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MSc in Business & Economics, Specialisation in Finance

**Mergers and Acquisitions of Financial Institutions During the
Subprime Mortgage Crisis and the European Sovereign Debt
Crisis**

Supervisor

Professor Cristina Cella
Department of Finance
Stockholm School of Economics

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Philip Di Salvo*

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Abstract: This thesis is composed of two different papers in the field of empirical bank M&A analysis. In the first paper “*Testing the Deposit Insurance Put Option Hypothesis for Acquisitions by EU-27 and US Banks*,” we test the validity of the “deposit-insurance hypothesis” and the “earnings diversification hypothesis” for a sample of EU-27 and US bank M&A transactions during the US-Subprime Mortgage Crisis and the European Sovereign Debt Crisis. Our results suggest that while acquirers from the EU-27 value the ability to diversify, US acquirers value the ability to increase the value of the deposit insurance put option. In the second paper “*Regulatory Drivers of Premiums and of Market Reactions to Merger Announcements*,” we analyse the influence of regulatory drivers on the percentage book value premium for a sample of European bank M&A transactions during the US-Subprime Mortgage Crisis and the European Sovereign Debt Crisis. We, furthermore, analyse the impact of regulatory drivers on the cumulative abnormal returns for the buyer’s stock following the announcement of the merger for the crises periods. Our results suggest a negative influence of the degree of regulatory strength and shareholder protection on the percentage book value premium in domestic M&A transactions. For the market reaction analysis, we observe a negative cumulative abnormal return for the bidder’s stock around the merger announcement day. We find support that the degree of equity capitalisation of the target, weak shareholder protection in domestic mergers, and strong shareholder protection in cross-border mergers drive the cumulative abnormal returns of the acquirer’s stock for European bank M&A transactions during the financial crises.

Keywords: Bank M&A, Regulatory M&A Premium Drivers, Event Study, Deposit Insurance Put Option, Too-Big-To-Fail

* Matriculation Number: 40263, Phone: +49 163 5888 183, E-mail: 40263@student.hhs.se

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I Testing the Deposit Insurance Put Option Hypothesis for Acquisitions by EU-27 and US Banks

Abstract: In this paper, we test the validity of the “deposit-insurance hypothesis” and the “earnings diversification hypothesis” for a sample of EU-27 and US bank M&A transactions during the US-Subprime Mortgage Crisis and the European Sovereign Debt Crisis. In essence, we test if acquirers incorporate the value of the deposit insurance put option in their target valuation or whether they value the diversification potential of a target. Furthermore, we analyse the role of equity capital on the valuation decision. For the purpose of the analysis, we use various multivariate OLS regression models. Our results suggest that EU-27 banks value the ability to diversify and, hence, to reduce risk of the post-merger institution, while US acquirers value the ability to increase the value of the deposit insurance put option. We argue that the underlying reason could be the ability of the US to bail out its deposit insurance funds by increasing the monetary supply. In addition, we find that the level of evidence for the “deposit insurance hypothesis” decreases with more equity capital of the acquirer for countries that have control over their monetary policy. For the case where targets are chartered in countries that do not have control over their monetary policy, the relation only holds for a high degree of equity capital.

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List of Abbreviations

BVPREM	Percentage Book Value Premium
bp	Basis points
DGS	Deposit Guarantee Schemes
DIS	Deposit Insurance System
EC	European Commission
EU	European Union
FDIC	Federal Deposit Insurance Corporation
GDP	Gross Domestic Product
NCUA	National Credit Union Administration
OLS	Ordinary least squares
SDC	Sovereign Debt Crisis
SMC	Subprime Mortgage Crisis
US	United States
USD	US Dollar

1 Introduction

The global financial crisis that started in 2007, and had its origin in the United States (US) Subprime Mortgage Crisis (SMC), has spread both within the US and the global financial systems. The particularity of a monetary union among 17 European countries and the distrust of the markets in the solvency of some European countries lead to the Sovereign Debt Crisis (SDC), which is, up to the present time, still unresolved. In order to prevent the evolution of future financial crises, regulators introduced stricter capital adequacy rules for banks with the new Basel III bank regulation standard in order to attenuate moral hazard problems, decrease expected social costs, and, hence, increase the liability of bank shareholders. Furthermore, an ongoing debate has evolved in Europe, which places the creation of a pan-European deposit insurance plan at the centre of discussion (European Commission, 2009). Despite the insecurities in the capital markets and the regulatory tightening, several bank mergers and acquisitions transpired during the times of recent financial turmoil.

In this paper, we want to examine one particular aspect of acquisition premium drivers in bank M&A transactions. We analyse the question of whether banks try to capitalize from the mispricing of deposit insurance premiums and value those targets that can enhance the value of the combined deposit insurance put option (“deposit-insurance hypothesis”) or whether banks value those targets that can diversify cash flows of the combined entity and, hence, reduce the business risk of the combined entity after the merger (“earnings diversification hypothesis”). In the paper by Benston et al. (1995), which examines US bank M&A deals between 1981 and 1986, the two opposing hypotheses are formulated, and the authors find evidence for the “earnings diversification hypothesis”.

The case, where banks attempt to increase the value of the deposit insurance put option, constitutes a moral hazard problem. Capital adequacy rules seek to attenuate this problem. In addition to examining the two competing hypotheses of Benston et al. (1995), we also want to analyse, how the degree of the acquirer’s equity capital influences the magnitude of the two hypotheses and, thus, in essence, the banks’ propensity to shift risks to society. In this context, we apply the findings of Calem and Rob (1998), who suggest a u-curve relation between equity capitalisation and risk taking. In light of the recent developments in the US and Europe, we want to test Benston et al.’s (1995) results under new environmental conditions and in an extended version for a EU-27 and a US Sample. The fact that we focus our research on the period of financial crises and, thus, test Benston et al.’s (1995) research question under

new economic conditions, should extend the results that Benston et al. (1995) provide for their US merger sample . Not only do they limit their research to a US Sample of bank M&A deals, but they also collect data from a period of relatively tranquil economic conditions. We aim at extending the view by providing evidence for bank M&A pricing during times of economic uncertainty, regulatory tightening, and political pressure on the banking sector. Thus, we aspire answering the following research questions in our thesis:

(1) Did banks incorporate the opportunity to increase the value of the deposit insurance put option through bank M&A transactions in Europe and the US during the financial crises in the merger premium or did banks value the opportunity to diversify risk?

(2) Did equity capital have an influence on the banks' propensity towards including the change in value of the deposit insurance put option in their valuation of the target?

Our findings should be particularly interesting for regulators and government authorities, since we can present indications for banks trying to maximize the value of the deposit insurance put option through M&A deals if the deposit insurance system is credibly re-insured by the government. Thus, if the government is able to bail-out the deposit insurer, banks highly value the ability of a target to increase the deposit insurance put option and, in essence, seek to shift expected costs to society.

For the purpose of our analysis, we compile samples of EU-27 and US bank M&A transactions between April 1, 2007 and December 31, 2013 and apply an extended accounting data based version of the Benston et al. (1995) empirical model to our sample period. We use multivariate ordinary least square (OLS) regressions in order to determine which of the hypotheses suggested by Benston et al. (1995) was of relevance during the recent crises.

The thesis is structured as follows: Section II provides a brief summary on the deposit insurance systems in the EU-27 and the US. Section III reviews the relevant literature on the “deposit insurance hypothesis”, the “earnings diversification hypothesis”, and the influence of capital on the moral hazard problem of banks that implicitly evolves with federal deposit insurance. In Section IV, we present our research design and research hypotheses. Section V comprises the empirical analysis and in Section VI we discuss our results and elaborate on limitations of our analysis. We conclude the thesis in Section VII.

2 The Deposit Insurance Systems in Europe and the United States: A Brief Comparison

In light of the process of deposit insurance system harmonisation in Europe and the potentially installed pan-European deposit insurance system, we briefly want to highlight the key pillars of the EU-27 deposit insurance systems and the US systems. This section is designed to provide the reader with an overview of the key differences of the systems, which is important for the later discussion of our empirical results.

Due to the existence of 27 distinct deposit guarantee schemes (DGS) in the EU, we focus on the general EU legislation regarding DGS and do not elaborate on the different national DGS in the EU-27 jurisdictions. The EU initiated the harmonisation of DGS with the EU directive 94/19/EC in 1994. While the harmonisation rules are based on soundness and safety requirements, the guiding purpose of the directive at that time was to prevent regulatory arbitrage between EU member states by means of harmonising the heterogeneous deposit insurance systems of the respective EU jurisdictions (Hagendorff et al., 2010). In response to the latest financial turmoil, the 1994 directive was amended in 2009 by the EU directive 2009/14/EC. The main aims of the new directive are the harmonisation of the deposit insurance funding mechanism, the harmonisation of the level of coverage (general minimum coverage of 100,000 EUR), and the time reduction of the payout procedure.¹ In a future scenario, the EU aims at creating a single pan-European DGS in order to enhance confidence in the system, further limit opportunities for regulatory arbitrage, and save administrative costs. Opponents of the single pan-EU DGS, however, anticipate breaches of the principle of subsidiarity and moral hazard problems by its implementation (European Commission, 2009). So far, the issue has not been settled yet and, thus, every member state is currently responsible for their domestic DGS.

Within the US system, a bank, a thrift, or a credit union has to become a member of the US deposit insurance system (DIS) on the approval of the respective deposit insurance agency. The main public policy objectives of deposit insurance agencies are to maintain the public confidence in the financial system by insuring deposits, liquidating failed banks, and supervising financial institutions for safety, soundness, and consumer protection. The US has two different federally mandated DIS: The Federal Deposit Insurance Corporation (FDIC) insures banks and thrifts while the National Credit Union Administration (NCUA) is responsible for insuring credit unions. The deposits in banks, thrifts, and credit unions are

¹ For detailed information see European Commission Directorate JRC Joint Research Centre (2010).

insured up to a value of 250,000 USD. Both systems manage ex-ante deposit insurance funds, meaning that the DIS accumulates a fund through premiums paid by the insured banks before any failure. Furthermore, the respective funds are backed by the US Government. Around 99.7% of all US deposits are covered by the DIS which translates to approximately 79% of the entire US deposit base. In 2010, the size of the deposit insurance fund translated to approximately 1.35% of the entire insured deposit base. Annual premiums for banks range between 2.5bp and 45bp and are paid on average consolidated total assets minus average tangible equity.²

Hence, we can conclude that the EU is currently in the process of harmonising and, to some degree, centralising the deposit insurance systems. The US already has a centralised deposit insurance mechanism, which is backed by the US government and which could serve as an example for a future pan-European deposit insurance system.

3 Literature Review

3.1 “Deposit-Insurance Hypothesis” and “Earnings Diversification Hypothesis”

From a pricing perspective, it is evident that the valuation of a target increases with lower costs of the deposit insurance in the jurisdiction in which the target is chartered. Another feature of deposit insurance systems that is pivotal for means of valuing an M&A target is the inherent put option feature of the deposit insurance. If deposits are insured by the federal deposit insurance system, banks have an implicit put option on their deposits. The idea of modelling the equity value of a firm as a call option goes back to Jensen and Meckling (1976), who model the incentive of equity holders to increase non-systemic risk of assets once debt has been issued in order to increase the value of the equity call option. Hence, the value of the outstanding debt decreases. In the case of the banking system, the deposit insurer takes the position of the debt holder. The derivation of the inherent put option can be reviewed in Merton (1977, 1978). If the premium for the deposit insurance that is charged by the insurer is imperfectly risk-sensitive, an increase in the bank’s risk or size increases the value of the put option, which is, accordingly, not offset by an increase in costs (Greenbaum and Thakor, 2007). Correspondingly, banks that seek to maximize shareholder value may attempt to increase asset risk, leverage, or size because the value of the put option increases with leverage and asset risk (see e.g. Dothan and Williams, 1980; Kareken and Wallace, 1978; Sharpe, 1978). Thus, deposit insurance systems can pose a moral hazard problem, since, given

² For paragraph on US deposit insurance system see: Financial Stability Board (2012).

imperfectly risk sensitive deposit insurance systems, banks have the propensity to increase risk and size and, thereby, shift costs to the general public. Capital requirements seek to attenuate this incentive, however, often inefficiently (Greenbaum and Thakor, 2007).

The opportunity to monetize from the deposit insurance put option (“deposit-insurance hypothesis”) in a bank merger context was articulated by Benston et al. (1995) and, originally, relates to the size and risk of the target that can be promising incentives for a merger. Ultimately, the authors claim that “the deposit-insurance hypothesis (...) suggests that acquirers would be willing to pay more for riskier, more profitable organizations whose returns are highly correlated with the acquirer’s returns” (Benston et al. 1995, p. 778). In addition, the authors also suggest that another way to monetize from the deposit insurance put option is to not only become riskier but also to become larger in order to increase the probability that the insurer covers 100% of the bank’s deposits, i.e. in order to become “too-big-to-fail”. The competing hypothesis, the “earnings diversification hypothesis”, may be applicable if acquirers presume that maximizing the bank’s risk does not maximize shareholder value. This may be the case if the regulator does not permit an increase in risk exposure or if the increase in expected bankruptcy costs offsets the increase in value of the deposit insurance put option (Benston et al., 1995). In these cases, diversifying mergers may increase shareholder value when acquiring banks diversify their earnings in order to generate higher cash flows while keeping the risk constant. Benston et al. (1995) provide direct and indirect empirical evidence (e.g. Kim and McConnell (1977) and Asquith and Kim (1983)) that support the idea that earnings diversification may lead to increases in cash flow to shareholders. Finally, the authors examine US bank M&A transactions between December 1981 and July 1986 by using linear regression techniques. They find strong evidence for the “earnings diversification hypothesis” and no evidence for the “deposit-insurance hypothesis.”

Brewer III et al. (2000) study 189 US bank M&A deals that took place between 1990 and mid-1998 and find that those targets that proxy for diversification benefits are offered higher premiums. Thus, their findings are consistent with the “earnings diversification hypothesis” as well. Brewer III et al. (2007) expand Benston et al.’s (1995) framework to investigate the impact of independent directors on the premium paid in 392 US commercial bank M&A transactions between 1990 and 2004. Again, the authors provide support for the “earnings diversification hypothesis.”

Opposing the previous findings, there is also the opinion in the literature that advocates a premium in order to expand the value of the deposit insurance put option. Hagendorff et al.

(2010), who examine the drivers of the percentage book value premiums (BVPREM) paid in European bank M&A transactions between 1997 and 2007, find evidence that, on average, acquirers are willing to pay a premium in order to increase the value of the deposit insurance put option by increasing the combined risk of the target. The authors, however, do not find a premium in order to approach a “too-big-to-fail” status. Similarly, Carbo-Valverde et al. (2009), who examine the purpose of European banks to undertake pan-European cross-border M&A deals, find that one guiding motivation of the acquiring bank is to shift risks onto the European safety net. The inherent moral hazard dynamic of the deposit insurance system is revealed by the authors. Kane (2000) studies the period of bank mega-mergers between 1991 and 1998. The author finds strong evidence for a potential aspiration of the acquirers during that period to approach a “too-big-to-fail” status. Hence, they reveal potential incentives for mega-mergers to shift part of the risk of the deal on the public safety net. In addition, Brewer III and Jagtiani (2007, 2009) show that banks are willing to pay a substantial premium in order to reach a “too-big-to-fail” status. Further evidence in this context is also provided by Molyneux et al. (2010). The authors examine European bank M&A deals between 1997 and 2008 and find that banks pay a premium for larger targets. Thus, the authors also find indication for acquirers valuing the ability to grow “too-big-to-fail”.

3.2 The Influence of Capital on the Moral Hazard Problem of Banks

As mentioned above, bank capital adequacy rules (currently in terms of risk-weighted capital ratios) seek to attenuate the incentive of banks to shift costs to the public (moral hazard problem) that is inherent in the deposit insurance system. Banks seeking to maximize shareholder value, in theory, should have a lower incentive to increase asset risk when stricter capital adequacy rules are in place. Furlong and Keeley (1989) show that the marginal value of the deposit insurance put option decreases with higher capital ratios. That is, however, only true as long as penalties for breaching capital adequacy thresholds are in place and are credibly enforced (Keeley and Furlong, 1990).

There is a different view in the literature that challenges the efficiency of capital adequacy and is based on utility maximization of banks. The basic analytical framework was developed by Kahane (1977) and Koehn and Santomero (1980). The authors show in a two-parameter Markowitz model how a utility maximizing manager increases asset risk and, therefore, the risk of default due to stricter capital adequacy rules. In such a framework, the expected costs for the insurer increase with stronger bank regulation. Therefore, following the

framework, one would expect that banks are willing to pay more for targets that increase the overall asset risk of the combined entity when minimum capital ratios are high. Keeley and Furlong (1990), however, argue that Kahane's (1977) and Koehn and Santomero's (1980) analysis is inappropriate due to their assumption of constant borrowing rates and deposit insurance costs independent of portfolio default risk.

Calem and Rob (1998) provide for an interesting interface between the two competing views. In their multiperiod model, where bank's capital and portfolio choices may vary over time, they find an implied u-shaped relationship between capital and bank risk taking. An increase in bank capital first leads to a decrease in risk taking and, subsequently, to more risk. A highly undercapitalized bank has the tendency to take on maximum risk. Accordingly, the moral hazard problem is severe for those banks that are at the edge of bankruptcy. As capitalisation of the bank increases, the tendency to take on enormous risk decreases up to a particular level where banks feel safe again to take on more risk. The authors also include an examination of an increase in capital adequacy requirements in their model. They find that if the capital adequacy requirements are increased, an ex-ante well capitalized bank will take on additional portfolio risk in the process of adding capital to comply with the new regulation. The results suggest that once a bank is well capitalized, i.e. beyond the range of maximum risk-taking, a significant reduction in the bankruptcy risk of banks cannot be achieved by the increase in capital adequacy standards.

4 Research Design and Hypotheses

The basic underlying empirical framework of our research is adapted from Benston et al. (1995), who test the "deposit insurance hypothesis" against the "earnings diversification hypothesis" for US bank M&A transactions in the 1980s by regressing the merger premium on several independent variables. The authors find evidence for the "earnings diversification hypothesis," i.e. the diversification motive drives the merger premium. The recent financial crises provide an interesting environment to test the authors' findings under new environmental conditions. We are interested in testing the authors' findings in European as well as American contexts in times of financial distress where particular attention is put on bank safety nets and "too-big-to-fail" institutions. We, thus, apply a modified version of Benston et al.'s (1995) empirical framework to the recent periods of financial turmoil for a EU-27 and a US Sample of bank M&A transactions.

First, in contrast to Benston et al. (1995), we refrain from using market premiums and use percentage book value premiums instead. The reason for this modification is the limited data availability during the financial crises. The usage of percentage book value premiums allows us to incorporate acquisitions of non-listed banks. The second modification is motivated by the model of Calem and Rob (1998), who analyse the effect of leverage on risk-taking behaviour of banks. We aim at scrutinizing the connection between leverage and the propensity of banks to increase the overall risk in our empirical analysis by analysing how leverage influences the two competing hypotheses elaborated on above.

The recent crises suggest a particular attention to the question of whether banks were willing to pay a premium for targets as they anticipate advantages by potentially shifting large amount of costs to the general public. Our results can provide further evidence to the discussion about potentially suboptimal incentives that are inherent in our current banking system and that are provided by implicit and explicit safety nets as well as imperfectly risk-sensitive deposit insurance premiums.

Our first hypothesis relates to the difference in US and European data. We expect to find a stronger incentive of risk shifting into EU safety nets, which is especially valid for the post Lehman default era. According to Acharya et al. (2009), after the collapse of Lehman, the “too-big-to-fail” status that Lehman was assumed to have, has taken deep damage following the bank’s bankruptcy. On the other hand, the examples of Ireland that nationalized Anglo Irish bank and later Spain that also ring-fenced their banking sector, have shown that the safety mechanisms for banks in Europe seemed to be more comprehensive and reliable than the one in the United States.

Hypothesis 1: We expect to find stronger evidence for the “deposit insurance hypothesis” in the EU-27 Sample than in the US Sample

In addition, we expect to find indication for Calem and Rob’s (1998) model. We expect to confirm the “deposit-insurance hypothesis” when acquirers have low capital ratios since their bankruptcy risk is already relatively high. In such a situation it makes sense to grow in size and risk in order for being considered “too-big-to-fail.” Such acquisitions, hence, could become a source of major social costs. The relation under scrutiny is particularly interesting in times of moral criticism of financial institutions, and even more, due to the high relevance that is put on capital adequacy rules by the regulator.

Hypothesis 2: The evidence for the “deposit-insurance hypothesis” in bank mergers and acquisition decreases with the level of capitalisation of the acquirer

5 Empirical Analysis

5.1 Data Description

5.1.1 Sample Selection

Since we aim at comparing the “deposit-insurance hypothesis” for an EU-27 Sample and a US Sample of bank acquisitions, we start the sample selection by retrieving two lists of M&A transactions from the “Zephyr” database that were announced and completed between April 1, 2007 (start of the US-SMC) and December 31, 2012 for targets and acquirers chartered in the EU-27 and targets and acquirers chartered in the US. Since we want to examine the effect of financial variables on the BVPREM that was paid in bank M&A transactions, we limit the sample for bidders and targets to a five digit “NACE” code 64.1.9.1 that refers to “banks.” Since we do not use market values in our research, we do not confine our study to listed targets, but also include unlisted banks in the research sample.

These selection requirements yield a total of 451 deals for the EU-27 Sample and 660 deals for the US Sample for the period under scrutiny.³ By deleting those deals where no information about the deal value is available on “Zephyr” database, where the deal value is below 1 million EUR,⁴ and where the book value of equity is negative, we further limit the sample to 218 deals for the EU-27 Sample and 338 deals for the US Sample. Finally, we eliminate those deals, where an insufficient amount of accounting information was available from the “Bureau Van Dijk Bankscope”⁵ database. As a result, we obtain a sample of 88 deals for the EU-27 Sample and 119 deals for the US Sample during the US-SMC and European SDC (see Appendix 1 for a list of the deals included in the EU-27 Sample and Appendix 2 for the list of deals included in the US Sample). For the additional data verification process, we follow Hagendorff et al.’s (2010) approach and compare the deal characteristics from the “Zephyr” database with publicly available news sources from “LexisNexis” and, eventually, adjust the data.

³ Data was obtained on 02/07/2013.

⁴ Due to the limited amount of deals that took place between 2007 and 2012 we apply a lower threshold compared to previous studies in order to reach a substantial amount of data. Beitel et al. (2004) use a 100 million USD threshold. Benston et al. (1995) use a 100 million USD and 25 million USD threshold for the acquirer’s assets and target’s assets respectively.

⁵ If not differently specified, all accounting data mentioned in this study are taken from the “Bureau Van Dijk Bankscope” database.

Table 1 Number of Deals - Breakdown by Country of Origin of Acquirer and by Year

	EU-27 Sample	US Sample
Breakdown by Country of the Acquirer		
Belgium	3	-
Cyprus	1	-
Denmark	5	-
France	19	-
Germany	11	-
Greece	4	-
Italy	16	-
Latvia	2	-
Netherlands	2	-
Poland	2	-
Portugal	1	-
Slovenia	2	-
Spain	12	-
Sweden	4	-
United Kingdom	4	-
Breakdown by Year		
2007	9	38
2008	31	17
2009	17	5
2010	9	12
2011	13	22
2012	9	25
Total	88	119

Table 1 shows a breakdown of deals by country of origin of the acquiring institution as well as by announcement year for the EU-27 Sample and the US Sample. For an overview of the single different deals included in the samples see Appendix 1 and Appendix 2.

An overview of the sample deals is provided in Table 1. For the EU-27 Sample, we find that most acquirers come from four of the five largest European economies: France, Germany, Italy, and Spain (see Eurostat database for an overview of GDP in the EU-27). We, furthermore, get an indication of the different evolution of the crises over the six years of our sample period. For Europe, our sample shows the highest number of deals in 2008 and a sharp decline after 2009 to a low level for the years 2010 to 2012. In 2009, first signs of financial turmoil in Europe were evident with the bailout of Anglo Irish by the Irish government (Mody, 2009). The crises reached a peak with Greece having been bailed out by the EU and the IMF in 2010 (Spiegel and Barker, 2012). Even in 2013, the Sovereign Debt Crisis cannot be considered over with Cyprus having been bailed out in the first quarter of 2013.⁶ For the US Sample, we find that the weakest year in terms of deal quantity was 2009, i.e. the year after Lehman filed for bankruptcy. After 2009, the number of deals in the US started to rise

⁶ See European Central Bank (2013) timeline for a comprehensive overview of the events in Europe during the crises.

again, indicating that the rising problems in Europe did not strongly affect the appetite for pan-US bank M&A deals.

In Table 2, we provide comparative deal statistics for the deal value and the acquired stake on a sample and on a year by year basis. We find that the average deal value was higher for the EU-27 Sample than for the US Sample. The maximum deal value for both samples was achieved in 2008. In the EU-27, Lloyds Banking Group announced the acquisition of 100% in HBOS in October 2008 for 16.4 billion EUR. In the US, Wells Fargo announced the acquisition of 100% in Wachovia in October 2008 for 48 billion EUR. In 2009, not only the amount of deals reached a low point (Table 1) but also the average deal value in the US declines from 3.1 billion EUR in 2008 to 49 million EUR in 2009. Clearly, the US financial industry was hit hard by the Lehman bankruptcy. Lastly, we observe for the EU-27 Sample that the acquired stake is on average 43.7% while for the US it is almost 100%.

Table 2 Deal Characteristics

	Sample	2007	2008	2009	2010	2011	2012
EU-27 Sample							
Deal Value (EUR mn.)							
Min	5.0	56.6	12.3	11.8	19.0	5.0	7.8
Mean	691.3	447.1	1,063.9	520.4	481.4	579.4	346.4
Max	16,366.2	1,397.8	16,366.2	4,119.7	1,205.0	3,941.9	2,420.8
US Sample							
Deal Value (EUR mn.)							
Min	1.2	1.2	9.2	7.1	2.1	3.1	4.4
Mean	655.8	208.1	3,149.5	49.4	205.1	508.8	107.4
Max	48,012.1	1,386.4	48,012.1	179.6	1,022.5	6,853.9	1,165.7
Stake acquired							
Mean EU-27 Sample	43.7%	36.4%	39.0%	39.3%	55.3%	62.0%	37.3%
Mean US Sample	99.7%	100.0%	100.0%	100.0%	100.0%	98.5%	100.0%

Table 2 shows descriptive statistics on the deal value and the acquired stake for the EU-27 and the US Sample over the total six years and on a yearly basis. “Deal Value” refers to the price paid by the acquirer for the stake acquired in the target. “Stake acquired” refers to the percentage in the target that was bought by the acquirer. For an overview of the single different deals included in the samples see Appendix 1 and Appendix 2.

5.1.2 Variable Selection and Description

5.1.2.1 Dependent Variable: Merger Book Value Premium

The dependent variable in our research is the percentage merger book value premium (BVPREM), the purchase price over the book value of equity of the target as of the financial statement in the fiscal year prior to the announcement date:

$$BVPREM_t = \left(\frac{Deal\ Value_t}{s * BV(Equity)_{t-1}} - 1 \right) * 100$$

The variable s refers to the stake acquired in the target by the bidder. BV refers to the book value in the fiscal year prior to the announcement date. The index t , thus, stands for the fiscal year in which an acquisition was announced. We use the fiscal year end prior to the announcement as the basis for the independent variables as well.

The limitation of this approach is that the book value of equity is an imperfect measure of economic value (Hagendorff et al., 2010). Since non-listed banks are included in the research sample and, by definition, there are no market values available for those institutions, an approximation for the market value has to be implemented. The book value of equity is an accepted approximation for the market value in a bank acquisition context (e.g. Brewer III et al., 2000; Diaz and Azofra, 2009; Hakes et al., 1997; Palia, 1993). The reason for its widespread use is that the majority of the assets and liabilities of banks are either short-term (book value is likely to be close to economic value) or are repriced frequently (Hagendorff et al., 2010). Furthermore, assets of banks are often marked to market and depreciation, which can have a big impact for manufacturing firms and would deflate the book value of equity, is often of negligible size for financial institutions (Damodaran, 2002).

Despite the ability to consider non-listed banks in the sample through the BVPREM approach, its use also avoids incorporating anticipated takeover premium in the price on a discounted value basis. This component of a bank's price can be of particular substance for those banks that have long been regarded as takeover targets (Hagendorff et al. 2010). Table 3 shows descriptive statistics for the variable BVPREM. The average BVPREM for the EU-27 Sample is substantially higher than for the US Sample (51.06% and 32.00% respectively). This result seems, however, to be driven by one particularly high BVPREM in the EU-27 Sample.⁷ Looking at the distribution, the median of both samples is almost identical. Comparing the data with previous studies, we find that the BVPREM paid during the financial crises was highly deflated. Diaz and Azofra (2009), who examine 147 EU bank acquisitions between 1994 and 2000 find an average sample BVPREM of 218%. The average BVPREM for Brewer III et al. (2000), who examine 189 US takeovers between 1990 and 1998, is also above 200%. Again, the impact of the financial crises is paramount.

⁷ BNP Paribas Private Bank announcing the acquisition of a 35% stake in Insinger de Beaufort for a BVPREM of 1066.18%.

Table 3 Descriptive Statistics Dependent and Independent Variables

EU-27 Sample	n	Mean	SD	Min	25%- Quart.	Median	75%- Quart.	Max
BVPREM (%)	88	51.06	145.57	-99.61	-29.89	23.45	71.80	1,066.18
COVROA (%)	88	0.14	0.48	-0.46	0.00	0.01	0.09	3.21
VAR_ROA_T (%)	88	3.55	19.07	0.00	0.02	0.08	0.48	170.51
TA_T/TA_A (%)	88	39.32	146.42	0.03	1.86	7.81	21.06	1,322.51
RELROA (%)	88	30.81	560.03	-2,852.25	25.34	92.91	164.30	1,452.88
VAR_ROA_A (%)	88	0.15	0.38	0.00	0.01	0.03	0.09	2.85
LEV (%)	88	5.83	3.34	1.35	3.27	5.34	7.09	19.48

US Sample	n	Mean	SD	Min	25%- Quart.	Median	75%- Quart.	Max
BVPREM (%)	119	32.00	64.40	-81.27	-12.13	24.09	72.04	224.57
COVROA (%)	119	0.19	0.94	-1.33	-0.03	0.01	0.09	7.77
VAR_ROA_T (%)	119	1.02	2.46	0.00	0.03	0.15	0.85	22.39
TA_T/TA_A (%)	119	39.51	62.59	0.38	7.66	15.26	44.29	444.83
RELROA (%)	119	-375.05	4,171.39	-45,178.95	9.58	61.31	100.30	967.27
VAR_ROA_A (%)	119	1.06	5.42	0.00	0.02	0.06	0.31	55.86
LEV (%)	119	12.36	5.92	4.27	9.33	11.35	13.69	59.72

Table 3 shows descriptive statistics for the dependent and independent variables. The upper part of the table shows the variables for the EU-27 Sample. The lower part of the table shows the variables for the US Sample. Variables are defined in Appendix 3.

5.1.2.2 Independent Variables

5.1.2.2.1 Change in Net Cash Flows

The basis for the selection of the independent variables is the empirical model of Benston et al. (1995) that was reviewed in Section III 1. As our study does not use market data, we substitute those proxies that are based on market data with adequate accounting data proxies. Just like the dependent variable, the following data relate to the fiscal year end prior to the announcement date of the M&A transaction.

Since we want to explain the premium that is paid for a takeover, the following independent variables should proxy for the increase or decrease in net cash flow after the merger (Benston et al., 1995). Any diversification benefit and, hence, any decrease of riskiness of the combined entity that could be obtained through the merger and that is based on a negative correlation of target and acquirers returns is proxied by the variable COVROA. The variable is defined as the covariance of the return on assets (roa) of the target with the roa of the acquirer for the minimum three years (maximum four years) prior to the announcement year. Any risk reduction benefit that stems from the low risk of the target is proxied by the variable VAR_ROA_T, which is the variance of the roa of the target for a minimum (maximum) of three (four) years prior to the announcement year. As outlined above, a negative relation between these two variables and BVPREM indicates a confirmation of the “earnings diversification hypothesis” while a positive relation indicates the confirmation of

the “deposit-insurance hypothesis” (Benston et al., 1995). As shown in Table 3, VAR_ROA_T is much higher for the EU-27 Sample than for the US Sample, while COVROA is higher for the US Sample. The results, however, seem to be driven by some outliers. The median for both variables are quite similar. Next, we include the variable TA_T/TA_A, which is defined as:

$$TA_T/TA_A = \frac{Total\ Assets\ (Target)_{t-1}}{Total\ Assets\ (Acquirer)_{t-1}} * 100$$

The variable TA_T/TA_A is a proxy for potential economies of scale that can be achieved through the acquisition and, hence, for any cost reduction potential. Relatively larger targets are supposed to offer greater potential for economies of scale while relatively smaller targets can be integrated easier (Focarelli et al., 2002; Hagendorff et al., 2010).

Lastly, we include the variable RELROA, which is defined as:

$$RELROA = \frac{Return\ on\ Assets(Target)_{t-1}}{Return\ on\ Assets(Acquirer)_{t-1}} * 100$$

We employ this variable in order to proxy for superior management skills of the managers of the acquiring bank. At this stage, Benston et al. (1995) use the following market to book value ratios in order to proxy for the efficiency of the acquirer and the efficiency of the target respectively.

$$\frac{Market\ Value_{Acquirer}}{Book\ Value_{Acquirer}} \& \frac{Market\ Value_{Target}}{Book\ Value_{Target}}$$

Since we refrain from using market values (due to a data availability problem), we use a different ratio (RELROA) to proxy for potential future bottom line efficiency enhancements of the target as suggested by Hawawini and Swary (1990) and Pilloff and Santomero (1998).

5.1.2.2.2 Change in Value of Deposit Insurance Put Option

In accordance with the empirical model proposed by Benston et al. (1995) and in addition to the variable COVROA, the following variables should proxy, for a potential change in the value of the deposit insurance put option after the completion of the deal.

As elaborated on in Section III 1, the value of the deposit insurance put option after the merger may increase when the combined entity is considered “too-big-to-fail.” Further, we mention that risky acquirers are likely to pay more for targets in order to reach a “too-big-to-fail” status. The risk of the acquirer is proxied by the variable VAR_ROA_A which is the

variance of the roa of the acquirer for a minimum (maximum) of three (four) years prior to the announcement year and by the variable LEV. The variable LEV proxies for the leverage of the acquirer at the fiscal year end prior to the announcement year. Leverage in this context is defined as:

$$LEV = \frac{Total\ BV(Equity)_{Acquirer}}{Total\ BV(Assets)_{Acquirer}} * 100$$

A high LEV variable, therefore, indicates that the acquirer is well capitalized. The lower the degree of capitalisation, the more willing a bank should be to pay for any target in order to grow in size and, hence, approach a “too-big-to-fail” status. The data in Table 3 reveals that the average equity capitalisation is more than twice as high in the US Sample as in the EU-27 Sample. The result that US acquirers are much better capitalised than their EU-27 counterparts is also supported by the distribution of LEV displayed in Table 3. In fact, it is highly striking that none of the US acquirers is capitalised below the minimum 3% non-risk-weighted leverage ratio as suggested by Basel III (Basel Committee on Banking Supervision 2011). In addition to the LEV variable, we extend Benston et al.’s (1995) model by also implementing the LEV_SQ variable, which is simply the variable LEV squared. We implement a quadratic leverage variable in order to account for the model by Calem and Rob (1998), who predict a quadratic relation between equity capitalisation of banks and risk-taking behaviour. As elaborated on above, Calem and Rob (1998) argue that when banks are poorly capitalised, they have an inherent incentive to take on high risk. With an increasing degree of capital, the incentive to take on risk decreases. At a particular high point of equity capital, however, banks are willing to take on additional risk again: This behaviour is motivated by an increase in safety that comes with more equity capital and that should allow banks to take on more risk.

5.2 Multivariate Analysis

5.2.1 Methodology

In order to find evidence for which of the competing hypotheses was the rationale for merger premiums in M&A transactions during the financial crises, we use multivariate OLS regressions. In sections V 2.2 and 2.3 the following regressions are implemented:

Regression (1): BVPREM on independent variables (excl. leverage variables) for EU-27 and US Sample respectively;

Regression (2): BVPREM on independent variables (incl. leverage variables) for EU-27 and US Sample respectively;

Regression (3): BVPREM on independent variables (incl. leverage variables) for Eurozone and Non-Eurozone Sample respectively;

Regression (4): BVPREM on independent variables (incl. leverage variables) for EU-27 and US Sample respectively – Leverage Cluster 1;

Regression (5): BVPREM on independent variables (incl. leverage variables) for EU-27 and US Sample respectively – Leverage Cluster 2;

Regression (6): BVPREM on independent variables (incl. leverage variables) for EU-27, Eurozone, Non-Eurozone, and US Sample respectively – Year Fixed Effect;

Regression (7): BVPREM on independent variables (incl. leverage variables) for EU-27, Eurozone, Non-Eurozone respectively – Year and Country Fixed Effects;

Regression (8): BVPREM on independent variables (incl. leverage variables) for EU-27 and US Sample respectively – Year and Country Fixed Effects Leverage Cluster 1;

Regression (9): BVPREM on independent variables (incl. leverage variables) for EU-27 and US Sample respectively – Year and Country Fixed Effects Leverage Cluster 2;

The basic regression design takes the following form (see Appendix 3 for a definition of the variables):

$$\text{BVPREM (\%)} = \alpha + \beta_1 \cdot \text{COVROA} + \beta_2 \cdot \text{VAR_ROA_T} + \beta_3 \cdot \text{TA_T/TA_A} + \beta_4 \cdot \text{RELROA} + \beta_5 \cdot \text{VAR_ROA_A} + \beta_6 \cdot \text{LEV} + \beta_7 \cdot \text{LEV_SQ} + \varepsilon$$

One of the assumptions of OLS regressions is the homoskedasticity of variances of residuals, which is important for the significance testing of the coefficients (Wooldridge, 2005). We, therefore, have to examine whether the variance of the error term in our regression models is heteroskedastic and adjust our regression analyses, if necessary. In order to test for heteroskedasticity in the sample, in a first step, graphical evidence is provided. Figure 1 and Figure 2 show the plot of the residuals versus the fitted values for regressions (1) for the EU-27 Sample and the US Sample respectively. Figure 1 suggests that the variance of the error term is clearly not homoskedastic, while the evidence from the eyeball test of Figure 2 is less obvious.

