banks on average record no significant positive abnormal returns. In addition, similar findings of high value creation for targets but near zero returns for bidders were reported by Goergen & Renneboog (2004) and Campa & Hernando (2006). However, although reporting returns to bidders close to zero, none of these studies found negative returns and destruction of value which were commonly reported by the US scholars. Therefore, it is apparent that the findings of US studies seem to differ those seen in Europe, suggesting there might be a fundamental difference in the way investors in the two markets react to the M&A announcement. Moreover, several studies tackled this issue by analysing both markets during the same period, investigating whether their reactions are in fact different.

In one such study, Scholtens & De Wit (2004) find that in both US and European markets, the target banks earn very high returns, while the results for the bidders in the two markets differ. Namely, the US bidders on average realize negative abnormal returns, while in Europe they recorded small positive gains. In addition, De Long (2003) examined US vs non-US mergers and the market reaction to their announcement for the period 1988-1999. De Long finds that the announcement of the non-US M&A enhances the value of combined partners, that bidders do not lose (small positive return), while the targets earn

high positive returns. On the other hand, in US, the joint value of the two combining parties is not affected by the M&A announcement, the bidders lose in value, while targets earn high positive returns.

2.4 Research Questions

When reflecting on the existing evidence, the overwhelming amount of research coming from the US points to the fact that M&A activity in the Banking Industry does not create value for the bidders and targets combined, and that there is rather a transfer of wealth from bidders to targets. On the other hand, some of the studies done in Europe suggest that merger of banks does create value for bidders and targets combined. Although findings of gains for target banks are the same as in US, studies in Europe reported that bidding banks shareholders experience value gains, or at worst do not suffer losses.

The difference in market reactions to the Banking M&A deal announcements in EU and US was further highlighted by Scholtens & De Wit (2004) and De Long (2003), inferring that conclusions made from studies in one market do not necessarily hold for the other. This realization gives to the importance of this thesis and all other future studies that will be done on this topic in Europe, considering that the bulk of research is still much behind those done in the United States. Therefore, the hypotheses to be tested in this study are:

H1: The announcement of M&A deals between European banks has a positive impact on the share prices of the bidding bank. Therefore, bidding bank shareholders' wealth is increased by M&A activity.

H2: The announcement of M&A deals between European banks has a positive impact on the share prices of the target bank. Therefore, target bank shareholders' wealth is increased by M&A activity.

H3: The announcement of M&A deals between European banks has an overall positive impact on the combined share price of the Bidding and Target bank. Therefore, M&A activity increases the overall wealth, and creates value for the imaginary combined entity.

3. Methodology

In the beginning of the section 2.2, the general idea of an Event study was briefly discussed, presenting its advantages and drawbacks when comparing with the operating performance methodology. The concept of Abnormal Returns was also introduced, however without an explanation of what it is or how it is calculated. Hence, the following section elaborates in more detail on the empirical methodology that was applied to answer the proposed hypotheses of this paper.

3.1 Abnormal Returns

The Event Study methodology is built on the Efficient Market Hypothesis (EMH), which suggests that the financial markets are efficient, and stock prices reflect all of the available information (Fama, 1970). Therefore, under EMH, any unexpected information release will cause a shock in the market and the returns of a stock will deviate from its normally expected returns. In that context, we can recognize the effect of an M&A announcement, as the difference between stock's return upon the announcement and its expected return (if no announcement was released). This difference, in the Event Study methodology, is known as the **Abnormal Return (AR)**:

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

Where:

$AR_{i,t}$ = Abnormal Return of the Bank i, on the day t

$R_{i,t}$ = Actual Return of the Bank i, on the day t

$E(R_{i,t})$ = Expected Value for the Return of the Bank i, on the day t

To determine AR's as per Equation (1), we can obtain the actual returns from the stock markets, however the Expected Values of the returns have to be calculated. There are several methods by which this can be done, but for the purpose of this study **Market Model** was chosen, in line with the majority of studies referenced in section 2. As MacKinlay (1997) explains, the market model relates the return of any given stock to the return of a market portfolio. Furthermore, the model assumes a stable linear relationship between the stock return and the market return, so the expected return of a security can be expressed as:

$$(2) \quad E(R_{i,t}) = \alpha_i + \beta_i * R_{m,t} + \varepsilon_{it}$$

Where:

$E(R_{i,t})$ = Expected Value for the Return of the Bank *i*, on the day *t*

α_i = Intercept

β_i = Slope (sensitivity of the Bank *i* stock to the markets return*)*

$R_{m,t}$ = Actual Market index Return on the day *t*

ε_{it} = Random error term

The chosen proxy for the market factor $R_{m,t}$ in the equation (2), was MSCI Europe Bank Index. The parameters "α" and "β", were estimated with the OLS regression, where the returns of stocks during the **Estimation period** were regressed against the market returns. The Estimation Period represents a time window before the event of interest, which we consider as "normal" - during which the stock prices were unaffected by the M&A announcement. The length of the estimation period can vary, depending on the authors preference. When the estimation period is longer, we observe better accuracy on the regression parameters. On the other hand, choosing a longer period also carries the increased risk of noise, since there is higher probability of capturing effects of other events. In this paper, the estimation period of 150 days was chosen, starting 20 days before the announcement, going backwards in time. Therefore, the Estimation Window is [-170,-20].

The above-mentioned process of estimating OLS regression parameters was repeated for all firms included in the sample using the STATA 16 software. Following, with the now known "α" and "β" parameters, the equation (2) was applied to obtain the expected returns. Finally, the Abnormal Returns were calculated for each bank, as per equation (1). To enable AR's interpretation for the entire sample, the **Average Abnormal Returns (AAR)** were calculated as:

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

Where:

AAR_t = Average Abnormal Return for the sample on the day *t*

$AR_{i,t}$ = Abnormal Return of the Bank *i*, on the day *t*

N = Number of Banks

3.2 Cumulative Abnormal Returns

However, the practice has shown that the financial markets are not always perfectly efficient as EMH suggests, thus some methodological adjustments must be made to correct for the inefficiency issues. Namely, a leakage of information often occurs through rumours about an M&A deal before it is officially announced (Wang and Moini, 2012). According to MacKinlay (1997), an additional problem may arise due to slow market reaction or the end-of-the-trading-day effects. Therefore, observing AR's only on the announcement date may not capture the full effect of the announcement news. To correct for these issues, the common approach is to establish an **Event Window**, and investigate the aggregated AR's few days before and few days after the announcement date (including the announcement date itself as day 0). The aggregation of AR's is referred to as **Cumulative Abnormal Returns** (CAR) and is calculated as:

$$(4) \qquad CAR_i = \sum_{t=k}^{l} AR_{i,t}$$

Where:

$CAR_{i,}$ = Cumilative Abnormal Return for the Bank i

$AR_{i,t}$ = Abnormal Return of the Bank i, on the day t

k = The first day of the Event Window

l = The last day of the Event Window

Once again, the average is taken to enable for further statistical inferences on the sample level. The **Cumulative Average Abnormal Returns (CAAR)** will be used the final indicator of the M&A announcement effects on the shareholder's wealth. If the CAAR is positive, on average, the M&A announcements from the sample increased the shareholders wealth. If the CAAR is negative, the wealth of shareholders on average decreased during the analysed period. The CAAR's were calculated for several Event Windows in this study, following the method of Cybo-Ottone & Mugria (2000) and Lesnik & Maslennikova (2008): 21 *days* [-10,+10]; 11 *days* [-5,+5]; 5 *days* [-2,+2]; and 3 *days* [-1,+1]. CAAR were calculated as:

$$(5) \qquad CAAR_{N,T} = \frac{\sum_{i=1}^{N} CAR_i}{N}$$

Where:

$CAAR_{N,T}$ = Cumulative Average Abnormal Return for N number of banks, during the Event Window T

