The Stock Market Reaction to Bank Mergers and Acquisitions in Europe and the impact of the Financial Crisis

Event study on the abnormal returns for targets and bidders

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Chapter 1 Introduction

1.1 Introduction

The financial crisis that started in the summer of 2007 has been the worst global financial crisis since the Great Depression in 1839. It has resulted in a suffering housing market, prolonged unemployment, a collapse of many large financial institutions, bailouts of banks by national government and downturns in stock markets. The International Monetary Fund (IMF) estimated that the financial institutions around the world would produce huge losses and that the economic output of the world would decline about five percent.

The financial crisis has also significantly affected the landscape of the banking sector around the world. During the period of 2007-2010, forty European banks across twenty-two nations required urgent help as they came into liquidity trouble. National governments looked at the importance of relevant banks to the local economy and rescued them systematically. Some banks received capital injections by the national government or became state-owned enterprises. Others were saved by a stronger competitor through an acquisition. An example is the large Dutch local bank Postbank N.V. that got acquired in 2009 by a strong local competitor ING Bank and became part of ING Group.

One of the countries that was hit hard by the crisis was The Netherlands, since it has a relatively a small domestic market compared to its large foreign market. Its government has made €20 billion available to inject banks like ING Bank and SNS Reaal (Rijksoverheid). The state also bought the domestic Fortis Bank, including ABN AMRO which eventually became one of the largest banks in The Netherlands ABN AMRO. The phenomenon of mergers and acquisitions (M&As) deals in the banking sector increased substantially with the come of the crisis. The total value of M&As reached its peak at €152 billion in 2008, following €140 billion in 2007 and €99 billion in 2006 (Eken etc., 2012).

The phenomenon of M&A deals in the banking sector is an interesting topic to investigate. Why do banks merge and what are the outcomes? Berger et al. (1999) found that banks want to merge and/or acquire to obtain economies of scale, x-efficiency, more market power and market expansion. They want to be cost and profit efficient. David and Solo (1998) found that consolidation is an efficient way to eliminate excess capacity in European banking markets and result in an efficient level for both the scale and product mix. But the outcomes and their reasons for bank M&As might be different in a period with financial crises. This is an interesting and also a quite unknown scientific area, because it shows the topic of M&A deals from a whole different perspective. The financial crisis could be an

important factor that pushes banks to merge; it could also be a crucial factor that has differentiated the previous outcomes of M&As. Do banks merge, because they are forced by its critical condition which is caused by the crisis or is it a strategic force that drives them to profit from merging? How does the stock market for banks change in a period of crisis?

Since there are little studies done on the subject with respect to financial crises, there is a void in the theory on the effects of the stock market on bank M&As. This study will focus on the change in reaction of the stock market and fill in this void. The research question of this paper will be as following: *How did the financial crisis impact the value creation of mergers and acquisitions in the banking sector in Europe?*

With how, we mean the sign and the amount of the change in stock market reaction. To answer this question the first question to answer is what the normal situation is, i.e. how was the value creation for European bank mergers and acquisitions without the financial crisis? What is also interesting to study are the short- and medium-term effects of M&As, i.e. What are the short- and medium-term effects of mergers and acquisitions?

The answers to these questions, the sample could be subdivided between target and bidder banks. As previous studies have concluded, acquirers are usually the losers and targets the winners in M&A transactions. So this paper will divide the M&As depending on its entity status as well; the targets and bidders. This empirical study will investigate whether the outcomes of past studies still apply in the situation of the financial crisis.

1.2 Scientific relevance

Several articles studied the impact of the financial crisis on bank M&As penetration. Schoenmaker (2011) was examining the impact of the financial crisis on cross-border banking and concluded that cross-border banking remained strong within Europe, but some countries made some big shifts in their cross-order penetration.

An article from Bruegel (Daluiso, 2013) collected the sample of bank M&As in the period of 2005 to 2013 from sources as SNL Companies database and SNL Mergers and Acquisitions database. It mentions a relevant result regarding the impact of the financial crisis on the number of cross-border deals; with the come of the financial crisis the European bank M&A market has shrunk to behind the national frontiers. The share of deals involving only banks within the EA has increased from 50% to 56%. This is mainly due to the increase from 33% to 45% in share of deals involving banks within the same EA country.

Some past studies have investigated and measured the post-performance of either firm or bank M&As. André and L'Her (2004) measures the long-term performance of M&As from 267 Canadian firms and uses various models for this, i.e. the Fama-French three factor pricing model and the four factor pricing model. The main finding was that there is a significant underperformance when returns of a portfolio of Canadian acquiring firms are equally-weighted. Other than performance, researchers have also focused on the profitability. Healy etc. (1992) have concluded that on average cash flow returns improve and this is not due to short term decisions. But recent papers question these outcomes and suggest that there may be no improvements on average (Ghosh, 2001 and Becotte, 2002). Most researchers (Teplý and Stárová, 2008) that have examined the stock market reaction to M&As seem to agree that these transactions do create some shareholder's value in overall. However studies show only significant gains for target shareholders and non-positive results for acquiring shareholders.

The subject of M&As is widely researched, yet not much research has been done about the impact of the financial crisis or in the European banking sector. This paper will examine publicly listed banks in the European Union (EU) that were merged or acquired between January 1 2004 and December 31 2013. This will be an empirical study that examines the effect of M&A announcement on the stock market and whether the financial crisis differentiates the outcomes significantly. It will also compare and discuss the results obtained by most researchers about the value creation for shareholders. Next is a table (table 1.1) that displays some studies that have contributed to the theory about value creation through M&A deals.

Table 1.1: Previous relevant research and contributions

Study	Context	Findings	Method	Contribution
André, Kooli and L'Her, 2004	Canadian Firm and bank M&As	Equally-weighted returns show significant underperformance	Fama-French three and four factor pricing models	The effect of M&As on long-term performance of the firms.
Healy etc., 1992	M&As in the United Kingdom	On average cash flow returns improve	Matching scheme	The measuring of M&As for UK takeovers on performance
Ghosh, 2001	M&As in USA	On average no improvements	Comparison post- and pre-	Contradicts Healy's finding. There are no

Becotte, 2002	Canadian M&As		acquisition performance	performance improvements for M&As
Teplý and Stárová, 2008	European bank M&As	In overall, Shareholders gain: bidders lose, targets win	Event study	Effects of M&As on value for target and acquirer banks
Crouzille, Lepetit and Bautista, 2005	Eight East-Asian bank M&As	Negative results and decrease in bank value during crisis	Bivariate GARCH model	Empirical study on stock market reaction to M&As in the financial crisis
Daluiso, 2013	European bank M&As	European bank M&A market has shrunk behind national lines	Data from SNL M&As database	Trend of European bank M&A market due to financial crisis
This thesis	**European bank M&As**		**Thomson One**	**Impact (short- and medium-term) of the financial crisis on bank M&As in EU**

1.3 Managerial relevance

The topic M&A is a very interesting phenomenon to study as there is little agreement between researchers about the causes and results of the M&A deals. Both corporate managers and bank managers are seeking opportunities to complete mergers at an increasing rate. With the findings of this research managers can consider the possible results of merging with or acquiring another firm, i.e. shareholder value, market reaction etc. Shareholders would want to know what the outcomes are from closing M&A deals and whether they benefit from it through value creation. Another factor in this study is the impact of the financial crisis, how would this change the results and how would this change the decisions of managers? It is a very interesting and important research for managers who are deciding whether to execute an M&A deal and gain ownership over another firm or to give ownership to another firm.

1.4 Delimitations

This paper will examine publicly listed banks in EU that were merged or acquired before, during and after the financial crisis, i.e. between January 1 2004 and December 31 2013. Only European acquirers and targets will be considered, so cross-border deals with not-European firms will also be excluded. The sample will be split into two time periods. The first one is from 2004 till 2007 as the pre-crisis situation; the second period frames the period 2007 until 2010 as the crisis period and the third period covers 2011-2013 (see table 4.2 in chapter 5). To collect this specified sample, the Thomson One Database will be used. Only banks of which the stock prices are available throughout these periods shall be taken into account. The source for finding the stock prices is DataStream.

1.5 Outline

The paper is mainly divided by six chapters. This chapter was the introduction or this paper. In the next chapter the theoretical framework will be discussed and the hypotheses will be framed and discussed. The financial crisis will be elaborated on, with respect to bank M&As and the main outcomes of earlier studies on this topic. Chapter 3 will outline and discuss the methodology; also the specification of the data selection for this paper will be discussed here. Thereafter the results will be presented in chapter 4. The hypotheses will be answered with reference to the found outcomes. With the results for the hypotheses, the conclusions can be found in chapter 5 referring back to the main and sub- research questions.

Chapter 2 Theoretical framework

2.1 Overview of previous literature/definitions

2.1.1 Definition of key concepts

The distinction between the terms merger and acquisition is not very clear as both of the terms are frequently used interchangeably (Titman, Gribblatt et al., 2006). However, a merger is slightly different from an acquisition. A merger is a transaction in which two or more firms combine to one and the target needs to exit the market. The risks and rewards of the new entity will be mutually shared by the shareholders of both parties. Under Financial Reporting Standard 6, 'Acquisitions and Mergers', a merger satisfies four criteria:

- No party is the acquirer or acquired;

- All parties to the combination participate in establishing the management structure of the new entity

- The combining entities are relatively equal in terms of size

- The consideration received by the equity shareholders of each party consists primarily of equity shares in the combined entity, any other consideration received being relatively immaterial.

An acquisition is defined as a transaction in which the bidding firm gains the ownership control over another company (target), but both still remain legally independent entities. The bidding firm purchases the majority of the shares from the other firm, but the assets of both firms do not combine. (Crouzille et al., 2005). A takeover is defined as a transaction in which one firm acquires another firm and takes over the assets, so there is a change in control of the company. A consolidation is the merger and acquisition of many smaller firms into a much larger firm and could result in a new entity. These terms are often used interchangeably in studies. True merges are very rare in practice and the difference between M&As do not influence the results of this study. Therefore the distinction will not be made throughout the study and the terms will be used interchangeably. The term bidder is the term acquirer and the target bank is the acquisition bank.

An event study is an econometric analysis of the impact of new information or event on the financial markets. This method has been applied a lot in past studies that investigate the gains and losses associated with mergers and acquisitions.

Abnormal returns will be used to measure the impact of the financial crisis on the bank M&As landscape. These returns show whether the returns obtained during an event is different from a normal situation. These are calculated by taking the difference between the actual and estimated returns. The use of an event study and abnormal returns will be elaborated on in the chapter of methodology.

2.1.2 The trend of bank M&As in EU (pre-crisis)

Over the last twenty- thirty years, the banking sector in developed counties has completely evolved and the competitive pressure has increased a lot. Western Europe has witnessed a large number of domestic M&A transactions in response to deregulation, technological advances and the globalization of non-financial economic activity (Berger et al., 2005). This evolution in numbers of M&A transactions and their values can be seen from the figure 2.1 below. The integration of the European banking sector has increased the competition for international banks by reducing structural differences between banks across different countries. The competitive environment has led European banks to expand by either internally generated growth or through M&As. The banking sector aim to create shareholder value through endogenous (i.e. strategies implemented within the bank) and exogenous channels (by involving external parties). They also try to operate more efficient by scale and scope economies, reducing costs and eliminate inefficiencies. In this way, M&As could be seen as strategic tools that could help banks to achieve these objections and we can see that more and more banks consider the latter strategy. From 2000 onwards we see an increase in the number of bank M&A deals, a decreased number of credit institutions, an increase in the banking market concentration and the total value of banks M&As.

So the last decade has shown a huge grow in bank M&As, but this does not only imply domestic transactions; there is also another new trend. The importance of cross-border deals has increased over the time both within and outside the EU as geographic diversification has become an important part of business and growth strategies of European banks. Over a period of 2000-2004, domestic mergers were 63.1 percent of the overall value of European bank M&A deals, cross-border deals within EU were 19.2 percent and those outside the EU were 17.7 percent. Then between 2005 and the first half of 2007, the domestic mergers decreased to 35.5 percent (-27.6%), cross-border M&A within EU increased to 37.7% (+18.5%) and those outside the EU increased to 26.8 percent (+9.1%). The bankers opened a new way to deliver financial services to foreign customers through joining banks in the foreign country or directly from its home country, without having to be present in a foreign country physically; or by opening branches or acquiring foreign banks (Berger et al., 2000).