Figure 1 Fitted Values and Residuals from Regression (1): EU-27 Sample

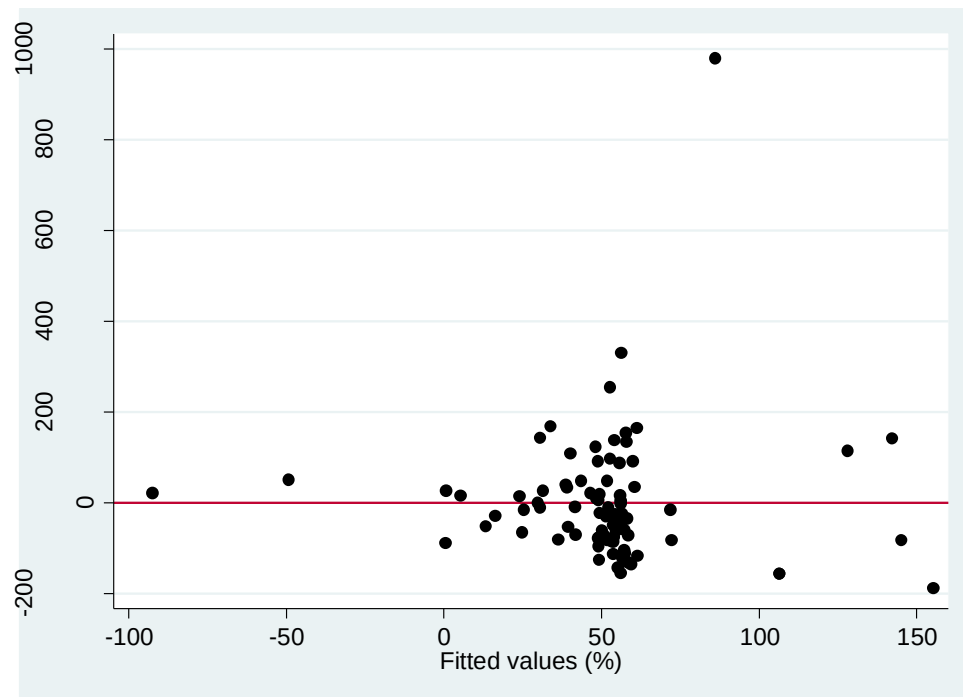


Figure 1 shows the plot of the fitted values and the residuals from regression (1): EU-27 Sample. The plot should indicate potential heteroskedasticity in the sample.

Figure 2 Fitted Values and Residuals from Regression (1): US Sample

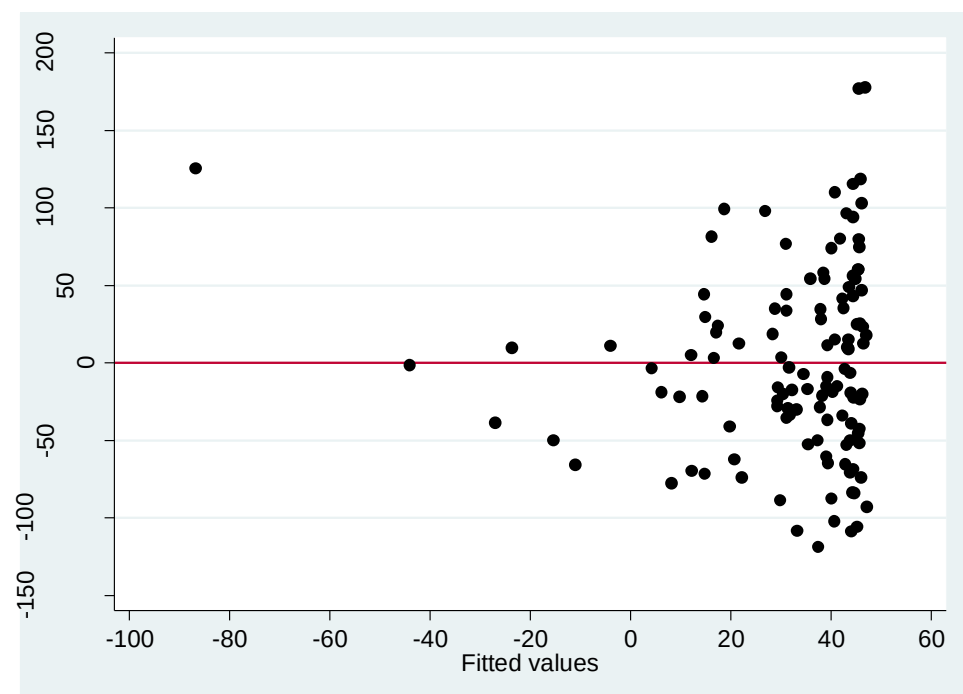


Figure 2 shows the plot of the fitted values and the residuals from regression (1): US Sample. The plot should indicate potential heteroskedasticity in the sample.

In order to account for the problem, we conduct the Breusch-Pagan/Cook Weisberg test for heteroskedasticity (Breusch and Pagan, 1979) with the H_0 hypothesis of constant variance of the residuals. Table 4 reports the test statistics. We find strong heteroskedasticity in most regression models. The H_0 hypothesis of constant variance must be rejected at a confidence level of 10% for all models except for model (1) US Sample, model (6) Non-Eurozone Sample, and model (7) Non-Eurozone Sample. In all other regression models the Huber-White heteroskedasticity consistent standard errors were implemented in order to control for heteroskedasticity in the sample (White, 1980).

Table 4 Breusch-Pagan/Cook-Weisberg Test for Heteroskedasticity

Regression Model	$\chi^2(1)$	P-value
(1) EU-27	27.14	0.00
(1) US	0.33	0.56
(2) EU-27	18.08	0.00
(2) US	3.48	0.06
(3) Eurozone	8.66	0.00
(3) Non-Eurozone	2.91	0.09
(4) EU-27	18.34	0.00
(4) US	2.92	0.09
(5) EU-27	9.47	0.00
(5) US	3.39	0.07
(6) EU-27	25.84	0.00
(6) Eurozone	16.65	0.00
(6) Non-Eurozone	0.08	0.78
(6) US	8.41	0.00
(7) EU-27	176.49	0.00
(7) Eurozone	91.97	0.00
(7) Non-Eurozone	0.00	0.99
(7) US	-	-
(8) EU-27	66.40	0.00
(8) US	4.86	0.03
(9) EU-27	28.54	0.00
(9) US	5.98	0.01

Table 4 provides data on the Breusch-Pagan/Cook Weisberg Test for Heteroskedasticity. Column 1 shows the different regression models, column 2 provides the chi-square statistic with one degree of freedom. P-values are reported in column three. The null-hypothesis of homoskedasticity is rejected for a P-value smaller 0.1. For a definition of the different regression models refer to Section V 2.1.

5.2.2 Results of Simple Multivariate OLS Regressions

In the following paragraphs, we present the results for the different regression specifications as presented in section V 2.1. The results for regressions (1) and (2), for the EU-27 and the US Sample are presented in Table 5. The first two columns of Table 5 show the results for regression (1) for the two samples with 88 observations for the EU-27 Sample and 119 observations for the US Sample. The second two columns show the results for regression (2). The R^2 for the EU-27 Sample is for both regression models 0.0 and for the US Sample 0.1. Thus, none of the variation of BVPREM is explained for the EU-27 Sample and only a very limited amount of the variation of BVPREM is explained for the US Sample.

Table 5 Multivariate OLS Regression Results for (1) and (2): BVPREM on Financial Variables

Variable	EU-27 Sample (1)	US-Sample (1)	EU-27 Sample (2)	US-Sample (2)
COVROA	-30.39** (-2.13)	2.43 (0.28)	-29.84* (-1.86)	20.72** (2.28)
VAR_ROA_T	0.70 (1.26)	-4.58 (-1.05)	0.55 (0.84)	-3.35 (-0.90)
TA_T/TA_A	-0.11*** (-3.20)	-0.28*** (-2.82)	-0.12*** (-3.92)	-0.31*** (-2.76)
RELROA	-0.03 (-0.93)	0.00 (-0.26)	-0.04 (-1.15)	0.00 (0.50)
VAR_ROA_A	-9.17 (-0.41)	-0.63 (-0.47)	-24.35 (-1.16)	-1.91** (-2.52)
LEV			19.67** (2.07)	-2.57 (-1.00)
LEV_SQ			-0.87** (-2.26)	-0.01 (-0.27)
ALPHA	59.67*** (3.14)	47.56*** (6.30)	33.15 (1.06)	80.23*** (3.01)
N	88	119	88	119
adj. R2	0.0	0.1	0.0	0.1

*Significant at 10%, **Significant at 5%, ***Significant at 1%. T-statistics are in parentheses. Table 5 shows the results for the BVPREM regressed on the financial variables for regression specifications (1) and (2) and for the EU-27 Sample and the US Sample. The variables are defined in Appendix 3.

In Table 5, we find for regression (1): for the EU-27 Sample, COVROA, TA_T/TA_A, and the constant term are statistically significant. According to the results, COVROA has a

significant negative impact on the BVPREM for the EU-27 Sample. The result is consistent with the “earnings diversification hypothesis,” since the BVPREM premium increases when the covariance of ROA between the acquirer and the target decreases. Hence, acquirers are willing to pay more for targets that offer diversification potential. This preliminary result speaks against Hypothesis 1 and is further scrutinized in the due course of the paper. The impact of the relative asset size (TA_T/TA_A) on BVPREM is significant, negative. This result is in line with the theory, which predicts that M&A deals where relatively smaller targets are acquired see a higher BVPREM since smaller targets are easier to integrate, and it is relatively easier to impose efficiency measures in smaller targets (see e.g. Brewer III et al., 2007; Focarelli et al., 2002; Palia, 1993; Thompson, 1997). This result for the EU-27 Sample is confirmed for the US Sample. We find that TA_T/TA_A is also significant for the US Sample. The magnitude of this variable is almost twice as high as for the EU-27 Sample. For regression (2) that includes the two leverage variables (LEV and LEV_SQ), we find the results for TA_T/TA_A confirmed for both samples. COVROA is again significant, negative for the EU-27 Sample, but, after controlling for the degree of equity capitalisation of the acquirer (leverage), significant, positive for the US Sample. Interestingly, the magnitude of the two effects is relatively similar. The regression results for the variable COVROA in regression (2) strongly speaks against our Hypothesis 1. It seems to be that despite the “too-big-to-fail” status having taken severe damage in the US (Acharya et al., 2009), our results are indicative for the “deposit insurance hypothesis” being confirmed for the US Sample and the “earnings diversification hypothesis” being confirmed for the EU-27 Sample. One way to rationalise these results is indicated by Lowenstein (2013). The author takes reference to the breach of the deposit insurance coverage in Cyprus in March 2013 where depositors, who are in essence creditors of banking institutions, had to write down part of their claims. The author argues that the credibility of the Eurozone deposit insurance system is at a disadvantage to the American one since “insurance plans are just as safe – but cannot be any safer – than the assets behind them” (Lowenstein 2013, p. 3). Ultimately, if a major bank collapses, a country needs to have the assets to bail out the insurance fund. Since assets to bail out the fund are limited, the US has the relative advantage over any Eurozone state that it can simply inflate the monetary base and, hence, bail out the fund by means of inflation. This opportunity is not available to those EU-27 institutions that are also members of the Eurozone, since the European Central Bank is in charge of managing the money supply for the Eurozone. In Table 6, we, hence, show the results for the Eurozone and the Non-Eurozone subsamples.

Comparing the two columns for those targets that are part of the Eurozone and that can, thus, not control their own monetary supply and those countries that have this ability, we find that for the Eurozone countries, COVROA is strongly negative and significant. The result of COVROA for the non-Eurozone countries is insignificant. Hence, we find another explanation for our previous indication. Buying a target that is chartered in a Eurozone country, i.e. a country that does not have impact on its monetary supply, may incentivise bidders to pay a lower premium if the covariance of returns is high. These bidders are rather valuing diversification, since the deposit insurance promise in countries that cannot manage their monetary supply appears not credible enough to professional market participants.

Table 6 Multivariate OLS Regression Results for (3): BVPREM on Financial Variables for Eurozone Sample

Variable	Eurozone (3)	Non-Eurozone (3)
COVROA	-337.10*** (-4.24)	80.31 (1.46)
VAR_ROA_T	0.96*** (2.88)	-17.74 (-1.52)
TA_T/TA_A	-0.03 (-0.08)	-0.10*** (-5.73)
RELROA	-0.05 (-1.51)	-0.04 (-0.62)
VAR_ROA_A	4.70 (0.22)	139.40 (1.33)
LEV	20.13 (1.51)	40.93* (1.95)
LEV_SQ	-0.86 (-1.25)	-3.48 (-1.73)
ALPHA	1.73 (0.03)	-103.30 (-2.13)
N	66	22
adj. R2	0.0	0.2

*Significant at 10%, **Significant at 5%, ***Significant at 1%. T-statistics are in parentheses. Table 6 shows the results for the BVPREM regressed on the financial variables for regression specification (3) for the Eurozone subsample and the Non-Eurozone subsample. The Eurozone subsample comprises those deals where the target was chartered in a Eurozone country. The variables are defined in Appendix 3.

Turning back to Table 5, we also find the variable LEV to be significant, positive and LEV_SQ to be significant, negative for the EU-27 Sample. In numeric terms, this result suggests a marginally decreasing impact of the acquirers' equity capitalisation on the BVPREM, i.e. an inverted u-curve relation.⁸ Hence, the result suggests that a higher degree of equity capitalisation leads to a higher BVPREM until a certain turning point is reached. Any additional degree of capital after that point leads to a decrease in BVPREM. Benston et al. (1995) as well as Calem and Rob (1999) suggest that under the “deposit insurance hypothesis” banks would be willing to take maximum risk when they are poorly capitalized. Calem and Rob (1999), further, suggest an inverted u-curve for the relation of equity capitalisation and risk-taking. Acquirers should, thus, be willing to pay a premium for targets in order to increase in size when their level of equity capital is low, which should, hence, be reflected in a high BVPREM for a low degree of leverage. Our results for LEV and LEV_SQ again suggest that the “deposit insurance hypothesis” is not valid for the EU-27 Sample. The inverse relation between equity capital and BVPREM that is suggested by the “deposit insurance hypothesis,” is only confirmed for a very high degree of equity capital (11.1%) that is well above the regulatory level. For the US, the variables are insignificant. However, Benston et al. (1995) suggest that despite the relation between leverage and BVPREM, the relation between the variance of profitability of the acquirer and the BVPREM may also be indicative for the “deposit insurance hypothesis.” They claim that VAR_ROA_T and BVPREM should have a positive relation in order to proxy for the “deposit-insurance hypothesis.” This is not confirmed by our results for the US Sample.

In summary, the results from Tables 5 and 6 suggest a reversion of Hypothesis 1. We cannot confirm that the credibility of the US safety net took deep damage in the post-Lehman era. We find evidence for the “deposit-insurance hypothesis” when looking at the empirical results for the US Sample, indicating that US acquirers value the potential bail out by the US safety nets in case of a bankruptcy. Further, we find evidence for the “earnings diversification hypothesis” when looking at the EU-27 Sample. One way to rationalize this result is via the ability of the US to easily bail out its deposit insurance funds. Therefore, US acquirers can more strongly rely on the credibility of the financial stabilisation mechanism, which they, hence, incorporate in their target valuation.

⁸ See Appendix 4 for a numeric example.

5.2.3 Results of Regressions Clustered by Leverage

In order to scrutinize on Hypothesis 2, we divide both the EU-27 Sample and the US-Sample in two clusters. Cluster 1 contains those deals, where the acquirer has a leverage ratio that was below the sample median. Cluster 2 contains those deals, where the acquirer has a leverage ratio that was above the sample median.

The results for the regressions (4) and (5) are presented in Table 7. The first two columns of Table 7 show the results for regression (4) for the two samples with 44 observations for the EU-27 Sample and 59 observations for the US Sample. The second two columns display the results for regression (5) with 44 observations for the EU-27 Sample and 60 observations for the US Sample. The R^2 is again very poor for the EU-27 Sample.

Table 7 Multivariate OLS Regression Results (4) and (5): BVPREM on Financial Variables for EU-27 and US Sample Clustered by LEV

Variable	Cluster 1		Cluster 2	
	EU-27 Sample (4)	US-Sample (4)	EU-27 Sample (5)	US-Sample (5)
COVROA	-370.80* (-1.82)	50.55 (1.38)	8.84 (0.64)	16.46 (1.14)
VAR_ROA_T	2.52 (0.82)	-4.815 (-0.91)	-0.18 (-0.58)	-2.49 (-0.51)
TA_T/TA_A	-0.22 (-0.51)	-0.54*** (-3.62)	-0.13*** (-4.74)	-0.34*** (-3.24)
RELROA	-0.05 (-0.98)	0.00 (0.40)	-0.04 (-1.13)	0.00 (0.36)
VAR_ROA_A	105.30 (0.29)	-17.76 (-1.19)	-30.02 (-1.52)	-1.42 (-0.99)
LEV	187.10 (1.49)	-195.50*** (-3.44)	52.23* (1.73)	-2.50 (-0.64)
LEV_SQ	-21.64 (-1.23)	11.49*** (3.56)	-2.05* (-1.75)	0.00 (-0.06)
ALPHA	-302.7 (-1.72)	847.20*** (3.43)	-206.00 (-1.36)	73.36 (-1.45)
N	44	59	44	60
adj. R2	0.0	0.2	0.0	0.0

*Significant at 10%, **Significant at 5%, ***Significant at 1%. T-statistics are in parentheses. Table 7 shows the results for the BVPREM regressed on the financial variables for regression specifications (4) and (5) for the EU-27 and the US Sample. The samples are clustered according to the median value of LEV. The deals below the median are included in Cluster 1. The deals above the median are included in Cluster 2. The variables are defined in Appendix 3.

For the EU-27 Sample, we only find confirmation of the negative impact of the variable COVROA, suggested by Table 5, for the first cluster. The impact, however, is about twelve times stronger than for the entire sample (compare Table 4 and Table 5). The findings suggest that once an acquirer is badly capitalised, she is willing to pay a high premium for a diversifying target. The fact that COVROA is positive, yet insignificant, for Cluster 2 suggests that this diversification effect vanishes with better capitalisation. For the LEV variables, we find a significant effect for Cluster 2. The results confirm our findings from Table 5, i.e., we again detect an inverted U-curve relation between leverage of the acquirer and BVPREM. Again, we do not find evidence for the deposit insurance hypothesis under which we would expect an inverse relation between leverage and the BVPREM. The results for Cluster 1 suggest the same relation, yet the result is insignificant. In summary, we find small evidence that the effect of the “earnings diversification hypothesis” diminishes with higher equity capitalisation for the EU-27 Sample.

Turning to the US Sample, the results for COVROA are insignificant for both clusters, yet the coefficients are positive. We do, however, find significant coefficients for the leverage variable in Cluster 1. The negative LEV coefficient and the positive LEV_SQ coefficient suggest a u-curve relation between the degree of equity capitalisation and BVPREM.⁹ The result, therefore, suggests the opposite relation between equity capitalisation and BVPREM than suggested by the results for the EU-27 Sample in Cluster 2. Hence, our results for the US Sample in Cluster 1 are indicative for the “deposit insurance hypothesis” according to Benston et al. (1995) and also for the effect suggested by Calem and Rob’s (1998) model. The idea is that low capitalised banks are willing to pay a high premium for the target in order to grow in size and approach a “too-big-to-fail” status. Thus, once the risk of bankruptcy decreases, i.e. the degree of equity capital increases, banks are willing to pay less in order to increase in size. This relation continues to hold for an increasing capital ratio until a particular threshold is reached (see Appendix 5) and banks start to increase their willingness to pay for size again. Calem and Rob (1998) argue that at a particular point of equity capital, acquirers are confident again to take on more risk and are willing to pay for it. This effect is also indicated by the results for Cluster 2. Equity capitalisation has virtually no impact on the BVPREM. In essence, the results for the US Sample are indicative for the “deposit insurance hypothesis”, which yet again decreases in magnitude with the degree of equity capitalisation.

⁹ See Appendix 5 for a numeric example.

5.2.4 Results of Year and Country Fixed Effect Regressions

From the summary of events during the financial crises, we can infer that the crises changed in severity during the due course of the six years covered in this study. The number of deals as well as the average deal value paid in the US, e.g., decreased sharply in 2009, the year after the Lehman collapse. Since panel data of transactions that took place at different points in time are used in our research, time fixed effects are implemented to control for time-specific factors, e.g. differences in interest rates and the severity of the financial crises (Demirguc-Kunt et al., 2010). In addition, we also control for country specific factors for the EU-27 Sample as well as for the Eurozone and Non-Eurozone Subsamples. We implement country fixed effects, since we want to control for factors like size and political relevance of a country that might play a role in the decision of saving a particular banking sector by the EU. Thus, we control for the likelihood of EU funds being used to save a particular national banking sector assuming that the size of a country and its banking sector play a pivotal role in the process of receiving EU support. We could argue that the intensity with which the EU-27 tries to bail out banks is highly dependent on the importance of the economy in which the bank is operating and the amount of cross-country risk (e.g. German banks holding assets from Cypriot banks) that is concentrated in the particular banking sector.

In Table 8, we provide the results for the regression models (6) and (7). In the left part of the table, we show the results for regression model (6) that contain year fixed effects for each year included in the sample period (2007-2012). While for the EU-27 Sample and the US Sample COVROA is again negative and positive respectively, the results are, however, insignificant when including time fixed effects. For the EU-27 Sample we find a positive effect of LEV on BVPREM, which is in line with our results from Table 5.

The result for the Eurozone and the Non-Eurozone Samples from Table 6 are confirmed in Table 8. We again find a significant, negative effect of COVROA on BVPREM for the Eurozone Sample and an insignificant effect for the Non-Eurozone Sample. Thus, we can confirm our previous explanation, i.e., buying a target from a country, which does not have control over its monetary policy causes bidders to pay a lower premium if the covariance of returns is high. Bidders are valuing diversification, since the deposit insurance promise in Eurozone countries is not credible enough in order to assign a value to an increase in post-merger risk. This result is substantiated by the results presented in the right part of Table 8, i.e. the results for the regression model (7) using year and country fixed effects.

Table 8 Multivariate OLS Regression Results (6) and (7): BVPREM on Financial Variables for EU-27, Eurozone, Non-Eurozone, and US Sample, Year Fixed Effect, and Year and Country Fixed Effects

Variable	Year Fixed Effect				Year and Country Fixed Effects			
	EU-27 Sample (6)	Eurozone Sample (6)	Non-Eurozone Sample (6)	US-Sample (6)	EU-27 Sample (7)	Eurozone Sample (7)	Non-Eurozone Sample (7)	US-Sample (7)
COVROA	-13.66 (-0.99)	-198.20** (-2.30)	-37.84 (-0.65)	20.46 (1.30)	-36.17 (-1.65)	-307.90** (-2.38)	60.79 (0.51)	- -
VAR_ROA_T	0.56 (0.99)	0.93* (1.86)	0.02 (0.00)	-0.53 (-0.12)	0.50 (0.76)	1.00 (1.60)	-17.67 (-0.94)	- -
TA_T/TA_A	-0.20*** (-4.77)	-0.27 (-0.54)	-0.13 (-0.54)	-0.29*** (-2.85)	-0.15*** (-3.09)	0.25 (0.57)	-0.12 (-0.43)	- -
RELROA	-0.05 (-1.26)	-0.05 (-1.39)	-0.02 (-0.47)	0.00 (0.72)	-0.07 (-1.40)	-0.08 (-1.47)	-0.09 (-1.15)	- -
VAR_ROA_A	-14.02 (-0.78)	3.93 (0.17)	-94.65 (-1.04)	-1.45 (-0.90)	-29.50 (-0.92)	16.89 (0.52)	-8.855 (-0.06)	- -
LEV	19.83* (1.76)	14.16 (0.74)	-12.84 (-0.58)	-0.59 (-0.19)	11.80 (0.82)	17.49 (1.00)	-16.58 (-0.44)	- -
LEV_SQ	-0.75 (-1.56)	-0.41 (-0.39)	2.29 (1.06)	-0.04 (-0.64)	-0.10 (-0.16)	-0.38 (-0.44)	1.21 (0.32)	- -
ALPHA	-19.53 (-0.39)	56.03 (0.76)	71.21 (0.21)	57.83* (1.91)	95.39 (1.30)	108.00 (1.57)	189.70 (0.50)	- -
N	88	66	22	119	88	66	22	-
adj. R2	0.0	0.0	0.6	0.1	0.1	0.1	0.6	-

*Significant at 10%, **Significant at 5%, ***Significant at 1%. T-statistics are in parentheses. Table 8 shows the results for the BVPREM regressed on the financial variables for regression specifications (6) and (7) for the EU-27, the Eurozone, the Non-Eurozone and the US Sample using year and country fixed effects. The variables are defined in Appendix 3.

In Table 9, we provide the results for regression models (8) and (9). In these models, we use year and country fixed effects for the EU-27 Sample and year fixed effects for the US Sample. We do not present results for the Eurozone and Non-Eurozone Sample since clustering these samples causes very small sample sizes. The direction of the effect of COVROA on BVPREM is the same as the one presented in Table 7. The results summarised in Table 9, however, are insignificant. We do find a significant, negative coefficient for LEV and a significant, positive coefficient for LEV_SQ for the US Sample in Cluster 1, which is in line with the results from Table 7, yet with a lower magnitude.

Table 9 Multivariate OLS Regression Results (8) and (9): BVPREM on Financial Variables for EU-27and US Sample; Year and Country Fixed Effects Clustered by LEV

Variable	Year and Country Fixed Effects			
	Cluster 1		Cluster 2	
	EU-27 Sample (8)	US-Sample (8)	EU-27 Sample (9)	US-Sample (9)
COVROA	-664.5 (-0.69)	48.54 (1.34)	-51.63 (1.65)	23.30 (1.40)
VAR_ROA_T	-2.28 (-0.23)	-2.04 (-0.29)	-0.18 (-0.23)	-0.45 (-0.10)
TA_T/TA_A	-0.67 (-0.65)	-0.49*** (-3.20)	-2.81** (-2.66)	-0.32** (-2.48)
RELROA	-0.15 (-1.29)	0.00 (0.49)	-0.07 (-0.78)	0.00 (-0.23)
VAR_ROA_A	501.30 (0.81)	-17.49 (-1.12)	59.99 (0.81)	-1.96 (-1.22)
LEV	333.70 (1.22)	-168.80*** (-2.80)	-1.04 (-0.03)	-2.57 (-0.56)
LEV_SQ	-39.18 (-1.15)	9.92*** (2.80)	2.15 (1.43)	-0.02 (-0.29)
ALPHA	-473.1 (-0.92)	773.80*** (3.02)	3157.90** (2.51)	95.28 (1.61)
N	44	59	44	60
adj. R2	0.1	0.2	-0.2	0.0

*Significant at 10%, **Significant at 5%, ***Significant at 1%. T-statistics are in parentheses. Table 8 shows the results for the BVPREM regressed on the financial variables for regression specifications (6) and (7) for the EU-27 and the US Sample using year and country fixed effects. The samples are clustered according to the median value of LEV. The deals below the median are included in Cluster 1. The deals above the median are included in Cluster 2. The variables are defined in Appendix 3.

Overall, the fixed effect regressions, controlling for year and country fixed effects, basically confirm our findings from the regular OLS regressions. We do have to concede, though, that after controlling for fixed effects, the results become less statistically significant. The direction of the coefficients, however, provides confidence for the indications that we found in preceding regressions. We argue that countries which are able to control their own monetary base credibly signal to the capital markets their ability to bail out any bank, if necessary by means of inflating the money supply. Acquirers value this implicit safety guarantee and treasure the increase in the deposit insurance put option that can be achieved by a merger through a pure increase in size as well as through an increase in combined risk. We do not find evidence for this behaviour in countries, where the deposit insurance plan cannot be guaranteed by levy on the monetary policy.

6 Discussion of Results and Limitations

Having conducted the empirical analysis for both samples, we have to concede that the hypotheses we raised have to be revised for most parts. We have to reject Hypothesis 1 (*We expect to find stronger evidence for the “deposit insurance hypothesis” in the EU-27 Sample than in the US Sample*). For our two samples, we find that on average the covariance of roa is higher in US bank M&A transactions than in European deals (0.19% and 0.14% respectively). The perception that US acquirers tend to focus more on increasing post-merger combined entity risk is further indicated by the results of our multivariate analyses. We do find a significant, positive impact of COVROA on the BVPREM for the US Sample and a significant, negative impact on BVPREM for the EU-27 Sample. According to Benston et al. (1995), an increase in the variance of the acquirer’s returns through the acquisition that leads to an increase in BVPREM proxies for the “deposit insurance hypothesis,” since acquirers are willing to pay a premium for an increase in risk and, thus, for an increase in the deposit insurance put option. We derive Hypothesis 1 based on the events in Europe, where a particular focus was put on saving banks during the recent years. For the case of the US, Achaya et al. (2009) claim that through the collapse of Lehman Brothers, the “too-big-to-fail” status took deep damage. We assume that our results, which speak against Hypothesis 1, can be rationalised by the argumentation of Lowenstein (2013), who argues that the European deposit insurance plans are at a disadvantage to the US ones since many countries cannot control their own monetary supply and, hence, may lack the ability to bail out the deposit insurance fund. This is of course not the case for the US. Consequently, we control for the

ability of managing ones' own monetary supply by dividing the EU-27 Sample into a Eurozone and a Non-Eurozone Sample. The results are indicative for Lowenstein's (2013) hypothesis. We find strong evidence for the "earnings diversification hypothesis" for the Eurozone sample, indicating that if a target is chartered in a Eurozone country, an acquirer is not willing to pay for an increase in risk, since the country of origin of the target is not able to manage its own monetary supply and, consequently, may not be able to bail out its deposit insurance plan.

In summary, we have to invert Hypothesis 1. We find evidence for the "deposit-insurance hypothesis" in the US Sample and for the "earnings diversification hypothesis" in the EU-27 Sample.

We have to reject Hypothesis 2 in some parts (*The evidence for the "deposit insurance hypothesis" in bank mergers and acquisition decreases with the level of capitalisation of the acquirer*). For the EU-27 Sample, we can report from Table 7 that the opposite relation holds true. The evidence for the "earnings diversification hypothesis" decreases with higher equity capital. This finding matches our previous argumentation that for the EU-27 Sample, the "deposit insurance hypothesis" does not appear to be valid. For the US Sample, however, we can confirm Hypothesis 2. Banks that are badly capitalised appear to be willing to pay a higher premium in order to increase the value of the deposit insurance put option than those banks that are well capitalised. This relation was suggested by Calem and Rob (1998) and is motivated by the higher likelihood of failing, i.e. making use of the deposit insurance put option, when the bank is badly capitalised. Calem and Rob (1998) further suggest an inverted u-curve relation between equity capitalisation and risk taking. The u-curve in Appendix 5 shows that with increasing equity, acquirers are willing to pay less for targets, i.e. the value of increasing in size and, hence, the value of increasing the deposit insurance put option, through an acquisition, diminishes with more equity until a certain point is reached where increasing size and taking risk in an acquisition is of value again. This finding follows the idea of Calem and Rob (1998), despite it being presented as a non-inverted u-curve. The difference stems from the relation of BVPREM and LEV that we present versus the relation of risk and LEV that is presented in Calem and Rob's (1998) paper.

Overall, taking into consideration our findings from the multivariate OLS regressions and the regressions clustered by leverage, we find rational to formulate the idea that the standard relation between deposit insurance and moral hazard via increasing risk taking based on the deposit insurance put option only holds true if the respective national state clearly and

credibly signals the ability to bail out the insurance plan. The most credible signal in this context is the ability to control its own monetary supply.

As with virtually every empirical study that deals with mergers and acquisitions, we raise questions in our research that we cannot decisively answer. From our data set, we can only deliver and discuss indications that could support the theory on bank M&A that has been discussed above. We claim to have an indication for the “deposit insurance hypothesis” in the US-Sample and for the “earnings diversification hypothesis” in the European sample and argue that the credibility of the deposit insurance plan and the leverage of the acquirer are pivotal for explaining this relation. However, without comprehensive testing of our results, we cannot rule out any number of different explanations that may have been omitted in our analysis. Having said that, we need to elaborate on the limitations of our study.

To start with, our sample selection suffers from a sampling bias in several ways: First, we argue that the US-SMC started with the New Century Financial signing for Chapter 11 in April 2007. We could reason that the actual crisis started earlier with the turning of the US housing market or later with, for example, the bankruptcy of Lehman Brothers. Thus, we might have incorporated deals that were not per se affected by the crises or could have left out a substantial amount of deals. Secondly, we only collected data until December 31, 2012. One could well argue that the SDC is not over yet, and we would have to collect data over a longer time horizon. This limitation is particularly important, since we did not take into account the time interval around the banking crisis in Cyprus in 2013. Thirdly, our sample selection is affected by the attrition bias, meaning that we only looked at deals that actually took place. We cannot say anything about the drivers of premium for those deals that did not take place (i.e. those that were called off) or where no deal value was reported.

Another limitation of our study is caused by the usage of accounting data in our study. As we described above, Benston et al. (1995, p. 783) use a market value based measure for the premium (“difference between the price paid for the target bank less the market price of the target approximately one month prior to the announcement of the merger”). Consequently, their data is much more relevant in terms of timing, i.e. closer to the actual announcement and in terms of accuracy in providing a proxy for real economic value. The usage of accounting data that was motivated by the low deal density and, therefore, the necessity to include non-listed targets, introduces two steps of measurement errors. First, accounting data are an imperfect proxy for actual economic condition since they are time lagged and their calculation depends on manifested rules. Second, accounting data is used to proxy for theoretical

explanations and are, thus, introducing a second error into the linear relation. This attenuation bias causes estimators to shrink towards zero and, thus, may not reflect the actual relation that we want to explain (Wooldridge, 2005).

Our study also suffers from an omitted variable bias (Wooldridge, 2005). The bias substantiates when the independent variables are correlated with the error term. In such a case, there are variables that were omitted and, consequently, should have been controlled for in the regression. Due to the unavailability of market data for the sample of targets, we assume that both the BVPREM analysis and the market reaction analysis suffer from a strong omitted variable bias. The general caveat in M&A studies is that there is no complete analytical model for what factors drive premiums and CAR. Thus, the omitted variable bias is an intrinsic caveat of our study. Lastly, we would like to draw attention to the modified empirical model by Benston et al. (1995) that we implement. Considering the merger pricing literature, Benston et al. (1995) have a relatively limited scope of explanatory variables that they include in their model. It might well be that the omitted variable bias is driven by the wrong empirical model that we implement. Hagendorff et al. (2010), e.g., look at a much wider model of merger premiums by including regulatory drivers as well as extended deal characteristics like the target country's GDP or the country's Hirschman-Herfindahl Index. Hence, the omitted variable bias could be strongly driven by some variables that were disregarded in the Benston et al.'s (1995) model.

7 Conclusion

The discussion around public safety nets for major banks in general and around “too-big-to-fail” institutions in particular has a prominent position in the public debate ever since the bankruptcy of Lehman Brothers. Large social costs of bank safety nets are a major concern for societies and became evident during the recent time of financial turmoil. In this thesis, we aimed at analysing one particular aspect of how banks may value the ability of profiting from public safety nets. We analysed if banks valued the ability to increase the value of the deposit insurance put option via M&A deals for EU-27 and US bank M&A transactions between 2007 and 2012. Furthermore, we wanted to examine if equity capital can attenuate the incentive to shift costs to the public. We can conclude the following results:

(1) EU-27 banks value the ability to diversify and, hence, to reduce risk of the post-merger institution, while US acquirers value the ability to increase the value of the deposit insurance put option. We argue that the underlying reason might be the ability of the US to

bail out its deposit insurance funds via an increase of the monetary supply, which is not possible for many EU-27 countries due to their inability of controlling the monetary policy. We find this explanation confirmed for the Eurozone and Non-Eurozone subsample. While for the Eurozone subsample, where the country cannot control the monetary policy, we find that acquirers rather value the diversification potential of a merger, we find evidence for acquirers valuing the ability to increase the deposit insurance put option through an M&A deal.

(2) We find that the level of evidence for the “deposit insurance hypothesis” decreases with more equity capital of the acquirer for countries that have control over their monetary policy. For the case, where targets are chartered in countries that do not have control over their monetary policy, the relation only holds for a high degree of equity capital.