$CAR_{i,}$ = Cumulative Abnormal Return for the Bank i

N = Number of Banks

3.3 Combined Entity Approach

Furthermore, having in mind the 3 hypotheses that this study seeks to test, the CAAR's were calculated separately for the perspective of Buyers, Targets, and the Imaginary Combined Entity. The process of obtaining CAAR for the first two is straightforward when following the above-described methodology, however an additional step was required to evaluate the combined returns. Commonly used approach to assess the overall wealth creation for the imaginary combined entity is to calculate weighted sum of the bidding and target banks' Abnormal Returns and aggregate them into CAAR's. The sum of AR's can be weighted based on Market Value or Total Asset Value of the banks involved in the M&A (Cybo-Ottone & Mugria, 2000). However, the financial reports were not available for many of the banks in the sample, thus the number of their shares or assets values could not be obtained. Therefore, for simplicity purposes, an equal weight distribution was assumed and ARs for the Combined Entity were calculated as:

$$(6) \qquad AR_{C,t} = AR_{B,t} * 0,5 + AR_{T,t} * 0,5$$

Where:

$AR_{C,t}$ = Abnormal Return for the Combined Entity C, on the day t

$R_{B,t}$ = Abnormal Return for the Bidding Bank B, on the day t

$AR_{T,t}$ = Abnormal Return for the Target Bank T, on the day t

Afterwards, following the logic of the previously described process, the ARs were aggregated into CARs as per equation (4), while the average values for the CARs of the imaginary combined entities in the sample were calculated as per equation (5).

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3.4 Statistical Significance Testing

Finally, in order to interpret the results of the empirical study and make conclusions about our research questions, a formal test of statistical significance was necessary. The test in question should answer whether the observed values of AAR's and CAAR's are statistically different from zero. Therefore, the null and alternative hypotheses are specified as:

$$H_0: E(AAR_t) = 0$$

$$H_a: E(AAR_t) \neq 0$$

The test statistics used to test the proposed H_0, was the **Cross-sectional T Test** given by:

$$t_{AAR_t} = \sqrt{N} \frac{AAR_t}{S_{AAR_t}}$$

Where:

t_{AAR_t} = Cross-Sectional T-Test statistic value

AAR_t = Average Abnormal Return on the day t

S_{AAR_t} = Standard Deviation across banks on the day t given by:

$$S_{AAR_t} = \frac{1}{N-1} \sum_{i=1}^{N} (AR_{i,t} - AAR_t)^2$$

N = Number of banks

Under the above specified null hypothesis[5], the announcement of M&A has no impact on the distribution of returns. Thus, if the null hypothesis is rejected, we can conclude that the M&A announcement carried relevant information to which market reacted and eventually increased or destroyed shareholders wealth.

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[5] The specified hypotheses and T-tests were denoted for AAR, but the same ones were also used to test for statistical significance of CAAR's:

$H_0: E(CAAR_{N,T}) = 0; \qquad t_{CAAR_{N,T}} = \sqrt{N} \frac{CAAR_{N,T}}{S_{CAAR_{N,T}}}; \qquad S_{CAAR_{N,T}} = \frac{1}{N-1} \sum_{i=1}^{N} (CAR_i - CAAR_{N,T})^2$

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4. Data

4.1 Data Selection

The starting point in construction of the sample for this study was obtaining a list of M&A deals between European banks in the period 2008-2020. Database used to obtain this information was the Thompson Reuters Refinitiv, and its application for advanced M&A search. To achieve the sample needed for the study, the following criteria was applied:

1. Announcement date of M&A deal was in the period 01/01/2008 – 31/12/2020.
2. Both Buyer and Target industry is Banking.
3. Both Buyer and Target status is Public.
4. Both Buyer and Target region is Europe.
5. Deal status is Completed.
6. Form of Transaction was Acquisition of Majority of Assets, or Merger.

With these filters applied, the sample of 63 deals was obtained. The next step was collection of stock prices for the banks in the previously extracted list for the period of 01/01/2007-10/01/2021. Once again Refinitiv database was used, however for many of the banks from the list data extraction was not possible. This was the case mostly for the target banks as some of them were delisted upon the acquisition, while others did not have available data for unknown reason. When removing the deals for which stock prices were not available, the sample size reduced to 37 deals.