Figure 2.1: Number and value of European banks involved in announced mergers and acquisitions
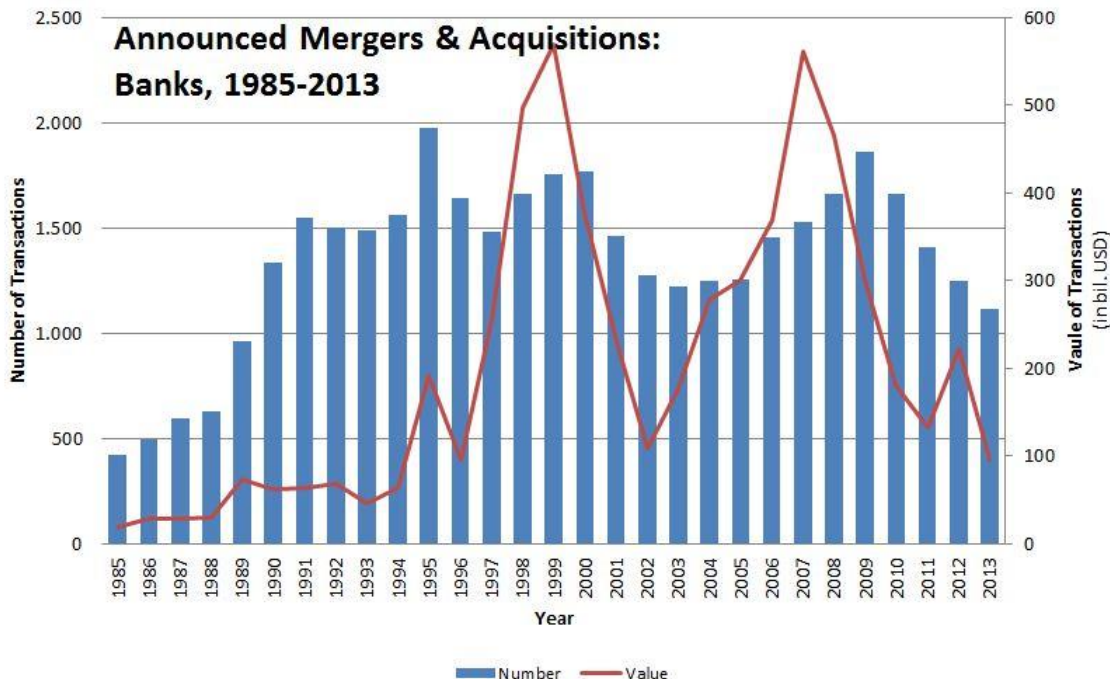
Source: www.imaa-institute.org/statistics-mergers-acquisitions.html#M&A_Ind_Banks

2.1.3   Trend of bank M&As in EU during the financial crisis

The global financial crisis started in the august 2007 in the US with the fall of Lehmann Brothers and the withdrawal from three hedges by BNP Paribus and reached the rest of the world as well. It has led to big uncertainty in the economy worldwide and this had huge consequences for the financial industry. In Europe, the crisis resulted in failings of large banks, bank runs, forced nationalization and a decrease in M&As etc. The European Central Bank (ECB) had to undertake actions and provided big amounts of liquidity to these banks.

With the come of the financial crisis, the trend of M&A activity has changed over the world. David Livingstone at Credit Suisse, which ranked top for European M&As said that the landscape of M&As was highly dependent on the economic outlook. "There's less overall confidence in making strategic moves, and continued dislocation in credit markets." This was observable by looking at the figures and graphs considering M&As, which showed a big drop of M&A deals in the banking sector. In overall there was a reduction in bidding banks and an increase in target banks. In the year of 2008, the total value of worldwide announced M&A deals was only 29.6 percent compared to the totals of 2007; this was the lowest level for annual deal activity since 2005. The value drop was particularly found in the

fourth quarter of 2008 with only a percentage of 34.6 compared to the third quarter of 2008. Also the effect was evident in the number of canceled M&A transactions, which was 1,194 deals, the highest level since 2000. In Europe, the drop in M&A announcements in 2009 compared to 2007 was from 292 to 49; the total value in this period has dropped from €345 billion to €80 billion. There was another noticeable fact due to the financial crisis on M&A activity; a substantial part of the M&A deals was driven by the investments of the government (Thomson Reuter, 2008), which can be associated with the intervention of national governments in the banking sector as a reaction to the crisis. In 2010, the government interventions were reduced and the total value even dropped to €50 billion (see figure 2.1).

2.1.4   Stock market reaction

The market efficiency theory asserts that all available information is fully reflected in stock prices in an efficient market (Fama and French, 1970), arranging from three degrees; strong, semi-strong and weak). So every new and relevant piece of financial information will immediately revaluate the stock price. Therefore finance studies apply this theory by using stock prices as a tool for measuring the impact of the information. Also, according to this theory the effects of bank M&A announcements are captured by its stock prices and can be used as an earnings indicator for shareholders. Abnormal returns of M&A announcements can be measured by comparing pre- and post-announcement stock returns to benchmark returns and this study will be based on this theory, using the stock prices and returns to measure a bank's value creation during events.

So the financial crisis has impacted the bank M&A activity significantly. Many banks have suffered huge losses and found themselves in financial struggle. These weaker banks became attractive targets to banks that still retained high liquidity despite of the crisis. These strong and healthy banks could take advantage from M&A opportunities and acquire weaker competitors at a bargain price and improve their market share and profitability (Berger and Bouwman, 2008). Beltratti and Paladino (2011) expected positive ARs during the crisis for acquirer banks by acquiring weaker banks, as they were also able to achieve portfolio diversification, geographic diversification, activity diversification and market power. A negative effect on ARs could be due to an increase in risks from M&A deals that were forced by national governments, as an attempt to prevent weaker banks from going bankrupt.

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2.1.5   Previous literature on impact of bank M&As

The previous studies compared the behavior of banks either before and after the M&A announcements or in a moment prior and after the M&A deal. Most studies that assess the short term impact of M&As use event study methodology to analyze the benefits by estimating the reaction of the market price of the banks around the announcement date. The general outcome was that target shareholders earned positive abnormal returns, while the bidding stockholder earned negative or insignificant returns; on aggregate the firms earned either positive returns or no significant returns. The reason for this could be that the market expects better performance of the target banks after being acquired by better running banks. In line with this argument is that the market expects worse performance of the acquirer bank now it has merged with the weaker bank. They need to invest money in the new bank, which affects the profits and the dividend for the shareholders. Also the negative ARs could be due to a forced M&A transaction by the government. Therefore the stock market reaction to acquirer banks during M&A announcements are negative. However from 2000 onwards there are some studies that do not support the outcomes of earlier studies. Studies that investigated the medium-long term effect of M&As found that banks enhance their performance and productive efficiency. However the effect on operating performance (obtained by analyzing financial ratios prior and after the M&A deals) is ambiguous. But this is beyond the scope of this paper.

During the financial crisis, the outcomes are different than during a non-crisis period. The general conclusion from several studies during a non-crisis period (Teplý and Stárov, 2008; Bruner, 2002; Jensen and Ruback, 1983 etc.) is that the ARs for acquirer banks around M&A announcement date are negative of insignificant. During the crisis, Beltratti and Palladino (2011) found positive abnormal returns for bidders after completion date. They assert that this difference in abnormal returns is due to information asymmetry, which is related to opaqueness of target assets and the uncertainty during the crisis. The bank opacity increased for banks at the beginning of the financial crisis as they try to hide their financial state and this led to a big uncertainty in the stock market about its securities. The delayed diligence process measures the value of the target banks and gives the real picture of its assets value. The market prefers to wait until the diligence process is made about the banks. Because due to the crisis, there is a high probability of a negative outcome, which could have affected the stock returns negatively as the expectations are not positive. Also, even though M&A announcements have been made, there is still a big possibility that the deal will be terminated in a time of the crisis. So when we approach the date of completion, new information will be provided and uncertainty will be taken away.

The stock market will gain faith in the new M&A deal and believe that the M&A deal will create value creation; they react positively. So at the completion date, the stock market will react positively, especially in cases of opaque target banks when the real value of the assets gets clarified to the stock market.

2.2 Hypotheses development

To remind the readers what the main interest of this study is and where the hypotheses will be based on, the research question from chapter 1.1 is reintroduced:

How did the financial crisis impact the value creation of mergers and acquisitions in the banking sector in Europe?

First we measure the effects of the M&A announcements on the abnormal returns for the targets and bidders. Based on the results of past studies (mentioned in 2.1.5), we formulate the following two hypotheses:

The effects of the M&A announcements on abnormal returns

H1: There are significant abnormal returns for target banks which are involved in M&A transactions.

H2: There are negative or no significant abnormal returns for bidder banks which are involved in M&A transactions.

This paper investigates the impact of the financial crisis on the European bank stock market of M&As. A sub-question we have to answer is what the difference is between the returns at the announcement date pre-crisis and during the crisis. Like mentioned before, the outcomes could differ for the acquirer and target banks. Earlier studies about stock returns of M&A announcements (Teplý and Stárová, 2008; Bruner, 2002; Jensen and Ruback, 1983 etc.) found that acquirer banks are the losers and achieve negative or insignificant ARs, while target banks are the winners with significant positive ARs.

But during a financial crisis, Beltratti and Paladino (2011) expected positive ARs for acquirer banks to reward their extraordinary good condition of being able to take over banks at a time where liquidity is drying up; also, these banks have positive forecasts since they could expand their market. Their investigation showed no significant ARs around the announcement date, but positive ARs at completions. De Pundert (2013) did find more prominent positive results for the bidders that announced

their M&A transaction during the crisis than before. Several studies (Temming, 2014 and De Pundert, 2013) found higher significant positive ARs for targets.

The effects of the financial crisis on the M&A announcement returns

H3: Target banks, involved in M&A transactions in the pre-crisis period, achieve significant positive abnormal returns.

H4: Bidder banks, involved in M&A transactions in the pre-crisis period, achieve significant negative abnormal returns.

H5: Target banks, involved in M&A transactions in the crisis period, achieve significant positive abnormal returns.

H6: Bidder banks, involved in M&A transactions in the crisis period, achieve positive abnormal returns.

As last, has the financial crisis influenced the abnormal returns for bank M&A deals announced after the financial crisis? We measure the medium-term impact of the financial crisis. This has not been researched yet in past studies.

The medium term effects of the financial crisis on M&A announcement returns

H7: Target banks, involved in M&A transactions in the post-crisis period, achieve significant positive abnormal returns.

H8: Bidder banks, involved in M&A transactions in the post-crisis period, achieve positive abnormal returns.