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Appendix

Appendix 1 List of Deals Included in EU-27 Sample

Announced	Acquirer	Target	Deal Value (EUR mn)
13.10.2008	LLOYDS BANKING GROUP PLC	HBOS PLC	16,366
31.08.2008	COMMERZBANK AG	DRESDNER BANK AG	6,485
07.03.2009	BNP PARIBAS SA	FORTIS BANK SA/NV	4,120
07.02.2011	BANCO SANTANDER SA	BANK ZACHODNI WBK SA	3,942
28.02.2012	DEUTSCHE BANK	DEUTSCHE POSTBANK AG	2,421
18.02.2008	INTESA SANPAOLO SPA	BANCA CR FIRENZE SPA	1,720
14.07.2008	BANCO SANTANDER SA	ALLIANCE & LEICESTER PLC	1,675
07.03.2009	BNP PARIBAS SA	FORTIS BANK SA/NV	1,517
31.08.2008	COMMERZBANK AG	DRESDNER BANK AG	1,400
09.05.2007	UNICREDITO ITALIANO SPA	BAYERISCHE HYPO- UND VEREINSBANK AG	1,398
07.10.2011	BANCO POPULAR ESPAÑOL SA	BANCO PASTOR SA	1,300
07.10.2010	DEUTSCHE BANK	DEUTSCHE POSTBANK AG	1,205
12.09.2008	DEUTSCHE BANK	DEUTSCHE POSTBANK AG	1,100
26.03.2007	UNICREDITO ITALIANO SPA	BANK AUSTRIA CREDITANSTALT AG	1,045
28.10.2009	DEUTSCHE BANK	SAL. OPPENHEIM JR. & CIE. SCA	1,000
22.09.2010	CRÉDIT DU NORD SA	SOCIÉTÉ MARSEILLAISE DE CRÉDIT SA	872
25.06.2010	BANCO DE SABADELL SA	BANCO GUIPUZCOANO SA	827
23.09.2008	BANK BPH SA	GE MONEY BANK SA	818
28.06.2011	SWEDBANK AB	SWEDBANK AS	810
17.12.2008	ABBEEY NATIONAL PLC	ALLIANCE & LEICESTER PLC	769
28.06.2011	SWEDBANK AB	SWEDBANK AB	701
11.12.2009	SOCIÉTÉ GÉNÉRALE	CRÉDIT DU NORD SA	645

Announced	Acquirer	Target	Deal Value (EUR mn)
18.11.2007	CRÉDIT AGRICOLE SA	BANKINTER SA	565
12.07.2010	SANTANDER CONSUMER BANK AG	SEB AG	555
07.03.2009	BNP PARIBAS SA	FORTIS BANQUE LUXEMBOURG SA	547
04.03.2011	CRÉDIT AGRICOLE SA	CENTEA NV	527
16.04.2010	SOCIÉTÉ GÉNÉRALE	BANCO BILBAO VIZCAYA ARGENTARIA SA	424
31.03.2008	GROUPE CAISSE D'EPARGNE	BANQUE PALATINE	367
24.10.2008	CAISSE NAT. D'EPARGNE ET DE PRÉVOYANCE	NATIXIS SA	351
20.03.2008	KBC GROUPE NV	ISTROBANKA AS	350
26.08.2007	LANDESBANK BADEN-WÜRTTEMBERG	LANDESBANK SACHSEN GIROZENTRALE	328
05.06.2010	BANCO POPOLARE SOCIETÀ COOPERATIVA	CASSA DI RISP. DI LUCCA PISA LIVORNO SPA	313
11.04.2012	RABOBANK INTERNATIONAL HOLDING BV	BANK GOSPODARKI ZYWNOSCIOWEJ SA	294
15.09.2008	NYKREDIT REALKREDIT A/S	FORSTÆDERNES BANK A/S	261
26.10.2009	BARCLAYS PLC	STANDARD LIFE BANK PLC	254
19.02.2007	BNP PARIBAS SA	DEXIA BANQUE PRIVÉE FRANCE SA	200
24.07.2007	BANCO BPI SA	BANCO COMERCIAL PORTUGUÊS SA	180
29.04.2008	VENETO BANCA SCPA	BANCA POPOLARE DI INTRA SPA	177
26.06.2007	COMMERZBANK INLANDSBANKEN HOLDING	EUROHYPO AG	168
19.05.2009	BANCO POPULAR ESPAÑOL SA	BANCO DE ANDALUCÍA SA	161
29.08.2012	CREDITO VALTELLINESE SC	CREDITO ARTIGIANO SPA	142
31.08.2009	NORDEA BANK AB	FIONIA BANK A/S	121
15.01.2008	BANCO POPOLARE SOCIETÀ COOPERATIVA	CASSA DI RISP. DI LUCCA PISA LIVORNO SPA	116
30.03.2011	VENETO BANCA HOLDING SCPA	BANCA DI INVESTIMENTI E GESTIONI SPA	109
15.09.2008	SVENSKA HANDELSBANKEN AB	LOKALBANKEN I NORDSJÆLLAND A/S	109
22.04.2009	CRÉDIT AGRICOLE SA	BANKINTER SA	105
30.07.2008	CREDITO VALTELLINESE SC	CASSA DI RISPARMIO DI FANO SPA	100
25.09.2008	BANCO POPULAR ESPAÑOL SA	BANCO DE CRÉDITO BALEAR SA	99
21.04.2008	NATIONAL BANK OF GREECE SA	TT HELLENIC POSTBANK SA	97

Announced	Acquirer	Target	Deal Value (EUR mn)
20.04.2012	CAIXABANK SA	BANCO BPI SA	93
27.07.2009	BANCAPULIA SPA	BANCA MERIDIANA SPA	93
30.04.2008	CRÉDIT MUTUEL - CIC	BANCO POPULAR FRANCE	85
29.05.2007	EIK BANK DANMARK A/S	SKANDIABANKEN A/S	84
04.03.2008	ROYAL BANK OF SCOTLAND GROUP PLC	MARFIN POPULAR BANK PUBLIC CO., LTD	76
30.07.2008	CREDITO VALTELLINESE SC	CASSA DI RISPARMIO DI FANO SPA	72
07.03.2008	BANCO SANTANDER SA	BANCA MONTE DEI PASCHI DI SIENA SPA	70
30.03.2010	BANKAS SNORAS AB	LATVIJAS KRAJBANKA AS	68
07.02.2012	GET BANK SA	GETIN NOBLE BANK SA (OLD)	64
28.07.2009	LANDESKREDITB. BADEN-WÜRTTEMBERG	WÜSTENROT & WÜRTTEMBERGISCHE AG	60
01.08.2008	BNP PARIBAS PRIVATE BANK	INSINGER DE BEAUFORT HOLDINGS SA	60
16.12.2009	BANK OF CYPRUS PUBLIC COMPANY LTD	BANCA TRANSILVANIA SA	58
04.10.2011	BANCO FINANCIERO Y DE AHORROS SA	CAIXA D'ESTALVIS LAIETANA	57
22.05.2006	DEUTSCHE POSTBANK AG	BHW HOLDING AG	57
15.12.2009	CRÉDIT AGRICOLE SA	EMPORIKI BANK OF GREECE SA	50
22.12.2010	CRÉDIT MUTUEL ARKÉA SA	CRÉDIT FONCIER D'ALSACE-LORRAINE	50
03.10.2008	CRÉDIT AGRICOLE SA	BANKINTER SA	49
17.09.2009	CREDITO VALTELLINESE SC	BANCA COOPERATIVA CATTOLICA SPA	48
13.11.2008	CRÉDIT AGRICOLE SA	EMPORIKI BANK OF GREECE SA	44
10.06.2009	GORENJSKA BANKA DD	ABANKA VIPA DD	44
11.12.2008	DELTA LLOYD BANK NV	BINCKBANK NV	38
12.04.2012	CRÉDIT AGRICOLE SA	BANCO ESPÍRITO SANTO SA	37
21.01.2008	SYDBANK A/S	BANKTRELLEBORG A/S	37
24.10.2012	INTESA SANPAOLO SPA	BANCA DI TRENTO E BOLZANO	37
24.05.2011	CRÉDIT AGRICOLE SA	EMPORIKI BANK OF GREECE SA	36
25.09.2008	BANCO POPULAR ESPAÑOL SA	BANCO DE GALICIA SA	34
25.09.2008	BANCO POPULAR ESPAÑOL SA	BANCO DE CASTILLA SA	30

Announced	Acquirer	Target	Deal Value (EUR mn)
10.07.2012	BANQUE CPH	CAISSE D'ÉPARGNE DE LA VILLE DE TOURNAI	22
09.02.2010	EMPORIKI BANK OF GREECE SA	EMPORIKI BANK ROMANIA SA	19
07.04.2011	UNIONE DI BANCHE ITALIANE SCPA	IW BANK SPA	15
22.12.2008	INTESA SANPAOLO SPA	BANKA KOPER DD	14
25.09.2008	BANCO POPULAR ESPAÑOL SA	BANCO DE VASCONIA SA	12
12.06.2009	EFG EUROBANK ERGASIAS SA	BANC POST SA	12
28.06.2011	BANCA POPOLARE DI VICENZA SCPA	BANCA DI CREDITO DEI FARMACISTI SPA	12
12.02.2009	BANK DNB NORD A/S	DNB NORD BANKAS AB	12
20.07.2011	GORENJSKA BANKA DD	ABANKA VIPA DD	10
22.06.2011	TT HELLENIC POSTBANK SA	T BANK SA	8
12.09.2012	SALLING BANK A/S	VINDERUP BANK A/S	8
13.01.2011	BANKAS SNORAS AB	LATVIJAS KRAJBANKA AS	5

Appendix 1 shows the list of deals that were included in the EU-27 Sample. The names of the targets and of the acquirers are as of June 24, 2013 and may, therefore, differ from the names prior to the acquisition.

Appendix 2 List of Deals Included in US Sample

Announced	Acquirer	Target	Deal Value (EUR mn)
03.10.2008	WELLS FARGO & COMPANY INC.	WACHOVIA CORPORATION	48,012
16.06.2011	CAPITAL ONE FINANCIAL CORPORATION	ING BANK FSB	6,854
24.10.2008	PNC FINANCIAL SERVICES GROUP INC., THE	NATIONAL CITY CORPORATION	3,936
20.06.2011	PNC FINANCIAL SERVICES GROUP INC., THE	RBC BANK (USA)	2,606
01.05.2007	NATIONAL CITY CORPORATION	MAF BANCORP INC.	1,386
12.03.2012	UNIONBANCAL CORPORATION	PACIFIC CAPITAL BANCORP	1,166
06.09.2007	RBC CENTURA BANKS INC.	ALABAMA NATIONAL BANCORPORATION	1,080
04.05.2007	WELLS FARGO & COMPANY INC.	GREATER BAY BANCORP	1,068
22.12.2010	HANCOCK HOLDING COMPANY	WHITNEY HOLDING CORPORATION	1,022
19.08.2010	FIRST NIAGARA FINANCIAL GROUP INC.	NEWALLIANCE BANCSHARES INC.	1,020
18.01.2011	COMERICA INC.	STERLING BANCSHARES INC.	715
16.08.2007	FIFTH THIRD BANCORP	FIRST CHARTER CORPORATION	705
01.05.2007	SUSQUEHANNA BANCSHARES INC.	COMMUNITY BANKS INC.	587
27.02.2012	PROSPERITY BANCSHARES INC.	AMERICAN STATE FINANCIAL CORPORATION	418
04.12.2008	CAPITAL ONE FINANCIAL CORPORATION	CHEVY CHASE BANK FSB	413
19.07.2007	M&T BANK CORPORATION	PARTNERS TRUST FINANCIAL GROUP INC.	376
19.07.2007	PNC FINANCIAL SERVICES GROUP INC., THE	STERLING FINANCIAL CORPORATION	361
09.07.2007	MARSHALL & ILSLEY CORPORATION	FIRST INDIANA CORPORATION	359
20.01.2011	PEOPLE'S UNITED FINANCIAL INC.	DANVERS BANCORP INC.	326
19.12.2008	M&T BANK CORPORATION	PROVIDENT BANKSHARES CORPORATION	287
07.06.2007	PNC FINANCIAL SERVICES GROUP INC., THE	YARDVILLE NATIONAL BANCORP	275
21.05.2007	FIFTH THIRD BANCORP	R-G CROWN BANK	215
28.04.2011	VALLEY NATIONAL BANCORP	STATE BANCORP INC.	213
06.03.2012	CADENCE BANCORP LLC	ENCORE BANCSHARES INC.	197

Announced	Acquirer	Target	Deal Value (EUR mn)
27.07.2009	FIRST NIAGARA FINANCIAL GROUP INC.	HARLEYSVILLE NATIONAL CORPORATION	180
20.04.2011	BROOKLINE BANCORP INC.	BANCORP RHODE ISLAND INC.	159
20.07.2007	WESBANCO INC.	OAK HILL FINANCIAL INC.	136
09.06.2008	WHITNEY HOLDING CORPORATION	PARISH NATIONAL CORPORATION	129
03.07.2007	WASHINGTON FEDERAL INC.	FIRST MUTUAL BANCSHARES INC.	127
20.05.2008	HARLEYSVILLE NATIONAL CORPORATION	WILLOW FINANCIAL BANCORP INC.	126
10.07.2007	HARRIS BANCORP INC.	OZAUKEE BANK	125
29.06.2010	EASTERN BANK CORPORATION	WAINWRIGHT BANK & TRUST COMPANY	120
13.05.2007	NEW YORK COMMUNITY BANCORP INC.	SYNERGY FINANCIAL GROUP INC.	119
19.03.2008	VALLEY NATIONAL BANCORP	GREATER COMMUNITY BANCORP	111
21.05.2007	BANCTRUST FINANCIAL GROUP INC.	PEOPLES BANCTRUST COMPANY INC.	108
24.04.2007	EAST WEST BANCORP INC.	DESERT COMMUNITY BANK	106
14.06.2012	INVESTORS BANCORP INC.	MARATHON BANKING CORPORATION	103
31.05.2012	BERKSHIRE HILLS BANCORP INC.	BEACON FEDERAL BANCORP INC.	101
15.12.2008	INVESTORS BANCORP INC.	AMERICAN BANCORP OF NEW JERSEY INC.	99
02.11.2007	SUNTRUST BANKS INC.	GB&T BANCSHARES INC.	99
10.09.2007	FIRST NIAGARA FINANCIAL GROUP INC.	GREAT LAKES BANCORP INC.	97
09.11.2008	INDEPENDENT BANK CORPORATION	BENJAMIN FRANKLIN BANCORP INC.	95
10.07.2007	HARRIS BANCORP INC.	MERCHANTS & MANUFACTURERS BANCORP..	90
14.05.2012	PARK STERLING CORPORATION	CITIZENS SOUTH BANKING CORPORATION	77
26.06.2008	FIRST CITIZENS BANK AND TRUST COMPANY.	COMMUNITY BANKSHARES INC.	73
25.10.2010	COMMUNITY BANK SYSTEM INC.	WILBER CORPORATION, THE	70
10.09.2008	YADKIN VALLEY FINANCIAL CORPORATION	AMERICAN COMMUNITY BANCSHARES INC.	70
11.10.2007	INDEPENDENT BANK CORPORATION	SLADE'S FERRY BANCORP	69
26.07.2007	CAPE SAVINGS BANK	BOARDWALK BANCORP INC.	67
25.01.2012	OLD NATIONAL BANCORP	INDIANA COMMUNITY BANCORP	61
24.09.2008	HAMPTON ROADS BANKSHARES INC.	GATEWAY FINANCIAL HOLDINGS INC.	61

Announced	Acquirer	Target	Deal Value (EUR mn)
15.02.2008	FNB CORPORATION	IRON & GLASS BANCORP INC.	58
11.09.2007	ISB FINANCIAL CORPORATION	MIDWESTONE FINANCIAL GROUP INC. (OLD)	57
04.04.2012	WASHINGTON FEDERAL INC.	SOUTH VALLEY BANCORP INC.	56
23.02.2011	PIEDMONT COMMUNITY BANK HOLDINGS.	CRESCENT FINANCIAL CORPORATION	56
25.05.2010	KEARNY FINANCIAL CORPORATION	CENTRAL JERSEY BANCORP	56
19.07.2012	WESBANCO INC.	FIDELITY BANCORP INC.	55
12.10.2010	BERKSHIRE HILLS BANCORP INC.	ROME BANCORP INC.	52
08.08.2012	SCBT FINANCIAL CORPORATION	SAVANNAH BANCORP INC., THE	51
14.08.2007	CAMDEN NATIONAL CORPORATION	UNION BANKSHARES COMPANY	49
30.04.2012	PACIFIC WESTERN BANK	AMERICAN PERSPECTIVE BANK	47
15.07.2010	PEOPLE'S UNITED FINANCIAL INC.	BANK OF SMITHTOWN	46
01.05.2012	INDEPENDENT BANK CORPORATION	CENTRAL BANCORP INC.	43
25.07.2007	FRONTIER FINANCIAL CORPORATION	BANK OF SALEM	42
19.03.2012	IBERIABANK CORPORATION	FLORIDA GULF BANCORP INC.	39
25.06.2007	NATIONAL PENN BANCSHARES INC.	CHRISTIANA BANK & TRUST COMPANY	38
26.06.2012	CAPITAL BANK FINANCIAL CORPORATION	SOUTHERN COMMUNITY FINANCIAL CORP.	37
27.08.2007	FIRST NATIONAL BANCSHARES INC. (SC)	CAROLINA NATIONAL CORPORATION	36
16.11.2011	NBT BANK NATIONAL ASSOCIATION	HAMPSHIRE FIRST BANK	36
18.01.2012	PROVIDENT MUNICIPAL BANK	GOTHAM BANK OF NEW YORK	33
08.01.2008	MUTUALFIRST FINANCIAL INC.	MFB CORPORATION	33
13.03.2012	GREAT WESTERN BANCORPORATION INC.	NORTH CENTRAL BANCSHARES INC.	33
01.03.2012	FIRST COMMUNITY BANCSHARES INC.	PEOPLES BANK OF VIRGINIA	33
31.08.2011	FIRST PACTRUST BANCORP INC.	BEACH BUSINESS BANK	31
24.10.2011	1ST UNITED BANCORP INC.	ANDEREN FINANCIAL INC.	28
04.06.2012	BNC BANCORP	FIRST TRUST BANK	27
03.11.2009	BRYN MAWR BANK CORPORATION	FIRST KEYSTONE FINANCIAL INC.	27
26.10.2009	UNION SAVINGS BANK	FIRST LITCHFIELD FINANCIAL CORPORATION	26

Announced	Acquirer	Target	Deal Value (EUR mn)
24.06.2010	WSFS FINANCIAL CORPORATION	CHRISTIANA BANK & TRUST COMPANY	26
11.05.2007	FIRST KEYSTONE CORPORATION	POCONO COMMUNITY BANK	23
25.10.2011	BERKSHIRE HILLS BANCORP INC.	CONNECTICUT BANK AND TRUST COMPANY	23
27.06.2012	PROSPERITY BANCSHARES INC.	COMMUNITY NATIONAL BANK (TEXAS)	21
20.12.2011	SANDY SPRING BANCORP INC.	COMMERCEFIRST BANCORP INC.	20
03.05.2012	WASHINGTONFIRST BANKSHARES INC.	ALLIANCE BANKSHARES CORPORATION	20
22.12.2011	ESSA BANCORP INC.	FIRST STAR BANCORP INC.	20
29.06.2007	SHINHAN BANK AMERICA	NORTH ATLANTA NATIONAL BANK	20
30.08.2012	UMPQUA HOLDINGS CORPORATION	CIRCLE BANCORP	20
30.04.2010	RABOBANK N.A.	NAPA COMMUNITY BANK	19
30.11.2007	CCFNB BANCORP INC.	COLUMBIA FINANCIAL CORPORATION	18
05.06.2012	WESTFIELD BANCORP INC.	WESTERN RESERVE BANCORP INC.	18
30.11.2011	TRUSTMARK NATIONAL BANK	BAY BANK & TRUST COMPANY	17
29.06.2011	FIRST FOUNDATION BANK	DESERT COMMERCIAL BANK	16
04.03.2011	OPUS BANK	CASCADE FINANCIAL CORPORATION	15
10.03.2008	VILLAGE BANK AND TRUST FIN. CORP.	RIVER CITY BANK	15
01.08.2012	NEW HAMPSHIRE THRIFT BANCSHARES INC.	NASHUA BANK, THE	15
30.08.2011	MIDSOUTH BANK NA	FIRST LOUISIANA NATIONAL BANK	14
27.10.2010	BROOKLINE BANCORP INC.	FIRST IPSWICH BANCORP	14
29.05.2007	HERITAGE OAKS BANCORP	BUSINESS FIRST NATIONAL BANK	14
14.09.2011	ALTAPACIFIC BANCORP	STELLAR BUSINESS BANK	13
25.08.2010	CALIFORNIA UNITED BANK	CALIFORNIA OAKS STATE BANK	13
18.09.2008	FIRST NATIONAL BANK OF CHESTER COUNTY	AMERICAN HOME BANK NA	13
11.10.2012	HEARTLAND FINANCIAL USA INC.	HERITAGE BANK NA	12
26.05.2011	AMERICANWEST BANK NA	BANK OF THE NORTHWEST	12
16.05.2011	BAY COMMERCIAL BANK	GLOBAL TRUST BANK	11
16.04.2007	NEW HAMPSHIRE THRIFT BANCSHARES INC.	FIRST COMMUNITY BANK (VERMONT)	10

Announced	Acquirer	Target	Deal Value (EUR mn)
24.04.2008	SAVINGS BANK OF MAINE	RIVERGREEN BANK	9
11.12.2007	FOUR OAKS FINCORP INC.	LONGLEAF COMMUNITY BANK	8
30.11.2007	FIRST BANKS INC.	COAST FINANCIAL HOLDINGS INC.	8
25.10.2007	PREMIER FINANCIAL BANCORP INC.	CITIZENS FIRST BANK INC.	8
06.03.2009	COMMERCEWEST BANK	DISCOVERY BANCORP	7
05.05.2009	FOOTHILLS BANK, THE	YUMA COMMUNITY BANK	7
10.09.2007	FARMERS & MERCHANTS BANCORP INC.	KNISELY BANK	7
11.02.2011	COMMUNITY BANK & COMPANY	FIRST COMMUNITY BANK OF AMERICA	7
14.08.2007	LCNB CORPORATION	SYCAMORE NATIONAL BANK	7
27.06.2007	NORTHRIM BANCORP INC.	ALASKA FIRST BANK & TRUST NA	4
19.01.2012	PROSPERITY BANCSHARES INC.	BANK ARLINGTON, THE	4
26.05.2011	FIRST GENERAL BANK	GOLDEN SECURITY BANK	3
20.09.2010	JACKSONVILLE BANCORP INC.	ATLANTIC BANCGROUP INC.	2
10.08.2007	MECHANICS & FARMERS BANK	MUTUAL COMMUNITY SAVINGS BANK INC.	1

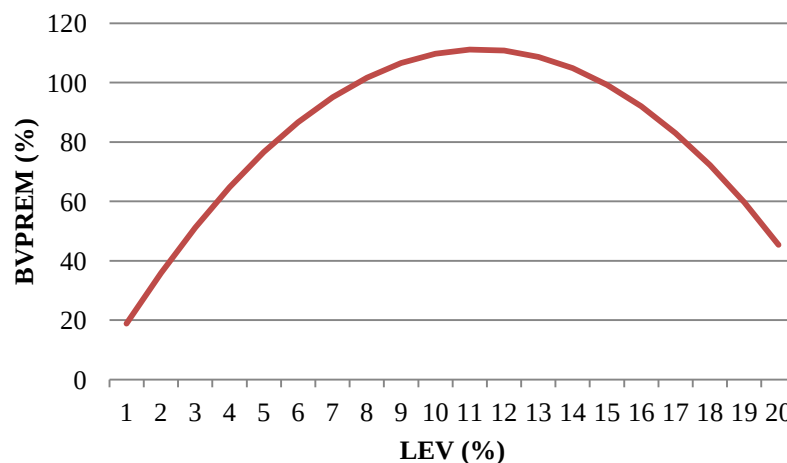
Appendix 2 shows the list of deals that were included in the US Sample. The names of the targets and of the acquirers are as of June 24, 2013 and may, therefore, differ from the names prior to the acquisition.

Appendix 3 Variable Definitions

Variable	Definition
BVPREM	Purchase price divided by the book value of equity of the target on the fiscal year end prior to the merger announcement.
COVROA	The covariance of the return on assets of the target with the return on assets of the acquirer for the minimum three years (maximum four years) prior to the merger announcement year
LEV	The Total Book Value of Equity of the Acquirer over the Total Book Value of Assets of the Acquirer.
LEV_SQ	LEV squared
RELROA	The relative return on assets. The variable is defined as the return on assets of the target over the return on assets of the acquirer on the fiscal year end prior to the announcement year
TA_T/TA_A	The variable proxies for the relative size of the target and is defined as the total assets of the target over the total assets of the acquirer on the fiscal year end prior to the announcement year
VAR_ROA_A	Variance of the return on assets of the acquirer for a minimum (maximum) of three (four) years prior to the announcement year
VAR_ROA_T	Variance of the return on assets of the target for a minimum (maximum) of three (four) years prior to the announcement year

Appendix 4 Numeric Example Regression (2) EU-27 Sample: Influence of Leverage on BVPREM

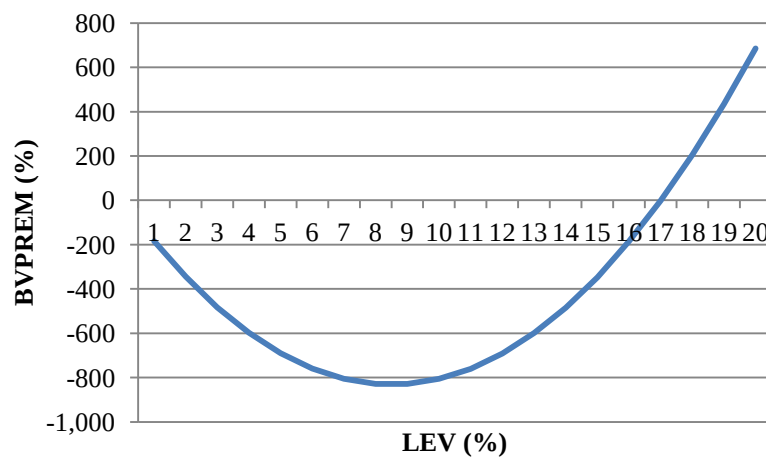
Leverage (%)	BVPREM(%)
1	18.8
2	35.9
3	51.2
4	64.8
5	76.6
6	86.7
7	95.1
8	101.7
9	106.6
10	109.7
11	111.1
12	110.8
13	108.7
14	104.9
15	99.3
16	92.0
17	83.0
18	72.2
19	59.7
20	45.4



Appendix 4 displays a numeric example for the results of the variable *LEV* and *LEV_SQ* in regression (2) for the EU-27 Sample. The table shows an example for leverage ratios and the corresponding *BVPREM* according to the regression coefficients of *LEV* (19.67) and *LEV_SQ* (-0.87) as displayed in Table 5.

Appendix 5 Numeric Example Regression (4) US Sample: Influence of Leverage on BVPREM

Leverage (%)	BVPREM(%)
1	-184.0
2	-345.0
3	-483.1
4	-598.2
5	-690.3
6	-759.4
7	-805.5
8	-828.6
9	-828.8
10	-806.0
11	-760.2
12	-691.4
13	-599.7
14	-485.0
15	-347.3
16	-186.6
17	-2.9
18	203.8
19	433.4
20	686.0



Appendix 5 displays a numeric example for the results of the variable *LEV* and *LEV_SQ* in regression (4) for the US Sample. The table shows an example for leverage ratios and the corresponding *BVPREM* according to the regression coefficients of *LEV* (-195.50) and *LEV_SQ* (11.49) as displayed in Table 7.

II Regulatory Drivers of Premiums and of Market Reactions to Merger Announcements

Abstract: In this paper, we analyse the influence of regulatory drivers on the percentage book value premium for a sample of European bank M&A transactions during the US-Subprime Mortgage Crisis and the European Sovereign Debt Crisis. We, furthermore, analyse the impact of regulatory drivers on the cumulative abnormal returns for the buyer's stock following the announcement of the merger for the crises periods. For this purpose, we use various multivariate OLS regression models and an event study to calculate cumulative abnormal returns. Our results suggest a negative influence of the degree of regulatory strength and shareholder protection on the percentage book value premium in domestic M&A transactions. We, further, find evidence for a premium in order to approach a "too-big-to-fail" status and premiums for the degree of equity capitalisation and stable funding of the target. For the market reaction analysis, we observe a negative cumulative abnormal return for the bidder's stock around the merger announcement day. We find support that the degree of equity capitalisation of the target, weak shareholder protection in domestic mergers, and strong shareholder protection in cross-border mergers drive the cumulative abnormal returns of the acquirer's stock for European bank M&A transactions during the financial crises.

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List of Abbreviations

BVPREM	Percentage Book Value Premium
CAR	Cumulative Abnormal Returns
CLT	Central Limit Theorem
EC	European Commission
ECB	European Central Bank
EU	European Union
GDP	Gross Domestic Product
HHI	Hirschman-Herfindahl Index
IMF	International Monetary Fund
KDE	Kernel Density Estimate
LCR	Liquidity Coverage Ratio
M&A	Mergers and Acquisitions
MBR	Mandatory Bid Rule
MSCI	Morgan Stanley Capital International
mn	Million
NACE	Nomenclature statistique des activités économiques dans la Communauté européenne
NSFR	Net Stable Funding Ratio
OLS	Ordinary Least Squares
pp	Percentage Points
roa	Return on Assets
roe	Return on Equity
SDC	Sovereign Debt Crisis
SMC	Subprime Mortgage Crisis
US	United States
USD	US Dollar

1 Introduction

The United States (US) Subprime Mortgage Crisis (SMC) from 2007 spread first within the US and then globally. The problems in the global financial systems reached a peak with the collapse of the US investment bank Lehman Brothers in September 2008. The particularity of a monetary union among 17 European countries and the distrust of the markets in the solvency of some European sovereigns marked what is known as the European Sovereign Debt Crisis (SDC). Governments and regulators reacted by introducing the new Basel III bank regulation standards that should gradually replace Basel II and should, ultimately, lead to a safer and sounder financial system (Demirguc-Kunt et al., 2010). Despite the insecurity in the capital markets and the increase in regulatory scrutiny, several bank mergers and acquisitions (M&A) deals, with some having been of remarkable size, took place in Europe during the time of the recent financial turmoil. The biggest German private bank, Deutsche Bank, for example, took over the majority share of Deutsche Postbank in December 2010. Furthermore, the problems in the financial markets fuelled distressed M&A activities in the financial industry, for example, the acquisition of the Belgian Fortis bank by the French bank BNP Paribas in May 2009.

Due to the prominent position of bank regulation in the public and political debate during the cause of the crises, and due to the strong impact of regulation on the banking system, we want to analyse the influence of bank regulation and regulatory changes on the pricing of the target in bank M&A transaction and on the market reactions of the bidder's stock following merger announcements in the EU-27.¹⁰ The EU-27 is an important geopolitical area to analyse regulatory influence on bank merger premiums, not only since the SDC is in fact a European crisis, but also because EU directives on bank regulation only set minimum harmonisation standards, while leaving some discretion to the respective national authorities. In a previous study, Hagendorff et al. (2010) analyse the regulatory drivers of percentage book value premiums (BVPREM) for a sample of European bank M&A deals between 1997 and 2007. The authors find a significant influence of the design of the deposit insurance system and of the regulatory strength in the country the target is chartered in on BVPREM paid by acquiring banks. In our thesis, we want to fill the gap of Hagendorff et al.'s (2010) research for the recent periods of financial turmoil. In addition, we extend Hagendorff et al.'s (2010) research

¹⁰ The EU-27 comprises: Austria, Belgium, Bulgaria, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, and United Kingdom.

to an analysis of the regulatory drivers of market reaction of the bidder's stock following a merger announcement. In light of recent financial and regulatory developments in the EU-27, we want to answer the following research question in our thesis:

How do regulatory characteristics in the country of origin of the target influence the BVPREM and market reactions for the bidder's stock following a merger announcement in European bank M&A transactions during times of financial turmoil?

For the purpose of the analysis, we compile samples of European bank M&A transactions between April 1, 2007 and December 31, 2012 and use multivariate OLS regressions to determine the influence of the drivers of the BVPREM that we identify in the bank M&A literature (e.g. Beitel et al., 2004; Benston et al., 1995; Brewer et al., 2000; Brewer and Jagtiani, 2007; Hagendorff et al., 2010; Hernando et al., 2009). Furthermore, we calculate cumulative abnormal returns (CAR) for the bidder's stock around the merger announcement date by running an event study. We again use multivariate OLS regressions in order to determine the drivers of market reactions for the bidder's stock following the merger announcement.

Our findings should be especially important for regulators, politicians, and practitioners in the M&A industry. We want to show how acquirers and the markets view the impact of regulation and shareholder protection on the value they assign to targets for transaction during the financial crises. Our findings can reveal a lack of credibility of bank regulation and a dominant price impact by the cost of strong regulation.

The thesis is structured as follows: Section II provides an overview of the summary of events during the recent crises and summarizes the aspects and changes of bank regulation that were relevant during the due cause of the crises. Section III reviews the literature on the main value drivers in bank M&A transactions. In Section IV, we present our research design and research hypotheses. In Section V and VI, we present the empirical results for the drivers of bank merger BVPREM and of the market reaction, respectively. Section VII provides the discussion of the results, the policy implications, and the limitations of our research. We conclude the thesis in Section VIII.

2 The Subprime Mortgage Crisis and the European Debt Crisis

2.1 Summary of Events

The US-SMC was triggered as early as in the first quarter of 2006, when the US housing market started reversing (Acharya et al., 2009). The downturn of the housing market induced the failure of subprime mortgage lenders, among which, New Century Financial, by the time the second largest subprime lender, filed for Chapter 11 bankruptcy protection in April 2007.¹¹ Despite the collapse of the subprime mortgage market having been identified as the root cause of the US-SMC, the event that had the most material impact on the systemic failure at the early days of the crisis was, according to Acharya et al. (2009), the failure of two highly levered hedge funds of the US investment bank Bear Stearns in June 2007.¹² Those funds were invested in subprime asset-backed securities. Following their defaults, there was a run on the assets of structured investment vehicles of BNP Paribas in August 2007 that forced the bank to halt redemption and that dried up the liquidity of the asset-backed commercial paper market, which, in turn, led to even more bankruptcies of subprime lenders (Acharya et al., 2009; The Federal Reserve Bank of St. Louis, 2011). Bear Stearns was ultimately rescued with the help of the US government and was purchased by JP Morgan in March 2008. In contrast to Bear Stearns, Lehman Brothers, by the time the fourth largest US investment bank, was not supported by the US government and had to file for bankruptcy over the weekend following September 12, 2008. This event materialised the systemic risk because the special “too-big-to-fail” status that Lehman was assumed to have took deep damage in the US following the bank’s bankruptcy. In addition, there was a strong insecurity in the system as a whole and ambiguity about the risks of many counterparties that, essentially, had to write down their claims on Lehman Brothers (Acharya et al., 2009). The consequence was a massive dry-up of funding liquidity. The collapse of Lehman Brothers that was followed by a government bailout of AIG on September 16, 2008, thus, marked the peak of the US-SMC.

Not only did the events in the US reveal the vulnerability of the financial markets, they also exposed the high international cross-dependencies in the financial system that, ultimately, in combination with excessive government spending in many EU-27 countries, led to the emergence of the European SDC. The first signs of contagion materialized with the nationalization of the bank Anglo Irish by the Irish government on January 21, 2009. Parallel

¹¹ For the complete summary of events during the SMC refer to Federal Reserve Bank of St. Louis (2011).

¹² Information about the market reaction and contagion effects to sovereign spreads in Europe following the collapse of Bear Stearns is provided by Mody (2009).

to this event, the spread of Irish government bonds over German government bonds rose from a negative level in early 2007 to about 260 basis points in January 2009 (Mody, 2009). Following this development, the Irish government announced rigid stabilisation measures, and the situation of the markets calmed down over the due course of 2009 (De Santis, 2012). The Greek government, however, revealed a revised budget deficit in November 2009, which was twice as high as the previous estimate suggested (De Santis, 2012). This announcement marked the definite beginning of the European SDC. Greece was hit worst by the distrust of the international capital markets (Grammatikos and Vermeulen, 2010). In May 2010, the EU and the IMF agreed on a three year 110 billion Euro rescue package for Greece, an action unprecedented in size by the time. The rescue package was followed by a second bailout in February/March 2012 (Spiegel and Barker, 2012). In the context of the first Greek bail-out, a European stabilization mechanism was created, ring-fencing 750 billion EUR for countries seeking financial assistance. In November 2010, Ireland became the second country that was bailed out with 85 billion EUR (Arghyrou and Kontonikas, 2011). Other countries to follow were Portugal, Spain, and, finally, Cyprus in 2013.¹³ European banks were also facing tremendous difficulties during the SMC and SDC. Europe saw some of its banks going through troubled times, among which, Anglo Irish, Fortis, and Dexia were the most prominent examples. Further, it is to be added that Spain's bailout by the European Stability Mechanism in 2012 and 2013 was particularly aimed at the recapitalisation of Spanish banks and at restoring market confidence (European Stability Mechanism, 2013). Especially the problems of Cyprus from the beginning of 2013 indicate that the European SDC was not over by the time.