In addition, another eliminating criteria had to be applied if either Buyer or Target bank was involved in more than one M&A deal within the period of 12 months.[6] This step was necessary to reduce the "noise" caused by multiple shocks of several deal announcements within a short time period. This elimination step is common for the event studies, nevertheless, it should be identified as a possible selection bias against successful acquirers. Namely, as suggested by Lesnik & Maslennikova (2008), firms that have been successful in M&A in the past are more likely to engage in them more often than others. After applying this criterion, we reach our final sample of 25 deals.

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[6] Following the example of Lesnik & Maslennikova (2008), banks involved in multiple deals will be admitted to the final sample if those deals are separated by at least 12 months. This period is perceived by authors as long enough to eliminate effects of previous shock.

4.2 Data description

The final sample of 25 deals consisted of 47 Banks[7]. Out of those, 44 were involved only once in a M&A transaction throughout the analysed period, while two of the banks from the sample were Buyers twice. In addition, one bank was both a Target and a Buyer once during the observed period.

The below shown Figure 2, presents a table with summary statistics of the M&A deals in the sample. The mean value of the deals included in the final sample is 1,836 M USD. When observing the split by the type of transaction, we see that 11 deals were classified as Mergers, while 14 were Acquisitions of Majority Assets. When focusing on the number of deals year-by-year, it is apparent that the bigger part of the sample is concentrated in the period 2008-2013, after which the frequency of M&A seems to reduce.

Figure 2. *Summary statistics of the M&A deals in the sample*

Year	Number of Deals	Mean value (mln USD)	Number of Domestic Deals	Number of Cross-Border Deals	Number of Merger	Number of Acquisition
2020	3	222	2	1	2	1
2019	0	-	0	0	0	0
2018	1	604	1	0	1	0
2017	0	-	0	0	0	0
2016	1	367	1	0	0	1
2015	1	2,530	0	1	1	0
2014	1	302	1	0	0	1
2013	3	746	2	1	1	2
2012	5	930	4	1	3	2
2011	2	1,024	2	0	1	1
2010	2	3,034	1	1	0	2
2009	2	203	2	0	1	1
2008	4	6,508	3	1	1	3
TOTAL	**25**	**1,836**	**19**	**6**	**11**	**14**

Furthermore, most of the deals were Domestic, meaning that both Buyer and the Target were from the same country. The distribution of Buyers and Targets according to their country of origin is provided in the Appendix, Figure 3. From there, we can see that the significant portion of the deals from the sample occurred in the Northern Europe, where banks from Denmark were most often involved in the M&A activity.

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[7] The names of the Banks involved in the deals, and the announcement dates are provided in Figure 1 of the Appendix.

5. Results

The results that will be presented in this section were obtained using the STATA 16 software, applying the event study methodology described in the Section 3 of this paper. The aim of this thesis was to answer the question whether M&A activity in the European banking industry increases wealth of shareholders. The empirical study was designed in a way to test this hypothesis from the perspectives of bidding bank shareholders, target bank shareholders and imaginary shareholders of the combined entity. Therefore, in the following sections, the results are presented in that same order.

5.1 Bidding Bank Perspective

The results for the bidding banks in the reviewed literature were particularly interesting, considering that some of the European studies reported positive returns for shareholders, while majority of the US studies reported value destruction, or no effect at best. The Figure 5 contains the table with the Average Abnormal Returns for the 25 banks that were on the buying side of the analyzed deals in this study, during the 21 days surrounding the announcement date.