2.3 Conceptual model

The purpose of this study is to analyze the impact of the financial crisis on the stock market reaction on M&A announcements in the European banking sector. In figure 2.2, the conceptual model of this study is illustrated. The independent variables are the normal or expected return (X1) which itself consists of an independent variable of the market return (X2); the dependent variable (Z1) will be defined as the actual returns and the dummy variable in this study is the financial crisis (period of 2007-2010). The question marks imply that the signs of these relationships between the variables are not known and this study is going to investigate these relationships and fill in the question marks. Another conceptual model is shown in figure 2.3. It is the same as the above model, but this gives a clearer idea

of the study. We first investigate the relationship in the circle (the M&A announcement on the stock market reaction) for the whole sample (H1 and H2) and for the sample before the crisis (H3 and H4). Thereafter we investigate the relationship between the financial crisis and the circle. Both the short-term effects (H5 and H6) and medium-term effects (H7 and H8) are investigated.
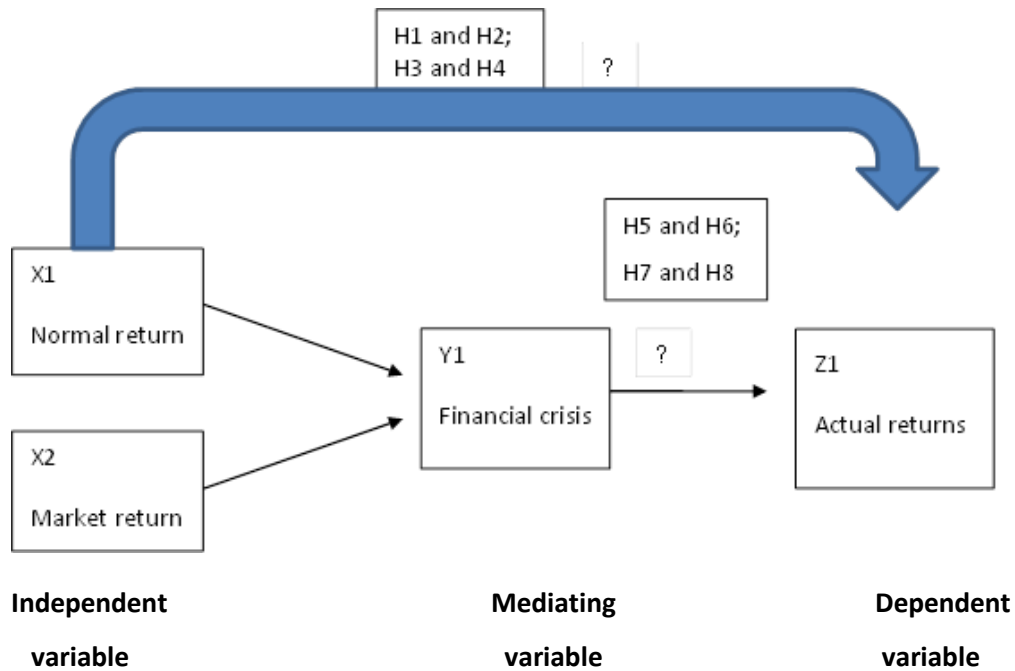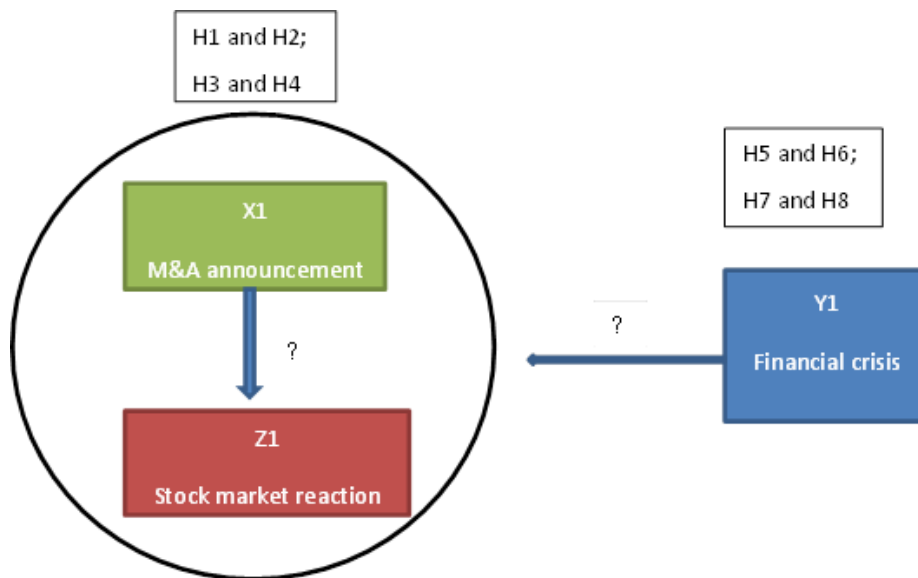
Figure 2.2: Conceptual model

Independent
variable

Mediating
variable

Dependent
variable

Figure 2.3 Conceptual model

Chapter 3 Methodology

3.1 Research type

A qualitative research is to gather, explore and understand the non-numerical data. It tries to discover a theory by examining the information which is obtained from informants, which is a typical inductive method. It describes the research topic, while a quantitative research aims at explaining the observation of interest by for example constructing statistical models. A quantitative research is to test objective theories in a deductive way by examining the relationship among variables which can be measured in numerical values. In this type of research, theory is defined as "a set of interrelated constructs (variables), definitions, and propositions that presents a systematic view of phenomena by specifying relations among variables, with the purpose of explaining natural phenomena" (Creswell, 1997). A descriptive research investigates the relationship between variables; in this study whether the independent variable (the financial crisis and the M&A announcement) cause an effect on the dependent variable (the stock returns).

This will be a quantitative research as the main focus is to find the impact of the financial crisis on the stock market on M&A announcements with numerical values by measuring abnormal returns. We adopt an event study which is a statistical method.

3.2 Data collection method

This is a case study using only secondary data which are external published (see table 3.2.1. X1, X2 and X3). As mentioned before we use stock prices of our sample to do an event study, which are secondary data. The two samples consist of European banks (targets and acquirers) that are involved in M&A deals which are announced in the period 2004-2013. To find this sample with some specific criteria, *Thomson One* is used. The criteria specification can be read in the fourth step for event study in the following sections and in appendix 1b. The full sample can be found in appendix 1a. After this we find the M&A announcement dates and the Stock Exchange Daily Official List (SENDOL) codes for the banks of the sample with the same database. A SENDOL code is an identification code assigned to all securities that are traded on the London Stock Exchange (Investopedia). These are needed to do the next step. With *DataStream Event Study Tool*, we can conduct an event study and calculate the returns (Y1) for each bank in the sample. Also the market return is found with this tool.

Table 3.2.1: Data needed

	Variables	Description
n	2 groups: targets and acquirers	The sample (see appendix 1)
X1	SENDOL codes of sample banks	The identification codes
X2	R_m	Market return (MSCIE)
X3	P	Stock prices
Y1	(C)AR	(Cumulative) abnormal returns

3.3 Sampling method

This study uses purposive sampling, which is a type of the probability sampling. The sample is selected based on the purpose of the study. And it is selected based on specific criteria specifications (appendix 1b).

3.4 Event study

We assume an efficient market in a weak form, which means that the information of the event will be interpreted by the stock price (Fama and French, 1970). Thus we can use the stock price as an indicator to see how the market reacts to the announced M&A event and with the addition of the financial crisis. The normal and abnormal returns are derived from stock prices, aided by certain models. With the significance test we will see whether the abnormal returns are significant and we can derive at conclusions for the research question of this paper. These will be discussed in the following sections. In the real world, it is often the case that the stock price does not immediately change according to the amount of released information, for example due to the leakage of information before the official public announcement date. Therefore, to measure the reaction of the stock market to the event, i.e. the impact of an M&A announcement on the stock prices of the banks, an event study methodology will be adopted. Event studies are the ideal tool to examine the effects of an (unanticipated) event on the stock prices. Hence, we will adopt an event study on the European M&A announcements in the banking sector in the period of 2004-2013. Thereafter, we can see whether the sample in the period of the financial crisis is significantly different than before and how the post-crisis effect will be.

There exist no clear method to adopt an event study, but event studies in past papers are coming down to approximately the same frame of methodology. This study will mainly follow the steps for an event study according to the method described in the book "Performing Financial Studies: A Methodological Cookbook" by M.J. Seiler (2004) and the theory of MacKinlay (1997). This will divide the

literature and methodology concerning event studies in steps and provides a nice and clear overview for the reader. See the following structure with the choices for this study:

1. Identify the event date (t=0)
2. Define the event window ($L_2 = T_2 - T_1$) – [-10, +10], [-5, +5], [-3, +3] and [-1, +1] and [0]
3. Define the estimation period ($L_1 = T_1 - T_0$) – [-110,-11]
4. Select the sample of firms (n) – see chapter 4
5. Calculate the normal returns – Market model
6. Calculate the abnormal returns (ARs)
7. Calculate the cumulative abnormal returns (CARs) – AARs and CAARs
8. Determine the statistical significance of the ARs and CARs – AARs and CAARs

Also we will adopt the DataStream Event Study Tool which will help us to conduct an event study by calculating the parameters for the models and its abnormal returns. The sample of firms for which we are going to obtain the stock prices for, are obtained from Thomson One as mentioned before. The DataStream Event Study Tool is based on the article "Event Studies in Economics and Finance" from A.C. MacKinlay (1997). Therefore this study will mainly adopt the formulas of event studies according to MacKinlay.

3.4.1 Identify the event date

This is the date on which the event happens and new information is publicly released to the market. The event date in the case of this study shall be the announcement date of the M&A deal and shall be defined as t=0. On this date, the effect of the event should be measured by the stock prices. The step of identifying the event date should not be underestimated, because the less accurate this step has been done, the less you will be able to measure the exact impact of the event. The event dates for all banks in this study are found in appendix 1a.

3.4.2 Define the event window

As mentioned before, it is often the case that the stock prices do not immediately adjust according to the amount of new information. News often spreads gradually to the market. Hence the event window is more interesting to study. An event window is defined by the number of days preceding and following the event date. It should show whether there was leakage or anticipation of the

information that has not publicly been released yet. The optimum number of days included in this event window will capture the total effect of event, i.e. the market reaction to the event, in the smallest event window as possible. This will be represented by the window L_2 which is T_1 to T_2 (see figure 3.1). Unfortunately, there is no recommendation how many days to include. The wrong length of the event window could give biased implications for the measurement of the event effect. The more unnecessary days you include, the less powerful the test of significance will be, because of confounding effects, i.e. non-event related effects. But the fewer days you include, the less you will be able to capture the full effect of the event. The only solution for the problem is that you should identify the event date as accurate as possible; so the event window can be small, just including enough days to capture the full effect of the event and; the more powerful the significance test can be. The event window in this study will be defined as [-10, +10], [-5, +5], [-3, +3] and [-1, +1] and [0].

Figure 3.1 – Timeline event study
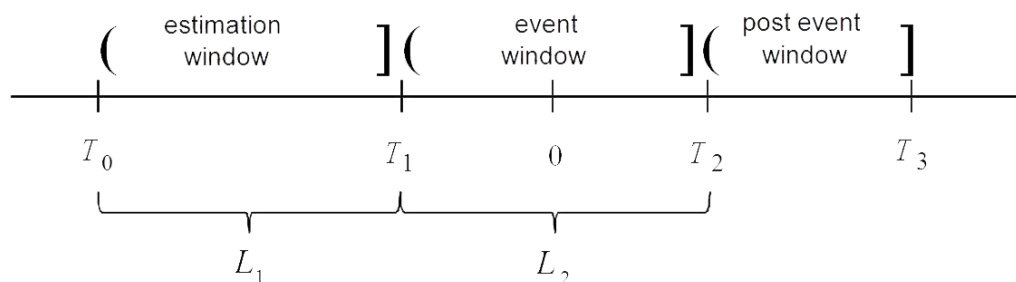
3.4.3   Define the estimation period
The estimation period is the period in which no event has occurred and is sometimes referred to as the control period. Its aim is to determine the normal behavior of stock returns, i.e. how the returns behave in the absence of the event, w.r.t. a certain index. The parameters for the expected return model are estimated over this estimation period. There are three time frame options for the estimation period: before, during and after the event window. The before event period is the most common one, followed by the post event window. The post event window can determine the longer impact of the event. According to Seiler, the only reason to include a post event window is when the event was so big that it has changed the fundamental relationship between the stock behavior and the market. The length of the estimation window (L1 or [T_o. T_1], see figure 3.1) is often equal or less than one year (252 trading days). According to Campbell et al. (1997), it could arrange from 120 days to 210 days, which a lot of studies adopt (Temming, 2013; Pundert, 2013 and Simões et al., 2010). So again there is no clear

rule how many days to include for the estimation period; the interval should be wide enough to capture the relationship between the stock and the market but not too wide as that would result into an estimated relationship that no longer applies to the firm today and gives false stock price movements. The estimation window for this study will be [-120, -11].

3.4.4   Select the sample of firms
For this study Thomson One will be used to collect the sample for this study. The criterion for the sample is as following:

- M&A transactions
- Both acquirers and targets are within the EU
- Both firms are in the banking sector
- The transactions are announced between 01/01/2004 and 31/12/2013
- Both acquirers and targets are publicly listed
- The M&A deals are completed
- The acquirer owns a minimum of 51 percent of shares after the acquisition

The first four requirements are self-evident as this is the scope of this study. Both acquirers and targets which are publicly listed are more likely to retrieve stock prices from the past. It would be hard or even impossible to find stock prices from the past of banks which are not publicly listed. The last requirement is the indicator for a shift in power of the target bank, since it obtains the majority of the stake. This implies a merge or acquisition (Temming and Asquith). We retrieve a total of 107 M&A transactions with the above seven requirements (see appendix 1a and 1b).