2.2 Aspects of Bank Regulation During the Crises – From Basel II to Basel III

The major objectives of bank regulation are to ensure safety and soundness of financial institutions and, ultimately, of the financial sector as a whole, as well as to prevent spillover effects to the real economy in times of crises (Greenbaum and Thakor, 2007). Capital adequacy rules are a means to achieve these two goals. Since the first Basel capital rules in 1988, bank regulators have assigned a pivotal role to capital adequacy convinced that more capital enables banks to better absorb losses and limits the likelihood of a bailout with public funds (Demirguc-Kunt et al., 2010). Barth et al. (2004) argue that capital requirements are particularly important in jurisdictions with generous deposit insurance systems, complex

¹³ See European Central Bank (2013) timeline for a comprehensive overview of the events in Europe during the SMC and SDC.

banks, and where official supervision is weak due to an inherent incentive of excessive risk taking that is provided in such systems. The recent financial crises clearly revealed that the existing approach to bank regulation in general, and to capital adequacy in particular was insufficient to ensure the safety of the financial system and to prevent a systemic crisis. Governments had to intervene in order to prevent a collapse of the different economies (Demirguc-Kunt et al., 2010). With respect to capital adequacy rules, Basel II provided an almost uniform capital regulation standard for all banks by the time.¹⁴ Due to the insufficient attainment of financial stability by the former set of regulation, the Basel Committee is in the process of establishing stricter rules of bank regulation, namely Basel III.¹⁵ In general, under the new Basel III rules, bank capital is divided into Core Tier 1 capital, Tier 1 capital, and Tier 2 capital. Basel III explicitly excludes Tier 3 capital, which was part of regulatory capital in Basel II.¹⁶ In 2010, the Committee agreed on an increase of the Core Tier 1 capital ratio from 2% to 4.5% (plus a countercyclical security buffer at the national legislator's discretion) and on an additional capital conservation buffer of 2.5% bringing the Core Tier 1 equity ratio to a minimum of 7% (and to a maximum of 9.5%). Furthermore, the minimum Tier 1 equity requirements increase from 4% to 6%, with an additional capital conservation buffer of 2.5% bringing the Tier 1 capital ratio to a minimum level of 8.5%. The minimum total capital ratio (Tier 1 plus Tier 2) remains at 8%, which represents the current rate as required by Basel II. However, the addition of the capital conservation buffer increases the total amount of capital that a bank must hold from 8% to a minimum of 10.5% of risk-weighted assets, with a minimum Tier 1 ratio of 8.5%. Further, a 3% non-risk based Tier 1 leverage ratio is introduced that serves as a lower limit to the risk based capital measures.

In addition to stricter capital adequacy rules, regulators also addressed the problem of a liquidity squeeze, which could be observed during the financial crises. The Basel Committee introduces the so called Liquidity Coverage Ratio (LCR) in order to attenuate potential problems of funding illiquidity for financial institutions. The LCR ratio is defined as:

$$LCR = \frac{\text{Stock of high quality liquid assets}}{\text{Total net cash outflows over the next 30 calendar days}}$$

In addition, the Basel Committee aims at promoting a more long term oriented funding by introducing the Net Stable Funding Ratio (NSFR). The ratio is designed to reduce reliance on

¹⁴ It is still the duty of national legislation to ratify the Basel Accords that are suggested by the Basel Committee on Banking Supervision.

¹⁵ For a detailed description of Basel III see: Basel Committee on Banking Supervision (2011) and Basel Committee on Banking Supervision (2013).

¹⁶ For the exact definitions see: Basel Committee on Banking Supervision (2011).

short-term wholesale funding and to encourage a better assessment of liquidity risk.¹⁷ A phase in time for banks to adapt to the new regulations is provided by the regulator, and full compliance has to be reached by 2019 (Demirguc-Kunt et al., 2010). As pointed out by KPMG (2010), the new guidelines for equity and liquidity deposition may reduce the systemic risk at the cost of reduced lending capacity, reduced investor demand for bank equity, and debt, as well as at the cost of regulatory arbitrage if Basel III is implemented differently in various jurisdictions.

3 Literature Review – Value Drivers in Bank M&A

3.1 Deposit Insurance and Bank Regulation

The case of Cyprus from the first quarter of 2013, where banks remained closed for about two weeks,¹⁸ showed that a temporary suspension of convertibility from deposits to bank notes is one means to prevent bank runs. This method was used frequently in the days before the deposit insurance was introduced (Friedman and Schwartz, 1963). Ever since its introduction, the theoretical finance literature assigns a pivotal role to the deposit insurance as a stabilizer of the financial intermediation sector. The basic purpose of government provided deposit insurance is to prevent bank runs and potential contagion effects that may challenge the stability of the financial system and, ultimately, of the entire economy (Bryant, 1980; Diamond, 2007). An explicit European deposit guarantee scheme was introduced with the EU directive 94/19/EC in 1994. At that time, the guiding purpose was to prevent regulatory arbitrage between EU member states (Hagendorff et al., 2010). Even as the EU-27 countries have reached a substantial amount of harmonisation of the deposit guarantee schemes¹⁹ (e.g. the amount insured is set to a minimum value of 100,000 EUR for all EU-27 countries), there are still considerable differences with respect to the costs of the deposit insurance scheme (Carbo-Valverde et al., 2008; Carbo-Valverde et al., 2009). It is evident from a pricing perspective that the valuation of a target increases with lower costs of deposit insurance in the jurisdiction in which the target is chartered. Another feature of deposit insurance systems is the inherent put option. If deposits are insured by the federal administration, banks have a put option on their deposits. If the premium is imperfectly risk-sensitive, an increase in the bank's risk increases the value of the put option, which is, accordingly, not offset by an increase in costs (Greenbaum and Thakor, 2007). Thus, deposit insurance systems can pose a moral

¹⁷ For details refer to Basel Committee on Banking Supervision (2010).

¹⁸ For details see Kambas and Tagaris (2013).

¹⁹ See European Commission (2010) for a report on the modifications of the deposit guarantee schemes in light of the financial crises.

hazard problem, since, given imperfectly risk sensitive deposit insurance systems, banks have the propensity to increase risk and, thereby, shift costs to the general public. Capital requirements seek to attenuate this incentive, however, often inefficiently (Greenbaum and Thakor, 2007). The opportunity to monetize from the deposit insurance put option was articulated by Benston et al. (1995) and, originally, relates to the size and risk of the target that can be promising incentives for a merger. Ultimately, banks acquiring targets that increase the risk of the combined entity increase the value of the deposit insurance put option. Therefore, M&A deals that try to take advantage of the deposit insurance put option are expected to result in higher bid premiums and can be considered a case of moral hazard. The idea of a deposit insurance put option can be extended to cross-border acquisitions of targets that are chartered in countries with a low-cost deposit insurance system. Such a transaction amplifies the opportunity of regulatory arbitrage, which should be reflected in a higher value that bidders assign to targets. Lastly, Hagendorff et al. (2010) suggest that a financial system with a stricter deposit insurance system creates a higher degree of safeness and stability by preventing bank runs. This would, ultimately, boost the confidence in the long-term value of potential targets within a country with a strong deposit insurance system. Thus, there is a case for strong deposit insurance regimes in the target's country driving the price that bidders are willing to pay for targets.

Concerning bank regulation beyond the deposit insurance regime, the EU banking directive from 1993 allows banks to operate relatively freely across the different member states.²⁰ Despite the deregulation of the last 20 years, there are still different levels of regulatory costs across the different EU member states that mainly involve the degree of influence of the supervisory body on the operations, financing, and ownership regulation of banks in the respective jurisdictions. “[b]anks not only expand internationally to diversify risks, but they also try to take advantage of supervisory incentives. Banks may, for instance, try to shift activities to countries in which they are less tightly regulated or in which they can shift risk to an underpriced deposit insurance system” (Buch and DeLong 2008, p.24). Therefore, the degree of supervisory discipline should influence the value of the target. Again, the costs associated with stricter regulation have to be balanced with the positive effects of stricter regulation that should, in theory, lead to a more reliable picture of the target and a more resilient financial market. Thus, strong regulation can, ultimately, increase the value of the target. The latter effect may be of particular importance in times of financial distress,

²⁰ See Zimmerman (1995) for a detailed description.

since, during these times, market participants are highly insecure about the different counterparty risks and hidden problems other banks may be facing (Acharya et al., 2009). The benefits of stricter regulation can, however, materialize only under the assumption that regulation is efficient and, actually, leads to safety and soundness of the banking system. If, as we could observe during the financial crises, regulation is inefficient in securing the stability of the financial system in times of financial turmoil, then professional market participants will not assign value to potential safety benefits. Thus, the costs associated with regulation would outweigh the above described advantages.

In summary, the literature suggests that the deposit insurance system as well as broader bank regulation can have a positive as well as a negative pricing impact in an M&A transaction. The direction of the impact will, ultimately, depend on the view of the acquirer on the future impact of regulation on the target bank and is under scrutiny in our thesis.

3.2 Investor Protection

Previous research has produced a significant amount of evidence that the development of financial markets is to a certain degree influenced by the protection of investors and the enforceability of the law (La Porta et al., 2002). According to La Porta et al. (2002), the development of financial markets is spurred by strong protection of ownership rights, since investors can expect that a higher degree of financial profit will, eventually, flow back to them (the ultimate idea of corporate governance, as summarized by Shleifer and Vishny (1997)). Thus, investors are willing to pay more for investments. The higher price that can be achieved on financial markets incentivizes entrepreneurs to seek financing on public markets, which, in turn, leads to the expansion of those markets. The agency problem that arises in this context is the conflict between large controlling shareholders vis-à-vis outside minority shareholders (Shleifer and Vishny, 1997). Given the information asymmetry between insiders (e.g. managers and majority shareholders) and outside investors (e.g. creditors and minority shareholders), strong investor protection regimes and good enforcement of the laws may limit opportunities for expropriation of outside investors by controlling shareholders (Dyck and Zingales, 2004). Expropriation may occur in different forms of severity; from purchase of perquisites, unfavourable acquisitions, to outright theft (Dyck and Zingales, 2004; La Porta et al., 2000). The intended limitation of expropriation by investor protection may both increase and decrease the value acquirers assign to targets. As pointed out by Hope (2003), if investors see their property right protected, demand and prices for financial assets may be positively

influenced. However, if majority investors intend to expropriate outsiders, a stronger investor protection acts value decreasing for majority investors and should result in lower premiums.

Rossi and Volpin (2004) draw a connection between investor protection and acquisition activities. The authors find that the amount of M&A activities and participating bidders increases with the strength of the investor protection regime (for further evidence see Bris and Cabolis, 2008). Thus, on average, it is expected to see higher bid premiums in stronger investor protection regimes (Moeller and Schlingemann, 2005). Starks and Wei (2004) also find higher bid premiums in strong investor protection regimes, which, according to the authors, is due to a compensation of the target shareholders for potentially weaker governance practice following the merger. Dahlquist et al. (2003) argue that bidders would be rewarded for acquisitions in high protection countries because of the higher disclosure standards and, correspondingly, lower agency costs. While the previously mentioned findings relate to M&A activities in general, Hagendorff et al. (2008) focus their research on M&A activities of banks and use a US and European sample of bank M&A deals. They argue that in high investor protection countries bidders will offer high bid premiums due to the increase in liquidity (i.e. more bidders) of the corporate control market that comes with better investor protection. Thus, they suggest that in high investor protection countries higher premiums can ultimately be expected.

In summary, the literature on investor protection suggests that banks are either paying a premium or a discount for targets chartered in strong investor protection countries. The result, ultimately, depends on whether the effect of an increase in liquidity of the corporate control markets drives up the premium or whether the negative effect of strong investor protection on the ability of majority investors to expropriate outsiders dominates.

One implementation of minority investor protection regimes are mandatory bid rules (MBR), as introduced by the EU Takeover Directive for listed firms in almost all EU-27 countries.²¹ The directive requires bidders to tender for all remaining shares once they have exceeded a particular ownership threshold in the target and offer a price to the remaining shareholders that is based on the price that was paid when they crossed the MBR threshold (Hagendorff et al. 2010). Thus, the directive protects minority shareholders from being forced into accepting lower premiums (Nenova, 2006). Crossing the MBR threshold should be considered a cost for the acquirer since she has to tender for all outstanding shares at the same price that was also offered to the controlling shareholder. In addition to the effect mentioned

²¹ For further details see EU Directive 2004/25/EC.

above, a crossing of the MBR threshold could also be associated with an increased premium that is paid by the acquirer. Since control over the target is the necessary condition in order to implement restructuring measures and to gain from synergy effects, a positive effect on premiums could be expected. However, the value of control is not shared among all the shareholders in proportion of the shares owned, but it is enjoyed primarily by the party that ultimately has the controlling majority (Dyck and Zingales, 2004). In addition, control may not only have positive aspects. Dyck and Zingales (2004) argue that maintaining control forces the large shareholder to lack diversification. Furthermore, targets that are in distressed situations or that face trouble post-acquisition may produce reputational costs or even legal liabilities for the acquirer (Dyck and Zingales, 2004). Hence, if banks anticipate the risk of such a development, one might observe lower premiums when they cross the MBR threshold.

3.3 Market Environment

Important factors to consider for the valuation of a target are the banking markets and the economies in which the target is operating. With respect to the banking market, the degree of competitiveness in the market plays a pivotal role when examining profit opportunities for the market participants. A decrease in competitiveness that can be triggered by a consolidation in the financial sector may increase the market power of the remaining participants and should, thus, offer larger profit opportunities to them and may, correspondingly, result in higher bid premiums (Berger et al., 1999). Cross-border M&A deals (i.e. international consolidation), however, into countries with a high competitive landscape should deflate bid premiums, since the likelihood of expanding profit opportunities in a highly competitive market is expected to be low (Beatty et al., 1987). A caveat for a clear cut inference is that the closing of most M&A deals depends on the execution of antitrust laws that can ultimately block or alter M&A transactions and could, therefore, have a significant influence on the ex-ante design and feasibility of deals.

In terms of the economic environment in the countries where the target is operating in, a high GDP growth in these countries may imply a high capacity to increase the business and, thus, increase the value of the target (Diaz and Azofra, 2009). Consequently, transactions with targets that are located in high growth economies are expected to have high premiums (Frieder and Petty, 1991).

3.4 Target Profitability, Risk, and Diversification

From standard corporate finance literature it is known that the expected future cash flow discounted at the opportunity cost of capital to the current period determines the price of an asset (see e.g. Damodaran, 2002). The majority of studies on takeover pricing follow the basic theoretical underpinning of asset pricing and use a profitability measure, like return on equity (roe) or return on assets (roa), in order to proxy for expected future cash flows (Hagendorff et al., 2010). As predicted by theory, high target profitability should lead to an increase in premium. Among other papers, Brewer et al. (2000), Hagendorff et al. (2010), and Rose (1991) find a significant, positive effect of roe on the premium. On the other hand, studies on market reactions to merger announcements indicate a negative market reaction to relatively high ROE targets. The so called efficiency hypothesis (see Hawawini and Swary, 1990; Pilloff and Santomero, 1998) claims that a low relative roe of target banks to the roe of acquiring banks may be a source of higher efficiency improvement potential. Thus, markets are expected to react positively to a relatively low roe of the target (see e.g. Beitel et al. (2004) and Hawawini and Swary (1990) for empirical evidence). In analogy to the profitability measure, a lower premium can also be expected if the systematic risk of a target's expected cash flow is high (Hagendorff et al., 2010).

As a means to reduce the risk of the combined entity's future cash flows, the diversification potential of a target is expected to have a significant influence on the premium paid by the acquirer. Finance literature advocates that diversifying mergers do not create value, since shareholders can diversify themselves (Lang and Stulz, 1994). Diversification may still have a value impact if it reduces the likelihood of bankruptcy, which should ultimately lead to a lower cost of debt. Benston et al. (1995) provide an interesting interface between diversification potential and bank regulation. In their paper, they attempt to answer the question of whether banks are willing to pay more for targets that can reduce the overall risk of the combined entity and have lower profitability risk (diversification hypothesis) or whether acquirers rather target those banks that would, once acquired, increase the value of the deposit insurance put option (deposit insurance put hypothesis). The deposit insurance put hypothesis predicts that bidders will offer a higher premium for those targets that can increase the overall risk of the combined entity and can, thus, increase the value of the deposit insurance put option. While Benston et al. (1995), Brewer et al. (2000), as well as Brewer et al. (2007) report evidence for the diversification hypothesis using US sample data, Carbo-

Valverde et al. (2009) and Hagendorff et al. (2010) using a European sample find that bidders value the opportunity to increase the value of the deposit insurance put option.

Sources of diversification can broadly be summarized under geographical and product diversification. Regarding the literature on cross-border bank M&A, mixed evidence can be found with respect to the effects on premium and market reaction. On the one hand, cross-border deals can provide a source of geographical diversification and can, thus, improve the risk-return profile of the combined entity if income and costs from different geographic areas have a low correlation. Further, the acquirer has the opportunity to generate operational synergies by exporting innovation and existing efficiencies (like processes and culture) from its current operations to the target abroad (Hagendorff et al., 2010). Consequently, higher premiums should be expected in cross-border deals (see e.g. Frieder and Petty, 1991; Shawky et al., 1996). On the other hand, domestic mergers are expected to provide a higher operational synergy potential than cross-border mergers. Reasons underlying this hypothesis are, among others, a limitation of cost savings in cross-border mergers due to the inherent inability of cross-border mergers in making use of synergy effects in the branch network. Furthermore, Berger et al. (2000) elaborate on the difficulties of managing a firm from the distance as another factor that may reduce the premium (e.g. due to cultural or legal mistakes that are more likely when managing a firm from abroad). In addition, there are numerous obstacles and insecurities (e.g. regulation and unfamiliar culture) that can be avoided when pursuing a domestic merger (Diaz and Azofra, 2009). Therefore, there are many authors advocating that lower premiums and negative market reactions for the buyer's stock can be expected from cross-border M&A deals (Beitel et al., 2004; Hagendorff et al., 2010; Jackson and Gart, 1999). Diaz and Azofra (2009) find consistently insignificant results for a binary cross-border coefficient in a European sample. Some US studies find significant, positive coefficients for interstate banking mergers to explain premiums (e.g. Palia, 1993; Shawky, Kilb and Staas, 1996). It is, however, to be considered in this context that for interstate mergers in the US, the cultural and regulatory differences and obstacles are much lower than for transactions within Europe.

In addition to geographic diversification and operational synergies, benefits can further be obtained by product diversification. Based on the sources of income that the acquiring bank concentrates on, a substantial amount of risk reduction and additional profit opportunities can be achieved through the acquisition of banks that generate income through different sources (e.g. interest versus commission income). Diaz and Azofra (2009) use

clustered regressions based on product strategies of banks to determine the influence of product diversification on premiums. They, however, find an insignificant coefficient for their measure of product diversification. Product diversification may not only have positive implications for the premium of the target. Higher product diversity is associated with higher integration costs and may, therefore, be a source of decrease in premium. Diaz et al. (2004), for example, show that product diversification does not necessarily improve the profits of the acquiring bank. The authors are stressing the relevance and impact of integration problems that are associated with diversifying mergers. From a market perspective, Beitel et al. (2004) claim that diversifying transactions can reduce risk by smoothing earning volatility and, thus, should have a positive impact on value creation. The authors add, however, that diversifying transactions may suffer from a “conglomerate discount” since the stock markets prefer transparent and focused companies that are easy to value.

3.5 Other Financial and Deal-Related Characteristics

As already alluded to in the previous section, acquirers are willing to pay higher premiums if they expect the target to grow its cash flows in the future. One source of future cash flow growth can derive from asset growth (Hagendorff et al., 2010). In the literature, the historic asset growth is used as a proxy for the expected future asset growth rate. Cheng et al. (1989), Hagendorff et al. (2010), and Hakes et al. (1997) find a significant, positive coefficient for the influence of past asset growth on the premium, while the coefficient in the study of Brewer and Jagtiani (2007) of listed targets is significant, negative when estimating premiums paid over market values. According to Hagendorff et al. (2010), the relation identified by Brewer and Jagtiani (2007) can be rationalized by assuming that a certain premium for growth should already be reflected in the target’s stock price and targets are not expected to exceed the market consensus on their growth rate. The coefficients in Diaz and Azofra (2009) and Palia (1993) are insignificant.

Different evidence can be found in the literature with respect to the effect of leverage on the premium. Leverage in this context is defined as:

$$\text{Leverage} = \frac{\text{Total Equity}}{\text{Total Assets}}$$

While Hagendorff et al. (2010) argue that a higher level of capital allows acquirers to grow the target without any new capital contribution, Diaz and Azofra (2009) argue that a high Equity-to-Asset ratio indicates that targets are not using their capital efficiently and should,

therefore, be lower in value. Hernando et al. (2009) add to the discussion by mentioning that acquirers that face regulatory pressure may seek well capitalised targets. Evidence for the negative influence of a high equity ratio on premiums can be found, for example, in Brewer et al. (2007), Diaz and Azofra (2009), Hagendorff et al. (2010), and in Hakes et al. (1997). Adkisson and Fraser (1990) report a positive coefficient. A target's leverage ratio is a highly interesting measure to study, given its consideration in the new Basel III accords (see discussion in Section II 2.).

One challenge of M&A transactions is to create synergies efficiently through economies of scale or scope, for example, by reducing the cost of integrating the target into the acquiring bank. Theory predicts that relatively smaller targets are easier to integrate, and it is easier to reduce costs of relatively smaller institutions (Focarelli et al., 2002; Thompson, 1997). Along the line of this reasoning Palia (1993), Benston et al. (1995), and Brewer et al. (2007) find a significant, negative influence of the relative size of assets on the premium. Against this hypothesis, however, speaks that once successfully integrated, smaller targets offer a reduced source of economies of scale than relatively larger targets (Hagendorff et al., 2010). Furthermore, it is predicted that larger targets improve the likelihood of the combined entity being considered “too-big-to-fail” (Hagendorff et al. 2010). If a bank reaches the “too-big-to-fail” threshold, it has additional access to public safety nets. In such a situation, acquirers were found to pay a premium for those transactions that allow the combined entity to cross a “too-big-to-fail” threshold (Brewer and Jagtiani, 2009). Consistent with these findings, Brewer et al. (2000) and Brewer and Jagtiani (2007) obtain a significant, positive influence of relative size on the premium.

If a target is listed on a stock exchange, it typically has to comply with stricter disclosure requirements than unlisted firms. Given information asymmetry between the acquirer and the seller and the willingness of the seller to obtain a maximum price for the target, the surplus of available information should improve the quality of the due diligence process, enhance the accuracy of valuation and should, thereby, prevent the acquirer from overpaying for the target. Consequently, the surplus of information should lower the premium of a transaction. A listing of the target, on the other hand, could increase the liquidity of the corporate control market for the target and could, thus, be a driver of higher premiums due to potentially resulting bidding contests. Such contests that drive up premiums can arise easier in a liquid corporate control market environment (Hagendorff et al., 2010).

The relative cost-efficiency of the target, measured by the cost-to-income or the cost-to-asset ratio of the target over the equivalent ratio of the bidder, indicates the improvement potential of the cost structure of a target after its integration (Beitel et al, 2004). Pilloff (1996), who studies the combined entity's performance after a deal, finds that the cost efficiency after a merger is positively correlated with the return from a merger. His paper indicates that markets value the potential for cost savings, as proxied by the lower cost-efficiency ratio of the acquirer. The market participants believe that a cost efficient acquirer can restructure the target in such a way that she can impose her own cost efficient organisation and processes on the target. Beitel et al. (2004) find a positive coefficient of a relative cost efficiency variable on the return of a transaction, indicating that markets value transactions where acquirers are more cost-efficient than targets. It is important, though, to consider for this variable that, from a theoretical perspective, a change of control is necessary in order for the variable to be of relevance from an empirical standpoint. The reason underlying this argument is that restructuring measures can hardly be initiated and implemented without control over the target.

Apart from the drivers mentioned in this section that all find application in the following empirical analyses, several other drivers that are often based on market data and that do not find consideration in our research can be identified in the existing literature. One such variable that is not considered in our paper due to a lack of data availability is the method used by the acquirer to pay for the target. Although not investigated in our paper, the method of payment has a prominent position in academic research both as a driver for the premium paid in a transaction and for the market reaction following a transaction announcement. According to Diaz and Azofra (2009), the method of payment has been relevant with respect to the determination of the premium because of its function to proxy for both financial synergies and the so-called overvaluation hypothesis. The former refers to a potential scenario of a liquidity squeeze while implementing post-acquisition restructuring programs for the target that aim at making use of financial synergies (e.g. severance payments for layoffs). Therefore, payment in stocks should lead to higher premiums since by this means of payment the likelihood of a liquidity squeeze is reduced (Diaz and Azofra, 2009; Hakes et al., 1997; Shawky et al., 1996). The second potential explanation that claims the same relation between the method of payment and the premium refers to the pecking order theory that is articulated by Myers and Majluf (1984). The theory is based on the asymmetric information between insiders and outsiders of a company. If the directors of the acquirer, who have more

information about how well the stock price of their company reflects the actual intrinsic value, assume the stock of their company to be overvalued, they would be inclined to pay in stock rather than in cash. Further, they would be willing to pay a higher premium if they could pay in stocks (overvaluation hypothesis). Markets are assumed to understand the signalling of the private information that is revealed by a payment in stock (i.e. overvaluation of acquirers' stocks), and any announcement of stock payment for an acquisition should, thus, drive negative returns for the acquirer's stock. For the payment in cash, the opposite argument applies. Indeed, Amihud et al. (1990), Beitel et al. (2004), Hawawini and Swary (1990), and Travlos (1987) find a positive impact of the cash ratio of payments on the returns of M&A transactions.

4 Research Design and Hypotheses

The review of the existing theoretical and empirical literature motivates our main question of which factors drive premiums that bidders offer to shareholders of targets during times of financial distress and market uncertainty. Further, we want to examine how markets react to merger announcements during times of financial crises and what the main drivers for the market reactions on the bidder's stock are. The developments during the crises suggest a particular attention to regulatory aspects when assessing the drivers of premiums and market reactions. As reviewed above, the US-SMC and European-SDC periods were clearly shaped by a squeeze in funding liquidity and regulatory aggravation. In this context, our paper places a particular emphasis on the regulatory drivers as well as on the shareholder protection in the country where the target is chartered. The degree of shareholder protection is particularly relevant due to the risk of nationalisation of financial institutions that increased during the crises. The ultimate goal of our paper is to provide insights into how the regulatory and political environment influenced the premiums that were paid by bidders and the CAR following acquisition announcements during financial crises.

The contribution to the existing literature of our paper is twofold. On the one hand, we add to the study of Hagendorff et al. (2010), who look at deals that took place between 1997 and 2007 and explain bank M&A book value premiums by regulatory drivers (deposit insurance system, regulatory strength, and shareholder protection). In our research, we particularly examine the influence of the regulatory drivers used in the study of Hagendorff et al. (2010) and additional variables that are directly or indirectly related to bank regulation for bank M&A transactions that took place during the US-SMC and the European SDC.

Furthermore, we expand Hagendorff et al.'s (2010) book value perspective by also looking at the market reaction following a merger announcement and the drivers of market reaction on the bidders' stock that were identified in the literature. We need to be cautious at this point of the analysis and clearly distinguish between the analysis of the premiums paid by bidders and the market reaction. While the analysis of the drivers of bid-premiums is related to the factors that drive the price a bank is willing to pay for a target, the analysis of the drivers of market reaction of the bidding bank is less straight forward. The market reaction is dependent on the valuation and assessment of the target by the acquirer, for example, when the acquirer purchases a target at an unjustifiable discount, the market reaction for the acquirer's stock should be positive. Therefore, an analysis of the drivers of market reaction assesses how the market evaluates the pricing skills of the acquirer with respect to particular drivers identified in the literature. In our case, we again focus our analysis on regulatory drivers.

In summary, in a first step, our research attempts to identify the underlying drivers that acquiring banks value in acquisitions during the financial crises. In a second step, we want to identify how the financial markets react to the premiums that banks offer paying for targets.

With respect to the influence of the deposit insurance system and the regulatory strength on the premium, the literature review suggests that while strict deposit insurance and strict bank regulation are costs that the acquirer has to consider when deciding on a premium, the intended increase in stability of the financial system in the home market of the target is an opposing force that may drive up the premium that buyers are willing to offer. The increase in premium would only be observed and justified, however, under the condition that an increase in stability is indeed expected to be achieved through strict regulation. History suggests the opposite, since the regulation of the banking system failed to achieve stability of the financial system and of the economy as a whole in recent years. Further, for the case of the EU-27 in general, and during the financial crises in particular, the high interconnectedness of regulatory measures and effects between the different countries make a significant price premium rather unlikely. The underlying idea is that despite an acquirer buying a target in a strongly regulated country, the interconnectedness of the financial system in Europe and the high interconnectedness of costs for the safety net might cause significant instability in the target's country when another European country faces financial difficulties despite the target's country itself being strongly regulated.

Hypothesis 1: The deposit insurance costs and the regulatory strength in the target's country have a negative influence on book value premiums in M&A transactions of European banks during times of financial crises.

Investor protection played a significant role in the policy discussions during the financial crises. The discussions evolved around the conflict between insiders (i.e. majority investors and management) and outsiders (i.e. creditors and minority investors). It became evident during the financial crises that especially outsiders found their stake in the company quite frequently expropriated by amoral management behaviour and short term operating strategies. In light of this development and in consideration of the quasi blank cheque that European banks received from the European governing authorities (i.e. public support for failing banks), we expect that acquirers (i.e. future insiders) are willing to pay less for targets that are chartered in countries where minority shareholder rights are strongly protected, since we assume that a propensity towards the expropriation of outsiders exists among acquirers.

Hypothesis 2: The strength of investor protection in the target's country has a negative influence on book value premiums in M&A transactions of European banks during times of financial crises.

In addition to the regulatory variables outlined above, we also expect to find a positive influence of the liquidity of assets of the target and equity capitalisation on the premium. This relation is expected because of the observed liquidity squeeze during the crises, the difficulty for banks to raise new equity, and, ultimately, the increased regulatory requirements on equity capitalisation and liquid funding.

Hypothesis 3: Liquid funding and equity capitalisation of the target drive book value premiums during times of financial crises.

Furthermore, we expect the deposit insurance put option hypothesis to be of particular relevance during the financial crises. We do not expect to find evidence for the diversification hypothesis. Due to the high minimum insurance value of 100,000 EUR in the EU-27 and credible promise of the EU to interfere if a large European bank is at the edge of bankruptcy, we expect banks to seek increasing the combined risk in M&A transactions, thus, the value of the deposit insurance put option.

Hypothesis 4: We expect to find evidence for the deposit insurance put option hypothesis.

As outlined in the literature review, relatively larger targets are more difficult to integrate post-acquisition, however, they increase the size of the combined entity and, thus, contribute to reaching a “too-big-to-fail” status for the combined entity. During the financial crises, large domestic banks like Commerzbank in Germany, who acquired Dresdner Bank during the cause of the crises, received money from the state, due to their assumed “systemic relevance”. We, therefore, assume that the size of the target drives the premium that banks are willing to offer, especially in domestic acquisitions, since we assume that national regulators have a particular focus on large domestic “too-big-to-fail” institutions.

Hypothesis 5: The size of the target drives the premium acquirers’ offer in domestic transactions in order to approach a “too-big-to-fail” status.

With respect to the market reaction on premiums offered for targets during the financial crises, we expect to find a significant market reaction for the bidder’s stock to regulatory drivers, due to the prominent role of bank regulation during the crises. It is, however, hard to argue in which way the market reacts, since, ultimately, the market reaction depends on the view the market participants have on the premium that bidders offer. Considering the scenario that our results suggest a negative influence of regulatory drivers on the market reaction, we could conclude that markets are more pessimistic than the acquirers about the efficiency of strong regulation leading to financial market soundness since in such a scenario markets discount the value that acquirers assigned to strong regulation. Thus, markets would be more concerned about the regulatory costs that the acquirer has to bear.

Hypothesis 6: Market reaction of the bidder’s stock are influenced by regulatory drivers upon a merger announcement in M&A transactions of European banks during the crises.

5 Empirical Analysis: Drivers of Merger Book Value Premium

5.1 Data Description

5.1.1 Sample Selection

The starting point for the sample selection is a list of M&A transactions retrieved from the “Zephyr” database that were announced and completed between April 1, 2007 (start of the SMC) and December 31, 2012. Since the SDC is per definition a European crisis, we limit the sample to banks from EU-27 member states for both the acquirer and the target. Since we want to examine the effect of regulatory variables on the BVPREM, we limit the sample for bidders and targets to a four digit “NACE” code 64.19 (other monetary intermediation) that

refers to credit institutions²² and building societies. Since we are not interested in the market reaction in this part of the research, but only in the drivers of the BVPREM, we do not confine our study to listed targets, but also include unlisted banks in the research sample.

These selection requirements yield a total of 439 deals for the period under scrutiny. By deleting those deals, where no information about the deal value is available on “Zephyr” database, where the deal value is below 1 million EUR,²³ and where the book value of equity is negative, we further limit the sample to 218 deals. Finally, we eliminate deals, where an insufficient amount of accounting information was available from the “Bureau Van Dijk Bankscope”²⁴ database and where either the bidding bank or the target was an insurance company or a building society. As a result, we obtain a sample of 107 deals during the US-SMC and European SDC (see Appendix 1 for a list of the deals included in the full sample).

For the additional data verification process, we follow Hagendorff et al.’s (2010) approach by comparing the deal characteristics from the “Zephyr” database with publicly available news sources from “LexisNexis” and, eventually, adjust the data. Hagendorff et al. (2010) further suggest cleaning the sample from distressed transactions. They define a transaction as distressed when the BVPREM of the deal is below -20%. In our research, we refrain from omitting these transactions in the base line regression model. The financial crises led to a substantial amount of distressed transactions. In our study, we find that 29 out of 107 deals were distressed (i.e. BVPREM less than -20%) among which the most prominent ones were the acquisition of Dresdner Bank by Commerzbank (-27% BVPREM) on August 31, 2008 and the acquisition of Fortis by BNP Paribas (-50% BVPREM) on March 7, 2009. Our baseline analysis investigates the factors that explain the discounts in distressed bank M&A transactions. In a second sample, we clean the sample from distressed transactions.

An overview of the sample deals is provided in Table 1. The highest deal density could be observed in the beginning of the financial crises and strongly declined after 2008, the year in which Lehman Brothers filed for Chapter 11 bankruptcy protection. Surprisingly, a high number of buyers came from Italy and Spain; countries that were among the ones strongest hit by the financial crises. One has to add in this context, however, that between 2000 and 2008 the number of monetary financial institutions in Spain and Italy only decreased by -6.5% and

²² A credit institution is any institution falling under the definition contained in the Banking Coordination Directive 2000/12/EC of March 20, 2000, as amended by Directive 2000/28/EC of September 18, 2000, namely “a) an undertaking whose business is to receive deposits and or other repayable funds from the public or to grant credits for its own account; or b) an electronic money institution within the meaning of directive 2000/46/EC of the European Parliament of September 18, 2000” (www.ecb.int).

²³ Beitel et al. (2004) use a 100 million USD threshold. Due to the limited amount of deals that took place between 2007 and 2012 we had to apply a lower threshold in order to reach a substantial amount of data.

²⁴ If not differently specified, all accounting data mentioned in this study are taken from the “Bureau Van Dijk Bankscope” database.

-6% respectively versus an EU-12²⁵ average of -26% (Fiordelisis, 2009). Thus, the two markets were still relatively unconsolidated by 2008. The majority of targets were listed banks (65/107), and 39 deals were cross-border transactions. In addition, during the financial crises buyers only came from 15 out of the 27 EU member states, while the majority of buyers came from countries with the strongest economic power, i.e. highest GDP in the EU (see Eurostat database for an overview of GDP in the EU-27).

Table 1 Number of Deals in BVPREM Study – Breakdown by Country and Year

	Full Sample	Listed Target	Cross-Border
Breakdown by Country of the Acquirer			
Belgium	3	0	1
Cyprus	2	2	2
Denmark	6	4	1
France	21	12	13
Germany	12	6	2
Greece	6	3	3
Italy	25	12	3
Latvia	2	2	0
Netherlands	2	2	1
Poland	3	2	0
Portugal	2	2	0
Slovenia	2	2	0
Spain	12	11	4
Sweden	4	2	4
United Kingdom	5	3	5
Breakdown by Year			
2007	20	13	6
2008	32	19	11
2009	18	9	11
2010	11	6	2
2011	13	8	4
2012	13	10	5
Total	107	65	39

Table 1 shows a breakdown of deals for the BVPREM study by country of origin of the acquiring institution as well as by announcement year for the full sample, the sample of listed targets, and the cross-border deals. For an overview of the single different deals included in the full sample see Appendix 1.

²⁵ The EU-12 comprises: Belgium, Denmark, France, Germany, Greece, Ireland, Italy, Luxembourg, Netherlands, Portugal, Spain, and United Kingdom.

Table 2 Geographic Deal Distribution - BVPREM Study

Target Country	Country of Bidders														
	BE	CY	DE	DK	ES	FR	GR	IT	LV	NL	PL	PT	SE	SL	UK
AT								1							
BE	2					2									
CY															1
DE			10					1							
DK				5									2		
ES					8	4									
FR						8									
GR		1				3	3								
IT			1		1			22							
LT				1									1		
LU			1			2									
LV									2				1		
NL						1				1					
PL					1					1	3				
PT					1	1						2			
RO		1					3								
SK	1														
SL								1						2	
UK					1										4

Table 2 shows the geographic distribution of acquirers and targets for the full sample. Variables are defined as: AT=Austria, BE=Belgium, CY=Cyprus, DE=Germany, DK=Denmark, ES=Spain, FR=France, GR=Greece, IT=Italy, LT=Lithuania, LU=Luxembourg, LV=Latvia, NL=Netherlands, PL=Poland, PT=Portugal, RO=Romania, SE=Sweden, SK=Slovak Republic, SL=Slovenia, UK=United Kingdom. For an overview of the single different deals included in the full sample see Appendix 1.