Figure 5. *AAR's for the Bidding Banks in the sample during the widest event window [-10, +10]*

Day	AAR	Positive / Negative		Cross-Sectional Test (CSect T)
-10	0.6%	10	15	0.74
-9	0.2%	11	14	0.33
-8	0.3%	17	8	0.80
-7	-0.6%	11	14	-1.39
-6	-0.3%	10	15	-0.73
-5	-0.4%	11	14	-1.03
-4	-0.4%	14	11	-0.69
-3	1.2%	16	9	1.75*
-2	2.0%	17	8	1.61
-1	0.3%	10	15	0.55
0	**2.4%**	**17**	**8**	**1.24**
1	-0.8%	13	12	-0.58
2	-0.1%	9	16	-0.13
3	-0.5%	7	18	-0.78

4	-0.1%	11	14	-0.15
5	-0.2%	13	12	-0.48
6	-0.3%	11	14	-0.29
7	-0.5%	10	15	-0.79
8	-0.2%	10	15	-0.37
9	-0.8%	13	12	-1.04
10	0.7%	12	13	0.62

*** 1% significance level, ** 5% significance level, *10% significance level

When looking at results presented above, we see that the bidding banks from the sample on average recorded highest positive AR on the event day itself, with 2.4%. Besides day 0, positive AAR's are also seen for the 3 days before the announcement, however only the third day prior to the event is showing statistical significance. Furthermore, the positive and statistically significant AAR od day -3, could be explained by the previously mentioned market inefficiency and information leakage, in this case having a positive effect on the shareholders wealth. The AAR's for the other days in the event window provided mostly negative values, nevertheless none of them being statistically different from zero.

For the final interpretation on potential wealth creation by M&A activity within our sample, the ARs were aggregated and observed during the 4 different event windows. Figure 6 provides summary of the CAAR's that were calculated for the bidding banks.

Figure 6. C*AAR's for the Bidding Banks in the sample during the 4 Event Windows*

Event Window	CAAR	S.D	Cross-Sectional Test (CSect T)
(-1, +1)	1.91%	8.2%	1.17
(-2, +2)	3.89%	13.4%	1.45
(-5, +5)	3.44%	13.2%	1.30
(-10, +10)	2.46%	13.9%	0.89

*** 1% significance level, ** 5% significance level, *10% significance level

For all of the 4 event windows analysed, we notice positive CAAR's for the bidding banks in the sample. However, none of the CAAR's show statistical significance. Therefore, we can conclude that obtained results do not provide enough evidence to support the hypothesis which claims that M&A increase wealth of the bidding bank shareholders (H1).

5.2 Target Bank Perspective

The examined literature was rather universal in conclusions regarding the target banks, with the commonly reported findings of high positive abnormal returns. Moreover, the high returns for targets were reported by the studies in US, but also in Europe. The results of this study are no different than those, as can be seen below in the Figure 7.

Figure 7. *AAR's for the Target Banks in the sample during the widest event window [-10, +10]*

Day	AAR	Positive / Negative		Cross-Sectional Test (CSect T)
-10	0.1%	11	14	0.09
-9	-0.9%	10	15	-1.41
-8	1.1%	14	11	1.67*
-7	0.6%	13	12	0.54
-6	0.2%	15	10	0.25
-5	-1.3%	11	14	-1.88*
-4	0.2%	7	18	0.16
-3	-0.3%	14	11	-0.35
-2	-0.8%	10	15	-1.24
-1	-0.4%	11	14	-0.37
0	**10.9%**	**14**	**11**	**2.23****
1	0.1%	11	14	0.04
2	-1.0%	9	16	-1.65*
3	-0.4%	9	16	-0.66
4	-0.1%	14	11	-0.19
5	-0.2%	14	11	-0.33
6	1.1%	13	12	1.87*
7	-0.4%	13	12	-0.98
8	-0.5%	10	15	-0.62
9	-0.4%	14	11	-0.46
10	1.2%	14	11	1.48

*** 1% significance level, ** 5% significance level, *10% significance level

Although throughout the event window we see the AAR's for target banks oscillated around zero with small positive or negative returns, the event day 0 is the clear outlier with the highest positive AAR of 10.9%, showing statistical significance at 5% level. Moreover, days -8, -5, 2 and 6 also proved to be statistically significant at 10%

significance level, offering different results. The reported AAR on day -8 was 1.1%, while on the day -5 it was -1.3%. On the second day after the announcement AAR for the sample was -1%, and on the day 6 average AR was 1.1%.

Despite seemingly obvious results shown in AAR's table, to stay consistent with the discussed methodology, the conclusions about potential wealth creation for shareholders of target banks will be made based on the analysis of CAAR's.