Critique of data selection

Some banks in the sample do not have a SENDOL code and are deleted from the sample. SEDOL codes are needed to identify and collect data (stock prices) from the DataStream Event Study Tool and since in the absence of these codes, we won't be able to find the crucial needed data for these specific banks. Also there are some crucial data missing or duplicated values, which will be discarded as well. After the adjustment, we get a total of 74 target banks and 91 acquirer banks.

3.4.5 Calculate normal returns

In an event study, we want to calculate abnormal returns due to an event, which are calculated by subtracting the normal from the actual return. Therefore we first need a model for normal returns. Normal returns are the stock returns that would have occurred in normal circumstances, i.e. in the absence of the event. There are different approaches to calculate the normal return of a given stock. These approaches could be divided into two main groups: the statistical and economic models. The difference between these are that the statistical model do not depend on economic arguments but statistical assumptions concerning the behavior of asset returns, while the economic model relies on both and apply restrictions, which therefore might provide more precise measurement of normal returns. The assumptions of the statistical models are the following:

- Asset returns are jointly multivariate normal;
- Asset returns are independently and identically distributed through time.

These assumptions are sufficient for the constant mean return and market model to be correctly specified. Also we assume for the analysis of this study that there is no event clustering. This is an overlap of event windows of the sample stocks and could give biased results when conducting an event study. In the following sections of this subchapter, the two categories of the models will be described and subcategorized. All models will be described, but especially the most often used models in event studies for M&As will get a further elaboration on, i.e. the constant mean model and the market model.

3.4.5.A   Economic models

Two common economic models used for event studies are the Capital Asset Pricing Model (CAPM) and the Arbitrage Pricing Theory (APT). The CAPM is an equilibrium theory that describes the relationship between the expected return and the risk of a given asset. The formula to calculate the expected returns according to the CAPM is:

$$R_{it} = R_{ft} + \beta_i(R_{mt} - R_{ft})$$

where

R_{it} = the expected return of firm i a time t
R_{ft} = the risk free return
β_i = the systematic risk for stock i
R_{mt} = the return on the market portfolio of stocks on day t

As you can see, the expected return has two dimensions: time and security/firm. That means for each firm you have to calculate different formulas and you get a unique outcome which holds for a given firm on a given time.

The APT is based on the idea that the expected return of a given asset is described by a linear combination of multiple risk factors. The use of CAPM for event studies has dropped over the years as deviations from the model have been discovered, which makes the validity of the model questionable. The APT eliminates the biases from the CAPM, but this model adds little explanatory power compared to the market model which will be introduced in 3.5.5.B.5.

3.4.5.B   Statistical models

Five common statistical models will be described in the following subsections. The models are such ranked that the most two popular models for event studies in M&As will be discussed as last. This study will incorporate the market model and will be discusses as last. The following subsections are divided as:

1. The risk adjusted model
2. The market adjusted model
3. The portfolio adjusted model
4. The mean adjusted model, also known as the constant mean return model
5. The market model

3.4.5.B.1   The risk adjusted model

The expected return for each of the days in the event window is predicted by a regression model. Studies have been going on about whether to use a single-index market model or a multiple factors model (Fama and French, 1993) for regressing returns. Also there is no consensus whether to use regular (nominal) or excess returns against the market returns. The single-index one is often used in studies though and is obtained by regressing the return of the sample stock against the market return. The multiple factors one is consistent with the CAPM and is the rate of return that exceeds the expected model or the CAPM. Brown and Warner (1985) have argued in their study that the risk adjusted model is complete and reliable for short-term event studies (Temming, 2013).

3.4.5.B.2   The market adjusted model

This model assumes that the mean of the stock return over the event window is expected to be the same as the mean of the market's return over the event window (Seiler, 2003).

$$R_{it} = R_{mt}$$

As you can see from the formula, the expected return is equal to the market return at a given time. Also since the parameters are pre specified, this model does not need an estimation period. So there will be no relationship made between the past and future returns. This is the right model for events which do not have or it is not feasible to obtain past stock prices, e.g. an initial price offer. Only when there is event clustering, this model could produce biased results.

3.4.5.B.3   The portfolio adjusted model

This model regress the expected returns in the event window to the return on the industry of the specific firm. The industry return is more specified than the market return, which therefore should be a more accurate benchmark. Past studies have shown that industry and firm size are relevant factors for a given stock return and risk. Besides the industry benchmark is better in controlling for the risk of the sample firm. Just like market adjusted model, this model does not need an estimation period. So again there will be no relationship made between the past and future returns, as that could be a wrong assumption.

The constant mean return and market model are the most common models for event studies. Only these two models are specifically being focused on in the article of MacKinlay (1997) which are also the only models on which the DataStream event study tool calculates the returns for.

3.4.5.B.4   The constant mean return model

This is the most simple approach and it basically assumes that the mean of the return over de return window is the same as the mean over the estimation period (mean is constant over time). So that means that the expected return in the event window is equal to the mean return over the estimation period. The formula for this model is as following:

$$R_{it} = \mu_i + \zeta_{it}$$

where
μ_i = the mean return of firm i

ζ_{it} = the disturbance term of firm i at time t

This model yields results compatible to the more advanced models due to the variance of abnormal returns that are in both models approximately the same. Only in two situations would this model not be the optimal model to use: when there is event clustering, which means that the firms in the sample have event dates that are very close together; and when the market is trending up or down. In both cases the model could produce biased results. Only when there is event clustering, this model could produce biased results.

3.4.5.B.5   The market model

The market model is the most common model to use in event studies for M&A cases. It is just like the earlier mentioned constant mean return model a simple model that yields comparable results like advanced models, but above that, this model is an improvement compared to the first one, because the variance of the ARs are reduced. Hence, this model is chosen for this study. This makes it also possible to compare the results with many other studies that have adopted this model. Although, be careful not to mistaken the market adjusted model for the market model. The first one is namely the restricted version of the market model (a = 0, b = 1). The market model assumes that the expected return of any given stock is linearly related with the market return, for which this study chose to use the Morgan Stanley Capital International Europe (MSCIE) index as the market benchmark. The formula for the market model is as following:

$$(1) \qquad R_{it} = \alpha_i + \beta_i R_{mt} + \varepsilon_{it}$$

$$E(\varepsilon_{it}) = 0 \qquad\qquad\qquad var(\varepsilon_{it}) = \sigma_{\varepsilon_i}^2$$

where

α_i = the intercept term of firm i

ε_{it} = the error term, with assumption : $E(\varepsilon_{it)} = 0$

An indicator for a good market model is the R^2 of the regression: the higher the R^2, the lower the variance of ARs and the more the power increases to detect abnormal returns. (MacKinlay, 1997; Beltratti and Palladino, 2013 and De Long, 2001)

3.4.6   alculate the abnormal returns (ARs)

No matter what model is used for the normal returns, the calculation of the AR will be the same. The AR of firm i at time t is calculated by subtracting the actual return from the sample stock of day t by the predicted normal return of the same firm and day. See the formula below:

$$AR_{it} = R_{it} - E(R_{it}|X_t)$$

where

AR_{it}, R_{it}, $E(R_{it})$ = the abnormal, actual and normal returns respectively of firm i at time t

X_t = the conditional information

As mentioned earlier this study will adopt the market model as the benchmark for calculating ARs. The X_t is the market return in this case and the $E(R_{it}|X_t)$ can be replaced by the market model. Notice that the second part of the formula is the market model for expected returns:

$$(2) \qquad AR_{it} = R_{it} - \left(\hat{\alpha}_i + \hat{\beta}_i R_{mt}\right)$$

So let's continue with this market model and estimate the parameters. Since the statistical models satisfy the assumptions described in chapter 3.5.5, the Ordinary Least Squares (OLS) can be conducted and is a consistent and efficient estimator for the market model. The parameters $\hat{\alpha}_i$, $\hat{\beta}_i$ and the volatility for a given firm are estimated by the following formulas:

$$\hat{\beta}_i = \frac{\sum_{t=T_0+1}^{T_1} (R_{it} - \hat{\mu}_i)(R_{mt} - \hat{\mu}_m)}{\sum_{T_0+1}^{T_1}(R_{mt} - \hat{\mu}_m)^2}$$

$$\hat{\alpha}_i = \hat{\mu}_i - \hat{\beta}_i \hat{\mu}_m$$

$$\hat{\sigma}_{\varepsilon_i}^2 = \frac{1}{L_1-2} \sum_{t=T_0+1}^{T_1}\left(R_{it} - \hat{\alpha}_i - \hat{\beta}_i R_{mt}\right)^2$$

where

$$\hat{\mu}_i = \frac{1}{L_1} \sum_{t=T_0+1}^{T_1} R_{it}$$

$$\hat{\mu}_m = \frac{1}{L_1} \sum_{t=T_0+1}^{T_1} R_{mt}$$

Notice that the error variance of AR should be as low as possible to make an error through calculation approach to zero. However, if the length of the estimation window is large enough, the AR will become independent through time. Now we have the market model parameters, we can fill in for actual return of a given firm on day t (R_{it}) and the MSCIE on that given day (R_{mt}) to calculate for AR for the given firm on the given day. But, many studies chose to calculate further and aggregate the ARs to CARs, which is also the next step.

3.4.7 Calculate the cumulative abnormal returns (CARs)

According to MacKinlay we have to aggregate ARs to CARs if we want to make overall inferences for the event. It is not useful to analyze one event observation, so we have to aggregate the ARs first through time (t) and then across securities (i). After calculating the ARs, the sample CARs (so through time) are simply calculated by summing up the ARs for the desired interval days. Let's take an example of a three days e vent window, which is an interval of [-1, +1]. The CAR on day -1 can be calculated by summing up the AR of day -2 and -1, the CAR on day 0 by summing up AR(-1) and AR(0) and the CAR on day 1 by summing up AR(0) and AR(+1). The CAR for security i from t_1 to t_2 (which is between the event window [T_1, T_2]) is:

$$(3) \qquad CAR_i(t_1, t_2) = \sum_{t=t_1}^{t_2} AR_{it}$$

$$\sigma_i^2(t_1, t_2) = (t_2 - t_1 + 1)\sigma_{\varepsilon_i}^2$$

This $CAR_i(t_1, t_2)$, also called car$_{iKL}$ (Van der Sar, 2011) is the sum over the event window. Now in order to gain insight into the cumulative return over a certain period interval, we take $CAR_i(t_1, t_2)$ together to derive at the cumulative average abnormal return (CAAR or $\overline{CAR}(t_1, t_2)$ as noted by MacKinlay):

$$(4) \qquad CAAR(t_1, t_2) = \frac{1}{N} \sum_{i=1}^{N} CAR_i(t_1, t_2)$$

This is the method from calculating AR to CAR to CAAR. However some studies, calculate the average abnormal return (AAR or MacKinlay's notation: $\overline{AR}_t$) after AR to be able to judge whether the event reaction in period t is valid by grouping the results in a specific way. We need a sufficiently large sample size to eliminate any confounding effect in the AAR_t. Then we can cumulate these AAR according to the length of the event window. These two formulas (AAR and CAAR) are respectively:

$$(5) \qquad AAR_t = \frac{1}{N}\sum_{i=1}^{N} AR_{it}$$

$$CAAR(t_1, t_2) = \sum_{t=t_1}^{t_2} AAR_t$$
$$var\big(CAAR(t_1, t_2)\big) = \frac{1}{N^2}\sum_{i=1}^{N} \sigma_i^2{}_i(t_1, t_2)$$

It is also possible to add another step to the calculation of CAR, by standardizing it. This will lead to more powerful tests according to some studies, but since this is beyond the scope of this paper, this will not be discussed.

3.4.8 Determine the statistical significance of the ARs and CARs

The last step is to determine the significance of the event. The null hypothesis of no abnormal returns within the event windows is tested. We will test the CAARs for the samples. The testing framework and distribution of CAAR under H_0 is:

$$H_0 : \mu = 0$$

$$H_1 : \mu \neq 0$$

$$CAAR(t_1, t_2) \sim N\big[0, var\big(CAAR(t_1, t_2)\big)\big]$$

A statistical test is used to evaluate on the chance of rejecting the null hypothesis of no effect at some specific significance levels. Past event studies have used different test statistics and significance tests to test the null hypothesis. These tests consist of the parametric and non-parametric tests. In order to use the first one correctly, three assumptions must be met: normal distribution, independence and homogeneity of the variances. The second one does not rely on these assumptions. It is suggested

to use non-parametric tests instead of parametric tests when the deviations are large and so are preferable to parametric tests for abnormal returns. There are mainly two non-parametric tests, which are the rank test and the sign test. In the past, studies have used both tests for event studies to verify that their results are not biased due to e.g. outliers (Temming, 2013; Beltratti and Paladino, 2011; Schaussen, 2011).