Table 2 summarizes the geographic deal distribution for the full sample. While Italian and German banks predominantly acquired stakes in banks from their home market (22 out of 25 and, respectively, 10 out of 12 transactions were domestic), the French banks, in comparison, distributed their targets among 7 different countries.

An overview of comparative deal statistics is provided in Table 3. The average deal value (the purchase price) in the sample is 1,068.7 million EUR. It is evident that after 2008 not only the number of M&A transactions declined steeply (see Table 1) but also that the average deal value declined strongly from around 1,039.4 million EUR in 2008 to 515.6 million EUR in 2009. In 2012, the average deal value further declined to merely 245.9 million EUR. Table 3 further provides comparative statistics for the acquired stake in the targets. While the average stake over the entire sample is 48.3%, the values in the respective years appear to fluctuate around the mean with particularly high values in 2010 (60.1%) and 2011 (62.0%). Thus, over the entire sample period, the average (and also the median) acquirer reached a substantial stake in their respective target. Overall, our results suggest a worsening of the

bank M&A situation in Europe over the sample period with a particular decline in transactions and average deal value after 2008.

Table 3 Deal Characteristics - BVPREM Study

	Sample	2007	2008	2009	2010	2011	2012
Deal Value (EUR mn.)							
Mean	1,068.7	2,818.4	1,039.4	515.6	428.3	579.4	245.9
Min	1.0	56.6	12.3	6.5	19.0	5.0	1.0
Median	150.3	505.3	104.3	99.1	312.7	109.2	37.1
Max	21,839.6	21,839.6	16,366.2	4,119.7	1,205.0	3,941.9	2,420.8
Stake acquired							
Mean	48.3%	56.3%	39.4%	42.7%	60.1%	62.0%	42.1%
Min	1.0%	1.3%	1.0%	3.0%	1.0%	4.0%	2.2%
Median	35.5%	52.7%	30.4%	20.0%	68.3%	95.0%	95.0%
Max	100%	100%	100%	100%	100%	100%	100%

Table 3 shows descriptive statistics on the deal value and the acquired stake for the full sample in the BVPREM study over the total six years and on a yearly basis. Deal Value refers to the price paid by the acquirer for the stake acquired in the target. Stake acquired refers to the percentage in the target that was bought by the acquirer. For an overview of the single different deals included in the full sample see Appendix 1.

5.1.2 Variable Selection and Description

5.1.2.1 Dependent Variable: Merger Book Value Premium

The dependent variable in our research is the percentage merger book value premium (BVPREM), the purchase price over the book value of equity of the target as of the financial statement in the fiscal year prior to the announcement date:

$$BVPREM_t = \left(\frac{Deal\ Value_t}{s * BV(Equity)_{t-1}} - 1 \right) * 100$$

The variable *s* refers to the stake acquired in the target by the bidder. *BV* refers to the book value in the fiscal year prior to the announcement date. The index *t*, thus, stands for the fiscal year in which the acquisition was announced. We use the fiscal year end prior to the announcement as the basis for the independent variables, as well.

The obvious limitation of this approach is that the book value of equity is an imperfect measure of economic value (Hagendorff et al., 2010). Since non-listed banks are included in the research sample and, by definition, there are no market values available for those institutions, an approximation for the market value has to be implemented. The book value of equity is an accepted approximation for the market value in a bank acquisition context (e.g. Brewer III et al., 2000; Diaz and Azofra, 2009; Hakes et al., 1997; Palia, 1993). The reason for its widespread use is that the majority of the assets and liabilities of banks are either short-

term (book value is likely to be close to economic value) or are repriced frequently (Hagendorff et al., 2010). Furthermore, assets of banks are often marked to market and depreciation that can have a big impact for manufacturing firms and would deflate the book value of equity is often of negligible size for financial institutions (Damodaran, 2002).

Table 4 Descriptive Statistics BVPREM Study – Full Sample and Excl. Distressed Sample

Variables Full Sample	n	Mean	SD	Min	25%- Quartile	Median	75%- Quartile	Max
BVPREM (%)	107	70.98	173.06	-99.61	-27.64	27.23	107.37	1066.18
HHI	107	6.89	4.53	1.78	3.28	5.23	10.96	19.28
TGDPGROWTH (%)	107	2.25	1.61	-0.06	1.20	1.78	3.39	7.64
RELSIZE	107	2.01	5.61	1.00	1.02	1.08	1.30	55.95
REG_STRENGTH	107	8.76	1.32	7.00	7.00	9.00	10.00	11.00
DEP_INS	107	1.21	0.70	0.00	1.00	1.00	2.00	3.00
SHPROTECT	103	23.19	10.14	11.42	12.21	24.79	29.20	42.16
ROE (%)	107	2.74	28.11	-232.64	1.60	7.50	14.30	38.46
RISK (%)	107	10.32	23.24	0.18	2.02	4.12	8.52	216.75
LEV (%)	107	7.77	6.17	1.08	3.90	6.83	9.24	51.78
COVROE (%)	106	1153.08	11467.20	-171.41	-2.68	2.07	15.08	118094.46
ASSETDIV	107	0.18	0.51	-155.95	-4.18	13.46	42.17	139.43
TAGRWTH (%)	107	12.75	39.10	-32.89	-0.05	6.73	12.88	344.15
CONTROL (dummy)	107	0.47						
CROSSB (dummy)	107	0.36						
SAVING (dummy)	107	0.10						
LISTED (dummy)	107	0.61						

Variables Excl. Distressed Sample	n	Mean	SD	Min	25%- Quartile	Median	75%- Quartile	Max
BVPREM (%)	75	86.45	90.26	-19.06	22.16	57.95	145.63	386.75
HHI	75	6.39	3.98	1.78	3.23	5.09	9.63	19.28
TGDPGROWTH (%)	75	2.35	1.61	-0.06	1.20	1.92	3.52	7.06
RELSIZE	75	1.95	6.33	1.00	1.02	1.08	1.26	55.95
REG_STRENGTH	75	8.69	1.38	7.00	7.00	9.00	10.00	11.00
DEP_INS	75	1.27	0.66	0.00	1.00	1.00	2.00	3.00
SHPROTECT	72	22.23	9.72	11.42	11.42	23.93	29.20	42.16
ROE (%)	75	6.91	13.42	-47.09	4.04	10.01	14.80	25.47
RISK (%)	75	7.49	9.84	0.18	1.79	4.05	7.00	46.00
LEV (%)	75	8.28	6.39	1.08	5.51	7.59	9.78	51.78
COVROE (%)	75	40.10	136.81	-171.41	-2.58	1.20	8.35	787.40
ASSETDIV	75	0.20	0.53	-1.56	-0.01	0.13	0.53	1.30
TAGRWTH (%)	75	11.26	21.06	-18.67	1.31	7.45	14.61	107.30
CONTROL (dummy)	75	0.43						
CROSSB (dummy)	75	0.33						
SAVING (dummy)	75	0.13						
LISTED (dummy)	75	0.63						

Table 4 shows descriptive statistics of the full sample and the excl. distressed sample (deals paying a BVPREM below -20%) for the variables used in the BVPREM study. The variable SHPROTECT only has 103 observations since there were no data on shareholder protection for Slovenia and Cyprus. Further, due to the lack of accounting data availability a covariance of ROE for the Paris-Oléans/Concordia deal could not be calculated. The variables are defined in Appendix 2. The mean values for the dummy variables show the percentage of deals that take the value 1 for the respective dummy.

Despite the ability to consider non-listed banks in the sample through the BVPREM approach, it also prevents from incorporating anticipated takeover premium in the price on a discounted value basis. This component of a bank's price can be of particular substance for those banks that have long been regarded as takeover targets (Hagendorff et al. 2010). Table 4

shows descriptive statistics for the variable BVPREM for the full sample and the sample excluding distressed transaction (excl. distressed sample).²⁶ The average BVPREM for the full sample is 70.98% ranging between -99.61% and 1066.18%. The mean BVPREM for the excl. distressed sample is 86.45% and ranges between -19.06% and 386.75%.

5.1.2.2 Independent Variables

5.1.2.2.1 Regulatory Variables

The regulatory strength index (REG_STRENGTH) that we compose for our study proxies for the existence and strength of supervisory elements for the different jurisdictions of the EU-27 member countries. Hagendorff et al. (2010) base their index of regulatory strength on the Buch and Delong (2008) index that is based on data from Barth et al. (2001). For our study, we use the more recent database from the Bank Regulation and Supervision Survey that was conducted and published by the World Bank (2011). It is based on the information provided by the regulatory bodies of the participating states.²⁷ Broadly speaking, the index covers disclosure requirements for banks, the ability of the regulator to require additional capital from banks that is above the regulatory minimum requirements, definitions of non-performing loans, the ability of the supervisory body to impose sanctions on the bank or the managers, the ability of the supervisory body to interfere in the operations of the bank, and the ability to limit the rights of the owners.²⁸ The final index is an equally weighted measure of the twelve distinct inputs and can, consequently, take values between 0 and 12. Higher values proxy for a stricter supervisory environment, less flexibility in managing the bank, and ultimately for higher regulatory costs that the shareholders have to bear. Descriptive statistics for REG_STRENGTH are presented in Table 4. The index ranges between 7 and 11 with a mean value for the full sample of 8.76.

The deposit insurance index (DEP_INS) that we compose for our study is also based on the World Bank (2011) dataset. The index reflects the design, strength, and associated costs of the different deposit insurance systems across the sample countries.²⁹ While all EU member states have a mandatory deposit insurance system, the index varies in terms of the risk adjustment of deposit insurance, the requirement for co-insurance, and the existence of an ex-

²⁶ We follow the approach of Hagendorff et al. (2010) who define distressed transaction as those deals where the BVPREM is less than -20%. We also eliminate three transactions from the excl. distressed sample (BNP Paribas Private Bank buying Insinger de Beaufort Holdings; Arbuthnot Banking Group buying Secure Trust Bank; Noble Bank buying Getin Bank) that have extremely high BVPREM (1066%;860%;757%).

²⁷ For further details on the survey see the paper by Cihak et al. (2012).

²⁸ A detailed overview is provided in Appendix 3.

²⁹ See Appendix 4 for a detailed overview.

ante reserve to cover deposit insurance claims. The index we compose varies between 0 and 3 with a mean value of 1.21 (Table 4). Larger index values are proxies for a stricter and more costly deposit insurance system.

The shareholder protection index (SHPROTECT) is based on the data provided by Djankov et al. (2008). The index is a proxy for the degree of outsider protection against opportunistic insider behaviour. The index, thus, addresses the principle-agent conflict within organisations (Shleifer and Vishny, 1997). Six different provisions that jurisdictions could provide in order to improve the power of company outsiders are the preliminary basis for the composition of the index.³⁰ This preliminary value may, therefore, vary between 0 and 6 with higher values implying more power for outsiders. As discussed above, a more shareholder oriented system can have decisive consequences for a merger valuation. In some cases, a stricter enforcement of the law may substitute for weaker outsider protection, while a low enforcement may disperse strong codified shareholder protection (La Porta et al. 1998). Therefore, we follow Hagendorff et al.'s (2010) approach by multiplying the preliminary shareholder protection score with the World Bank Rule of Law Index³¹ (rebased such that it varies between 0 and 10) in order to account for the degree of enforceability of contracts (also see Rossi and Volpin, 2004). The result of the multiplication constitutes the SHPROTECT index, which can, consequently, vary between 0 and 60. Table 4 shows summary statistics for SHPROTECT. Looking at Appendix 5 that shows the SHPROTECT index on a per-country basis, we observe a high dispersion in index values.

5.1.2.2.2 Deal-Related and Financial Variables

In order to control for other drivers that may influence the BVPREM in M&A deals and that were identified in the literature review, we control for deal-related and financial variables of the bidder in our analysis. The basis for the variable selection is the variables implemented by Hagendorff et al. (2010) which are in line with the factors that were identified in the literature review above. Just like the regulatory variables, deal-related and financial data always relate to the fiscal year end prior to the announcement date of the transaction.

With respect to the deal-related variables, the following variables are included: The Hirschman-Herfindahl Index (HHI) measures the degree of market concentration, with reference to the country in which the target is headquartered. The most recent index for the

³⁰ See Appendix 5 for a detailed presentation.

³¹ See Appendix 5.

EU-27 countries for the years between 2006 and 2011 was obtained from the European Central Bank (ECB) and is displayed in Appendix 6. The index value can range from $1/n$ to 1, where n is the number of market participants. The value 1, consequently, represents a monopoly. The index is ultimately only an imprecise proxy since its inclusion assumes that the target is only operating in the country where it is headquartered. The dummy variable CONTROL indicates whether the acquisition involves a change of control over the target. Following Hernando et al. (2009), the control threshold is crossed for non-listed banks when the bidder has a stake larger or equal to 20% in the target. For listed banks, we apply the mandatory bid rule (MBR) EU directive (EU Directive 2004/25/EC.) that is applicable in the respective target country. Despite its actual aim of protecting minority shareholders, the MBR also reflects a point of change of control as defined by the regulators. The CONTROL variable for listed targets, thus, takes the value 1, if the MBR-threshold is crossed after the completion of the transaction. The MBRs applicable to the target country are taken from Nenova (2006). In case the MBR data for a particular country was unavailable, we used the 20% threshold for non-listed banks as a proxy.³² The dummy variable CROSSB takes the value 1 if the target's and the bidder's headquarters are located in different countries and 0 otherwise. To control for the growth opportunities in the targets' headquarter location (assuming that the country the target is chartered in is the country where the main revenue sources are located) the variable TGDPGROWTH is added to the regression. The variable indicates the historic GDP growth on a compounded basis. We assume that the historic GDP growth is a good proxy for the future. A potentially marginally decreasing GDP growth is disregarded in this context. The historic growth rates are taken from Eurostat and are included on a compounded basis since 2003. In order to proxy for the easiness of integration of a target and for the potential aim of reaching a "too-big-to-fail" status, we include the variable RELSIZE in the regression that proxies for the relative size of assets of the target:

$$RELSIZE = \frac{Total\ Assets_{Target} + Total\ Assets_{Bidder}}{Total\ Assets_{Bidder}}$$

Lastly, LISTED is a binary variable that takes the value 1 if a target is listed on a stock exchange and 0 otherwise. The variable is included to control for a potential information availability surplus for listed banks over unlisted banks.

In addition to the deal-related variables, the following financial variables of the target are included in the sample. ROE is the average return on average equity over a maximum of three

³² See Appendix 7 for a detailed overview of MBR thresholds for the different countries included in the samples.

years (depending on the data availability) preceding the deal announcement. The variable is included in order to proxy for the expected future cash flows of the target (Hagendorff et al., 2010), assuming historic ROE growth is a good proxy for the future growth. The variable RISK is a measure for the risk of returns of the target and is proxied by the standard deviation of roe in the (maximum) three years prior to the merger announcement. LEV is a variable that proxies for the leverage of the target in the fiscal year before the announcement of the acquisition. The variable is defined as:

$$LEV = \frac{Total\ Equity_{Target}}{Total\ Assets_{Target}}$$

Thus, a high variable value indicates that the target has a high degree of equity capitalisation. The variable is of particular interest due to the introduction of the mandatory 3% non-risk-weighted leverage ratio in Basel III that is defined by the regulatory authority as:³³

$$Basel\ III\ Leverage\ Ratio = \frac{Tier\ 1\ Equity\ Capital}{Total\ Assets}$$

The leverage ratio implemented in our research is a good proxy for the Basel III Leverage Ratio with the difference relating to the definition of equity. Just like Hagendorff et al. (2010), we follow Benston et al. (1995) and proxy the conflicting diversification hypothesis and the deposit insurance put option hypothesis with the variable COVROE which is the covariance between the roe of the bidder and the roe of the target for the three years prior to the announcement date. The variable TAGRWTH proxies for the expected future growth of the market (not necessarily local market) the target is operating in. It is defined as the compounded growth of the target's total assets in the three fiscal pre-merger announcement years. It is, therefore, assumed that asset growth proxies historic market growth and, further, that it is a good proxy for the future market growth. The variable ASSETDIV should proxy for the difference between the bidder and the target in the focus on the core deposit taking and lending activities:

$$ASSETDIV = \left[1 - \left(\frac{Net\ Loans_{Acquirer} - Other\ Earning\ Assets_{Acquirer}}{Total\ Earning\ Assets_{Acquirer}} \right) \right] - \left[1 - \left(\frac{Net\ Loans_{Target} - Other\ Earning\ Assets_{Target}}{Total\ Earning\ Assets_{Target}} \right) \right]$$

³³ Basel Committee on Banking Supervision (2011).

Total Earning Assets equal Net Loans plus Other Earning Assets. The index takes the value 0 if the acquirer and the target have the same focus of activity. The index takes the value -2 if the acquirer is completely focused on lending activities while the target is completely focused on other activities. The index takes the value 2 if the relation is inverted. Thus, the index can take values between -2 and 2. Lastly, we include the dummy variable SAVING that takes the value 1 if the target is a savings bank and 0 otherwise. The variable is a proxy for the degree of available deposit financing. It is included because the business model of a savings bank consists primarily of deposit taking and lending. Especially due to the stricter regulatory guidelines with respect to stable funding and due to the experience of dried up funding liquidity during the crises, this variable can be of particular interest during the sample period under scrutiny. According to Huang and Ratnovski (2011), deposits are sluggish in nature since they are insured by the government and since withdrawals are mostly motivated by predictable liquidity needs. Thus, deposits can be considered a stable source of funding that is, however, tied to the local markets the bank is operating in. Summary statistics of all variables for both the full sample and the excl. distressed sample are available in Table 4.

5.2 Descriptive Analysis

This section provides first findings for the relation between the regulatory variables, the geographic scope of a transaction, the leverage of the target company, the year in which the transaction took place and the BVPREM.

Table 5 presents the results of the descriptive analysis. The table contains the mean and median BVPREM for the transactions that have a variable value that is above and below the median of the respective independent variable. For the analysis of the deposit insurance variable, we subdivide the variables into those deals that have an index value of 0 or 1 and those that have a value of 2 or 3. Significance is measured using T-tests.

For the shareholder protection variable, the results show significant lower BVPREM for transactions with above median outsider protection. We, thus, find evidence that low shareholder protection regimes show higher BVPREM and will further scrutinize this result in the forthcoming sections.

The regulatory strength variable shows a significant difference for the excl. distressed sample between the mean BVPREM for above median regulatory strength transactions and for the ones below the median. The results indicate that bidders paid on average a 48.3pp higher BVPREM for targets which headquarter is located in an EU jurisdiction where the

regulatory strength is above the sample median. Again, we further need to scrutinize on this result. Looking at the median value, for example, we find that the difference between above median and below median values is much lower.

For the deposit insurance variable, the results for the full sample indicate that buyers pay significantly higher premiums (46.4pp) for targets that are chartered in countries where the deposit insurance is low. For the deposit insurance we, therefore, find first evidence that acquirers rather place emphasis on the costs of a strict deposit insurance system than the potential stabilization benefits.

Summarizing the findings for the regulatory variables in the descriptive analysis, we discover that the sample deals show higher BVPREM for strong regulation, weak deposit insurance systems, and low shareholder protection systems. A more comprehensive multivariate analysis is provided in later sections in order to advance the first evidence provided by the descriptive analysis.

Further analysis is conducted on the geographic scope of the transaction. We find a significant result for the excl. distressed sample. The data indicates that acquirers are willing to pay a 28.3pp higher BVPREM for domestic transactions than for cross-border deals. The results for the geographic scope provides first evidence for the cost cutting hypothesis in domestic transactions (Hagendorff et al., 2010), which claims that bidders are willing to pay a premium for domestic targets since cutting cost at the target is easier in domestic transactions due to easier restructuring processes when buying a domestic bank. The opposing view that suggests higher BVPREM for cross-border deals (e.g. Shawky et al., 1996) due to a potentially low correlation of cost and income between different geographies appears not to be confirmed by the descriptive analysis. A binary cross-border variable may, however, proxy for several differences between two countries that could influence the BVPREM. Thus, a more comprehensive interpretation of the variable will only be possible after the multivariate analysis, where we apply regression analysis in order to control for correlation between the different independent variables. The results for the analysis of the leverage of the target are insignificant.

Finally, some attention is placed on the BVPREM for the different transaction years at the bottom of Table 6. There is a trend towards falling book value premiums over the years for both samples. This trend is an explicit reflection of the deepening of the financial crises in Europe and should, therefore, also be considered in the multivariate analysis.

Table 5 BVPREM (% unless differently specified) by acquisition characteristics – BVPREM Study

Full Sample		Mean	Median	n	Excl. Distressed		Mean	Median	n
Sh. Protection	Below Median	110.0	72.0	51	Sh.	Below Median	125.6	123.4	36
	Above Median	37.7	20.0	48	Protection	Above Median	54.5	27.8	32
	Difference (pp)	72.3 **	52.1			Difference (pp)	71.1 ***	95.6	
Regulat. Strength	Below Median	57.2	29.8	41	Regulat.	Below Median	62.4	55.9	32
	Above Median	64.6	26.7	47	Strength	Above Median	110.7	79.6	34
	Difference (pp)	-7.4	3.1			Difference (pp)	-48.3 ***	-23.7	
Deposit Insurance	0 or 1	85.3	29.1	74	Deposit	0 or 1	87.9	57.3	52
	2 or 3	38.9	20.6	33	Insurance	2 or 3	83.3	58.0	23
	Difference (pp)	46.4 **	8.5			Difference (pp)	4.6	-0.6	
Geogr. Scope	Domestic	66.1	29.3	68	Geogr.	Domestic	95.9	64.8	50
	Cross Border	79.5	24.0	39	Scope	Cross Border	67.6	37.9	25
	Difference (pp)	-13.3	5.3			Difference (pp)	28.3 **	26.9	
Leverage	Below Median	69.3	0.9	53	Leverage	Below Median	92.8	71.7	37
	Above Median	73.3	30.4	53		Above Median	82.1	57.1	37
	Difference (pp)	-4.0	-29.4			Difference (pp)	10.7	14.6	
Year	2007	97.5	111.5	20	Year	2007	125.3	123.5	17
	2008	84.2	24.7	32		2008	88.4	54.6	23
	2009	66.1	31.5	18		2009	63.4	60.1	11
	2010	58.5	37.9	11		2010	71.9	47.9	10
	2011	24.2	-13.9	13		2011	78.1	23.9	8
	2012	61.8	7.3	13		2012	46.6	28.3	6
	Sample	71.0	27.2	107		Sample	86.5	57.9	75

*Significant at 10%, **Significant at 5%, ***Significant at 1%. Table 5 displays BVPREM (%) and difference in BVPREM (pp) by acquisition characteristics for the regulatory variables as well as for the geography, the level of leverage of the target, and the year of the transaction. Each category is subdivided in above and below median observations for the respective variable. The table columns present the respective mean and median for the BVPREM of each category. The left side of the table shows the results for the full sample. The right side shows results for the excl. distressed sample.

5.3 Multivariate Analysis

5.3.1 Methodology

We use multivariate OLS regressions to determine the factors that influence the BVPREM in European bank M&A transactions during the US-SMC and the European SDC. In Sections V 3.2 and V 3.3 the following regressions are implemented:

Full Sample (1) and Excl. Distressed Sample (2): BVPREM on deal and financial variables;

Full Sample (3) and Excl. Distressed Sample (4): BVPREM on regulatory, deal, and financial variables;

Full Sample (5) and Excl. Distressed Sample (6): BVPREM on regulatory, deal, and financial variables, including geographic interaction variables;

Full Sample (7) and Excl. Distressed Sample (8): BVPREM on regulatory, deal, and financial variables, using time fixed effects;

Full Sample (9) and Excl. Distressed Sample (10): BVPREM on regulatory, deal, and financial variables, using winsorized variables;

The basic regression design takes the following form (see Hagendorff et al., 2010):

$$BVPREM (\%) = \alpha + \beta_1 DC + \beta_2 TC + \beta_3 REGULAT + \varepsilon$$

DC refers to the deal characteristics that include the following variables: HHI, CONTROL, CROSSB, TGDPRWTH, LISTED, and RELSIZE. TC signifies the target bank financial characteristics and includes the following variables: ROE, RISK, COVROE, LEV, TAGRWTH, ASSETDIV, SAVING. REGULAT refers to the regulatory variables and includes: REG_STRENGTH, DEP_INS, and SHPROTECT (see Appendix 2 for a definition of the variables).

One of the assumptions of OLS regressions is the homoskedasticity of variances of residuals, which is important for the significance testing of the coefficients (Wooldridge, 2005). We, therefore, have to examine whether the variance of the error term in our regression models is heteroskedastic and adjust our regression analyses if necessary. In order to test for heteroskedasticity in the sample, in a first step, graphical evidence is provided. Figure 1 and Figure 2 show the plot of the residuals versus the fitted values for regressions (1) and (2). Figure 1 suggests that the variance of the error term is clearly not homoskedastic, while the evidence from the eyeball test of Figure 2 is less obvious.

Figure 1 Fitted Values and Residuals from Regression (1) – BVPREM Study

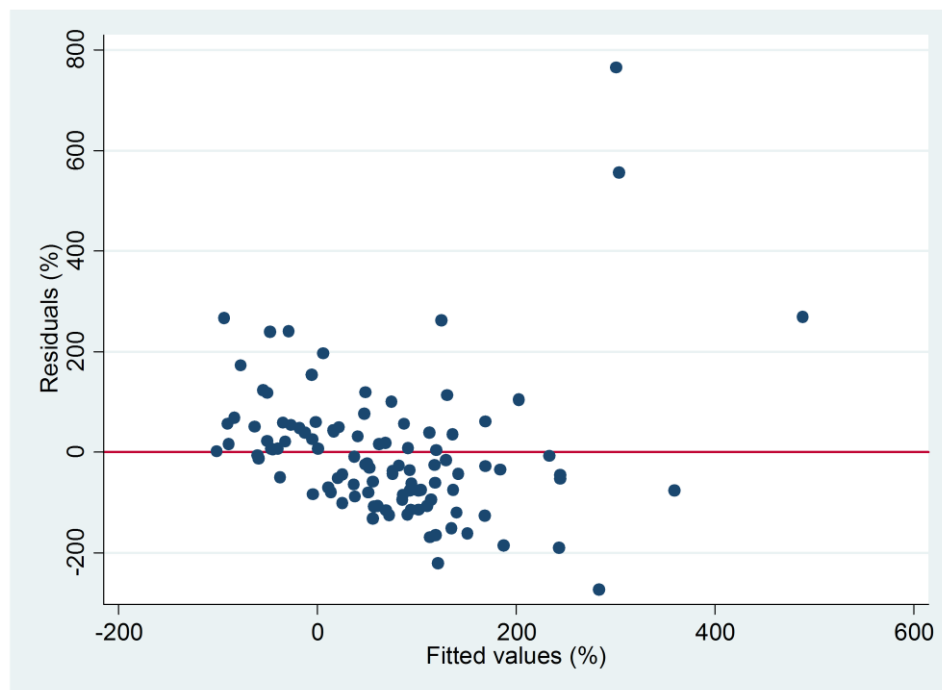


Figure 1 shows the plot of the fitted values and the residuals from regression (1). The plot could indicate potential heteroskedasticity in the sample.

Figure 2 Fitted Values and Residuals from Regression (2) – BVPREM Study

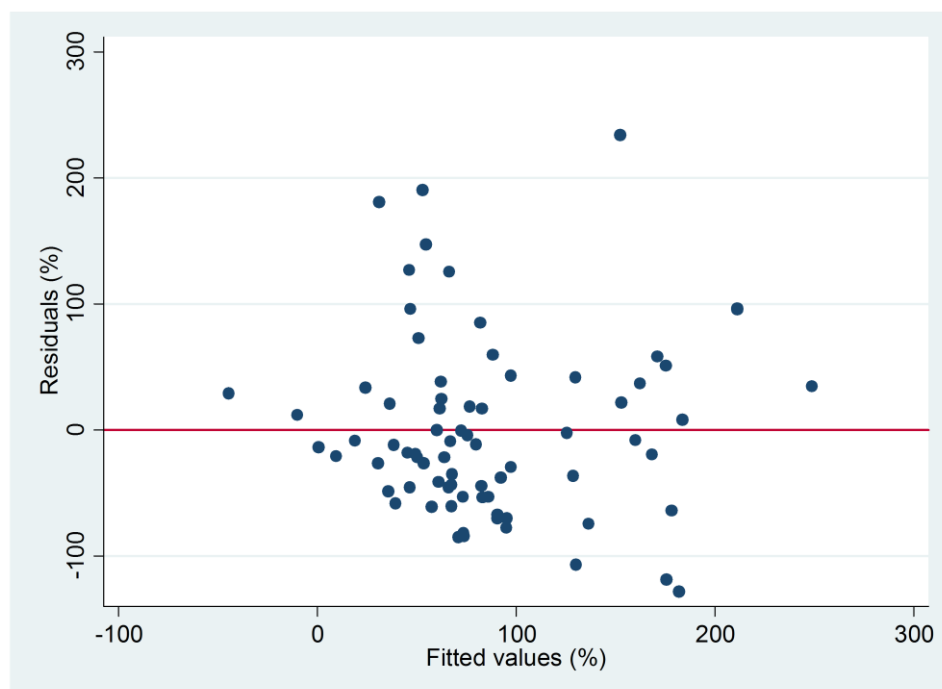


Figure 2 shows the plot of the fitted values and the residuals from regression (2). The plot could indicate potential heteroskedasticity in the sample.

In order to account for the problem, we conduct the Breusch-Pagan/Cook Weisberg test for heteroskedasticity (Breusch and Pagan, 1979) with the H_0 hypothesis of constant variance of the residuals. Table 6 reports the test statistics. We find strong heteroskedasticity in most regression models. The H_0 hypothesis of constant variance must be rejected at a confidence level of 5% for all models except for model (2) and (9). In all regression models except for (2) and (9), the Huber-White heteroskedasticity consistent standard errors were, thus, implemented in order to control for heteroskedasticity in the sample (White, 1980).

Table 6 Breusch-Pagan/Cook-Weisberg Test for Heteroskedasticity – BVPREM Study

Regression Model	$\chi^2(1)$	P-value
(1)	70.61	0.00
(2)	1.67	0.20
(3)	68.06	0.00
(4)	5.69	0.02
(5)	89.82	0.00
(6)	9.61	0.00
(7)	81.8	0.00
(8)	6.97	0.01
(9)	1.52	0.22
(10)	4.35	0.04

Table 6 provides data on the Breusch-Pagan/Cook Weisberg Test for Heteroskedasticity. Column one shows the different regression models, column two provides the chi-square statistic with one degree of freedom. P-values are reported in column three. The null-hypothesis of homoskedasticity is rejected for a P-value smaller 0.05. For a definition of the different regression models refer to Section V 3.1.

Another assumption that is important for hypothesis testing (T-test and P-value) in OLS regressions is that the unobserved error term is normally distributed (Wooldridge, 2005). To test for normality of the error term, we first provide graphic evidence in Figure 3 and Figure 4 by displaying the Kernel Density Estimate (KDE) and a corresponding normal distribution for regressions (1) and (2). The KDE is a non-parametric smoothing approach to establish the probability density function of the residuals from the regression model, which proxy for the unobserved error term and are assumed to be normally distributed in an OLS regression (Parzen, 1962; Rosenblatt, 1956). Looking at the KDE and the corresponding normal distributions, it seems that the underlying error terms for regression (2) are closer to normality than the ones for regression (1). The eyeball test is backed by the Kolmogorov-Smirnov test (Table 7). The test examines whether the error terms of the regression models are standard normal with the H_0 hypothesis of standard normality. For this purpose, we standardized the data on the error term. Using a confidence level of 5%, we can confirm approximate standard

normal distributions of residuals for all regressions except for (1) and (7). For the error terms in regression (1) and (7), we can rely on the central limit theorem (CLT). The CLT states that the average from a random sample for any population with finite variance, when standardized, has an asymptotic normal distribution (Wooldridge, 2005). The CLT works for large sample sizes which have been known to work for samples as small as $N=20$ (Wooldridge, 2005). Due to our sample size, we, thus, assume approximate normality for the error terms in (1) and (7).

Figure 3 Kernel Density Estimate of Regression (1) – BVPREM Study

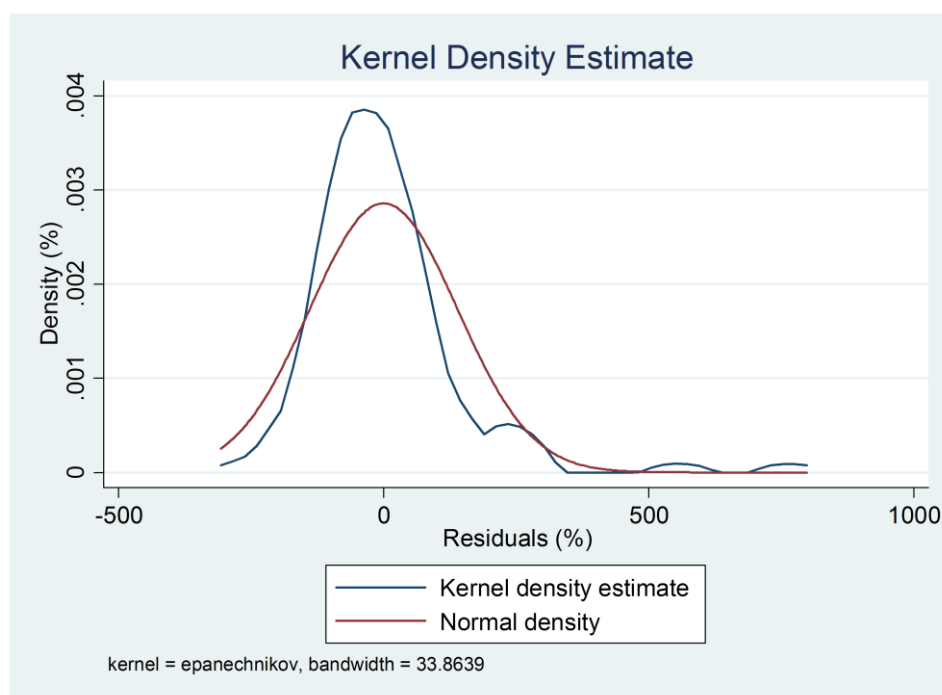


Figure 3 shows the Kernel density estimate of the residuals from regression (1). Further, the figure displays a corresponding density function of a normal distribution. An automatic smoothing of the curve was applied resulting in a bandwidth of 33.8639. The Kernel smoothing applied is the Epanechnikov kernel.

Figure 4 Kernel Density Estimate of Regression (2) – BVPREM Study

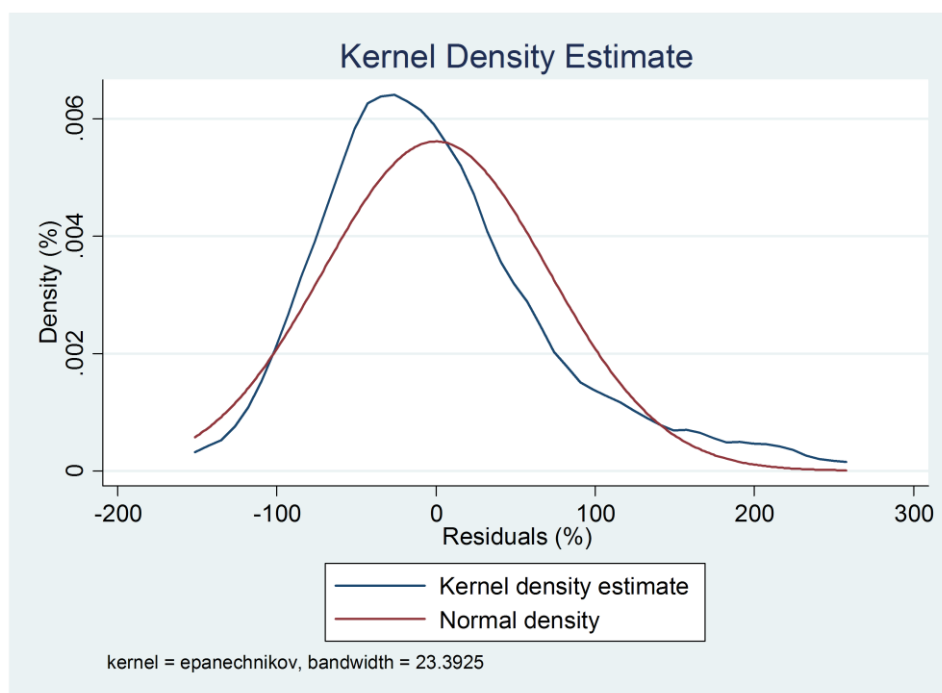


Figure 4 shows the Kernel density estimate of the residuals from regression (2). Further, the figure displays a corresponding density function of a normal distribution. An automatic smoothing of the curve was applied resulting in a bandwidth of 23.3925. The Kernel smoothing applied is the Epanechnikov kernel.

Table 7 Kolmogorov-Smirnov Test for Standard Normality – BVPREM Study

Regression Model	P-value
(1)	0.01
(2)	0.29
(3)	0.06
(4)	0.28
(5)	0.07
(6)	0.46
(7)	0.04
(8)	0.30
(9)	0.22
(10)	0.32

Table 7 provides the P-values for the Kolmogorov-Smirnov Test. The test examines whether the error terms follow a standard normal distribution. The null-hypothesis of standard normality is rejected with a P-value smaller 0.05. For a definition of the different regression models refer to Section V 3.1

In the following section, we present results on regressions (1) to (6). In Section V 3.3, we provide results for the regression models with fixed effects and winsorized data (models (7) to (10)).