Figure 8. C*AAR's for the Target Banks in the sample during the 4 Event Windows*

Event Window	CAAR	S.D	Cross-Sectional Test (CSect T)
(-1, +1)	10.6%	24.2%	2.18**
(-2, +2)	8.8%	24.4%	1.80*
(-5, +5)	6.7%	23.9%	1.40
(-10, +10)	8.7%	29.2%	1.50

*** 1% significance level, ** 5% significance level, *10% significance level

By looking at the Figure 8, we see that the CAAR's for the target banks of the sample provide evidence that support the wealth creation hypothesis with all 4 Event windows showing high positive returns, out of which CAAR for [-1, +1] and [-2, +2] being statistically significant. Therefore, we can say that based on this study, there is evidence that support the hypothesis of wealth creation through M&A activity for the shareholders of target banks (H2).

5.3 Combined Entity Perspective

Finally, the overall wealth creation hypothesis was put to test, by combining the abnormal returns for bidders and targets, assuming an equal weight distribution between them.

Figure 9. *AAR's for the Imaginary Combined Entity assuming equal weight distribution between Buyer and Target Bank*

| Day	AAR	Positive / Negative		Cross-Sectional Test (CSect T)
-10	0.3%	12	13	0.59
-9	-0.4%	10	15	-0.75
-8	0.7%	16	9	1.83*
-7	0.0%	11	14	-0.03
-6	0.0%	14	11	-0.12

-5	-0.9%	11	14	-2.38**
-4	-0.1%	8	17	-0.21
-3	0.5%	16	9	1.01
-2	0.6%	13	12	1.01
-1	0.0%	9	16	-0.07
0	**6.7%**	**17**	**8**	**2.34****
1	-0.4%	14	11	-0.31
2	-0.5%	8	17	-1.31
3	-0.5%	12	13	-1.08
4	-0.1%	13	12	-0.27
5	-0.2%	16	9	-0.54
6	0.4%	16	9	0.67
7	-0.5%	11	14	-1.37
8	-0.3%	8	17	-0.76
9	-0.6%	11	14	-1.09
10	0.9%	17	8	1.70*

*** 1% significance level, ** 5% significance level, *10% significance level

When looking at the Figure 9, we see that returns on multiple days are showing statistical significance. Starting from the biggest one, on the announcement day an AAR of 6.7% was recorded, statistically significant at 5% significance level. Moreover, the AAR on the 5th day before the announcement of -0.9%, also showed significance at 5% level. The AAR's that were statistically significant but at 10% level, were recorded on days -8 and 10, with the returns of 0.7% and 0.9%, respectively.

Figure 10. *AAR's for the Event Window [-10, +10] for the Bidders, Targets and Combined Entity*
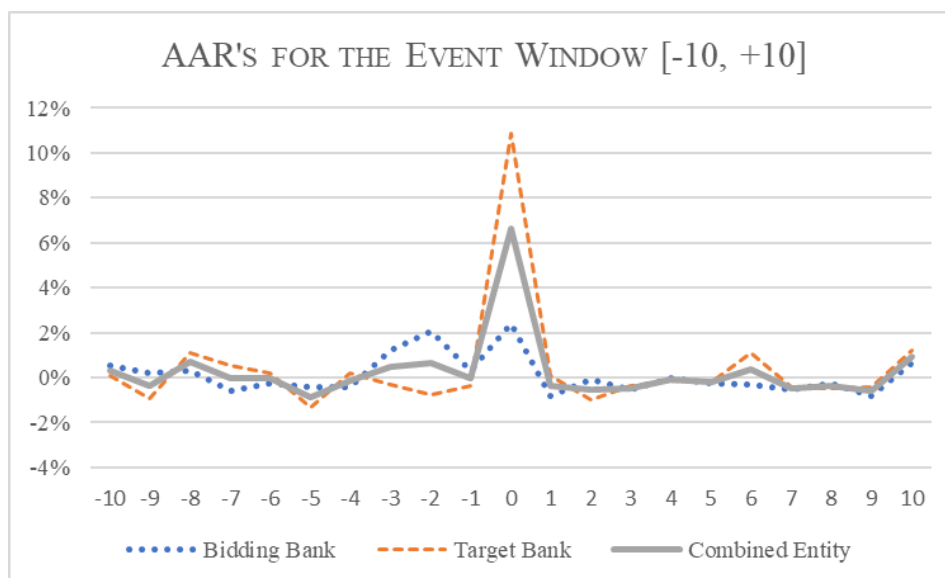
Additionally, the Figure 10 provides a visual representation of AAR movements throughout the widest event window, where the solid line presents the combined entity. By observing the chart above, we can see that there is an obvious spike in AAR on the day 0, when M&A deals were announced. Furthermore, we see that the AAR's slightly increase in the few days prior to day 0, driven by the effects seen for the bidding banks which may be attributed to the information leakage.