However, when the sample size if large enough, the parametric test can be used since the abnormal returns converge to a normal distribution, which is known as the central limit theorem. The central limit theorem states that the distribution of a variable will approximate the standard normal distribution when the sample size (n) is sufficiently large. In practice, this is when n ≥ 30, but even for n ≥ 20, the approximation will be usually quite sufficient. So we only apply the parametric student's t-test on the sample sets, for which the degrees of freedom are equal to N-1. (Van der Sar, 2011; Zaiontz, C.)

AAR has the following formula for the student t-test statistic:

$$T1AAR_t = \frac{AAR_t}{\sigma_t\sqrt{N}}$$

However the σ_t is often unknown, therefore the estimator S_t will be used instead. The formula for the variance s_t^2 and the substituted t-test is as following:

$$(6)\ s_t^2 = \frac{1}{N-1}\sum_{i=1}^{N}(AR_{it} - AAR_t)^2$$

$$(7)\ T2AAR_t = \frac{AAR_t}{s_t\sqrt{N}}$$

CAAR has the following formula for its student t-test statistic (or cross-sectional t-test):

$$(8)\ T2CAR_i = \frac{CAAR(t_1,t_2)}{s_c/\sqrt{N}}$$

with

$$(9)\ s_c^2 = \frac{1}{N-1}\sum_{i=1}^{N}(CAR_i - CAAR_t)^2$$

Chapter 4 Results

This chapter will first provide the descriptive statistics of the data collected in the last chapter. Then the empirical findings of the conducted event study will be provided and discussed. The subchapter will be divided into two sections for the empirical findings: the effect of the M&A announcement on abnormal returns and the effect of the financial crisis on the M&A announcement returns. For finding the answers, step 1 until 9 of the event study have been followed. As last part of this chapter, the hypotheses will be answered.

4.1 Descriptive statistics

In the table below (table 4.1), a summary of the M&A sample is presented in the period of 01/01/2004 – 31/12/2013. This study would use the event study based on the sample that is showed in the last two columns, which are the adjusted sample for the target and acquirer banks. But due to missing information and duplicated data, we end up using 74 target and 91 bidder banks. Figure 4.1 shows a graph that present the data in table 4.1: the number of M&A transactions in the specified period. We would expect an increase of M&A transactions in the crisis period as this was described and shown in chapter two (figure 2.1) about the trend of M&A deals in the crisis period. Although this is not significant from the graph, as the line is moving too volatile, what can be seen is that the trend of the line is decreasing from 2008 on. What is contradicting with the actual data is that the number of M&A deals in 2007 we have found, is relatively low, while this is actually the year that was the peak of the amount of M&A deals. Since some data are missing or are duplicated, we discard these stocks/firms from our sample set as these could produce biased results (or event clustering). Unfortunately, we have to delete more than 30% from the target sample. The sample is divided between three subsamples (see table 4.2a and b), with the main benchmark prior to 08/08/2007 and after 01/01/2010. The actual start of the financial crisis is still discussable, but many see the action of the French bank BNP Paribus terminating three of its hedge funds as the start of the liquidity crisis, which is on 09/08/2007. Therefore we choose the crisis period as 09/08/2007-31/12/2010 (see table 4.2 first row). What can be seen from the initial full sample in table 4.2a and b is that the crisis period has the most M&A transactions completed. Thereafter the M&A has shrunk more than before the crisis. This is in accordance with the real world; however the data does not show significant difference.

Table 4.1 Summary M&A transactions

Year	Number of M&A's	Targets (adjusted)	Acquirers (adjusted)
2004	9	9	9
2005	10	8	8
2006	14	13	14
2007	10	8	10
2008	18	16	17
2009	6	6	6
2010	14	8	14
2011	4	3	4
2012	13	13	13
2013	9	7	8
Total	107	91	103
End usable		74	91
End Total (in percentage)	100%	69.16%	85.05%

Table 4.2a: three target subsamples

Time period	01/01/2004 – 08/08/2007	09/08/2007 – 31/12/2010	01/01/2011 – 31/12/2013	Total
Full sample	39	42	26	107
- no SEDOL	34	34	23	91
- duplicated values	31	33	23	87
- no information	28	24	23	76
End bidder sample	28	24	22	74

Table 4.2b: three bidder subsamples

Time period	01/01/2004 – 08/08/2007	09/08/2007 – 31/12/2010	01/01/2011 – 31/12/2013	Total
Full sample	39	42	26	107
- no SEDOL	37	41	25	103
- duplicated values	33	37	25	95
- no information	33	34	24	91
End bidder sample	33	34	24	91

Figure 4.1: Trend of the M&A deals in the European banking sector
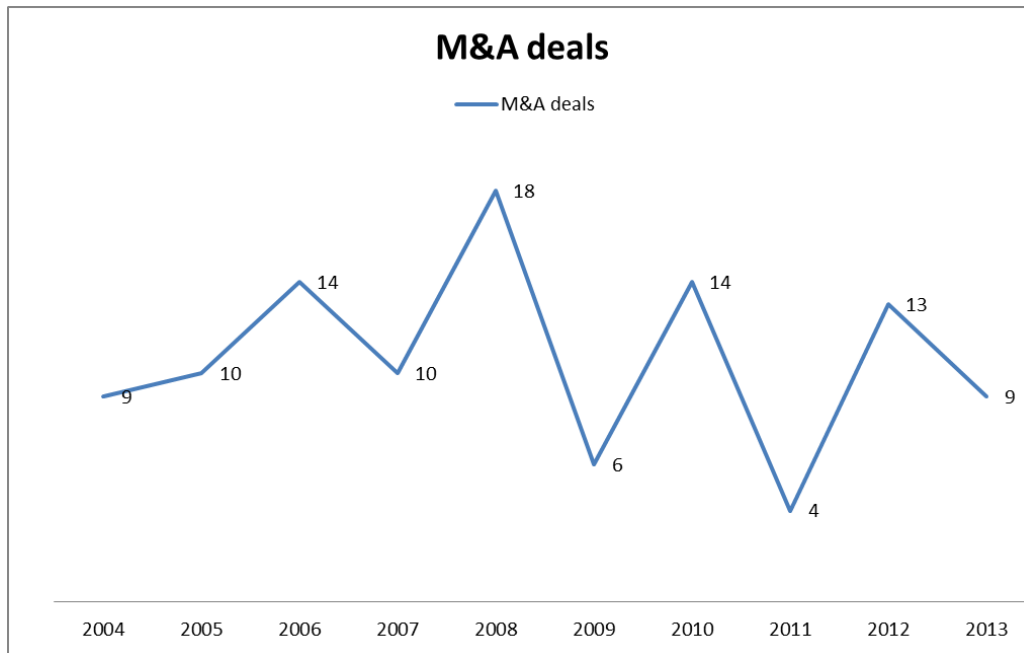
M&A deals

The table in appendix 2 presents the geographic scatter of the targets and acquirers. The most frequent domestic M&A deals are in Denmark, Germany, Italy, Russian Republic and Spain (nine deals or more). France, Greece, Italy have acquired the most cross-border deals with 9, 5 and 6 deals respectively. The most targeted country in M&A cross order deals is Ukraine with 7 deals, being acquired by other countries. The most cross-border M&A deals by acquiring banks are located in Italy and Spain (both with 15 deals) followed by Russian Republic with 13 deals and France with 12 deals. In overall, so including both domestic and cross-border deals, the most target banks of the sample are located in Russian Republic with 14 deals, followed by Denmark and Spain with both 12 deals.

In table 4.3 below, the descriptive statistics of the AARs of the whole target and bidder sample of the entire period 2004-2012 is presented. The means for both groups are positive, which could indicate that there was a positive market reaction to the M&A announcements. However the mean for acquirers is much smaller and close to zero. The standard deviation and variance of the targets are tending to be big compared to those of the acquirers. Big standard deviations are not favorable, because these can lead to mislead results. In appendix 3, the normality distributions of the samples are illustrated. The black line shows the normal distribution. As can be seen from the two graphs, the target sample is tending to be abnormal, while the acquirer sample is relatively normal distributed. But as mentioned before the central limit theorem states that the distribution of a variable will approximate the standard

normal distribution when the sample size (n) is sufficiently large. So we continue with these samples, since all subsamples are larger than 20.

Table 4.3 Descriptive statistics AARs of the data based on a [-10, 10] event window

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation	Variance
Targets	21	-.8236	6.1080	.504690	1.4771275	2.182
Acquirers	21	-.8266	.5322	.002919	.3221749	.104

4.2 Empirical findings

4.2.1 The effects of the M&A announcements on abnormal returns

To be able to measure the total effect of the event, we want to see the results of the CAARs for both groups. The table in appendix 4 displays the AARs in percentage of the target and bidder groups for the time window [-10, 10]. This covers all deals of the sample set, which are 74 targets and 91 bidders in the period 01/01/2004 until 31/12/2013. The results for the acquirers are almost all insignificant, with the exception of the days -9 and +5, which are both negative significant at a five and ten percent significance level respectively. The first result is in accordance with the previous papers mentioned in chapter 2, which find no significant or insignificant negative results for acquirers in M&A deals. However the AARs for the targets are not in line with the results of these previous papers. We would expect significant positive AARs and also higher returns than those of the acquirers. But in our results, we see some AARs smaller than those of the acquirers (day -10, -2, -1 etc.). Also, only at day 0 and +1, we see higher AARs of 6,11% and 2,04% significant at a ten percent confidence level. The negative returns at day -2 and -1 could imply a negative expectation of the stock market at the news of the M&A announcement.

In figure 4.2 below, a graph of the CAARs during the time window is depicted. Both target and bidding banks show deviations around the announcement window through the whole event window. The bidder banks show little deviations as the line does not fluctuate much around zero; this means they create little value around the event window of the M&A announcement date . On the contrary, the target banks fluctuate a lot around the announcement date (t=0). The line increases at day -1, reaches

its peak at day 0 (the announcement date) and then decreases sharply again. In accordance with previous literature, the bidder banks achieve little or insignificant returns, while the target banks achieve positive returns.

Figure 4.2 CAARs for target and bidder banks in the European banking sector
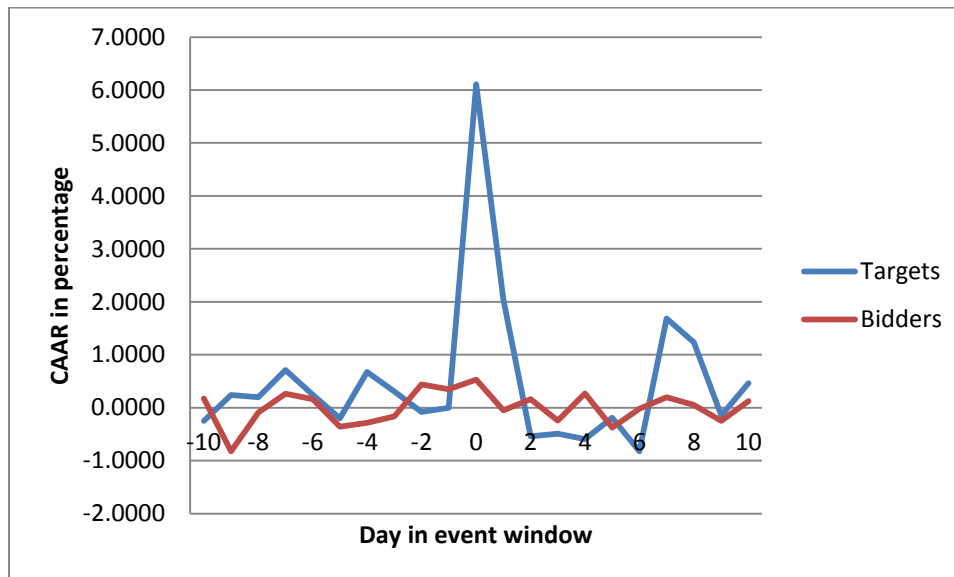
In table 4.3, the CAARs in percentage are shown for both the target and bidder sample. Now all results for the target banks are significant positive in all of the event windows. The CAARs for the bidders are positive in all of the event windows, but insignificant. These results are in line with the results of the past papers (Beltratti and Paladino, 2012; Beitel and Schiereck, 2001; Teplý and Stárová, 2008, etc.). Although some papers (Jensen and Ruback, 1983; Weidenbaum and Vogt, 1987 etc.) conclude that target banks are clearly the winners and bidder banks the losers as they could only at best do no worse off, this is not the case as the bidder banks here do show positive results.