5.3.2 Results of Simple Multivariate OLS Regressions

The results for the regressions of the BVPREM on deal and financial characteristics of the target (regressions (1) and (2)) are presented in Table 8. The first column of Table 8 shows the results for the full sample with 106 observations.³⁴ The second column displays the results for the excl. distressed sample with 75 observations. The adjusted R^2 is 0.26 and 0.25 for the full sample and for the excl. distressed sample respectively. A reasonable amount of the variation of BVPREM is, hence, explained by the model inputs.

Table 8 Regression Results for (1) and (2): Deal and Financial Variables – BVPREM Study

Variable	FULL SAMPLE (1)	T-stat	EXCL. DISTRESSED (2)	T-stat
CONTROL	-18.83	(-0.59)	-42.75**	(-2.13)
CROSSB	27.97	(0.62)	-1.78	(-0.06)
HHI	-19.27***	(-2.90)	-6.61**	(-2.17)
TGDPGROWTH	15.10	(0.73)	4.34	(0.48)
RELSIZE	4.31***	(3.59)	1.91	(1.23)
ROE	-0.29	(-0.23)	0.67	(0.67)
RISK	5.78*	(1.96)	3.10*	(1.95)
LEV	5.65**	(2.65)	2.66*	(1.70)
COVROE	-0.01**	(-2.24)	-0.15	(-1.61)
ASSETDIV	-30.02	(-1.01)	-27.10	(-1.41)
TAGRWTH	1.82	(1.17)	-0.90	(-1.61)
SAVING	154.90***	(4.28)	90.88***	(3.04)
LISTED	42.64	(1.21)	-21.33	(-0.97)
ALPHA	9.94	(0.17)	106.50***	(3.07)
N	106		75	
adj. R2	0.26		0.25	

*Significant at 10%, **Significant at 5%, ***Significant at 1%. T-statistics are in parentheses. The table shows the results for the BVPREM regressed on deal related characteristics and the financial characteristics of the target banks for the full sample and the excl. distressed sample. For a definition of the variables see Appendix 2.

First, the deal characteristics are under scrutiny. The dummy variable CONTROL has a significant, negative impact on BVPREM if the deal involves a change of control. While, Beitel et al. (2004) predict a premium for control, it seems counterintuitive that banks discount the BVPREM when taking control over a target. There are, however, some explanations that might be particularly relevant during the financial crises. Taking control could, ultimately, result in higher regulatory scrutiny, and, therefore, so it seems, non-controlling investments were valued higher during the crises. Furthermore, Dyck and Zingales (2004) suggest that taking control of a target may result in legal or reputational costs for the

³⁴ One observation is missing due to one missing data point for the variable COVROE.

acquirer if the target ends up underperforming the expectation or if the bank has hidden risks (e.g. business or legal risks) that were not discovered during the due diligence process. The risk is particularly pronounced in times of financial distress. Thus, it might well be that during the crises acquirers saw a high risk of buying into legal or reputational problems by taking control over the target and adjusted the BVPREM accordingly. The finding is, however, only significant for the excl. distressed sample. One way to rationalize the result is to argue that for distressed deals, acquirers need to have control for the purpose of restructuring the target's business. Acquirers, apparently, valued this option of restructuring higher than the associated legal and reputational risks that are associated with taking control.

The second significant deal characteristic is the HHI variable. The results indicate that for a one percentage point (pp) increase in HHI in the country where the target is chartered (i.e. closer to a monopoly), the BVPREM decreases at 19.27pp for the banks in the full sample. The impact can be high in magnitude. Looking at Appendix 6 for deals in 2011, for example, we can see that the HHI index value for the Netherlands is around four times as high as the equivalent value for the United Kingdom. Therefore, acquiring banks are willing to pay a roughly 77pp higher BVPREM for a bank that is chartered in the United Kingdom than for a bank chartered in the Netherlands. We find justification for this result in Beatty et al. (1987), who argue that a higher competitive landscape, as it is the case for the Netherlands in comparison to the United Kingdom, should be associated with smaller premiums, since the opportunities to expand profits are limited in such a market environment.

RELSIZE is highly significant for the full sample. This result supports the hypothesis of Hagendorff et al. (2010), namely that acquiring larger banks increases the opportunity of synergy potential and further increases the likelihood of becoming "too-big-to-fail". The impact of RELSIZE is significant for the full sample since especially the acquisition of distressed banks should be strongly driven by realizing restructuring and synergy potentials and by the willingness to become a "too-big-to-fail" institution. Our results reflect that the quasi blank cheque given by the European politicians and regulators to European banks apparently incentivised banks to become bigger in size and made them also willing to pay a premium for growing in size.

The variable LEV is significant, positive for both samples. Apparently, acquirers prefer banks with a higher level of equity, which is a stronger value driver for the full sample, the sample that includes distressed deals. The result confirms the high importance of equity capitalisation during the financial crises that was especially amplified by an increase in

regulatory scrutiny. Our findings also support the hypothesis of Hagendorff et al. (2010) that acquirers price the ability to grow or restructure a target with a minimum amount of new equity infusion. The latter was particularly difficult to achieve during the financial crises since equity markets were deflated strongly and there was virtually no appetite among investors to invest in new bank equity. While the variable RISK is significant, positive for both samples the variable COVROE is significant, negative for the excl. distressed sample. This finding is rather supporting the diversification hypothesis, where banks value a low degree of covariance of roe with the target, indicating the diversification potential. The coefficient is, however, very small in magnitude. The fact that this finding is only significant for the excl. distressed sample could indicate that the covariance in roe with banks that were in distress was not considered representative for future operations and was, therefore, not considered relevant by the acquirers for valuation purposes.

Finally, the variable SAVING is significant with coefficients that are high in magnitude. The dummy variable takes the value 1 if the target bank is a savings bank, i.e. a bank whose main business is lending and deposit-taking. While this variable is of a generic character and may potentially proxy for several different characteristics of savings banks, it can be inferred that the high magnitude of the impact of the variable characterizes the need for stable funding during the financial crises that were characterized by low funding liquidity (Acharya et al., 2009). Since deposits are a source of stable funding (Huang and Ratnovski, 2011), banks were willing to pay a high premium in order to prepare for the increased regulatory demands on liquidity coverage and stable funding. The effect is larger for the sample including distressed deals (full sample), since the distressed deals often faced significant restructuring needs, and a larger amount of stable funding could be considered supportive for financing the restructuring plans. The remaining characteristics are insignificant and, thus, did not influence the BVPREM paid by acquirers in European bank M&A transactions during the crises.

Table 9 shows the regression results for the OLS regression including the regulatory variables REG_STRENGTH, DEP_INS, and SHPROTECT (Regressions (3) and (4)). There are 102 observations for the full sample and 72 observations for the excl. distressed sample with an adjusted R^2 of 0.26 and 0.33 respectively.

Table 9 Regression Results for (3) and (4): Deal, Financial, and Regulatory Variables – BVPREM Study

Variable	FULL SAMPLE (3)	T-stat	EXCL. DISTRESSED (4)	T-stat
CONTROL	-10.49	(-0.33)	-44.80**	(-2.44)
CROSSB	39.57	(0.69)	-0.12	(-0.00)
HHI	-21.23**	(-2.89)	-4.44	(-1.38)
TGDPGROWTH	11.08	(0.51)	6.08	(0.57)
RELSIZE	4.03***	(3.13)	0.75	(1.02)
ROE	-0.50	(-0.34)	1.72**	(2.04)
RISK	5.61*	(1.92)	2.86*	(1.99)
LEV	5.03***	(2.69)	2.65	(1.51)
COVROE	-0.01**	(-2.17)	-0.09	(-1.14)
ASSETDIV	-38.13	(-1.26)	-18.05	(-0.60)
TAGRWTH	1.79**	(0.90)	-1.53***	(-3.17)
SAVING	151.00***	(3.46)	61.64*	(1.92)
LISTED	45.65	(1.18)	-3.44	(-0.18)
REG_STRENGTH	-22.19*	(-1.94)	-0.14	(-0.02)
DEP_INS	-8.74	(-0.29)	5.60	(0.37)
SHPROTECT	-1.96	(-0.78)	-3.78***	(-3.10)
ALPHA	281.70*	(1.93)	160.50	(1.48)
N	102		72	
adj. R ²	0.26		0.33	

*Significant at 10%, **Significant at 5%, ***Significant at 1%. T-statistics are in parentheses. The table shows the results for the BVPREM regressed on deal related characteristics, the financial characteristics of the target banks, and the regulatory variables for the full sample and the excl. distressed sample. We report 103 observations for the full sample because of 1 missing observation for the variable COVROE and 4 missing observations for the variable SHPROTECT. We report 73 observations for the excl. distressed sample because of 3 missing observations for the variable SHPROTECT. For a definition of the variables see Appendix 2.

With respect to the deal and financial characteristics, the regression models (3) and (4) basically confirm the results from regressions (1) and (2) with the exception of TAGRWTH that is now significant, positive for the full sample and significant, negative for the excl. distressed sample. This conflicting result appears counterintuitive and is further scrutinized in the following regression models. It is, additionally, to be pointed out that for regression (4) ROE now has a significant, positive influence on the BVPREM. This corresponds with the results of Brewer et al. (2000), Hagendorff et al. (2010), and Rose (1991) who also find a significant positive influence of ROE on BVPREM. Despite the changes described, the coefficients and significance levels of the other financial characteristics do not vary remarkably with the regulatory variables included. Therefore, the results can be considered relatively robust at this stage of the analysis.

At the centre of the analysis are the regulatory variables. For the full sample, we find a significant, negative effect of REG_STRENGTH on BVPREM. The coefficient (-22.19)

suggests that strict regulation in the country where the target is chartered was considered more of a cost than a benefit by acquiring banks during the financial crises. This effect was not compensated for by the positive value of a potentially associated increase in soundness of the financial system. In a following regression model, we scrutinize on the difference of this effect in a cross-border and a domestic acquisition context. Another highly significant regulatory characteristic is the SHPROTECT variable with a coefficient of -3.78 for the excl. distressed sample. In light of the results of other studies that argue in favour of a positive influence of shareholder protection on the premium (see e.g. Dyck and Zingales, 2004; Hagendorff et al., 2008), there is need to further rationalize our finding in times of financial turmoil. We argue that a weak investor protection and a weak rule of law are particularly important for acquirers in times of financial distress. Not only does weak outside investor protection give the controlling shareholder the opportunity to expropriate outsiders (e.g. by continuing risky operations and, thus, deflating the value for creditors), but we also argue that in times of financial crises, quick and strong decision making is valued by controlling shareholders without considering potential rights of the minority shareholders. The fact that these effects are only significant for the excl. distressed sample also shows that for distressed targets a stronger shareholder protection and rule of law is considered important due to the already very high level of operational and financial risk that distressed targets typically have.

We present additional regression results that include geographic interaction variables in Table 10. The regressions (5) and (6) include the interaction variables RELSIZE * CROSSB, LEV * CROSSB, REG_STRENGTH * CROSSB, DEP_INS * CROSSB, and SHPROTECT * CROSSB. The inclusion of the interaction variables enables us to test for the potentially different effects of the variables in cross-border acquisitions versus domestic acquisitions. The results in Table 10 display insights on RELSIZE. At a previous stage, we argue that the positive coefficient of RELSIZE indicates the potential intention of a buyer to become a “too-big-to-fail” institution. The effect of RELSIZE, however, becomes highly negative when controlling for cross-border acquisitions. Consequently, we need to differentiate between domestic deals and cross-border deals. In domestic deals acquirers consolidate the national market by buying a domestic institution. Thus, they grow in relevance for the domestic economy and might be considered by the domestic regulator or politicians as “too-big-to-fail.” Such effects are not visible in the data for cross-border acquisitions. We assume that this is partly the case because politicians would rather save national players with public funds than international conglomerates when guided by political motives. The data for RELSIZE in a

cross-border context, thus, supports the concept of a discount for large targets due to the difficulty of integration (Focarelli et al., 2002). This difficulty seems particularly pronounced when acquiring a foreign bank as indicated by the high coefficient.

Table 10 Regression Results for (5) and (6): Deal, Financial, Regulatory, and Geographic Interaction Variables – BVPREM Study

Variable	FULL SAMPLE (5)	T-stat	EXCL. DISTRESSED (6)	T-stat
CONTROL	0.82	(0.02)	-33.20	(-1.61)
CROSSB	159.70	(0.47)	275.70	(1.31)
HHI	-19.77***	(-2.65)	-4.70	(-1.58)
TGDPGROWTH	5.23	(0.24)	9.91	(0.80)
RELSIZE	3.30***	(2.32)	0.86	(1.21)
RELSIZE*CROSSB	-110.90**	(-2.04)	-123.40	(-1.46)
ROE	-0.76	(-0.49)	2.16**	(2.43)
RISK	5.24*	(1.87)	2.86*	(1.83)
LEV	5.84**	(2.63)	3.09**	(2.06)
LEV*CROSSB	-5.39	(-0.71)	-6.03	(-1.62)
COVROE	-0.01**	(-1.99)	-0.054	(-0.71)
ASSETDIV	-45.31	(-1.35)	-35.81	(-1.06)
TAGRWTH	2.27	(1.08)	-1.45**	(-2.24)
SAVING	163.10***	(3.09)	57.96	(1.59)
LISTED	55.52	(1.40)	2.133	(0.09)
REG_STRENGTH	-30.19**	(-2.12)	2.083	(0.23)
REG_STRENGTH*CROSSB	15.46	(0.80)	-13.06	(-0.93)
DEP_INS	48.65	(1.43)	28.62	(1.27)
DEP_INS*CROSSB	-107.70	(-1.33)	-26.33	(-0.72)
SHPROTECT	-3.62	(-1.50)	-4.93***	(-2.97)
SHPROTECT*CROSSB	2.18	(0.44)	2.09	(0.71)
ALPHA	292.00*	(1.83)	114.50	(0.98)
N	102		72	
adj. R ²	0.28		0.34	

*Significant at 10%, **Significant at 5%, ***Significant at 1%. T-statistics are in parentheses. The table shows the results for the BVPREM regressed on deal related, financial, and regulatory characteristics of the target bank and the cross-border interaction variables. The interaction variables allow a detailed differentiation of the variables for domestic and cross-border acquisitions. For a definition of the variables see Appendix 2.

With respect to the regulatory variables, REG_STRENGTH has a significant, negative influence on BVPREM for the domestic mergers in the full sample. The result suggests that in particular for domestic acquisitions, strict regulation is considered a cost for the bank which is not compensated by an associated increase in soundness of the financial system. The fact that the same variable is insignificant in a cross-border acquisition context might reflect the additional source of security that a strong regulatory regime offers to acquirers. This may have been of particularly importance in an international M&A setting of banks in the recent

crises. Furthermore, we argue that bidders acquiring a bank in their own country are familiar with the operations and effectiveness of the regulator and may, therefore, have concluded that the regulatory costs cannot offset the gain in soundness (if any) from stricter regulation. Investors require higher confidence in the due diligence when acquiring a bank abroad. Thus, regulatory strength does not reflect a cost but rather an assurance to acquirers in a cross-border M&A transaction.

The SHPROTECT variable is again significant negative for the excl. distressed sample. The coefficient is not significantly different from zero for the cross-border deals. The results confirm our previous findings, namely that shareholder protection was considered a cost by the acquirer, however, as indicated by the results in Table 10, only in a domestic context. While the result supports our previous argumentation that acquirers value low protection of outside investors, this finding is not true for cross-border deals. For cross-border acquisitions, the rule of law and the legal protection in a foreign jurisdiction might be of higher importance than potential expropriation gains.

The data confirms our results for the leverage variable only in a domestic context. The data on LEV for cross-border deals are insignificant. Again, confidence in the reporting quality and insights on the assertiveness of the regulator in a domestic context appear to drive the results.

Our results, therefore, suggest that regulatory variables have particular influence on prices in a domestic acquisition context during the financial crises. We find that regulatory variables that proxy for an increase in soundness of a financial system are not value-deflating in cross-border acquisition. For the same variables the associated regulatory costs seem to dominate when pricing a target in a domestic acquisition.

5.3.3 Fixed Effect and Winsorized Regressions

From the summary of events during the financial crises, we can infer that the crises changed in severity during the course of the six years covered in this study. Since panel data of transactions that happened at different point in time during the mentioned sample period are used in our research, time fixed effects are implemented to control for time-specific factors like differences in interest rates and the severity of the financial crises over the different years, potentially affecting BVPREM (Demirguc-Kunt et al., 2010). Despite having observed a difference in severity of the financial crises in different countries, country fixed effects are

disregarded, since many variables (GDP, HHI, REG_STRENGTH, DEP_INS, SHPROTECT) are already country specific.

Table 11 Regression Results for (7) and (8): Deal, Financial, and Regulatory Variables with Time Fixed Effects – BVPREM Study

Variable	FULL SAMPLE (7)	T-stat	EXCL. DISTRESSED (8)	T-stat
CONTROL	-13.33	(-0.37)	-56.50**	(-2.51)
CROSSB	33.33	(0.62)	-3.84	(-0.15)
HHI	-21.28**	(-2.48)	-3.43	(-1.08)
TGDPGROWTH	14.48	(0.67)	6.65	(0.63)
RELSIZE	3.67**	(2.07)	0.07	(0.10)
ROE	-0.61	(-0.41)	1.53	(1.61)
RISK	5.96*	(1.75)	2.68*	(1.87)
LEV	4.91**	(2.38)	2.32	(1.26)
COVROE	-0.01**	(-2.00)	-0.05	(-0.54)
ASSETDIV	-34.18	(-0.99)	-21.32	(-0.70)
TAGRWTH	1.79	(0.90)	-1.58***	(-3.15)
SAVING	149.70***	(3.07)	63.58*	(1.90)
LISTED	39.36	(1.01)	-7.17	(-0.29)
REG_STRENGTH	-23.36*	(-1.99)	-4.49	(-0.54)
DEP_INS	-12.42	(-0.42)	0.70	(0.05)
SHPROTECT	-1.89	(-0.69)	-4.05***	(-3.13)
2008	-21.74	(-0.44)	-25.91	(-0.90)
2009	-43.22	(-0.81)	-22.30	(-0.64)
2010	-12.12	(-0.22)	-15.38	(-0.38)
2011	-39.29	(-0.83)	-51.03	(-1.09)
2012	6.71	(0.09)	-75.11**	(-2.26)
CONS	312.60**	(2.02)	242.70**	(2.42)
N	102		72	
adj. R ²	0.22		0.32	

*Significant at 10%, **Significant at 5%, ***Significant at 1%. T-statistics are in parentheses. The table shows the regression results for BVPREM regressed on deal related, financial, and regulatory characteristics of the target bank using time fixed effects. 2007 is omitted due to collinearity. For a definition of the variables see Appendix 2.

Table 11 shows the results for the time fixed effect regression (7) and (8) with 2007 omitted due to collinearity. With respect to the full sample, no material differences can be found in comparison to the previous analysis. Looking at the excl. distressed sample, the only material difference can be accounted for the fixed effect in 2012 that is significant, with a coefficient of -75.11. One possible explanation is that 2012 might have been a particularly bad year for merger premiums in Europe, since doubts concerning the stability of the Euro were sparked again by Spain asking for a bailout by the European Stability Mechanism.

In Appendix 8, a partial regression plot is provided for the different independent variables of the regression. The graphs show the relation between the independent and the dependent

variables adjusted for all other predictors in the model. The plotted lines refer to the regression coefficients of the different variables. The graphs reveal that there are strongly outlying data points for many variables with one particularly influential outlier for RELSIZE.³⁵ In order to account for the effect of outlying variables, a winsorized regression was performed with winsorization at the 95% and the 5% percentile. By using this approach, the extreme data points above the 95% percentile and below the 5% percentile are replaced with the respective 95% percentile and 5% percentile values. According to Barnett and Lewis (1984), this approach can be used to limit the influence of extreme values for estimating coefficients. It can, however, only be considered an approximation towards limiting the influence because of the different amount of extreme realisations for the different variables that winsorization does not account for.

An OLS regression with winsorized variables was performed in order to see whether the results change materially after the correction for extreme results. The results are displayed in Table 12. The results reveal material changes for RELSIZE and REG__STRENGTH. We can see that these two variables are particularly fragile to the winsorization process. The coefficient for SHPROTECT becomes now also positive for the full sample

In summary, the results for the time fixed effect regressions and the winsorized regressions basically confirm our previous results. We do not find any material differences for the fixed effect regression. We have to concede, though, that the results for RELSIZE and REG_STRENGTH change after having conducted the winsorization. This finding is revealed by the results in Table 12. Considering the small amount of transactions we are reflecting upon, the results from Table 12 suggest compiling a larger sample that is more robust to extreme values.

³⁵ The outlier refers to the purchase of a 2% equity stake of Banco Comercial PO by Banco Privado Português in 2007.

Table 12 Regression Results for (9) and (10): Winsorized Deal, Financial, and Regulatory Variables – BVPREM Study

Variable	FULL SAMPLE (9)	T-stat	EXCL. DISTRESSED (10)	T-stat
CONTROL	-36.43*	(-1.78)	-40.06**	(-2.28)
CROSSB	11.19	(0.41)	10.20	(0.36)
HHI	-10.89***	(-3.50)	-3.27	(-0.83)
TGDPGROWTH	11.33	(1.20)	4.63	(0.38)
RELSIZE	12.67	(0.55)	-18.88	(-0.57)
ROE	0.69	(0.63)	1.65	(1.25)
RISK	4.14**	(2.57)	2.36	(1.22)
LEV	6.42**	(2.14)	1.36	(0.43)
COVROE	-0.17*	(-1.10)	-0.13	(-1.14)
ASSETDIV	-9.92	(-0.43)	-10.43	(-0.45)
TAGRWTH	-0.68	(-0.75)	-2.22**	(-2.15)
SAVING	117.20***	(3.42)	59.58*	(2.00)
LISTED	18.88	(0.90)	-2.89	(-0.16)
REG_STRENGTH	-9.19	(-1.01)	1.84	(0.17)
DEP_INS	-1.16	(-0.06)	17.52	(0.92)
SHPROTECT	-2.66**	(-2.48)	-3.47**	(-2.42)
ALPHA	150.80	(1.31)	153.00	(0.92)
N	103		72	
adj. R ²	0.27		0.25	

*Significant at 10%, **Significant at 5%, ***Significant at 1%. T-statistics are in parentheses. The table shows the regression results for the winsorized BVPREM regressed on winsorized deal related, financial, and regulatory characteristics of the target bank. Winsorization was conducted at the 95% percentile and at the 5% percentile. For a definition of the variables see Appendix 2.

6 Empirical Analysis: Market Reaction Analysis

6.1 Data Description

6.1.1 Sample Selection

In line with the approach from the BVPREM study, we start the sample selection by collecting a sample of all M&A transactions from the “Zephyr” database that were announced and completed between April 1, 2007 and December 31, 2012. Furthermore, the acquiring companies had to be chartered in an EU-27 member state or in Norway and Switzerland.³⁶ Since we are conducting a market data analysis of the acquirer, the acquiring bank had to be traded on a stock exchange with available market data for a minimum of 252 trading days prior to the announcement day and 20 trading days after the announcement of the transaction. Due to the limited data availability, we do not confine the scope of the target to banks from

³⁶ We expand the sample for Norway and Switzerland due to the data availability problem for traded acquirers during the financial crises. Due to their geographic proximity to the EU-27 countries, we expect banks from Switzerland and Norway to be strongly interconnected with EU-27 banks.

EU-27 countries, as we did in the BVPREM analysis. Targets can further be listed or unlisted. Since we include variables in the market reaction analysis that proxy for operational improvement potential of the target, we follow the approach of Beitel et al. (2004) and require acquirers to reach a post-acquisition equity stake in the target of more than 50% in order to be included in the sample. Lastly, we obligate the acquirer and the target to be credit institutions (“NACE” code 64.19 that includes credit institutions and building societies). These sampling requirements yield a total of 590 M&A deals. We clean the sample for those deals that have a deal value of below 20 million EUR³⁷ or where deal values are unavailable. This approach reduces the sample to 238 transactions. Furthermore, we clean the sample from those transactions where either the buyer or the seller was a building society or an insurance company and where accounting data was unavailable on “Bureau Van Dijk Bankscope” database. Finally, the accounting data was compared with publicly available sources in order to ensure correctness. These last steps yield a final sample of 79 M&A transactions for listed acquirers during the two crises.³⁸

Table 13 provides an overview of the nature of the deals that were covered in the market reaction analysis. The findings for the sample are consistent with the findings from the BVPREM analysis in the previous chapter.³⁹ Again, the banks that are mostly involved in M&A transactions come from Italy, Spain, and France. One reason for the high comparative density of acquirers in these countries (that were heavily hit by the financial crises) might be the availability of relatively cheap targets during the financial turmoil. Just like in the BVPREM study, more than half of the deals took place before 2009. Again, we see the strong decline in deal activity following the Lehman collapse in September 2008. Lastly, it can be pointed out that while in the BVPREM sample around 60% of the targets were listed, this value drops to around 50% in the market reaction analysis sample. However, the percentage of cross-border deals increases from less than 40% to slightly more than 50%. Table 14 provides an overview for the geographic deal distribution. It should be mentioned that since we do not limit the scope of the country of origin for the target to the EU-27 anymore, Table 14 also contains targets coming from Brazil, Morocco, South Africa, Russia, Turkey, Ukraine, and the United States. Despite the fact that we see some acquirers targeting banks chartered in countries outside the EU-27, the bank acquisitions in this sample are still very EU-centric, even if we open the target scope to non EU-27 countries. This stylised fact is surprising in the

³⁷ Beitel et al. (2004) use 100 million USD in deal value or above as a sampling criterion. We reduce the threshold in order to expand the sample size, which is motivated by a small amount of deals during the financial crises.

³⁸ See Appendix 9 for an overview of the deals considered in the market reaction analysis.

³⁹ This is due to the fact that many of the deals covered in the market reaction analysis were also covered in the BVPREM study.

sense that due to the insecurity in the EU-27 countries, one could have assumed acquirers to seek targets outside the EU. This was, however, only very rarely the case. In general, Table 14 displays a geographically well distributed deal scope.

Table 13 Number of Deals in the Market Reaction Analysis - Breakdown by Country of Origin of Acquirer and by Year

	Full Sample	Listed Target	Cross-Border
Breakdown by Country of the Acquirer			
Belgium	4	2	4
Switzerland	1	0	1
Cyprus	1	0	1
Denmark	2	1	0
France	14	7	12
Germany	6	3	2
Greece	3	2	3
Hungary	1	0	1
Italy	20	9	3
Netherlands	1	0	1
Norway	2	0	0
Poland	2	0	1
Spain	15	10	8
Sweden	3	3	3
United Kingdom	4	2	1
Breakdown by Year			
2007	25	11	20
2008	22	13	10
2009	12	4	7
2010	5	2	0
2011	7	5	3
2012	8	4	1
Total	79	39	41

Table 13 shows a breakdown of deals for the market reaction analysis by country of origin of the acquiring institution as well as by announcement year for the full sample, the listed targets, and the cross-border deals. For an overview of the single different deals included in the full sample see Appendix 9.

Table 14 Geographic Deal Distribution – Market Reaction Analysis

Target Country	Country of Bidders														
	BE	CH	CY	DE	DK	ES	FR	GR	HU	IT	NL	NO	PL	SE	UK
AT										1					
BE							1								
BG	1														
BR						1	1								
DE				4						1					
DK					2									2	
ES						7									
FR		1					2								
GR							3								
IT							1			17					
LU				1											
MA							1								
NL							1								
NO												2			
PL						1							1		
RO								1							
RS	1														
RU	2		1				3		1						
SK											1				
SL										1					
TR								2							
UA				1			1						1	1	
UK						1									3
US						5									1

Table 14 shows the geographic distribution of acquirers and targets in the market reaction analysis. The variables are defined as follows: AT=Austria, BE=Belgium, BG=Bulgaria, BR=Brazil, CH=Switzerland, CY=Cyprus, DE=Germany, DK=Denmark, ES=Spain, FR=France, GR=Greece, HU=Hungary, IT=Italy, LU=Luxembourg, MA=Morocco, NL=Netherlands, NO=Norway, PL=Poland, RO=Romania, RS=South Africa, RU=Russia, SK=Slovakia, SL=Slovenia, TR=Turkey, UA=Ukraine, UK=United Kingdom, US=United States. For an overview of the single different deals included in the full sample see Appendix 9.

An overview over additional comparative deal statistics is provided in Table 15. It is particularly interesting to note that the average deal value over the sample in the market reaction analysis is around 40% higher than in the BVPREM study (compare Table 15 with Table 3). The reason for this might be that unlisted acquirers included in the BVPREM study are generally smaller in size and, thus, not able to stem high deal values. Since unlisted acquirers are disregarded in Table 15, the average deal value is much higher. Furthermore, the minimum deal value in the market reaction analysis is 20 million EUR versus 1 million EUR in the BVPREM study due to the different thresholds that we applied. The average stake acquired is also slightly higher in the market reaction analysis.

Table 15 Deal Characteristics – Market Reaction Analysis

	Sample	2007	2008	2009	2010	2011	2012
Deal Value (EUR mn.)							
Mean	1,458.8	2,596.2	1,432.6	588.9	468.9	815.6	462.8
Min	23.9	24.9	30.3	26.6	50.8	35.5	23.9
Median	260.0	435.0	283.0	145.5	159.0	68.6	41.0
Max	21,839.6	21,839.6	16,366.2	4,119.7	1,205.0	3,941.9	2,420.8
Stake Acquired							
Mean	61.7%	72.4%	60.6%	55.8%	48.3%	68.7%	42.2%
Min	3.5%	3.7%	4.3%	3.5%	8.0%	4.0%	8.7%
Median	70.1%	100.0%	70.9%	54.6%	51.0%	95.7%	29.3%
Max	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Table 15 shows descriptive statistics on the deal value and the acquired stake for the deals in the market reaction analysis over the total six years and on a yearly basis. Deal Value refers to the price paid by the acquirer for the respective stake acquired in the target. Stake acquired refers to the percentage stake bought by the acquirer. For an overview of the single different deals included in the full sample see Appendix 9.

6.1.2 Variable Selection and Description

6.1.2.1 Dependent Variable: Cumulative Abnormal Return

In order to explain the factors that drive the market reaction for the bidder's stock following a merger announcement, the cumulative abnormal returns (CAR) are used as a proxy for the market reaction. CAR are calculated using an event study around the merger announcement with the following basic model for stock returns (see Brown and Warner, 1980; Brown and Warner, 1985):

$$R_{bt} = \alpha_b + \beta_b * R_{Mt} + \varepsilon_{bt}$$

R_{bt} are daily (at t) adjusted stock returns (of stock b and adjusted for dividends and other sources of returns), and R_{Mt} are daily market returns. The model is based on the Capital Asset Pricing Model (Sharpe, 1964) that explains individual stock returns as a coefficient (β) of market returns. Expected returns are, thus, calculated in the following way:

$$\hat{R}_{bt} = \hat{\alpha}_b + \hat{\beta}_b * R_{Mt}$$

The estimated $\hat{\alpha}$ parameter, the abnormal return, explains the part of the returns that are not explained by the market beta. The parameters ($\hat{\alpha}, \hat{\beta}$) are estimated for a 252 trading day horizon prior to the event window (Beitel et al., 2004).

We shadow the approach suggested by Brown and Warner (1985) and Scholes and Williams (1977) and do not use procedures that adjust for non-synchronous trading (which happened during the period under scrutiny) since the authors find that these approaches do not yield a clear cut advantage over simple OLS regressions. Despite the unavailability of better

substitutes, implementing the OLS model can, therefore, bias the results given illiquidity and non-synchronous trading during the period under scrutiny. Individual stock data are obtained from “Thomson Reuters Datastream” and daily returns are calculated accordingly. For the market data, the domestic Morgan Stanley Capital International (MSCI) market indices are taken to compute daily market returns for the different domestic stock markets.⁴⁰ The MSCI national indices are designed to cover the large and mid-cap segments of the respective markets. Abnormal returns AR_{bt} at time t of a bank b are calculated by subtracting the return estimated by the market model: $\hat{R}_{bt}$ from the actually realized stock return R_{bt} in the event window:

$$AR_{bt} = R_{bt} - \hat{R}_{bt}$$

The event window T lasts over 41 trading days $[-20; +20]$ and $t = \{0\}$ is the announcement day of an acquisition. Abnormal returns for the banks are averaged:

$$\overline{AR}_t = \frac{1}{n} * \sum_{b=1}^n AR_{bt}$$

With n being the number of banks and t the point of time that refers to the event window under scrutiny. Within the event window T , different intervals will be under scrutiny (e.g. $[-1; +1]$). Finally, CAR for the different event intervals $[t_1; t_2]$ within the event window T are calculated:

$$CAR_{[t_1; t_2]} = \sum_{[t_1; t_2]} \overline{AR}_t$$

For every bidder, the CAR is calculated for different intervals. In a next step, we attempt to explain CAR by different financial, deal related, and regulatory variables.

6.1.2.2 Independent Variables

An overview of the summary statistics and the variables in the market reaction analysis is provided in Table 16. The regulatory variables (REG_STRENGTH, DEP_INS, and SHPROTECT), as well as TGDPGROWTH, TAGRWTH, COVROE, LEVERAGE, CROSSB, and LISTED are defined according to the definitions in Section V 1.2.2.

⁴⁰ The only exception is Cyprus where no MSCI index is available. We use data for the Cyprus General Index instead.

Table 16 Summary Statistics of Independent Variables – Market Reaction Analysis

Variables Full Sample	n	Mean	SD	Min	25%- Quartile	Median	75%- Quartile	Max
INTINC (%)	78	62.05	26.94	-15.11	55.20	68.64	80.15	106.72
RELASSET (%)	79	81.88	10.81	56.02	74.48	81.27	88.73	120.04
TAGRWTH (%)	79	17.58	29.72	-27.70	2.93	11.04	18.14	138.31
RELROE (%)	79	-4.83	402.57	-2470.06	24.14	66.61	119.77	361.51
RELCIR (%)	79	118.37	62.63	20.88	89.37	106.39	129.29	561.05
TGDPGROWTH (%)	79	3.06	2.34	-0.06	1.30	2.23	4.29	7.82
LEV (%)	79	9.23	8.20	1.39	5.01	7.92	10.30	56.77
COVROE (%)	77	22.20	78.90	-136.37	-3.39	2.02	9.47	435.42
REG_STRENGTH	79	9.52	1.62	6.00	9.00	10.00	11.00	12.00
DEP_INS	79	1.15	0.60	0.00	1.00	1.00	2.00	2.00
SHPROTECT	78	21.86	10.80	9.11	11.42	17.71	32.75	42.16
CROSSB (dummy)	79	0.52						
LISTED (dummy)	79	0.49						

Table 16 shows descriptive statistics for the independent variables that are used in the market reaction analysis. Due to a lack of accounting data availability, INTINC and COVROE lack observations. Furthermore, the variable SHPROTECT lacks one data point since data on shareholder protection was unavailable for Slovenia. Variable definitions can be found in Appendix 2.

In addition, other variables identified in the literature to explain market reactions to merger announcements of banks (see e.g. Beitel et al., 2004) are added. INTINC is the target's interest income over its operating income and reflects the amount of income diversification of the target. As indicated by the results in Table 16, the mean of INTINC is 62.05%, showing that the average target focused on lending as one major source of revenue. The variable RELASSET should proxy for the relative size of the target to the acquirer. Beitel et al. (2004) use this marginally decreasing index for the relative size of the banks which is defined as:

$$RELASSET = \frac{\log(Total\ Assets_{Target})}{\log(Total\ Assets_{Bidder})}$$

As expected, the mean of the RELASSET variable is well below 1, indicating that bidders are on average much larger in asset size than targets. Furthermore, the variable RELROE, the roe of the target over the roe of the acquirer is used in order to proxy for the potential for bottom line efficiency enhancement of the target (Hawawini and Swary, 1990; Pilloff and Santomero, 1998). The mean of the variable is negative due to one extreme negative outlier which relates to the acquisition of a 3% stake in Emporiki Bank of Greece by Credit Agricole for approximately 50 million EUR. The median of 66.6% indicates that, in general, targets had a smaller roe than acquirers. The variable RELCIR, which is defined as the target's cost-to-income ratio over the acquirer's cost-to-income ratio, follows the same logic as RELROE and indicates the potential for cost efficiency improvement (Pilloff, 1996).

The mean of RELCIR suggests that the average target has an 18.37% higher cost-to-income ratio than the average buyer. Both RELROE as well as RELCIR were not implemented in the BVPREM study. The reason for this exclusion is that the ownership threshold in the BVPREM study was only 1%. Since the two variables proxy for efficiency enhancement potential in the target, we can only include the variables when the buyer has control over the target.

6.2 Event Study Results

Figure 5 and Table 17 present the mean CAR for the event study of EU-27 acquirers for 79 transactions between April 1, 2007 and December 31, 2012.