Figure 11. C*AAR's for the Imaginary Combined Entity during the 4 Event Windows*

Event Window	CAAR	S.D	Cross-Sectional Test (CSect T)
(-1, +1)	6.2%	13.4%	2.33**
(-2, +2)	6.3%	14.7%	2.16**
(-5, +5)	5.1%	14.2%	1.78*
(-10, +10)	5.6%	16.0%	1.75*

Finally, the Figure 11 shows that all 4 event windows for combined entity recorded high positive CAAR's, also being statistically significant. The two of the narrower event windows are significant at 5% level, while the 11 and 21-days event windows are significant only at 10% level. Therefore, we can say that these results provide support to the hypothesis of overall wealth creation to the shareholders by M&A activity (H3). Nevertheless, it is important to again highlight the assumption of equal weight distribution, which could have potentially tampered the accuracy of CAAR's as well as inflated the test statistics values.

6. Conclusion

The aim of this thesis was to investigate how the activity of M&A impacts the wealth of shareholders in the European banking industry. This investigation was designed to test the wealth creation hypothesis from the perspectives of bidding bank shareholders, target bank shareholders and shareholders of the imaginary combined entity. For that purpose, a sample of 25 M&A deals between European banks was collected from Refinitiv database, for the period 2008-2020. The methodology applied was the event study method, estimating CAAR values around the announcement dates of the deals from the sample. The CAAR's were estimated for the three above mentioned perspectives, over the four alternative event windows: [-1, +1], [-2, +2], [-5, +5], [-10, +10].

The results from the study showed positive CAAR's for the bidding banks in the sample in all four event windows, however none of them proving statistically significant. Since the obtained results are in statistical sense not different from zero, there is no evidence that would support the hypothesis of wealth creation for the shareholders of bidding banks through M&A activity. On the other hand, CAAR's for the target banks were high and positive, with two of the analysed event windows showing statistical significance. Namely, the CAAR [-1, +1] was 10.6%, significant at 5% level, while CAAR [-2, +2] was 8.8%, significant at 10% level. Therefore, the results of the study provide evidence for the wealth creation hypothesis to the shareholders of target banks. These results are in line with some of the European studies which found high and significant returns to target banks, but near zero or statistically not significant ones to the bidding banks (e.g. Tourani & Van Beek (1999); Goergen & Renneboog (2004); Campa & Hernando (2006)).

Finally, the results for the imaginary combined entity showed positive CAAR's statistically significant for all event windows. CAAR's for all of the four analyzed periods were around the values of 5-6%, with two narrower event windows being statistically significant at 5% level, while the two wider ones at 10% level. Such CAAR's provide evidence of overall wealth creation hypothesis, in line with the findings of Cybo-Ottone & Murgia (2000) and De Long (2003). Nevertheless, the results for the joint entity in this dissertation were obtained with an underlying assumption of equal weight distribution between bidder and target, which potentially could have tampered the accuracy of CAAR's as well as inflated the test statistics values.