Table 4.4: CAARs in percentage of targets and bidders

	Targets	Bidders
CAAR [-10,10]	10.5986***	0.0611
CAAR [-5,5]	7.0355**	0.2757
CAAR [-3,3]	7.3438**	1.0292
CAAR [-1,1]	8.1478**	0.8347
CAAR [0]	6.1080**	0.5322

4.2.2   The effects of the financial crisis on the M&A announcement returns

This section will provide the results of the event study on the targets and bidders divided into three sub-periods: the pre-crisis, crisis and post-crisis. The results can be found in appendices 5, 6 and the tables below, 4.5 and 4.6. The table in appendix 5 shows many negative AARs for the targets in the pre-crisis period, and for day -10 and +9 the AARs are even significant negative. This is contradicting with the results found above and previous studies. In the crisis and post-crisis period we find significant positive AARS at day +1 and 0 respectively. So the M&A announcement create positive stock market reaction. However thereafter there are some days with negative results.

If we cumulate the AARs, we can test whether the financial crisis has had an impact on the event. In table 4.5 we can see that the CAARs in the pre-crisis period are not significant in any event window. During the crisis, only the event window [-10, 10] is significant at a confidence level of ten percent. But then we find significant returns in the post-crisis period for all the event windows at a one and five percent level. This is contradicting with the results of De Pundert, 2013, as he has found that target returns are higher before than during the financial crisis.

Table 4.5: CAARs in percentage of targets

	Pre	During	Post
CAAR [-10,10]	2.0819	15.6485*	15.9302**
CAAR [-5,5]	2.5731	4.9509	15.0020***
CAAR [-3,3]	2.7973	5.3692	15.2996***
CAAR [-1,1]	2.6302	7.3681	16.0115***
CAAR [0]	2.2936	4.4329	12.7911**

The table in appendix 6 indicates few significant AARs throughout the whole time period for acquiring banks. What is noticeable is that there are more negative returns before the crisis than during and after the crisis. In the crisis we obtain an at ten percent level significant positive return at day -1. When we look at the CAARs which are displayed in table 4.6, there are no significant results. The CAARs are positive before crisis, although not significant, which is as mentioned before in line with previous studies. At day 0 during the crisis, there is an insignificant negative return, which could imply a negative stock market reaction. Also after the crisis, there are insignificant negative returns in the event windows [-10, 10] and [-5, 5]. The not more positive (or significant) returns during the financial crisis than before are contradicting with previous studies. Hotchkiss and Mooradian (1998), Belattri and Paladino (2011) have explained that firms that acquire other firms from the same industry will create value. Since these

firms know the true value of the targets, they will pay a bargain price during the financial crisis and the market would be more positive about the returns of the bidder firms during the crisis. However, when we look at table 4.7, which illustrates the t-tests of the acquirer CAARs, it can be seen that the t-tests are a bit higher for CAARs during than before the crisis with the exception at day 0. That shows that the market is not more positive before the crisis than during the crisis.

Table 4.6: CAARs in percentage of acquirers

	Pre	During	Post
CAAR [-10,10]	0.58197	1.49514	-2.68649
CAAR [-5,5]	0.37468	1.51593	-1.61745
CAAR [-3,3]	1.08123	0.82077	1.25311
CAAR [-1,1]	1.12713	0.93358	0.29241
CAAR [0]	0.55128	-0.82250	2.42520

Table 4.7: T-test of the CAARs of acquirers

	Pre	During	Post
CAAR[-10,10]	0.4315	0.7024	-0.7861
CAAR[-5,5]	0.3463	0.7073	-0.6099
CAAR[-3,3]	0.5882	0.5204	0.5369
CAAR[-1,1]	0.6006	0.5551	0.2593
CAAR[0]	0.4200	-0.5210	0.7469

We conduct the paired samples t-tests to see whether the financial crisis has had an impact on the M&A announcement returns. The paired samples t-test has the advantage of greater control over confounding variables and it needs smaller samples. Confounding variables are external variables that correlates with both the independent and dependent variable and that could therefore give biases results. Examples are share repurchases, change in dividend policy etc. Our group samples are tending to the smaller size (>20) but linked with each other, since they all represent the European banking sector that deals with M&A transactions. That is why the paired samples t-test is ideal to use to compare the means of the groups whether there are significant return differences.

Table 4.8: Paired samples t-tests on the target and bidder subsamples

Targets		Bidders	
	P-value		P-value
Pre and During	0.0796	Pre and During	0.9252
Pre and Post	0.0000	Pre and Post	0.4111

The results are displayed in table 4.8 above. To measure the short term effect of the financial crisis, the subsamples pre-crisis and crisis are being compared. For the target group, these groups turn out to be only significant at a 10 percent level. While the medium term effect of the financial crisis on the abnormal returns (CAAR) of the target group is significant at a one percent level, as the p-value is 0.000. For the bidder groups, the abnormal returns are far from significant as the p-values are 0.925 and 0.411. So there are no significant differences in the abnormal returns in both pairs of the groups for the bidders.

4.3 Hypothesis testing results

This subchapter will provide the answers on the hypotheses stated in chapter 2. For all of the hypotheses the null hypothesis is that there are no significant abnormal returns, based on the significance on the CAARs.

The effects of the M&A announcements on abnormal returns

H1: There are significant abnormal returns for target banks which are involved in M&A transactions.	Reject H0. That is, there are significant positive abnormal returns for target banks at a five and ten percent confidence level. So H1 is true.
H2: There are negative or no significant abnormal returns for bidder banks which are involved in M&A transactions.	Do not reject H0. That is, there are no significant abnormal returns for acquirer banks. So H2 is true.

The effects of the financial crisis on the M&A announcement returns

H3: Target banks, involved in M&A transactions in the pre-crisis period, achieve significant positive abnormal returns.	Do not reject H0. That is, although the abnormal returns for the target banks before the crisis are positive, these are not significant. So H3 is false.
H4: Bidder banks, involved in M&A transactions in the pre-crisis period, achieve significant negative abnormal returns.	Do not reject H0. That is, there are no significant abnormal returns for bidder banks before the crisis. So H4 is false.
H5: Target banks, involved in M&A transactions in the crisis period, achieve significant positive abnormal returns.	Do not reject H0. That is, although the abnormal returns for the target the banks during crisis are positive, these are not significant. So H5 is false.
H6: Bidder banks, involved in M&A transactions in the crisis period, achieve positive abnormal returns.	Do not reject H0. That is, although most abnormal returns for the target the banks during crisis are positive, these are not significant. So H6 is false

The medium term effects of the financial crisis on M&A announcement returns

H7: Target banks, involved in M&A transactions in the post-crisis period, achieve significant positive abnormal returns.	Reject H0. That is, there are significant positive abnormal returns for target banks at a one and five percent confidence level. So H7 is true.
H8: Bidder banks, involved in M&A transactions in the post-crisis period, achieve positive abnormal returns.	Do not reject H0. That is, there are both negative and positive abnormal returns, but all insignificant. So H8 is false.

Chapter 5 Conclusion

5.1 Conclusions and discussions

In this paper, the stock market reaction to M&A announcements are investigated and in addition also the impact of the financial crisis on the European banking sector involved in M&A deals is measured and investigated. This is done by doing several event studies. The financial crisis has induced many banks to go bankrupt and an increase in banking M&A deals. Expected is that the stock returns for the banks of these banks that announce their M&A transaction are different than before the crisis. We measure the abnormal returns for two groups: the target banks and the bidder banks. An end useable sample of 74 targets and 91 acquirers, announced between 01/01/2004 and 31/12/2013, are used for the event studies.

For the effects of the M&A announcements on abnormal returns, previous studies have concluded that targets are the winners, which means they create value or they have significant positive returns after being merged and acquired. The bidders on the contrary do not create much value or even negative value and therefore are called the losers. In agreement with these conclusions of previous studies, this study find significant positive results for target banks and no significant differences from zero for bidder banks.

If we compare the results of the abnormal returns before, during and after the crisis we find only significant positive results for the target around the M&A announcement in the post-crisis period. The abnormal return in other periods are all positive, but not significant surprisingly, as most studies are in line with significant positive returns for targets. Also it is not in accordance with the explanations given by De Pundert (2013). He found significant positive abnormal returns during the financial crisis for the targets and even higher returns before the crisis. A reason could be that we have a too small sample size that has too small power to be significant. Besides, we find all insignificant results for the acquirers; there are also negative results in the post-crisis period. This also contradicts the theory from past studies. De Pundert found mostly positive returns for bidders; insignificant returns before the crisis (this matches with the found results) and mostly significant returns during the crisis. He explains that these results are due to the shift of value creation from the targets to the bidders. The reason is that the bidders can buy target banks at bargain prices and have a good financial condition during the crisis (Hotchkiss and Mooradian, 1998; Beltratti and Paladino, 2012, Temming, 2014). Therefore bidders achieve higher ARs and targets lower ARs due to the crisis. What could be the reason for insignificant returns for bidders is according to Beltratti and Paladino that the market reacts cautiously to the M&A

announcements during the crisis due to uncertainty and opaqueness of bank assets. And when the M&A deals are completed, the returns for acquirers should be significant positive.

When we compare the results of the periods with each other, we find significant differences in ARs for targets in both the short- and medium-term at a one and ten percent level respectively; but for the acquirers, the differences are not significant. Therefore, based on the results we conclude that the financial crisis does impact the abnormal returns for European target banks positively, but not those of the European bidder banks

5.2 Scientific implications

This study investigates first of all the impact of M&A announcements on the abnormal returns for both the target and acquirer groups. Not many studies focus on both of the groups, especially in the European banking sector. So it is interesting to know whether the found results of past papers also apply to this industry in this continent. This research also investigates the impact of the financial crisis on the M&A announcement returns for again both of the groups. Even less papers have been done in this topic. Also this paper investigates the abnormal returns in and between three sub-periods: before, during and after the crisis. So far, no study in this topic has done that. It is interesting to know whether the financial crisis has had an impact and this is also valuable information for banks and their shareholders that consider closing an M&A deal during the financial or short after the crisis. Because shareholders care about the wealth creation of the event and the banks care for their long-term performance and profits.

Chapter 6 Limitations and Future research

6.1 Limitations

Some empirical findings are in line with the theory and conclusions of past papers. But we also obtained contradicting results, which could be influenced by some limitations in this study. These may have affected the quality and reliability of the results in this empirical study.

An important limitation is the small sample sizes due to dividing the samples in three subsamples. Unfortunately, many M&A deals are excluded, because the involving banks are not publicly listed and also because relevant data were missing. An insufficient sample size could make it hard to detect significant differences in abnormal returns and it also gives weaker results compared when using large sample sizes.

Another limitation of this study is the use of only one parametric test for testing the significance of AARs and CAARs. This could give not accurate results, as there are better tests. There are other parametric tests and non-parametric tests; a combination of these tests could give more reliable and valid results.

As mentioned before, it is possible to standardize the CARs to get more powerful test results. But this paper does not do that and calculate only the AARs and CAARs.

This study only used one method to measure the value creation, while other studies have also included a multiple regression to find the impact of various variables or the reason that explains for the found abnormal returns. Also accounting methods could be used for the measurement. It would be more reliable if more methods are adopted to investigate a certain event or phenomenon.

We only measured the impact of the financial crisis on the stock market for the short- and medium-term. Banks are in particular interested in the long-term impact as they look at the long horizon of their performances and profits. So further research can be done for the long-term effects of the financial crisis on bank performance.

6.2 Future research

The limitations stated above could be considered for future improvements. As mentioned before there are not many studies available about the topic in this specific industry, continent and time period. So practitioners could investigate this topic for samples during another financial crisis, another continent or industry to see whether the found results are still consistent. If practitioners want to

continue with this specific research, they could also measure the ARs after completion dates of the M&A deals. Measuring this time period gave prominent results in the study of Beltratti and Paladino (2012) and the outcomes could add to the results of this study. It is also interesting to study the explanatory variables that produce the differences in the ARs between the timer periods with and without the financial crisis. This could be very useful for companies that want to enter M&A deals. In short, there are many interesting researches that can be done about this topic.