Figure 5 Development of Mean CAR of Acquirers' Stocks in the Event Window – Market Reaction Analysis

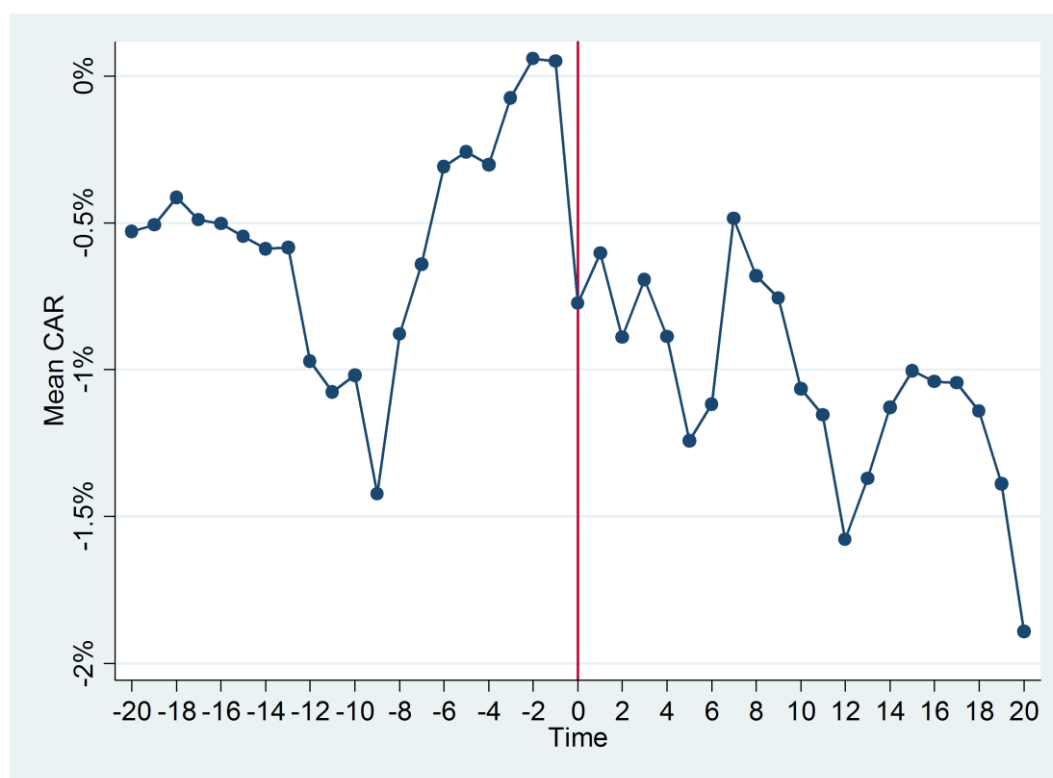


Figure 5 shows the development of the mean cumulative abnormal return for the acquirers' stocks over the event window [-20; +20] for 79 M&A transactions of EU-27 acquirers during the US-SMC and the European SDC.

The results in Figure 5 indicate strong anticipation effects around nine days prior to the merger announcement. These effects are diminishing, however, around two days prior to the merger announcement, when CAR is around zero until the day of the merger. Figure 5 suggest a strong volatility of CAR, which is not surprising given the high volatility of credit

institutions' stock prices during the past years. In general, anticipation effects may occur when investors either use publicly available information on firm characteristics in order to forecast an event or when proprietary information leak into the market (MacKinlay, 1997). According to MacKinlay (1997), anticipation effects cause the OLS estimators to become inconsistent, since the assumption of uncorrelatedness between the residuals and the regressors breaks down. Prabhala (1997), however, argues that despite the weaknesses of OLS regressions under the conditions of anticipation effects, inference problems are not given and the significance levels should be interpreted as the upper bounds of the true significance (for example significant at 10% or higher significance level). Hence, the standard OLS approach is applied in our study. Z-score statistics were calculated under the H_0 hypothesis of no market impact on the acquirers' stock return following the event according to the standard Z-score approach (Fiordelisis, 2009):

$$Z = \frac{\overline{CAR}_{[t_1; t_2]}}{\sqrt{VAR[\overline{CAR}_{[t_1; t_2]}}]} \approx N(0,1)$$

Table 17 Event Study Results Acquirer – Market Reaction Analysis

Event Interval	CAR (%)	Pos.	Neg.	Z-test	P-value
[-20;0]	-0.77	36	43	-0.76	0.22
[-10;0]	0.30	39	40	0.41	0.66
[-1;0]	-0.83***	29	50	-2.66	0.00
{0}	-0.82***	28	51	-3.73	0.00
[-1;+1]	-0.66*	32	47	-1.73	0.04
[-1;+5]	-1.30**	28	51	-2.22	0.01
[-1;+10]	-1.12	35	44	-1.47	0.07
[-1;+20]	-1.95*	28	51	-1.88	0.03
[-10;+10]	0.01	35	44	0.01	0.50
[-20;+20]	-1.89	33	46	-1.34	0.09

Table 17 provides the results for the event study of 79 M&A deals of EU-27 acquirers between 2007 and 2012. The table shows the event window, the cumulative abnormal returns of the acquirer for the respective event interval, the amount of positive and negative CAR, the Z-test statistic, and the corresponding P-value.

Turning to the results in Table 17, we find a significant, negative effect (at 1% significance level) of -0.82 CAR on the announcement date. A general finding for those intervals that are significant and include trading days after the announcement date is that the CAR is negative. We can, thus, conclude that market reaction was negative for the bidding banks following the announcement of an acquisition during the financial crises. The results differ from the ones obtained by Beitel et al. (2004) who get mixed and insignificant results

for their event study of the bidders' stock market reaction. A reason for this difference might be that Beitel et al.'s (2004) sample period is between 1985 and 2000 and, hence, covers periods of relative stability as compared to the recent periods of crisis covered in our study. It, thus, seems that markets were particularly sceptical about banks acquiring other banks during the latest years of financial turmoil.

6.3 Descriptive Analysis

In Table 18, we provide first insights into the regulatory variables as well as into the geographic scope of a transaction, the leverage of the target company, and the year in which the transaction took place. The table can be read analogously to Table 5. It shows the mean and median CAR for the transactions above and below the median of the respective independent variable. For the analysis of the deposit insurance variable, we subdivide the variables into those deals that have an index value of 0 and those that have a value of 2. Differences in CAR are identified for the event intervals of $[-1;+1]$ and $[-1;+5]$, since we want to examine the short-term market reaction and since both intervals are significant, different from zero.

Looking at Table 18, we find insignificant results for the regulatory variables. The data, however, suggests that higher CAR are seen for low shareholder protection and high regulation countries. The results, further, suggest that markets prefer merger announcements of cross-border deals over domestic deals and of deals with targets that report a higher total equity to total asset ratio (Leverage). The effect for the geographic scope and the leverage is significant for both intervals. While we could not find any significant influence of cross-border mergers on BVPREM in the multivariate analysis in the previous sections, the results in Table 18 suggest that markets favour cross-border deals over domestic deals. This might be due to the fact that we opened the scope of the market reaction analysis to non-EU 27 countries. Given this explanation, the result would be supportive of markets favouring geographical diversification. We further investigate this question in the multivariate analysis. The results for the leverage of the target seem to be in line with our findings from the BVPREM analysis. Again, we further scrutinize the influence of leverage on the CAR in the multivariate analysis.

Table 18 CAR (% unless differently specified) by Acquisition Characteristics – Market Reaction Analysis

[-1;+1]		Mean	Median	n	[-1;+5]		Mean	Median	n
Sh. Protection	Below Median	-0.3	0.0	39	Sh. Protection	Below Median	-1.0	-0.7	39
	Above Median	-1.1	-1.1	39		Above Median	-1.6	-1.9	39
	Difference (pp)	0.8	1.1			Difference (pp)	0.5	1.3	
Regulat. Strength	Below Median	-1.0	-0.9	29	Regulat. Strength	Below Median	-2.2	-0.6	29
	Above Median	-0.3	-0.4	22		Above Median	-0.7	-1.1	22
	Difference (pp)	-0.7	-0.5			Difference (pp)	-1.5	0.5	
Deposit Insurance	0	-1.6	-1.3	21	Deposit Insurance	0	-5.5	-2.5	21
	2	-3.3	-0.5	9		2	-2.5	-2.0	9
	Difference (pp)	1.7	-0.8			Difference (pp)	-3.0	-0.5	
Geogr. Scope	Domestic	-2.1	-1.2	38	Geogr. Scope	Domestic	-2.6	-1.3	38
	Cross Border	0.7	-0.2	41		Cross Border	-0.1	-0.9	41
	Difference (pp)	-2.8 **	-1.0			Difference (pp)	-2.5 *	-0.4	
Leverage	Below Median	-1.8	-1.1	39	Leverage	Below Median	-2.9	-2.1	39
	Above Median	0.4	-0.4	39		Above Median	0.4	-0.3	39
	Difference (pp)	-2.2 *	-0.7			Difference (pp)	-3.3 **	-1.8	
Year	2007	-0.3	-0.6	25	Year	2007	-0.5	-1.1	25
	2008	-3.0	-0.9	22		2008	-4.0	-0.1	22
	2009	0.7	-0.2	12		2009	-0.1	-1.4	12
	2010	1.2	1.1	5		2010	2.3	2.4	5
	2011	-0.1	-0.5	7		2011	-2.1	-2.4	7
	2012	0.9	-0.9	8		2012	0.1	-1.5	8
	Sample	-0.7	-0.5	79		Sample	-1.3	-0.9	79

*Significant at 10%, **Significant at 5%, ***Significant at 1%. Table 18 displays CAR (%) and difference in CAR (pp) by acquisition characteristics for the regulatory variables as well as for the geography, the level of leverage of the target, and the year of the transaction. Each category is subdivided in above and below median observations for the respective variable. The table presents the respective mean and median for the CAR of each category.

Lastly, we turn to the different years of transactions. We observe highly negative CAR in 2008, the year of Lehman bankruptcy, and relatively strong CAR in 2010. We will again run a deeper analysis of the influence of the deal year on CAR in the multivariate regression setting.

6.4. Multivariate Regressions

6.4.1 Methodology

We proceed analogously to the BVPREM analysis and use multivariate OLS regressions in order to determine the factors that influence the CAR in European bank M&A transactions during the US-SMC and the European SDC. In Section VI 4.2 we implement and discuss the following regressions:

Interval [-1;+1] (11), Interval [-1;+5] (12), Interval [-1;+20] (13), Interval [-20;+20] (14): CAR on Regulatory, Deal, and Financial Variables;

Interval [-1;+1] (15), Interval [-1;+5] (16), Interval [-1;+20] (17), Interval [-20;+20] (18): CAR on Regulatory, Deal, and Financial Variables, including geographic interaction variables;

Interval [-1;+1] (19), Interval [-1;+5] (20), Interval [-1;+20] (21), Interval [-20;+20] (22): CAR on Regulatory, Deal, and Financial Variables, using time fixed effects;

The basic regression design takes the following form:

$$CAR (\%) = \alpha + \beta_1 DC + \beta_2 TC + \beta_3 REGULAT + \varepsilon$$

DC refers to deal characteristics and includes the following variables: CROSSB, TGDPRWTH, LISTED, and RELASSET. TC signifies target bank characteristics and comprises the following variables: INTINC, TAGRWTH, RELROE, RELCIR, COVROE, and LEV. REGULAT refers to regulatory variables and incorporates the three variables: REG_STRENGTH, DEP_INS, and SHPROTECT.⁴¹

We perform the Breusch-Pagan/Cook Weisberg test (Table 19) and the Kolmogorov-Smirnov test (Table 20) to test for heteroskedasticity and normality of the residuals respectively. Considering the results in Table 19 for the Breusch-Pagan/Cook Weisberg test, we must reject the H_0 hypothesis of constant variance for regressions (11), (13), (15), (19), and (22). Accordingly, for these regression models, the Huber-White heteroskedasticity consistent standard errors are applied in order to control for heteroskedasticity in the sample.

⁴¹ See Appendix 2 for a definition of the variables.

Table 19 Breusch-Pagan/Cook-Weisberg Test for Heteroskedasticity – Market Reaction Analysis

Regression Model	$\chi^2(1)$	P-value
(11)	65.17	0.00
(12)	0.10	0.75
(13)	4.60	0.03
(14)	1.58	0.21
(15)	65.04	0.00
(16)	0.43	0.51
(17)	0.64	0.42
(18)	1.80	0.18
(19)	68.97	0.00
(20)	0.24	0.62
(21)	0.02	0.89
(22)	3.97	0.05

Table 19 provides data on the Breusch-Pagan/Cook Weisberg Test for Heteroskedasticity. Column one shows the different regression models, column two provides the chi-square statistic with one degree of freedom. P-values are reported in column three. The null-hypothesis of homoskedasticity is rejected for a P-value smaller 0.05. For a definition of the different regression models refer to Section VI 4.1.

Table 20 Kolmogorov-Smirnov Test for Standard Normality – Market Reaction Analysis

Regression Model	P-value
(11)	0.32
(12)	0.14
(13)	0.63
(14)	0.15
(15)	0.58
(16)	0.34
(17)	0.67
(18)	0.27
(19)	0.17
(20)	0.54
(21)	0.74
(22)	0.43

Table 20 provides the P-values for the Kolmogorov-Smirnov Test. The test examines whether the error terms follow a standard normal distribution. The null-hypothesis of standard normality is rejected with a P-value smaller 0.05. For a definition of the different regression models refer to Section VI 4.1.

Furthermore, looking at Table 20, we find that for all regression models the error terms approximately follow a standard normal distribution. In the following section, we present the results for the multivariate regression models.

6.4.2 Results of Multivariate OLS Regressions

Table 21 provides the results of the regression analysis for the bidding banks' CAR over those time intervals that were found to be significant in Table 17 and over the entire event window.⁴² For the two longest intervals, [-1;+20] and [-20;+20], no significant effects of any of the identified drivers can be reported. At this stage, we should also mention the negative adjusted R^2 for the two above-mentioned time intervals. The negative adjusted R^2 indicates a poor model fit. In addition, we observe that the model fit strongly decreases between the short time interval in regression (11) and the longer time intervals for regressions (12) to (14).

Going back to the results in Table 21, we find a significant influence of COVROE on the CAR with a coefficient of 0.03 for the interval [-1;+1]. For the [-1;+20] interval, the coefficient is also 0.03 and significant. The result suggests that markets assign a positive value to transaction where bidders acquire targets that have a high covariance of roe with their own roe. The risk of the combined entity in such transactions is not reduced but even more pronounced. This result speaks in favour of the deposit insurance put option hypothesis and, thus, is in line with the results of Hawawini and Swary (1990). We also find a significant, positive influence of LEV on CAR. The result is in line with our results from the BVPREM study in Tables (8) to (12), where we report a significant, positive influence of LEV on BVPREM. Markets, thus, even seem to amplify the importance of equity capitalisation of the target by rewarding those deals with a higher CAR that involve high equity capitalisation of the target. The identified effect of the variable REG_STRENGTH on CAR is significant, negative for the [-1;+1] interval, and very high in terms of economic magnitude (-0.96). The markets discourage acquisitions of targets that are chartered in countries with high regulatory scrutiny. The results, thus, imply that market participants might think that bidders overpaid for targets chartered in those countries. This effect might be due to a market consensus accepting that strong regulation does not necessarily lead to a high stability of the financial sector and, hence, does not outweigh the high regulatory cost for the buyer. Again, we observe amplification by the markets of the already negative influence of REG_STRENGTH on the BVPREM (Table 9).

⁴² Only 75 observations are recorded for the regression analysis over each period due to missing observations for the following variables: INTINC (n=78), SHPROTECT (n=78), and COVROE (n=77).

Table 21 Cross Sectional OLS Regression Results for (11) to (14): CAR on Deal, Financial, and Regulatory Variables – Market Reaction Analysis

Variable	[-1;+1] (11)	T-stat	[-1;+5] (12)	T-stat	[-1;+20] (13)	T-stat	[-20;+20] (14)	T-stat
RELINTINCOME	0.04	(1.15)	0.02	(0.49)	0.06	(1.01)	0.12	(1.51)
CROSSB	3.12	(1.61)	2.18	(0.80)	2.81	(0.63)	1.12	(0.19)
RELASSET	-0.11	(-1.17)	-0.10	(-1.00)	-0.11	(-0.61)	-0.10	(-0.46)
ASSETGROWTH	0.01	(0.72)	-0.00	(-0.08)	0.04	(0.70)	0.03	(0.38)
RELROE	0.00	(1.12)	0.00	(0.88)	0.00	(0.24)	0.00	(0.42)
RELCIR	0.01	(0.71)	0.01	(0.42)	-0.04	(-0.79)	-0.04	(-0.83)
LISTED	-0.43	(-0.38)	0.28	(0.16)	3.51	(1.16)	5.60	(1.44)
GDPGROWTH	-0.50	(-1.15)	-0.25	(-0.40)	-0.53	(-0.63)	-0.31	(-0.23)
LEVERAGE	0.143*	(1.75)	0.42	(0.36)	0.00	(0.00)	0.10	(0.39)
COVROE	0.03***	(3.04)	0.03**	(2.20)	0.01	(0.37)	0.00	(0.08)
REG_STRENGTH	-0.96*	(-1.81)	-0.30	(-0.46)	-0.33	(-0.25)	-0.69	(-0.49)
DEP_INS	1.36	(0.70)	-2.07	(-1.34)	0.26	(0.01)	-0.29	(-0.09)
SHPROTECT	-0.16	(-1.64)	-0.12	(-1.29)	-0.11	(-0.70)	0.09	(0.44)
ALPHA	13.57	(1.63)	10.96	(1.07)	10.76	(0.75)	5.35	(0.24)
N	75		75		75		75	
adj. R^2	0.20		0.01		-0.09		-0.09	

*Significant at 10%, **Significant at 5%, ***Significant at 1%. T statistics are in parentheses. Table 21 shows the regression results for CAR of the acquirer's stock regressed on the regulatory, financial, and deal-related variables for the intervals [-1;+1], [-1;+5], [-1;+20], and [-20;+20] for the market reaction analysis. For a definition of the variables see Appendix 2.

Following the simple multivariate OLS regression, we conduct a multivariate OLS regression including geographic interaction variables: $LEVERAGE * CROSSB$, $REG_STRENGTH * CROSSB$, $DEP_INS * CROSSB$, and $SHPROTECT * CROSSB$. The results for the regressions (15) to (18) are presented in Table 22. The coefficient and significance of $COVROE$ remain almost unchanged. The coefficient for LEV repurchases also positive, however, only for domestic transactions. Again, the influence of LEV on the market reaction is in line with our results from the $BVPREM$ study where we also find a significant, positive coefficient of LEV for domestic deals only (Table 11). In addition, we find significant, negative coefficients for $SHPROTECT$ in cross-border transactions and a significant positive influence of $SHPROTECT$ in domestic transactions. As observed in the $BVPREM$ analysis for the bidder, markets also appear to stress the relevance of strong shareholder protection in the context of cross-border M&A transactions and reward those cross-border transactions with a positive CAR that involve a country with strong shareholder protection. We again find support for our hypothesis on expropriation when acquiring domestic targets versus protection when acquiring cross-border targets.

Lastly, we report the results for the multivariate OLS regression with time fixed effects in Table 23 (2007 omitted due to collinearity). The results confirm the findings reported in Table 21: We do not find any significant time fixed effects across all four time intervals. In general, the data in Table 23 also confirm the overall picture of the market reaction analysis. Variables for the longer time intervals are barely, if at all, significantly different from zero. We can, thus, conclude that markets are time efficient in considering factors of the target for the bidder's market price following a merger announcement.

Overall, the results suggest that market participants seem to be considerate of many of the same regulatory drivers that bidders consider as well. Once more, we feel the need to stress the interpretation of the results. Given the observation of the premiums that acquirers are willing to pay for targets, markets react according to their view on the premium. Thus, an interpretation of the drivers of CAR does not lead to an answer about what kind of deals market participants favour. It rather answers the question concerning what drivers markets considered important in evaluating the premium offered by acquirers. Thus, having found similar drivers for the market reaction and the $BVPREM$ study is an important result.

Table 22 Cross Sectional OLS Regression Results for (15) to (18): CAR on Deal, Financial, Regulatory, and Geographic Interaction Variables – Market Reaction Analysis

Variable	[-1;+1] (15)	T-stat	[-1;+5] (16)	T-stat	[-1;+20] (17)	T-stat	[-20;+20] (18)	T-stat
RELINTINCOME	0.04	(1.28)	0.03	(0.77)	0.07	(1.08)	0.14	(1.66)
CROSSB	-8.86	(-0.74)	-5.68	(-0.35)	-5.98	(-0.16)	4.17	(0.12)
RELASSET	-0.14	(-1.33)	-0.12	(-1.14)	-0.13	(-0.57)	-0.11	(-0.48)
ASSETGROWTH	0.00	(0.00)	-0.01	(-0.13)	0.03	(0.59)	0.03	(0.35)
RELROE	0.00	(0.31)	0.00	(0.35)	-0.00	(-0.22)	0.00	(0.15)
RELCIR	0.00	(0.33)	0.01	(0.25)	-0.04	(-0.85)	-0.05	(-0.87)
LISTED	-0.05	(-0.05)	0.52	(0.29)	3.89	(1.19)	5.73	(1.44)
GDPGROWTH	0.11	(0.35)	0.76	(0.94)	0.77	(0.73)	1.19	(0.66)
LEVERAGE	0.20*	(1.83)	0.07	(0.54)	0.04	(0.26)	0.17	(0.55)
LEVERAGE*CROSSB	-0.22	(-1.26)	-0.06	(-0.25)	-0.05	(-0.21)	-0.10	(-0.18)
COVROE	0.03**	(2.87)	0.03**	(2.24)	0.01	(0.30)	0.00	(0.12)
REG_STRENGTH	-1.38	(-1.51)	-0.31	(-0.29)	-0.26	(-0.10)	0.03	(0.01)
REG_STRENGTH*CROSSB	1.00	(0.92)	-0.43	(-0.28)	-0.38	(-0.11)	-1.81	(-0.53)
DEP_INS	3.10	(0.90)	-1.42	(-0.57)	2.54	(0.40)	1.70	(0.31)
DEP_INS*CROSSB	-3.78	(-1.06)	-0.88	(-0.26)	-3.86	(-0.56)	-2.38	(-0.32)
SHPROTECT	-0.28**	(-2.07)	-0.26**	(-2.10)	-0.29	(-1.09)	-0.06	(-0.22)
SHPROTECT*CROSSB	0.32*	(2.05)	0.49*	(2.14)	0.63*	(1.99)	0.62	(1.23)
ALPHA	19.79	(1.32)	13.26	(0.82)	10.47	(0.29)	-2.69	(-0.07)
N	75		75		75		75	
adj. R^2	0.25		0.03		-0.10		-0.13	

*Significant at 10%, **Significant at 5%, ***Significant at 1%. T statistics are in parentheses. Table 22 shows the regression results for CAR of the acquirer's stock regressed on the regulatory, financial, and deal-related variables including geographic interaction variables for the intervals [-1;+1], [-1;+5], [-1;+20], and [-20;+20] for the market reaction analysis. For a definition of the variables see Appendix 2.

Table 23 Cross Sectional OLS Regression Results for (19) to (22): CAR on Deal, Financial, and Regulatory Variables with Time Fixed Effects – Market Reaction Analysis

Variable	[-1;+1] (19)	T-stat	[-1;+5] (20)	T-stat	[-1;+20] (21)	T-stat	[-20;+20] (22)	T-stat
RELINTINCOME	0.04	(1.17)	0.01	(0.35)	0.04	(0.66)	0.13	(1.24)
CROSSB	4.30	(1.50)	2.83	(0.96)	3.22	(0.71)	1.03	(0.16)
RELASSET	-0.09	(-1.02)	-0.05	(-0.48)	-0.11	(-0.68)	-0.17	(-0.46)
ASSETGROWTH	0.02	(1.02)	0.00	(0.08)	0.05	(0.71)	0.02	(0.27)
RELROE	0.00	(1.07)	0.00	(0.87)	0.00	(0.25)	0.00	(0.07)
RELCIR	0.01	(0.73)	0.02	(0.69)	-0.03	(-0.74)	-0.06	(-0.85)
LISTED	-0.38	(-0.33)	0.38	(0.21)	4.15	(1.44)	5.77	(1.51)
GDPGROWTH	-0.43	(-0.99)	-0.09	(-0.14)	-0.68	(-0.68)	-0.54	(-0.41)
LEVERAGE	0.19*	(1.86)	0.09	(0.64)	0.07	(0.35)	0.20	(0.76)
COVROE	0.02**	(2.64)	0.02	(1.49)	0.00	(0.18)	0.01	(0.25)
REG_STRENGTH	-1.16*	(-1.99)	-0.54	(-0.79)	-0.57	(-0.53)	-0.82	(-0.43)
DEP_INS	1.55	(0.76)	-2.06	(-1.29)	1.14	(0.45)	0.64	(0.16)
SHPROTECT	-0.16	(-1.51)	-0.11	(-1.17)	-0.15	(-1.04)	0.05	(0.22)
2008	-0.32	(-0.19)	-2.38	(-0.97)	1.13	(0.30)	4.25	(0.97)
2009	1.95	(0.93)	1.06	(0.32)	5.20	(0.96)	0.60	(0.08)
2010	3.63	(1.31)	4.32	(1.06)	-0.74	(-0.13)	-5.48	(-0.74)
2011	-0.76	(-0.40)	-2.12	(-0.56)	-3.23	(-0.54)	-4.11	(-0.58)
2012	3.90	(1.51)	1.63	(0.45)	1.72	(0.31)	1.80	(0.28)
ALPHA	11.19	(1.50)	7.42	(0.69)	11.75	(0.70)	11.90	(0.69)
N	75		75		75		75	
adj. R^2	0.20		-0.00		-0.16		-0.15	

*Significant at 10%, **Significant at 5%, ***Significant at 1%. T statistics are in parentheses. Table 23 shows the regression results for CAR of the acquirer's stock regressed on the regulatory, financial, and deal-related variables for the intervals [-1;+1], [-1;+5], [-1;+20], and [-20;+20] for the market reaction analysis using time fixed effects. 2007 is omitted due to collinearity. For a definition of the variables see Appendix 2.

7 Discussion of Results and Limitations

Having conducted the BVPREM study and the market reaction analysis, we can report mixed evidence with respect to our research hypotheses. We can confirm Hypothesis 1 with respect to our prediction on the influence of regulatory strength on BVPREM (*The deposit insurance costs and the regulatory strength in the target's country have a negative influence on book value premiums in M&A transactions of European banks during times of financial crises*). With respect to our prediction on the influence of the deposit insurance strength (DEP_INS) on BVPREM, we cannot confirm hypothesis 1. We find evidence that the cost of the deposit insurance system is insignificant in explaining BVPREM. We assume that this variable plays a subordinate role in pricing the target due to the relatively high degree of harmonization in deposit insurance systems in Europe (European Commission, 2010). For the DEP_INS variable, Hagendorff et al. (2010) find a significant, negative influence on BVPREM. Our employment of a newer dataset as well as the more advanced stage of deposit insurance harmonisation in the EU-27 could explain the difference. With respect to the part of Hypothesis 1 on regulatory strength (REG_STRENGTH), we find confirmation for our hypothesis in the data. We discover a significant, negative influence of the degree of regulatory strength on BVPREM for domestic acquisitions in the full sample. The results indicate that strong regulation does not offer credible stability advantages in light of past regulatory failure and high cross-country interconnectedness for acquirers in domestic mergers. Strong regulation does not offer credible strong effects on stability that compensate for the costs that are associated with strong regulation. The results, further, indicate that despite the reforms towards a single banking market in Europe, that seem to be at an advanced stage for the deposit insurance systems, differences are still noticeable and significant for the regulatory strength inside the EU-27. These differences are breeding ground for regulatory arbitrage. Our results are in line with Hagendorff et al. (2010), who also find a significant, negative influence of REG_STRENGTH on BVPREM in a domestic merger context. We can conclude from our data that regulatory strength in the home country is considered a cost for the institution with no credible offsetting stability effects.

We can confirm Hypothesis 2 (*The strength of investor protection in the target's country has a negative influence on book value premiums in M&A transactions of European banks during times of financial crises*). We find a significant, negative impact of strong shareholder protection regimes and strong rule of law on the BVPREM for domestic transactions in the

excl. distressed sample. While acquirers seem to encourage a reduced degree of outsider protection and, therefore, the freedom to operate relatively autonomously and the higher ability to expropriate, this effect appears to be less pronounced in cross-border acquisitions, where uncertainty about the foreign legislation might be compensated by confidence and trust in the rule of law and shareholder protection when determining the price for the target. The results are highly interesting in light of the financial crises, since the debate about liability for banks' failures and wrong management decisions was almost omnipresent in the past years. We seem to see an indication in our data that banks prefer acquiring targets where the conflict between insiders and outsiders is less strictly moderated by the regulator. Our results add to the results of Hagendorff et al. (2010), who do not find a significant influence of shareholder protection for the pre-crises sample period.

We can confirm Hypothesis 3 (*Liquid funding and equity capitalisation of the target drive book value premiums during times of financial crises*). We can report robust evidence for the significant, positive coefficient of the total equity to total asset ratio (LEVERAGE) on the BVPREM that ranges between 4.7% and 6.6% for the full sample, depending on the model we look at. The results indicate that acquirers were to a certain degree aware and conscious about the stricter regulatory requirements and were considerate of them in their valuation. The variable that should proxy for the degree of stable deposit funding, SAVING for the BVPREM analysis, also provides interesting insights. For the dummy SAVING that takes the value 1 if the target is a savings bank we find a significant and robust linear relation with BVPREM that ranges between 111.9% and 148.5%. Our results for capitalisation and stable funding suggest that future regulatory scrutiny could have already been considered by acquirers when pricing the target during the financial crises.

We have to reject Hypothesis 4 (*We expect to find evidence for the deposit insurance put option hypothesis*). We report evidence for the diversification hypothesis in Tables 8 to 12. We find a significant, negative influence of COVROE on BVPREM in all regression, which speaks for the diversification hypothesis. The effect is, however, economically negligible. We could still argue in this context that, for example, the threat of nationalisation of a bank during the recent crises and the accompanied loss of credibility and reputation deterred bidders from valuing the deposit insurance put option and rather made them value targets that could reduce their overall risk level.

We can confirm Hypothesis 5 (*The size of the target drives the premium acquirers' offer in domestic transactions in order to approach a "too-big-to-fail" status*). We observe a

significant influence of the RELSIZE variable on the BVPREM. The result is in line with the hypothesis of Hagendorff et al. (2010) that larger banks increase the opportunity of synergy potential and, further, increase the likelihood of becoming “too-big-to-fail,” which is an important characteristic to have for European banks during the financial crises. Our results, however, differ from the results reported by Hagendorff et al. (2010), who find an insignificant influence of RELSIZE across their regression models. Our results, thus, suggest a particular importance of the “too-big-to-fail” status during the crises. We have to concede, however, that the results are highly dependent on extreme observations. Additional research would be necessary.

We can partly confirm Hypothesis 6 (*Market reaction of the bidder's stock are influenced by regulatory drivers upon a merger announcement in M&A transactions of European banks during the crises*). Our finding reveal that a high degree of equity capitalisation, low regulatory strength, low shareholder protection in domestic mergers, and high shareholder protection in cross-border mergers drive CAR around the announcement date of an acquisition (interval [-1;+1]). Furthermore, the reaction of the market with respect to the COVROE variable seems to suggest that markets were discontent with the valuation by the bidder with respect to the impact of the covariance in roe on the value of the target. The results for the markets are supportive for the deposit insurance put option hypothesis with a significant positive coefficient for COVROE across regressions (11), (15), and (19). For the other identified drivers, we do not find a significant impact. The results are conclusive in the way that markets seem to amplify the notion of the bidder with respect to some value drivers. Market participants observe the price that bidders offer for the target and react accordingly with an own valuation. The drivers that are found significant for CAR were also found significant for the BVPREM. Thus, we are able to report that these drivers seem to be impactful for both the valuation by the bidders and by the market participants.

Overall our findings suggest that the US-SMC and the European SDC profoundly shaped M&A transactions that took place during the last six years. The regulatory tightening, increased liquidity demands, high insecurity and volatility, as well as political measures decisively shaped the pricing of M&A deals. Our results should be highly interesting for regulators in particular since the findings suggest that both bidders and targets do not seem to value the potential increase in safety that should come from higher regulation. Thus, the results seem to suggest that the past failure of bank regulation considerably shaped rational expectations of market participants. The new Basel III bank regulation needs to win the trust

of the market participants with respect to its ability to shape and support a safe and sound banking system. Furthermore, our results add to the corporate governance debate. We find evidence that the company insider versus outsider conflict was clearly amplified during the financial crises with bidders valuing the opportunity to expropriate company outsiders. This pricing strategy, that we assume is based on rational expectations, shows that bidders expect to be able to get some benefits from expropriation. Further research, however, is suggested on this field.

Finally, some limitations of our study are to be considered. To start with, our sample selection suffers from a sampling bias in several ways. First, we argue that the US-SMC started with the New Century Financial signing for Chapter 11 in April 2007. We could reason that the actual crisis started earlier with the turning of the US housing market or later with, for example, the bankruptcy of Lehman Brothers. Thus, we might have incorporated deals that were not per se affected by the crises or could have left out a substantial amount of deals. Secondly, we only collected data until December 31, 2012. One could well argue that the SDC is not over yet, and we would have to collect data over a longer time horizon. Thirdly, our sample selection is affected by the attrition bias, meaning that we only looked at deals that actually took place. We cannot say anything about the drivers of premium for those deals that did not take place (i.e. those that were called off) or where no deal value was reported.

Another limitation of our study is caused by the usage of accounting data in our study. This usage introduces two steps of measurement errors. First, accounting data are an imperfect proxy for actual economic condition since they are time lagged and their calculation depends on manifested rules. Second, accounting data is used to proxy for theoretical explanations and are, thus, introducing a second error into the linear relation. The effect caused by these errors is called attenuation bias. Estimators tend to shrink towards zero and, thus, may not reflect the actual relation that we want to explain (Wooldridge, 2005).

Our study also suffers from an omitted variable bias (Wooldridge, 2005). The bias substantiates when the independent variables are correlated with the error term. In such a case, there are variables that were omitted and, consequently, should have been controlled for in the regression. Due to the unavailability of market data for the sample of targets, we assume that both the BVPREM analysis and the market reaction analysis suffer from a strong omitted variable bias. The general caveat in M&A studies is that there is no complete

analytical model for what factors drive premiums and CAR. Thus, the omitted variable bias is an intrinsic caveat of our study.

8 Conclusion

The US-SMC and the European SDC marked the beginning of a drastic change for the banking industry with a tightening of bank regulation and stronger government involvement. In this thesis we aimed at analysing how regulatory variables drove the bid premiums in M&A transaction of European banks between 2007 and 2012. Furthermore, we aimed at identifying the drivers for the market reaction of the bidder's stocks, following the announcement of a merger. We can conclude the following results:

(1) The degree of regulatory strength has a negative impact on the premiums acquirers are willing to pay in domestic transactions. While for cross-border deals, the degree of regulatory strength compensates for the insecurity of the acquirer when acquiring a target abroad, its impact is value reducing for domestic deals due to regulatory cost.

(2) Higher shareholder protection and rule of law reduces the value bidders are willing to pay in domestic acquisitions. This effect can be rationalized by the value that acquirers assign to the ability of expropriating outsiders like minority investors and debt holders. This effect is not observable for cross-border deals.

(3) The degree of liquid funding as well as of equity capitalisation of the target have a positive influence on the price that acquirers are willing to pay. We argue that this relation holds true due to the prominent position of liquidity and leverage in the ongoing bank regulation discussion and due to their relevance for Basel III bank regulation.

(4) Acquirers value the size of the target. Our results suggest a premium that acquirers pay in order to approach a "too-big-to-fail" status and, hence, are eligible to fall under the protection of public safety nets. The results, however, seem to be strongly dependent on some extreme values and, thus, have to be treated with caution.

(5) Overall, the short-term market reaction for the acquirer's stock, measured by CAR, is significant, negative following the merger announcement. We find support that the degree of equity capitalisation of the target, low regulatory scrutiny in the country of origin of the target, weak shareholder protection in domestic mergers, and strong shareholder protection in cross-border mergers drive CAR of bank M&A transactions during the recent crises.