This Master's Thesis provided a review of the currently available literature on the wealth effects of M&A in the banking industry and had identified the gap in the amount of evidence stemming from Europe. Furthermore, the scarce amount of empirical research that was available in EU provided findings contradicting the conclusions of US studies which report that there is no value creation through M&A between banks, but there is rather a transfer of wealth from bidders to targets. Upon conducting the research on the sample of 25 deals in the period 2008-2020, the results of this thesis add to the pile of evidence from Europe which suggest that M&A activity does increase the wealth of shareholders.

Suggestion for future research on this topic would be to focus on analysing the wealth effects to the bidding bank shareholders. The effects of M&A for target banks across literature are consistent and seem to be well understood, while the opposite can be said about the bidding banks. Furthermore, building a sample which includes only deals where both bidder and target data is available, as it was done in this study, severely limits the size of the final sample. Therefore, focusing only on the bidding banks may result in larger sample sizes with better accuracy of the results. Although this would prevent testing the hypothesis of the overall wealth creation for both sides involved in M&A, it would provide more concrete evidence on the bidding side, which is in Europe a point that is still debated and inconclusive.

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8. Appendix

Figure 1. *The announcement dates and names of the Banks from the sample*

Announcement Date	Bidding Bank Name	Target Bank Name
30/11/2020	Sparebank 1 BV	Sparebanken Telemark
26/11/2020	Vestjysk Bank A/S	Den Jyske Sparekasse A/S
26/02/2020	Nova Ljubljanska Banka dd Ljubljana	Komercijalna Banka AD Skopje
18/04/2018	Ringkjobing Landbobank A/S	Nordjyske Bank A/S
01/04/2016	Alior Bank SA	Bank BPH SA
12/03/2015	Banco de Sabadell SA	TSB Banking Group plc
09/10/2014	Nordjyske Bank A/S	A/S Norresundby Bank
27/12/2013	BNP Paribas SA	Bank Gospodarki Zywnosciowej SA
11/11/2013	Sydbank A/S	Diba Bank A/S
12/06/2013	Powszechna Kasa Oszczednosci Bank Polski SA	Vordingborg Bank A/S
19/10/2012	Bank of Piraeus SA	General Bank of Greece SA
05/10/2012	National Bank of Greece SA	Eurobank Ergasias SA
18/09/2012	Spar Nord Bank A/S	Sparbank A/S
08/06/2012	Sberbank Rossii PAO	Denizbank AS
25/01/2012	Vestjysk Bank A/S	Aarhus Lokalbank A/S
07/10/2011	Banco Popular Espanol SA	Banco Pastor SA
28/04/2011	Bank VTB PAO	OAO "TransKreditBank"
10/09/2010	Banco Santander SA	Bank Zachodni WBK SA
27/05/2010	Max Bank A/S	Skaelskor Bank A/S
19/05/2009	Banco Popular Espanol SA	Banco de Andalucia SA
16/03/2009	Banco Popolare SC	Banca Italease SpA
17/09/2008	Lloyds TSB Group PLC	HBOS PLC
15/09/2008	Svenska Handelsbanken AB	Lokalbanken i Nordsjaelland A/S
24/06/2008	Banca Popolare dell'Emilia Romagna SC	Meliorbanca SpA
09/04/2008	Commerzbank AG	Commerzbank AG von 1870

Figure 3. *Distribution of M&A deals in the sample by the country of origin*

Targets \ Buyers	Norway	Denmark	Slovenia	Poland	Spain	France	Greece	Russia	Portugal	Italy	United Kingdom	Sweden	Germany
Norway	1												
Denmark		6										1	
North Macedonia			1										
Poland				2	1	1							
United Kingdom					1						1		
Greece							2						
Turkey								1					
Spain					2								
Russia								1					
Portugal									1				
Italy										2			
Germany													1

Figure 4. *Comparison of sample size and mean value (USD) with selected studies from US and Europe*

	This study	Selected US Studies			Selected European studies	
		Houston & Ryngaert (1994)	Zhang (1995)	Siems (1996)	Cybo-Ottone & Mugria (2000)	Lesnik & Maslennikova (2008)
Number of M&A in the sample	25	153	107	19	54	75
Mean Deal Value	1,836 M	N/A	N/A	2,774 M	1,612 M	2,771 M