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Appendix

Appendix 1a: Sample: target and acquirer bank

Date Announced	Target Name	Target Nation	Target's Sedol	Acquiror Name	Acquiror Nation	Acquiror's Sedol	Value of Transaction ($mil)
02/06/2004	Entenial SA	France	5,844,399	Credit Foncier de France SA	France	4,679,581	203.96
03/11/2004	Vereins-und Westbank AG	Germany	5,544,376	Bayerische Hypo- und Vereins	Germany	4,325,419	-
05/05/2004	Entenial SA	France	5,844,399	Credit Foncier de France SA	France	4,679,581	9.92
07/23/2004	Abbey National PLC	United Kingdom	4,455	Santander Central Hispano SA	Spain	5,705,946	15,787.49
08/12/2004	Kredittbanken ASA	Norway	5,230,813	Islandsbanki hf	Iceland	5,986,729	50.99
09/30/2004	Union de Credit pour Batiment	France	4,912,866	BNP Paribas SA	France	7,309,681	0.67
11/03/2004	Sparebanken Rana	Norway	4,958,893	Helgeland Sparebank	Norway	B071544	-
11/15/2004	Bolig-og Naeringsbanken AS	Norway	4,109,420	Islandsbanki hf	Iceland	5,986,729	287.43
12/23/2004	Almanij NV	Belgium	4,021,104	KBC Bank & Insurance	Belgium	4,497,749	20,891.21
02/28/2005	AKB MBRR	Russian Fed	-	AFK Sistema	Russian Fed	-	10
03/22/2005	BHW Holding AG	Germany	5,235,528	Deutsche Postbank AG	Germany	B018CX9	2,123.95
04/12/2005	Turk dis Ticaret Bankasi	Turkey	B03MXQ9	Fortis SA/NV	Belgium	B86S2N0	1,136.07
04/12/2005	Turk dis Ticaret Bankasi	Turkey	B03MXQ9	Fortis SA/NV	Belgium	B86S2N0	46.7
05/30/2005	Bayerische Hypo- und Vereins	Germany	4,325,419	Unicredito Italiano SpA	Italy	B5M1SM3	18,256.50
06/12/2005	Bank Austria Creditanstalt AG	Austria	7,621,363	Unicredito Italiano SpA	Italy	B5M1SM3	3,268.41
07/26/2005	AKB MBRR	Russian Fed	-	AFK Sistema	Russian Fed	-	-
10/26/2005	BHW Holding AG	Germany	5,235,528	Deutsche Postbank AG	Germany	B018CX9	-
10/26/2005	BHW Holding AG	Germany	5,235,528	Deutsche Postbank AG	Germany	B018CX9	53.92
11/15/2005	Eurohypo AG	Germany	5,526,341	Commerzbank AG	Germany	B90LKT4	5,344.02
02/03/2006	Banca Nazionale del Lavoro	Italy	5,528,604	BNP Paribas SA	France	7,309,681	5,944.13
04/03/2006	Finansbank AS	Turkey	B03MSQ4	National Bank of Greece SA	Greece	BB36BJ7	2,258.16
04/03/2006	Finansbank AS	Turkey	B03MSQ4	National Bank of Greece SA	Greece	BB36BJ7	697.15
04/05/2006	Bank Millennium SA	Poland	4,077,323	Banco Comercial Portugues SA	Portugal	5,812,493	334.75
05/18/2006	Bipielle Investimenti SpA	Italy	B01LQX6	Banca Popolare Italiana	Italy	4,072,146	429.8
06/13/2006	Emporiki Bank SA	Greece	4,212,823	Credit Agricole SA	France	7,262,610	2,650.24
07/04/2006	Egnatia Bank SA	Greece	5,759,932	Cyprus Popular Bank Ltd	Cyprus	4,243,481	674.26
08/04/2006	Bank BPH SA	Poland	7,288,876	Unicredito Italiano SpA	Italy	B5M1SM3	-
08/26/2006	SanPaolo IMI SpA	Italy	5,556,575	Banca Intesa SpA	Italy	4,076,836	37,624.24
09/25/2006	Metkombank	Russian Fed	B3PQNB5	OAO SeverStal	Russian Fed	B5B9C59	-
09/29/2006	DZI Bank	Bulgaria	-	Eurobank Ergasias SA	Greece	BBL58B7	200.72
10/16/2006	Banca Popolare Italiana	Italy	4,072,146	Banco Popolare di Verona	Italy	BKJ9QS7	8,383.70
11/14/2006	Banca Lombarda e	Italy	4,071,875	Banche Popolari Unite Scrl	Italy	7,622,225	7,801.46
12/07/2006	Bank Linth	Switzerland	4,075,048	LLB	Liechtenstein	B1X00Z8	269.9
01/16/2007	Dochirnii Bank Sberbanku Rosii	Ukraine	-	Sberbank Rossii	Russian Fed	4,767,981	150
01/24/2007	Bayerische Hypo- und Vereins	Germany	4,325,419	Unicredito Italiano SpA	Italy	B5M1SM3	1,891.51
01/24/2007	Bank Austria Creditanstalt AG	Austria	7,621,363	Unicredito Italiano SpA	Italy	B5M1SM3	1,272.42
04/23/2007	Kredobank	Ukraine	-	PKO Bank Polski SA	Poland	B03NGS5	-
06/18/2007	Banca CR Firenze SpA	Italy	B1TJQH3	Intesa SanPaolo SpA	Italy	4,076,836	2,916.81
07/25/2007	Banca CR Firenze SpA	Italy	B1TJQH3	Intesa SanPaolo SpA	Italy	4,076,836	3,486.48
08/09/2007	OAO VTB Bank North-West	Russian Fed	4,664,167	Bank VTB	Russian Fed	B5B1TP4	223.71
09/28/2007	Economic & Investment Bank AD	Bulgaria	7,066,964	KBC Groep NV	Belgium	4,497,749	420.95
10/04/2007	Bank BPH SA	Poland	7,288,876	Bank Pekao	Poland	5,473,113	-
11/30/2007	Metkombank	Russian Fed	B3PQNB5	OAO "Severstal"	Russian Fed	B5B9C59	-
01/21/2008	bankTrelleborg A/S	Denmark	-	Sydbank A/S	Denmark	B06JSP1	53.97
01/31/2008	AKB Rosbank	Russian Fed	B5BM6S9	Societe Generale SA	France	5,966,516	453.77
03/11/2008	Sandsvaer Sparebank	Norway	4,774,969	SpareBanken Vestfold	Norway	4,809,355	18.96
03/12/2008	Bank VTB Severo-Zapad	Russian Fed	4,664,167	Bank VTB	Russian Fed	B5B1TP4	-
03/28/2008	Bank VTB Severo-Zapad	Russian Fed	4,664,167	Bank VTB	Russian Fed	B5B1TP4	249.54
04/03/2008	Matelco 234 SA SICAV	Spain	-	Invplus Actius	Spain	-	-
06/24/2008	Meliorbanca SpA	Italy	4,863,856	BPER	Italy	4,116,099	439.96
07/14/2008	Alliance & Leicester PLC	United Kingdom	38,614	Banco Santander SA	Spain	5,705,946	2,517.95
09/12/2008	Deutsche Postbank AG	Germany	B018CX9	Deutsche Bank AG	Germany	5,750,355	3,559.19
09/12/2008	Deutsche Postbank AG	Germany	B018CX9	Deutsche Bank AG	Germany	5,750,355	1,450.04

Date	Target	Target Country	Target ID	Acquirer	Acquirer Country	Acquirer ID	Value
09/15/2008	Lokalbanken i Nordsjaelland	Denmark	B06LBJ2	Svenska Handelsbanken AB	Sweden	5,703,661	152.05
09/17/2008	HBOS PLC	United Kingdom	3,058,750	Lloyds TSB Group PLC	United Kingdom	870,612	25,439.45
09/25/2008	Banco de Castilla SA	Spain	5,458,411	Banco Popular Espanol SA	Spain	BBHXPN6	44.37
09/25/2008	Banco de Vasconia SA	Spain	5,458,165	Banco Popular Espanol SA	Spain	BBHXPN6	18.06
09/25/2008	Banco de Galicia SA	Spain	5,457,849	Banco Popular Espanol SA	Spain	BBHXPN6	49.79
09/25/2008	Banco de Credito Balear SA	Spain	5,458,433	Banco Popular Espanol SA	Spain	BBHXPN6	144.98
09/29/2008	Bonusbanken A/S	Denmark	7,718,533	Vestjysk Bank A/S	Denmark	B00HQS0	3.43
12/03/2008	URSA Bank	Russian Fed	B59BYL7	MDM Bank	Russian Fed	B59BYL7	-
03/15/2009	Banca Italease SpA	Italy	B09RG58	Banco Popolare SC	Italy	BKJ9QS7	186.93
05/19/2009	Banco de Andalucia SA	Spain	5,458,392	Banco Popular Espanol SA	Spain	BBHXPN6	218.79
05/27/2009	AKB Rosbank	Russian Fed	B5BM6S9	Societe Generale SA	France	5,966,516	-
06/12/2009	UkrSibbank	Ukraine	B45CJJ0	BNP Paribas SA	France	7,309,681	-
06/16/2009	UkrSibbank	Ukraine	B45CJJ0	BNP Paribas SA	France	7,309,681	-
08/31/2009	Fionia Bank A/S	Denmark	4,033,626	Nordea Bank AB	Sweden	5,380,031	173.43
01/21/2010	Setskog Sparebank	Norway	-	Holand Sparebank	Norway	5,754,283	-
02/18/2010	AKB Rosbank	Russian Fed	B5BM6S9	Societe Generale SA	France	5,966,516	1,337.12
03/30/2010	Latvijas Krajbanka AS	Latvia	B03B8W7	Bankas Snoras AB	Lithuania	B1NVX63	-
04/12/2010	Stater Banka AD Kumanovo	Macedonia	-	Tsentralna Kooperativna Banka	Bulgaria	4,207,421	7.9
05/27/2010	Skaelskor Bank A/S	Denmark	B053FP3	Max Bank A/S	Denmark	B012TQ3	6.14
05/27/2010	Astra Bank	Ukraine	-	Alpha Bank AE	Greece	4,235,864	-
06/03/2010	Fortis Bank AS	Turkey	B03MXQ9	Turk Ekonomi Bankasi AS	Turkey	B03MYJ9	932.8
06/25/2010	Banco Guipuzcoano SA	Spain	B1VSGS9	Banco de Sabadell SA	Spain	B1X8QN2	419.22
08/17/2010	Stopanska Banka AD	Macedonia	-	National Bank of Greece SA	Greece	BB36BJ7	45.51
09/10/2010	Bank Zachodni WBK SA	Poland	7,153,639	Banco Santander SA	Spain	5,705,946	5,629.41
09/12/2010	Deutsche Postbank AG	Germany	B018CX9	Deutsche Bank AG	Germany	5,750,355	1,531.15
11/15/2010	Bank Stavropol'ye	Russian Fed	-	KB Petrokommerts	Russian Fed	7,418,877	-
12/02/2010	UkrSibbank	Ukraine	B45CJJ0	BNP Paribas SA	France	7,309,681	-
12/17/2010	Eik Bank Danmark 2010 A/S	Denmark	-	Sparekassen Lolland A/S	Denmark	B24DZJ2	136.33
02/17/2011	Swiss Reinsurance Co Ltd	Switzerland	B545MG5	Swiss Reinsurance Co Ltd	Switzerland	B545MG5	21,405.36
03/23/2011	Deutsche Schiffsbank AG	Germany	-	Commerzbank AG	Germany	B90LKT4	-
04/28/2011	TransKreditBank	Russian Fed	B2PY0X3	Bank VTB	Russian Fed	B5B1TP4	584.12
10/07/2011	Banco Pastor SA	Spain	B17M2F4	Banco Popular Espanol SA	Spain	BBHXPN6	1,465.37
01/02/2012	General Bank of Greece SA	Greece	B848H71	Societe Generale SA	France	5,966,516	85.99
01/04/2012	GETIN Bank SA	Poland	B1XLG53	Get Bank	Poland	B7F0DW6	-
01/25/2012	Aarhus Lokalbank A/S	Denmark	B1YXQ03	Vestjysk Bank A/S	Denmark	B00HQS0	23.7
02/14/2012	TransCreditBank	Russian Fed	B2PY0X3	Bank VTB	Russian Fed	B5B1TP4	252.33
02/28/2012	Kredyt Bank SA	Poland	4,534,099	Bank Zachodni WBK SA	Poland	7,153,639	1,425.19
03/26/2012	Banca Civica SA	Spain	B6R1G98	CaixaBank SA	Spain	B283W97	1,305.19
06/08/2012	Denizbank AS	Turkey	B03MR01	Sberbank Rossii	Russian Fed	4,767,981	3,861.65
09/12/2012	A/S Vinderup Bank	Denmark	7,327,898	Salling Bank A/S	Denmark	4,771,799	9.6
09/18/2012	Sparbank A/S	Denmark	B010GQ6	Spar Nord Bank A/S	Denmark	B14LS01	56.22
10/05/2012	Eurobank Ergasias SA	Greece	BBL58B7	National Bank of Greece SA	Greece	BB36BJ7	708.84
10/19/2012	General Bank of Greece SA	Greece	B848H71	Bank of Piraeus SA	Greece	BBFL4S0	1.3
11/16/2012	Banco de Valencia SA	Spain	B3BWN17	CaixaBank SA	Spain	B283W97	-
12/17/2012	Banesto	Spain	4,072,919	Banco Santander SA	Spain	5,705,946	346.62
04/04/2013	Banco de Valencia SA	Spain	B3BWN17	CaixaBank SA	Spain	B283W97	33.51
06/12/2013	Nordea Bank Polska SA	Poland	4,082,565	PKO Bank Polski SA	Poland	B03NGS5	826.32
07/09/2013	TT Hellenic Postbank SA	Greece	B15MTB1	Eurobank Ergasias SA	Greece	BBL58B7	889.62
07/16/2013	UniCredit Bank	Ukraine	-	UniCredit SpA	Italy	B5M1SM3	166.35
07/19/2013	Astra Bank	Ukraine	-	Del'ta Bank	Ukraine	-	107.77
08/14/2013	Vordingborg Bank A/S	Denmark	4,083,535	Lollands Bank A/S	Denmark	B0773F9	5.18
09/04/2013	Vestfyns Bank A/S	Denmark	4,931,593	Svendborg Sparekasse A/S	Denmark	BH7XN45	-
11/11/2013	Diba Bank A/S	Denmark	B1S48T5	Sydbank A/S	Denmark	B06JSP1	82.82
11/26/2013	Credito Bergamasco SpA	Italy	4,228,552	Banco Popolare SC	Italy	BKJ9QS7	273.29