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Appendix

Appendix 1 List of Deals Included in BVPREM Study

Announcement	Acquirer	Target	Deal Value (EUR mn)
20.05.2007	UNICREDITO ITALIANO SPA	CAPITALIA SPA	21,839.61
13.10.2008	LLOYDS BANKING GROUP PLC	HBOS PLC	16,366.21
08.11.2007	BANCA MONTE DEI PASCHI DI SIENA SPA	BANCA ANTONIANA POPOLARE VENETA SPA	9,894.00
16.10.2006	BANCA POPOLARE DI VERONA E NOVARA SCRL	BANCA POPOLARE ITALIANA SCARL	8,189.69
31.08.2008	COMMERZBANK AG	DRESDNER BANK AG	6,484.72
14.11.2006	BANCHE POPOLARI UNITE SCRL	BANCA LOMBARDA E PIEMONTESE SPA	6,427.57
07.03.2009	BNP PARIBAS SA	FORTIS BANK SA/NV	4,119.71
07.02.2011	BANCO SANTANDER SA	BANK ZACHODNI WBK SA	3,941.93
28.02.2012	DEUTSCHE BANK	DEUTSCHE POSTBANK AG	2,420.79
25.07.2007	INTESA SANPAOLO SPA	BANCA CR FIRENZE SPA	2,130.66
30.03.2007	BAYERISCHE HYPO- UND VEREINSBANK AG	UNICREDITO BANCA MOBILIARE SPA	2,056.01
18.02.2008	INTESA SANPAOLO SPA	BANCA CR FIRENZE SPA	1,719.98
14.07.2008	BANCO SANTANDER SA	ALLIANCE & LEICESTER PLC	1,674.86
07.03.2009	BNP PARIBAS SA	FORTIS BANK SA/NV	1,516.55
31.08.2008	COMMERZBANK AG	DRESDNER BANK AG	1,400.00
09.05.2007	UNICREDITO ITALIANO SPA	BAYERISCHE HYPO- UND VEREINSBANK AG	1,397.83
07.10.2011	BANCO POPULAR ESPAÑOL SA	BANCO PASTOR SA	1,300.00
07.10.2010	DEUTSCHE BANK	DEUTSCHE POSTBANK AG	1,205.04
12.09.2008	DEUTSCHE BANK	DEUTSCHE POSTBANK AG	1,100.00
26.03.2007	UNICREDITO ITALIANO SPA	BANK AUSTRIA CREDITANSTALT AG	1,045.00
28.10.2009	DEUTSCHE BANK	SAL. OPPENHEIM JR. & CIE. SCA	1,000.00
22.09.2010	CRÉDIT DU NORD SA	SOCIÉTÉ MARSEILLAISE DE CRÉDIT SA	872.00
25.06.2010	BANCO DE SABADELL SA	BANCO GUIPUZCOANO SA	826.79
23.09.2008	BANK BPH SA	GE MONEY BANK SA	817.61
28.06.2011	SWEDBANK AB	SWEDBANK AS	810.00
17.12.2008	ABBEEY NATIONAL PLC	ALLIANCE & LEICESTER PLC	768.67
28.06.2011	SWEDBANK AB	SWEDBANK AB	701.00
11.12.2009	SOCIÉTÉ GÉNÉRALE	CRÉDIT DU NORD SA	645.00
10.01.2007	MARFIN POPULAR BANK PUBLIC CO., LTD	MARFIN BANK SA	616.53
18.11.2007	CRÉDIT AGRICOLE SA	BANKINTER SA	564.69
12.07.2010	SANTANDER CONSUMER BANK AG	SEB AG	555.00

Announcement	Acquirer	Target	Deal Value (EUR mn)
07.03.2009	BNP PARIBAS SA	FORTIS BANQUE LUXEMBOURG SA	547.09
04.03.2011	CRÉDIT AGRICOLE SA	CENTEA NV	527.00
17.07.2007	PARIS-ORLÉANS	CONCORDIA BV	446.00
29.01.2009	NOBLE BANK SA	GETIN BANK SA	434.53
16.04.2010	SOCIÉTÉ GÉNÉRALE	BANCO BILBAO VIZCAYA ARGENTARIA SA	424.33
15.05.2007	BANCA MONTE DEI PASCHI DI SIENA SPA	CASSA DI RISPARMIO DI BIELLA E VERCELLI - BIVERBANCA	398.70
31.03.2008	GROUPE CAISSE D'EPARGNE	BANQUE PALATINE	367.40
24.10.2008	CAISSE NATIONALE CAISSES D'EPARGNE ET PRÉVOYANCE	NATIXIS SA	351.18
20.03.2008	KBC GROUPE NV	ISTROBANKA AS	350.00
26.08.2007	LANDESBANK BADEN-WÜRTTEMBERG	LANDESBANK SACHSEN GIROZENTRALE	328.00
05.06.2010	BANCO POPOLARE SOCIETÀ COOPERATIVA	CASSA DI RISPARMIO DI LUCCA PISA LIVORNO SPA	312.70
11.04.2012	RABOBANK INTERNATIONAL HOLDING BV	BANK GOSPODARKI ZYWNOSCIOWEJ SA	293.92
30.07.2008	CREDITO VALTELLINESE SC	CASSA DI RISPARMIO DI FANO SPA	281.00
15.09.2008	NYKREDIT REALKREDIT A/S	FORSTÆDERNES BANK A/S	260.54
26.10.2009	BARCLAYS PLC	STANDARD LIFE BANK PLC	254.37
01.10.2010	CASSA DI RISPARMIO DELLA PROVINCIA DI TERAMO SPA	BANCA CARIFE SPA	228.00
27.04.2007	BANCO PRIVADO PORTUGUÊS	BANCO COMERCIAL PORTUGUÊS SA	218.85
19.02.2007	BNP PARIBAS SA	DEXIA BANQUE PRIVÉE FRANCE SA	200.00
24.07.2007	BANCO BPI SA	BANCO COMERCIAL PORTUGUÊS SA	179.81
29.04.2008	VENETO BANCA SCPA	BANCA POPOLARE DI INTRA SPA	176.79
26.06.2007	COMMERZBANK INLANDSBANKEN HOLDING GMBH	EUROHYPO AG	167.51
19.05.2009	BANCO POPULAR ESPAÑOL SA	BANCO DE ANDALUCÍA SA	160.57
04.11.2010	CRÉDIT MUTUEL ARKÉA SA	CRÉDIT FONCIER COMMUNAL D'ALSACE-LORRAINE	150.25
29.08.2012	CREDITO VALTELLINESE SC	CREDITO ARTIGIANO SPA	142.19
02.10.2006	VENETO BANCA SCPA	BANCA POPOLARE DI INTRA SPA	125.78
31.08.2009	NORDEA BANK AB	FIONIA BANK A/S	121.00
15.01.2008	BANCO POPOLARE SOCIETÀ COOPERATIVA	CASSA DI RISPARMIO DI LUCCA PISA LIVORNO SPA	116.20
30.03.2011	VENETO BANCA HOLDING SCPA	BANCA INTERMOBILIARE DI INVESTIMENTI E GESTIONI SPA	109.23
15.09.2008	SVENSKA HANDELSBANKEN AB	LOKALBANKEN I NORDSJÆLLAND A/S	108.54
22.04.2009	CRÉDIT AGRICOLE SA	BANKINTER SA	105.21
30.07.2008	CREDITO VALTELLINESE SC	CASSA DI RISPARMIO DI FANO SPA	100.00
25.09.2008	BANCO POPULAR ESPAÑOL SA	BANCO DE CRÉDITO BALEAR SA	99.13
21.04.2008	NATIONAL BANK OF GREECE SA	TT HELLENIC POSTBANK SA	97.26
20.04.2012	CAIXABANK SA	BANCO BPI SA	93.42
27.07.2009	BANCAPULIA SPA	BANCA MERIDIANA SPA	93.00
30.04.2008	CRÉDIT MUTUEL - CIC	BANCO POPULAR FRANCE	85.00

Announcement	Acquirer	Target	Deal Value (EUR mn)
29.05.2007	EIK BANK DANMARK A/S	SKANDIABANKEN A/S	84.45
04.03.2008	ROYAL BANK OF SCOTLAND GROUP PLC, THE	MARFIN POPULAR BANK PUBLIC CO., LTD	75.68
30.07.2008	CREDITO VALTELLINESE SC	CASSA DI RISPARMIO DI FANO SPA	72.03
07.03.2008	BANCO SANTANDER SA	BANCA MONTE DEI PASCHI DI SIENA SPA	70.19
30.03.2010	BANKAS SNORAS AB	LATVIJAS KRAJBANKA AS	67.81
07.02.2012	GET BANK SA	GETIN NOBLE BANK SA (OLD)	63.93
28.07.2009	LANDESKREDITBANK BADEN-WÜRTTEMBERG-FÖRDERBANK	WÜSTENROT & WÜRTTEMBERGISCHE AG	60.39
01.08.2008	BNP PARIBAS PRIVATE BANK	INSINGER DE BEAUFORT HOLDINGS SA	60.00
16.12.2009	BANK OF CYPRUS PUBLIC COMPANY LTD	BANCA TRANSILVANIA SA	58.00
04.10.2011	BANCO FINANCIERO Y DE AHORROS SA	CAIXA D'ESTALVIS LAIETANA	57.00
22.05.2006	DEUTSCHE POSTBANK AG	BHW HOLDING AG	56.58
15.12.2009	CRÉDIT AGRICOLE SA	EMPORIKI BANK OF GREECE SA	50.41
22.12.2010	CRÉDIT MUTUEL ARKÉA SA	CRÉDIT FONCIER COMMUNAL D'ALSACE-LORRAINE	49.95
03.10.2008	CRÉDIT AGRICOLE SA	BANKINTER SA	48.98
17.09.2009	CREDITO VALTELLINESE SC	BANCA COOPERATIVA CATTOLICA SPA	48.04
18.09.2012	SPAR NORD BANK A/S	SPARBANK A/S	45.57
13.11.2008	CRÉDIT AGRICOLE SA	EMPORIKI BANK OF GREECE SA	44.02
10.06.2009	GORENJSKA BANKA DD	ABANKA VIPA DD	43.86
11.12.2008	DELTA LLOYD BANK NV	BINCKBANK NV	38.23
12.04.2012	CRÉDIT AGRICOLE SA	BANCO ESPÍRITO SANTO SA	37.15
21.01.2008	SYDBANK A/S	BANKTRELLEBORG A/S	36.52
24.10.2012	INTESA SANPAOLO SPA	BANCA DI TRENTO E BOLZANO	36.51
24.05.2011	CRÉDIT AGRICOLE SA	EMPORIKI BANK OF GREECE SA	36.02
25.09.2008	BANCO POPULAR ESPAÑOL SA	BANCO DE GALICIA SA	34.05
25.09.2008	BANCO POPULAR ESPAÑOL SA	BANCO DE CASTILLA SA	30.34
13.06.2012	NATIONAL BANK OF GREECE SA	BANCA ROMANEASCA SA	26.00
10.07.2012	BANQUE CPH	CAISSE D'ÉPARGNE DE LA VILLE DE TOURNAI	22.00
09.02.2010	EMPORIKI BANK OF GREECE SA	EMPORIKI BANK ROMANIA SA	19.01
07.04.2011	UNIONE DI BANCHE ITALIANE SCPA	IW BANK SPA	14.86
22.12.2008	INTESA SANPAOLO SPA	BANKA KOPER DD	13.68
25.09.2008	BANCO POPULAR ESPAÑOL SA	BANCO DE VASCONIA SA	12.35
12.06.2009	EFG EUROBANK ERGASIAS SA	BANC POST SA	12.15
28.06.2011	BANCA POPOLARE DI VICENZA SCPA	BANCA DI CREDITO DEI FARMACISTI SPA	12.00
12.02.2009	BANK DNB NORD A/S	DNB NORD BANKAS AB	11.77
20.07.2011	GORENJSKA BANKA DD	ABANKA VIPA DD	10.27
22.06.2011	TT HELLENIC POSTBANK SA	T BANK SA	8.39

Announcement	Acquirer	Target	Deal Value (EUR mn)
12.09.2012	SALLING BANK A/S	VINDERUP BANK A/S	7.83
07.12.2012	ARBUTHNOT BANKING GROUP PLC	SECURE TRUST BANK PLC	6.48
13.01.2011	BANKAS SNORAS AB	LATVIJAS KRAJBANKA AS	4.98
19.10.2012	PIRAEUS BANK SA	GENERAL BANK OF GREECE SA	1.00

Appendix 1 shows the list of deals that were included in the BVPREM study. The names of the targets and of the acquirers are as of February 15, 2013 and may, therefore, differ from the names prior to the acquisition.

Appendix 2 Variable Definitions

Variable	Definition
ASSETDIV	Measure of how focused banks are on lending. Absolute value of the difference between target and acquirer of the ratio: $1 - ((\text{net loans} - \text{other earning assets}) / \text{total earning assets})$.
BVPREM	Purchase price divided by the book value of equity of the target on the fiscal year end prior to the merger announcement.
CAR	Cumulative Abnormal Returns (CAR) is the sum of the average abnormal returns over the specified event window. The abnormal returns are the difference between the realised daily returns and the expected returns as calculated by the market model.
CONTROL (dummy)	Binary variable equal to one if the deal involves a change in shareholder control and zero otherwise.
COVROE	Covariance of roe between bidder and target measured during maximum three years before the deal announcement.
CROSSB (dummy)	Binary variable equal to one if the acquirer and the target are chartered in different countries and zero otherwise.
DEP_INS	Equally weighted index measuring the strength of the deposit insurance regime in the jurisdiction of the target.
HHI	Hirschman-Herfindahl Index measures the degree of market concentration in the headquarter country of the target.
INTINC	Interest income divided by total operating income of the target.
LEV	Leverage ratio of the target: $\text{Book Value (Equity)} / \text{Book Value (Total Assets)}$.
LISTED (dummy)	Binary variable equal to 1 if the target is listed on a stock exchange.
REG_STRENGTH	Equally weighted index for the degree of regulatory and supervisory strength in the jurisdiction of the target.
RELASSET	Logarithm of total assets of the target divided by logarithm of total assets of the bidder.
RELCIR	Cost-to-income ratio of the target divided by Cost-to-income ratio of the bidder.
RELROE	Return on Average Equity of the target divided by Return on Average Equity of the bidder.
RELSIZE	Sum of bidder's and target's total assets divided by bidder's total assets.
RISK	Standard Deviation of roe of the target measured during maximum three years before the deal announcement.
ROE	Average return on average equity of the target over three years prior to the deal announcement.
SAVING (dummy)	Binary variable equal to 1 if the target is a savings bank.
SHPROTECT	Equally weighted index measuring the extent to which outside investors are protected by law from opportunistic insider behaviour.
TAGRWTH	Asset growth measure for the target over three years on a compounded basis.
TGDPGROWTH	Measure of gross domestic product growth in the years prior to the announcement date on a compounded basis.

Appendix 3 Regulatory Strength Index Composition

Target Country	Regulatory Strength Index												Index
	1	2	3	4	5	6	7	8	9	10	11	12	
Austria	1	1	1	1	1	1	1	0	1	1	1	1	11
Belgium	1	1	1	0	1	1	0	0	0	1	1	0	7
Brazil	1	1	1	1	1	1	1	1	1	0	1	1	11
Bulgaria	1	1	1	1	0	1	0	0	1	1	0	0	7
Cyprus	1	1	0	1	1	1	1	0	0	1	0	1	8
Denmark	1	1	1	1	1	1	1	1	0	1	0	1	10
France	1	1	1	1	1	1	0	0	0	1	0	0	7
Germany	1	1	1	0	1	1	1	0	1	1	1	1	10
Greece	1	1	1	1	1	1	1	0	0	1	0	1	9
Italy	1	1	1	1	1	1	1	0	1	1	0	1	10
Latvia	1	1	0	1	1	1	1	0	1	1	0	0	8
Lithuania	1	1	0	1	1	0	1	1	1	1	0	0	8
Luxembourg	1	1	0	1	1	1	1	0	1	1	1	0	9
Morocco	1	1	1	1	1	0	1	0	0	0	1	0	7
Netherlands	1	1	0	1	1	1	1	0	0	1	1	0	8
Norway	1	1	0	0	1	0	1	0	0	1	0	1	6
Poland	1	1	0	0	1	0	0	1	1	1	1	0	7
Portugal	1	1	0	1	1	0	0	1	1	1	0	0	7
Romania	1	1	1	1	1	1	1	1	0	1	0	1	10
Russia	1	1	1	1	1	1	1	0	1	1	1	1	11
Slovak Rep.	1	1	0	0	1	0	1	1	1	1	1	1	9
Slovenia	1	1	1	0	1	0	1	1	1	1	0	1	9
South Africa	1	1	1	1	1	0	1	0	0	1	1	1	9
Spain	1	1	0	1	1	0	0	0	0	1	1	1	7
Turkey	1	1	1	1	1	1	1	1	1	1	1	0	11
Ukraine	1	0	1	1	1	1	1	1	1	1	1	1	11
United Kingdom*													9
USA	1	1	1	1	1	1	1	1	1	1	1	1	12
Mean EU-27 Members	1.00	1.00	0.53	0.74	0.95	0.68	0.68	0.37	0.58	1.00	0.42	0.53	8.50

Parameter	Source World Bank (2011) Database
1	Q 10.5.1 c: Must banks disclose risk management procedures to public?
2	Q 3.7: Does your agency have the legal authority to require additional capital that is over-and-above the minimum required capital?
3	Q 9.1: Is there a formal definition of non performing loan?
4	Q 11.1 l m: Are there any mechanisms whose infraction leads to automatic imposition of sanctions on banks directors and managers?
5	Q 11.1 f: Can the supervisory agency order directors/management to constitute provisions to cover actual/potential losses?
6	Q 11.1 j k: Can the supervisory agency suspend director's decision to distribute dividends, bonuses, or management fees?
7	Q 11.3: Does the supervisory agency operate an early intervention framework that forces automatic action when certain regulatory triggers/thresholds are breached?
8	Q 11.5 a: Can the supervisory agency supersede bank shareholder rights and declare a bank insolvent?
9	Q 11.5 b: Does banking law allow the supervisory agency to suspend some or all ownership rights of a problem bank?
10	Q 11.1 i: Can the supervisory agency or any other government agency take measures aimed at bank restructuring and reorganization?
11	Q 11.1 n: Require commitment/action from controlling shareholder(s) to support the bank with new equity (e.g. capital restoration plan)?
12	Q 11.1 h: Forbearance possible?

Appendix 3 shows the national input data for the regulatory strength index. The data is taken from the Bank Regulation and Supervisory Survey that was conducted and published by the World Bank (2011). *For the United Kingdom the survey did not indicate sufficiently transparent data and, therefore, the value from the Buch and DeLong (2008) index is used.

Appendix 4 Deposit Insurance Cost Index Composition

Deposit Insurance Cost Index				
Target Country	1	2	3	Index
Austria	0	0	0	0
Belgium	0	0	1	1
Brazil	0	0	1	1
Bulgaria	0	0	1	1
Cyprus	0	0	1	1
Denmark	0	0	1	1
France	1	0	1	2
Germany	1	0	1	2
Greece	1	0	1	2
Italy	1	0	0	1
Latvia	1	1	1	3
Lithuania	0	0	1	1
Luxembourg	0	0	0	0
Morocco	0	0	1	1
Netherlands	0	0	0	0
Norway	1	0	1	2
Poland	0	0	1	1
Portugal	1	0	1	2
Romania	0	0	1	1
Russia	0	0	1	1
Slovak Rep.	0	0	1	1
Slovenia	0	0	0	0
South Africa	0	0	0	0
Spain	0	0	1	1
Turkey	1	0	1	2
Ukraine	0	0	1	1
United Kingdom	0	0	0	0
USA	1	0	1	2
Mean EU-27 Members	0.30	0.05	0.70	1.05

Parameter	Source World Bank (2011) Database
1	Q 8.14: Are deposit insurance premia risk adjusted
2	Q 8.10: Does the deposit insurance require co insurance
3	Q 8.12: Is there an ex ante fund/reserve to cover deposit insurance claims?

Appendix 4 shows the national input data for the deposit insurance cost index. The data is taken from the Bank Regulation and Supervisory Survey that was conducted and published by the World Bank (2011).

Appendix 5 Shareholder Protection Index and World Bank Rule of Law Index

Shareholder Protection Index								
Target Country	1	2	3	4	5	6	Sum	Index
Austria	0.0	0.0	0.0	0.5	1.0	1.0	2.5	21.8
Belgium	1.0	0.0	0.0	1.0	1.0	0.0	3.0	23.1
Brazil	1.0	0.0	1.0	1.0	1.0	1.0	5.0	22.6
Bulgaria	1.0	1.0	0.0	0.0	0.0	1.0	3.0	14.3
Cyprus	na	na	na	na	na	na	na	na
Denmark	0.0	1.0	0.0	1.0	1.0	1.0	4.0	35.5
France	1.0	0.0	0.0	0.5	1.0	1.0	3.5	27.7
Germany	1.0	0.0	0.0	0.5	1.0	1.0	3.5	29.2
Greece	0.0	0.0	0.0	0.0	1.0	1.0	2.0	12.8
Italy	0.0	0.0	0.0	0.0	1.0	1.0	2.0	11.4
Latvia	0.0	1.0	1.0	0.0	1.0	1.0	4.0	26.0
Lithuania	0.0	1.0	1.0	0.0	1.0	1.0	4.0	25.4
Luxembourg	0.0	0.0	1.0	0.0	1.0	0.0	2.0	17.1
Morocco	0.0	0.0	0.0	0.0	1.0	1.0	2.0	9.1
Netherlands	0.0	0.0	0.0	0.5	1.0	1.0	2.5	21.4
Norway	0.0	1.0	0.0	0.5	1.0	1.0	3.5	31.0
Poland	0.0	0.0	0.0	0.0	1.0	1.0	2.0	12.2
Portugal	0.0	0.0	0.0	0.5	1.0	1.0	2.5	17.6
Romania	0.0	1.0	1.0	1.0	1.0	1.0	5.0	24.8
Russia	0.0	1.0	1.0	0.0	1.0	1.0	4.0	13.0
Slovak Rep.	0.0	1.0	0.0	0.0	1.0	1.0	3.0	18.3
Slovenia	na	na	na	na	na	na	na	na
South Africa	1.0	1.0	0.0	1.0	1.0	1.0	5.0	26.0
Spain	1.0	0.0	1.0	1.0	1.0	1.0	5.0	36.3
Turkey	1.0	0.0	0.0	0.0	1.0	1.0	3.0	15.3
Ukraine	0.0	1.0	0.0	0.0	1.0	1.0	3.0	10.1
United Kingdom	1.0	1.0	0.0	1.0	1.0	1.0	5.0	42.2
United States	1.0	1.0	0.0	1.0	0.0	1.0	4.0	32.7
Mean EU-27 Members	0.4	0.4	0.3	0.4	0.9	0.9	3.4	22.3

World Bank Rule of Law Index						
Target Country	2006	2007	2008	2009	2010	2011
Austria	8.8	8.9	8.9	8.6	8.6	8.6
Belgium	7.4	7.6	7.6	7.8	7.8	7.9
Brazil	4.2	4.1	4.3	4.6	5.0	5.0
Bulgaria	4.6	4.7	4.6	4.9	4.8	4.8
Cyprus	7.2	7.2	7.4	7.4	7.4	7.1
Denmark	9.0	9.0	8.9	8.8	8.8	8.8
France	7.8	7.8	7.9	7.9	8.1	8.0
Germany	8.5	8.4	8.4	8.3	8.3	8.2
Greece	6.6	6.6	6.6	6.3	6.2	6.1
Italy	5.6	5.7	5.7	5.7	5.8	5.8
Latvia	6.3	6.4	6.6	6.6	6.6	6.6
Lithuania	6.2	6.2	6.2	6.4	6.5	6.5
Luxembourg	8.4	8.5	8.6	8.6	8.6	8.6
Morocco	4.6	4.5	4.5	4.6	4.6	4.6
Netherlands	8.5	8.5	8.5	8.6	8.6	8.6
Norway	9.0	8.9	9.0	8.8	8.8	8.8
Poland	5.7	5.8	6.0	6.3	6.4	6.5
Portugal	7.0	7.0	7.0	7.1	7.1	7.0
Romania	4.7	4.8	5.0	5.1	5.1	5.1
Russia	3.1	3.0	3.1	3.4	3.5	3.4
Slovak Rep.	6.0	5.9	6.1	6.1	6.2	6.3
Slovenia	6.7	6.8	7.0	7.2	7.0	7.1
South Africa	5.5	5.1	5.0	5.2	5.2	5.2
Spain	7.1	7.2	7.3	7.3	7.4	7.4
Turkey	5.0	5.0	5.1	5.2	5.2	5.2
Ukraine	3.3	3.4	3.5	3.4	3.3	3.3
United Kingdom	8.5	8.4	8.3	8.5	8.5	8.3
United States	8.2	8.2	8.3	8.1	8.2	8.2
Mean EU-27 Members	7.0	7.1	7.1	7.2	7.2	7.2

Appendix 5 displays the national inputs for the shareholder protection index. The first table includes binary variables based on Djankov et al. (2008) database. 1: Shareholder can mail their proxy votes, 2: No restrictions of selling shares prior to time of shareholder meeting, 3: Proportional representation of shareholders on board of directors, 4: Minority shareholders may require their shares to be bought back if in disagreement with major managerial initiatives (e.g. M&A), 5: Shareholders have pre-emptive rights to new issues of equity, 6: An extraordinary shareholder's meeting can be called using 10% or less of the shareholder capital. The sum of the six factors is then multiplied with the World Bank Rule of Law Index that is displayed in the second table in order to receive the Shareholder Protection Index value.

Appendix 6 Hirschman-Herfindahl Index

Target Country	Hirschman-Herfindahl Index					
	2006	2007	2008	2009	2010	2011
Austria	5.3	5.3	4.5	4.1	3.8	4.2
Belgium	20.4	20.8	18.8	16.2	14.4	12.9
Cyprus	10.6	10.9	10.2	10.9	11.2	10.6
Denmark	10.7	11.2	12.3	10.4	10.8	11.9
France	7.3	6.8	6.8	6.1	6.1	6.0
Germany	1.8	1.8	1.9	2.1	3.0	3.2
Greece	11.0	11.0	11.7	11.8	12.1	12.8
Italy	2.2	3.3	3.1	3.0	4.1	4.1
Latvia	12.7	11.6	12.0	11.8	10.0	9.3
Lithuania	19.1	18.3	17.1	16.9	15.5	18.7
Luxembourg	3.3	3.2	3.1	3.1	3.4	3.5
Netherlands	18.2	19.3	21.7	20.3	20.5	20.6
Poland	6.0	6.4	5.6	5.7	5.6	5.6
Portugal	11.3	11.0	11.1	11.5	12.1	12.1
Romania	11.7	10.4	9.2	8.6	8.7	8.8
Slovak Rep.	11.3	10.8	12.0	12.7	12.4	12.7
Slovenia	13.0	12.8	12.7	12.6	11.6	11.4
Spain	4.4	4.6	5.0	5.1	5.3	6.0
United Kingdom	5.2	5.1	3.7	3.6	4.2	5.2
Mean	9.8	9.7	9.6	9.3	9.2	9.4

Appendix 6 shows the values for the Hirschman-Herfindahl Index for the countries in the BVPREM study. A larger index indicates a larger degree of market concentration. The data was obtained from the ECB database.

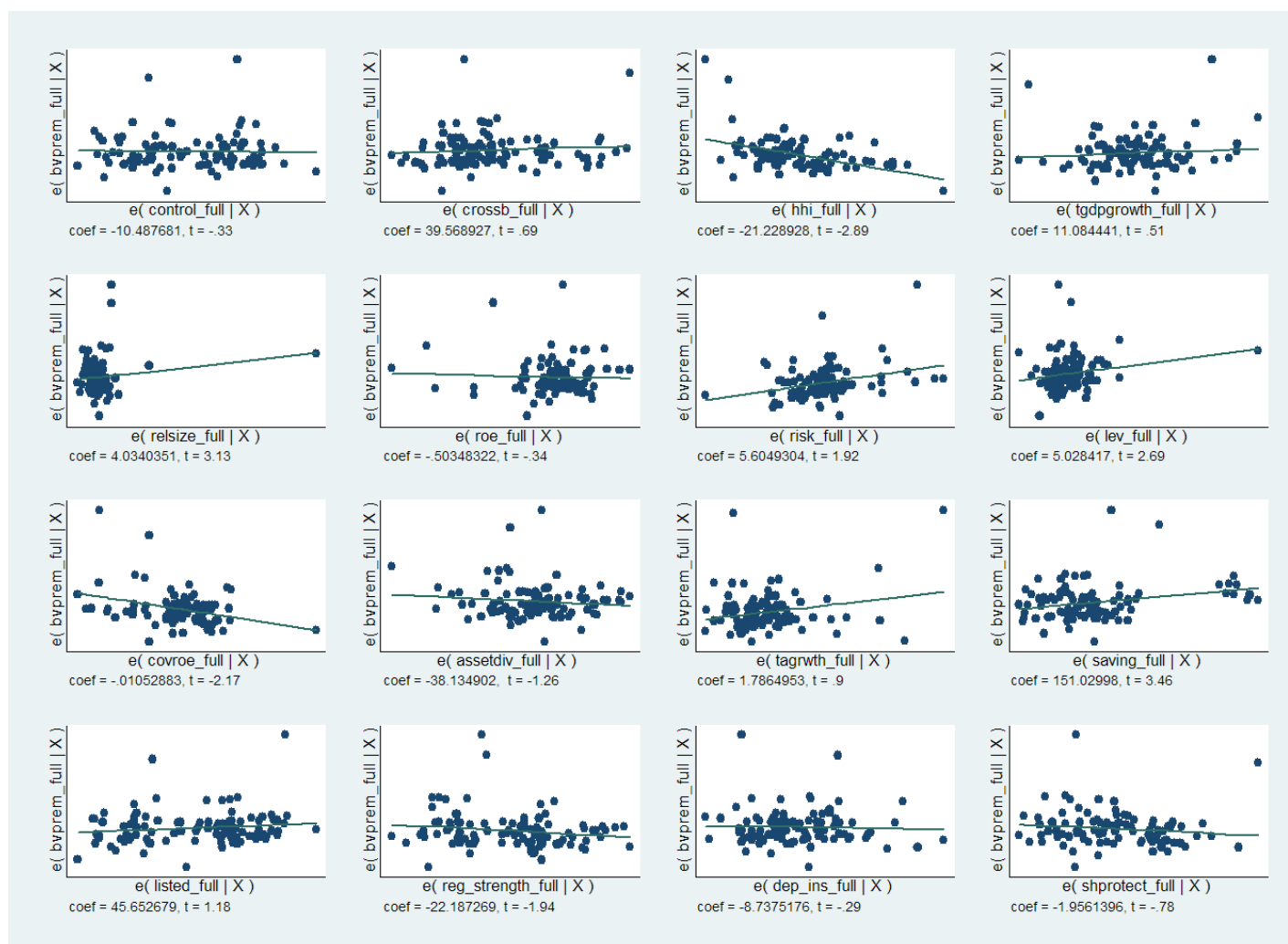
Appendix 7 Mandatory Bid Rules

Mandatory Bid Range	
Target Country	Range
Austria	30%
Belgium	50%
Cyprus*	20%
Denmark*	20%
France	33%
Germany	30%
Greece	50%
Italy	30%
Latvia*	20%
Lithuania	40%
Luxembourg*	20%
Netherlands	50%
Poland	25%
Portugal*	20%
Romania	33%
Slovak Rep.*	20%
Slovenia*	20%
Spain	25%
United Kingdom	15%
Mean	29%

Appendix 7 shows the Mandatory Bid Range threshold for the different EU 27 jurisdictions as reported by Nenova (2006).

*The threshold was not reported by Nenova (2006) and we used the 20% proxy for non-listed banks as suggested by Hernando et al. (2009).

Appendix 8 Partial Regression Plots – BVPREM Study Regression (3)



Appendix 8 displays the partial regression plot for regression (3) of the BVPREM study. The 16 different windows relate to the results for the 16 independent variables. The graphs show the relations between the single independent and the dependent variable (BVPREM) adjusted for the other independent variables in the model. The plotted line refers to the regression coefficient of the respective independent variables.

Appendix 9 List of Deals Included in Market Reaction Analysis

Announcement	Acquirer	Target	Deal Value (EUR mn)
20.05.2007	Unicredito Italiano SPA	Capitalia SPA	21,839.61
08.01.2007	National Bank of Greece SA	Finansbank AS	17,266.36
13.10.2008	Lloyds Banking Group PLC	HBOS PLC	16,366.21
08.11.2007	Banca Monte dei Paschi di Siena SPA	Banca Antoniana Popolare Veneta SPA	9,894.00
16.02.2007	Banco Bilbao Vizcaya Argentaria SA	Compass Bancshares INC	6,601.14
31.08.2008	Commerzbank AG	Dresdner Bank AG	6,484.72
07.03.2009	BNP Paribas SA	Fortis Bank SA/NV	4,119.71
07.02.2011	Banco Santander SA	Bank Zachodni WBK SA	3,941.93
28.02.2012	Deutsche Bank AG	Deutsche Postbank AG	2,420.79
18.02.2008	Intesa Sanpaolo SPA	Banca CR Firenze SPA	1,719.98
14.07.2008	Banco Santander SA	Alliance & Leicester PLC	1,674.86
13.10.2008	Banco Santander SA	Sovereign Bancorp Inc	1,476.11
09.05.2007	Unicredito Italiano SPA	Bayerische Hypo- und Vereinsbank	1,397.83
07.10.2011	Banco Popular Espanol SA	Banco Pastor SA	1,300.00
07.10.2010	Deutsche Bank AG	Deutsche Postbank AG	1,205.04
26.03.2007	Unicredito Italiano SPA	Bank Austria Creditanstalt AG	1,045.00
30.07.2007	Societe Generale	JSC Rosbank	1,041.77
28.10.2009	Deutsche Bank AG	Sal Oppenheim JR. & CIE. SCA	1,000.00
26.03.2012	Caixabank SA	Banca Civica SA	977.38
25.06.2010	Banco de Sabadell SA	Banco Guipuzcoana SA	826.79
23.09.2008	Bank BPH SA	GE Money Bank SA	817.61
18.04.2007	KBC Groupe NV	Absolut Bank	761.00
07.02.2007	Swedbank AB	TAS Commerzbank AG	722.99
11.12.2009	Societe Generale	Credit Du Nord	645.00
11.12.2007	Credit Agricole SA	Agos SPA	546.00
18.09.2007	Standard Chartered PLC	American Express Bank Ltd	542.63
20.08.2008	National Bank of Greece SA	Finansbank AS	475.11
26.06.2008	Bank of Cyprus Public Company LTD	Uniastrum Bank KB OOO	450.49
17.07.2007	Paris-Orleans	Concordia BV	446.00
18.09.2007	Commerzbank AG	Bank Forum	435.00
17.08.2009	Commerzbank AG	Deutsche Schiffsbank AG	400.00
15.05.2007	Banca Monte dei Paschi di Siena SPA	Cassa di Risparmio di Biella e Vercelli - Biverbanca	398.70
24.10.2007	UBS AG	Caisse Centrale de Reescompte SA	387.00

Announcement	Acquirer	Target	Deal Value (EUR mn)
20.03.2008	KBC Groupe NV	Istrobanka AS	350.00
26.02.2007	Societe Generale	Banco Cacique SA	340.89
23.06.2008	Banca Popolare Dell'Emilia Romagna SPA	Meliorbanca Group SPA	289.97
03.03.2008	Societe Generale	JSC Rosbank	284.93
30.07.2008	Credito Valtellinese SC	Cassa di Risparmio di Fano SPA	281.00
09.09.2011	Investec PLC	Evolution Group PLC	280.25
30.01.2007	KBC Groupe NV	DZI AD	260.00
26.10.2009	BarclaysPLC	Standard Life Bank PLC	254.37
25.07.2007	Intesa Sanpaolo SPA	Banca CR Firenze SPA	213.66
27.02.2008	Banco Santander SA	Banco ABN Amro Real SA	209.00
11.07.2007	Banco Popular Espanol SA	Totalbank	204.21
19.02.2007	BNP Paribas SA	Dexia Banque Privee France SA	200.00
19.05.2009	Banco Popular Espanol SA	Banco de Andalucia SA	160.57
15.10.2010	Intesa Sanpaolo SPA	Banca Monte Parma SPA	159.00
25.11.2008	Credit Agricole SA	Credit Du Maroc	145.00
29.08.2012	Credito Valtellinese SC	Credito Artigiano SPA	142.19
27.05.2009	Societe Generale	JSC Rosbank	130.41
24.01.2007	Banco de Sabadell SA	Transatlantic Bank	129.52
31.08.2009	Nordea Bank AB	Fionia Bank	121.00
21.07.2009	Banco de Sabadell SA	Mellon United National Bank	111.00
15.09.2008	Svenska Handelsbanken	Lokalbanken i NORDSJÆLLAND A/S	108.54
23.09.2008	Banca Popolare di Milano SCARL	Anima SGR SPA	106.73
26.02.2010	Banca Popolare di Sondrio SCPA	Factorit SPA	103.00
25.09.2008	Banco Popular Espanol SA	Banco de Credito Balear SA	99.13
03.01.2007	KBC Groupe NV	A Banka AD	96.50
30.03.2007	Bank Polska Kasa Opieki SA	HVB Bank Ukraine JSCB	84.28
28.04.2011	Sparebanken Vest	Sparebanken Hardanger	68.60
01.04.2010	Intesa Sanpaolo SPA	Casa die Risparmi di Fiorli e della Romagna SPA	50.78
15.12.2009	Credit Agricole SA	Emporiki Bank of Greece	50.41
17.09.2009	Credito Valtellinese SC	Banca Cooperativa Cattolica SPA	48.04
30.05.2011	KBC Groupe NV	Aabsolut Bank ZAO	46.73
18.09.2012	Spar Nord Bank A/S	Sparbank A/S	45.57
13.11.2008	Credit Agricole SA	Emporiki Bank of Greece	44.02
21.01.2008	Sydbank A/S	Banktrelleborg A/S	36.52
24.10.2012	Intesa Sanpaolo SPA	Banca di Trentino e Bolzano	36.51
24.05.2011	Credit Agricole SA	Emporiki Bank of Greece SA	36.02

Announcement	Acquirer	Target	Deal Value (EUR mn)
31.03.2011	BANCA IFIS SPA	Toscana Finanza SPA	35.46
25.09.2008	Banco Popular Espanol SA	Banco de Galicia SA	34.05
21.10.2008	Sparebank1 Nord-Norge AS	Glitnir Bank ASA	33.13
09.10.2012	Credito Valtellinese SC	Credito Siciliano SPA	30.38
25.09.2008	Banco Popular Espanol SA	Banco de Castilla SA	30.34
01.10.2009	Credit Agricole SA	Industrialno-Ekspornyy Bank PAT	26.61
12.11.2007	OTP BANK RT	Donskoi Narodnyi Bank OOO	26.48
13.06.2012	National Bank of Greece SA	Banca Romaneasca SA	26.00
01.02.2007	Intesa Sanpaolo SPA	Banka Koper DD	24.94
02.04.2012	Banca Popolare Dell'Emilia Romagna SPA	Cassa di Risparmio di Bra SPA	23.90

Appendix 9 shows the list of deals that were included in the market reaction analysis. The names of the targets and of the acquirers are as of February 15, 2013 and may, therefore, differ from the names prior to the acquisition.