Appendix 1b: sample criteria

| Search Criteria			
Request	**Operator**	**Description**	**Hits**
Database	Include	All Mergers & Acquisitions	n/a
Acquiror All SIC (Codes Listed Dow	Include	Banks, non-US chartered National commercial banks State banks,member fed reserve Commercial banks, nec Branches and agencies of foreign banks Foreign trade & international banking institutions Offices of bank holding companies	37877
Target All SIC (Codes Listed Down	Include	Banks, non-US chartered National commercial banks State banks,member fed reserve Commercial banks, nec Branches and agencies of foreign banks Foreign trade & international banking institutions Offices of bank holding companies	22478
Acquiror Nation Region (Code)	Include	Europe	5961
Target Nation Region (Code)	Include	Europe	5430
Acquiror Public Status (Code)	Include	Public	2639
Target Public Status (Code)	Include	Public	1046
Date Announced	Between	01/01/2004 to 12/31/2013	350
Percent of Shares Owned after Trar	Between	51 to HI	109
Deal Status (Code)	Include	Completed	107

Appendix 2: Geographic scatter of the targets and bidders

Acquiror country \ Target country	AUS	BE	BUL	DEN	FRA	GER	GRE	IT	LAT	MAC	NOR	POL	RU	SP	SWI	TUR	UKR	UK	Grand Total
BE		1	1													2			4
BUL							1												1
CYP										1									1
DEN				10															10
GER						9													9
GRE			1				3	1								2	1		8
FRA					3		2			1			3				3		12
ICE											2								2
IT	2					2		9				1					1		15
LIE															1				1
LIT									1										1
NOR											3								3
POL												4					1		5
POR												1							1
RU													11			1	1		13
SP												1		12				2	15
SWE				2															2
SWI															1				1
TUR																1			1
UKR																	1		1
UK																		1	1
Grand Total	2	1	2	12	3	11	6	10	1	2	5	7	14	12	2	6	8	3	107

Note:

AUS (Austria); BE (Belgium); BUL (Bulgaria); CYP (Cyprus); DEN (Denmark); FRA (France); GER (Germany); GRE (Greece); ICE (Iceland); IT (Italy); LAT (Latvia); LIE (Liechtenstein); LIT (Lithuania); MAC (Macedonia); NOR (Norway); POL (Poland); RU (Russian Republic); SP (Spain); SWE (Sweden); SWI (Switzerland); TUR (Turkey); UKR (Ukraine); UK (United Kingdom).

Appendix 3: Normality diagrams of the target and bidder samplesets

Targets

Mean = .5047
Std. Dev. = 1.4771
N = 21

Acquirers

Mean = .0029
Std. Dev. = .3222
N = 21
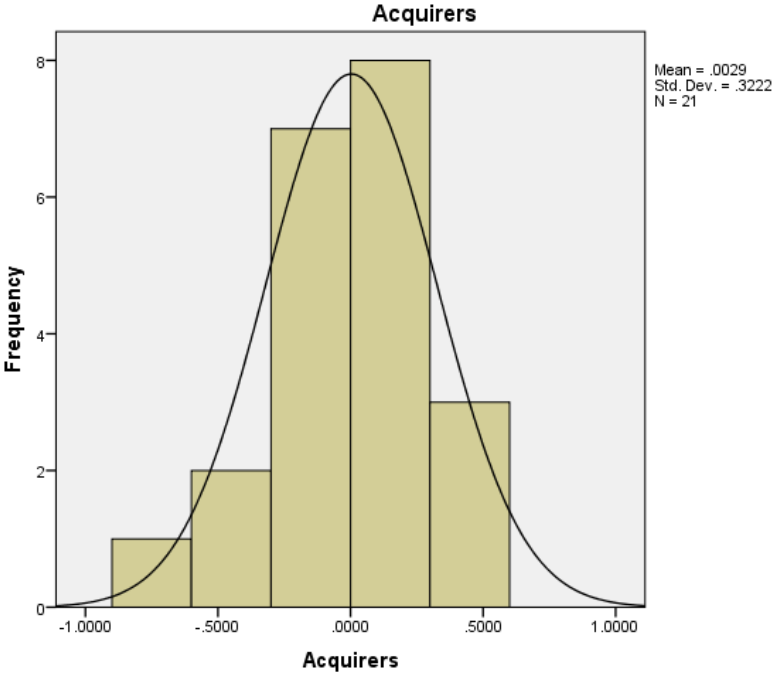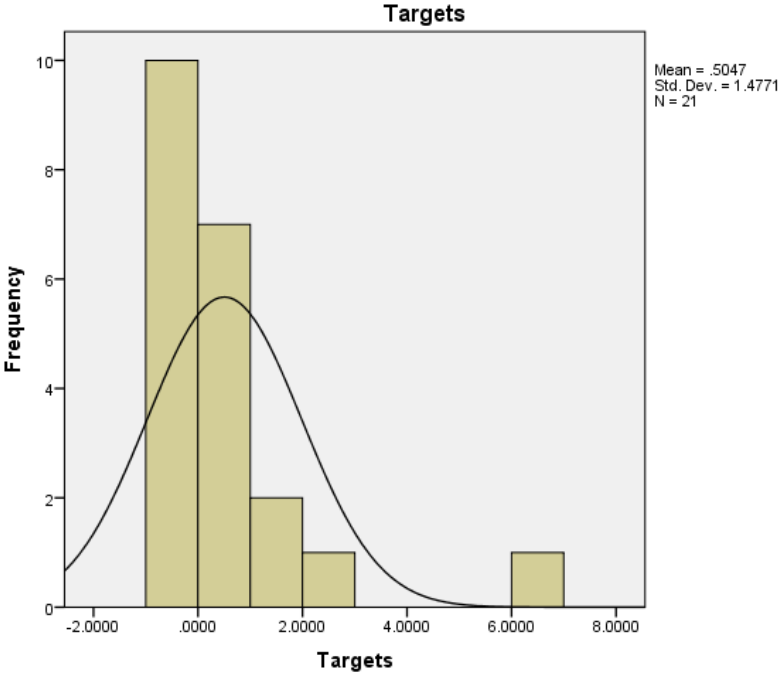
Appendix 4:

Average Abnormal Returns (AAR) of targets and bidders in percentage in the time window [-10, +10]

Day	Targets	Day	Acquirers
-10	-0.2469	-10	0.1755
-9	0.2430	-9	-0.8266**
-8	0.1974	-8	-0.0952
-7	0.7101	-7	0.2635
-6	0.2473	-6	0.1644
-5	-0.1992	-5	-0.3573
-4	0.6727	-4	-0.2884
-3	0.3055	-3	-0.1621
-2	-0.0799	-2	0.4399
-1	-0.0006	-1	0.3498
0	6.1080**	0	0.5322
1	2.0403**	1	-0.0473
2	-0.5410	2	0.1606
3	-0.4886	3	-0.2438
4	-0.5923	4	0.2679
5	-0.1894	5	-0.3757*
6	-0.8236	6	-0.0179
7	1.6840	7	0.1967
8	1.2378	8	0.0524
9	-0.1485	9	-0.2508
10	0.4624	10	0.1235

*** = significance at the 1% confidence level

** = significance at the 5% confidence level

* = significance at the 10% confidence level

Appendix 5:

Average Abnormal Returns (AAR) of targets in percentages of the time window [-10, +10] based on three time periods

Dag	Pre-crisis	Crisis	Post-crisis
-10	-0.4824*	-0.1583	-0.0296
-9	0.5529	0.4695	-0.4141
-8	0.2881	0.3659	-0.1034
-7	0.0705	0.9268	1.2881
-6	-0.2689	0.7377	0.3623
-5	0.3592	0.0639	-1.1772
-4	0.1857	0.5880	1.3627
-3	0.2785	0.0697	0.5952
-2	-0.0663	-0.7906	0.6981
-1	0.1110	-0.7367	0.6468
0	2.2936	4.4329	12.7911**
1	0.2257	3.6719**	2.5736
2	0.0181	-1.1030	-0.6373
3	-0.0633	-0.1749	-1.3679*
4	-0.2469	-1.5670*	0.0313
5	-0.5222	0.4967	-0.5143
6	-0.1315	-3.3227	1.0188
7	-0.0481	4.8020	0.4864
8	0.1563	3.8329	-0.2166
9	-0.5005**	0.7510	-0.6819
10	-0.1277	2.2929*	-0.7819

*** = significance at the 1% confidence level

** = significance at the 5% confidence level

* = significance at the 10% confidence level

Appendix 6:

Average Abnormal Returns (AAR) of bidders in percentages of the time window [-10, +10] based on three time periods

Dag	Pre-crisis	Crisis	Post-crisis
-10	-0.3017*	-0.1402	1.2788
-9	-0.5728**	-0.6546	-1.4192
-8	0.3602	-0.2468	-0.5068
-7	0.1323	0.4693	0.1524
-6	0.2861	0.3115	-0.2114
-5	-0.5637	-0.3103	-0.1403
-4	-0.1628	0.1256	-1.0476*
-3	-0.0381	0.1052	-0.7112
-2	-0.0108	0.6203	0.8041
-1	0.1516	1.2277*	-0.6215
0	0.5513	-0.8225	2.4252
1	0.4242	0.5284	-1.5113
2	0.2486	-0.4310	0.8777
3	-0.2455	-0.4074	-0.0098
4	0.2992	0.9052	-0.6779
5	-0.2793	-0.0253	-1.0048**
6	0.1244	-0.0505	-0.1676
7	0.2511	0.7394	-0.6470
8	0.1624	0.0349	-0.0741
9	-0.1535	-0.0199	-0.7116
10	-0.0812	-0.4640	1.2373

*** = significance at the 1% confidence level

** = significance at the 5% confidence level

* = significance at the 10% confidence level

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