

# Short-term Stock Price Behaviour around European Cross-border Bank M&As

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## Abstract

The current study explores the short-term stock price reaction of cross-border bank mergers and acquisitions (M&As) in Western Europe for the period 1998-2009 which includes 40 M&A deals. Employing the classical event study methodology, we probe into the stock price effects of cross-border bank M&As by calculating abnormal returns for both bidders and targets. Moreover, we employ multivariate regression analysis in order to identify the determinants of value creation from cross-border bank M&As. Consistent with the pertinent literature, we demonstrate that targets significantly benefit from M&As, while bidders undergo price erosions during the M&A days. In specific, we find positive and significant abnormal stock price reaction of more than 3% on M&A day for targets and negative abnormal returns for bidders. The differential market behaviour between bidders and targets is more evident when the return on equity of the involved banks is taken into account.

**JEL classification numbers:** G11; G14; G15; G34

**Keywords:** Cross-border M&As, bidders, targets, banks, Western Europe

## 1 Introduction

The trend of merging bank institutions dates back to the early 2000s when the benefits of conglomeration were realized by bank managers, shareholders and policy makers. According to Pilloff (1996), the main motive for a bank to be involved in a M&A is the increased market power which in turn leads to higher profits and probably to cost reduction through the elimination of the unnecessary labour, the closure of redundant

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bank branches and the centralization of back office functions. Moreover, an increase in market power is aligned with a reduction in a bank's cost of capital (Keeley, 1990).

Mergers and acquisitions are two terms that are distinct for investors and professionals alike. Acquisition refers to the case that a firm takes over another company and assimilates it, while mergers refer to two entities that mutually agree to become one. However, we use the two terms interchangeably. It is often referred that consolidated institutions provide more benefits to shareholders than two separate entities. The main source of excess value is derived from the performance improvement, which involves efficiency growth, accrued market power, raising capital efficiency, international expansion, diversification improvement and cost efficiency (Frohlich and Kavan, 2000). Additionally, a firm take part in a M&A deal in order to better exploit technologies and create value for its shareholders. According to Altunbas and Marqués (2008) cross border mergers seem to be more oriented towards growth and operational performance compared with domestic M&As. However, cross-border M&As may display operating and possibly foreign exchange risks due to cultural differences among countries in relation to accounting, reporting and regulation issues (Asimakopoulos and Athanasoglou, 2009).

The short-term impact of cross-border M&A announcements on stock prices remains inconclusive. Both the corporate finance and banking literature provides rationales for both positive and negative market reaction. On the one hand, a stock price appreciation can be construed by an increase in efficiency or in market power following the deal (e.g., Berger and Humphrey, 1992, Cybo-Ottone and Murgia, 2000). On the other hand, the market response may be negative for an international acquisition if investors perceive that the firm is longer able to reap sufficient domestic profits (Doukas and Travlos, 1998). Moreover, according to hubris hypothesis, an increased agency cost of international acquisition may also produce negative stock price reaction (Roll, 1986).

International expansion through M&As could be linked with greater reactions than domestic M&As due to the exploitation of market imperfections, diversification benefits and positive signaling effects (Hudgins and Seifert, 1996). Our study attempts to shed some light on cross-border bank M&As for a sample of listed banks in Western Europe for the period 1998-2009. Specifically, we examine the short-term stock price reaction of bidders and targets surrounding M&As announcements. In addition, we explore the role of profitability in explaining abnormal stock price behaviour around announcement days. Finally, we conduct a multi-variable regression analysis in order to detect the factors that explain the stock price movements provoked by the M&As announcements.

We are motivated to examine the short-term value effects of bank M&As deals in Western Europe since the majority of relevant studies are concentrated in the US market. Moreover, the existing literature mainly covers cross-border transactions among industrial companies leaving the banking sector less explored. Our study covers a period during which a significant number of events occurred in the banking sector resulting in an international consolidation trend in financial institutions. First, it was the deregulation of financial institutions in the US and in the EU during the 1990s (Bessler and Murtagh, 2002). Second, it was the introduction of the Basel Accord with the implementation of CAD-II, which in 1998 replaced CAD-I in an attempt to refute earlier criticism by introducing more efficient treatment of the off-balance sheet items. Third, it was the introduction of the Euro as the common currency for 17 member states. This was one of the key economic events in the history of global financial markets and had a significant effect on the harmonisation and integration of the European financial markets (Adjaoute and Danthine, 2003). Under this economic environment banks encounter challenges to

exploit scale and scope economies and to generate the asset size necessary for them to become major international financial institutions (Bessler and Murtagh, 2002). Therefore, we hope that our results will contribute to the pertinent literature.

The rest of paper is structured as following: Section 2 presents the relevant literature. Section 3 describes the research design of the study, while section 4 presents the empirical findings. Section 5 summarizes the main results of the study.

## **2 Literature Review**

The European banking system has historically undergone significant restructuring. Although the European Committee has repeatedly encouraged banks to merge in order to achieve economies of scale and scope and greater efficiency, during the 1990s, a limited number of cross-border bank M&As occurred in Western European countries. However, when EU banks started to consider expanding outside their national borders, they were especially interested in Eastern European countries (Asimakopoulos and Athanasoglou, 2009). A notable wave of cross-border bank M&As in Europe emerged in 2000s as a natural response to the prospects that the Euro-zone would offer to EU members and their financial institutions.

In a study of cross-border mergers in the OECD countries in the 1990s, Focarelli and Pozzolo (2001) found that cross-border acquisitions are fewer in banking than in other sectors. Moreover, they argue that banks in countries in which the banking sector is larger and more profitable are more likely to engage in cross-border activity. The relevant literature examining stockholder gains associated with bank M&As yields mixed results. Most of the international studies (see, for example, Kyimaz, 2004; Akhibe and Madura, 2004; Lensink and Maslennikova, 2008; Asimakopoulos and Athanasoglou, 2009) investigating bank M&As find that bank targets generally gain at the expense of the acquiring banks, while bidders undergo negative wealth changes. Some studies, however, find that the announcement of bank M&As neither creates nor destroys shareholder value (Hannan and Wolken, 1989; Pilloff and Santomero, 1998), while others find that the announcements of bank M&As do create value (Goddard, et al., 2012; Beltratti and Paladino, 2013).

Waheed and Mathur (1995) examined the stock price reaction to foreign expansion of the top 25 US banks during the period 1963-1989 using a sample of 259 M&A transactions. They found that the shareholders of US banks engaging in foreign expansion, underwent significant negative abnormal returns of -0.17% on day 0.

The value effects of cross-border M&As in the US were further explored by Hudgins and Seifert (1996) who distinguished domestic from cross-border M&As for the period 1968-1989. In line with the predominant view that targets gain and bidders lose, the authors find that targets experience in a three-day event window (-1,+1) a cumulative abnormal return (CAR) of 7.30% in the case of cross-border M&As and 6.44% in the case of domestic bank M&As, while acquirers experience an insignificant stock price reduction of 0.25%. Acquirers of domestic US bank M&As earned a weak positive CAR of 0.49%. Overall, the above results are consistent with a competitive market for acquisitions of financial firms in which acquirers do not gain or lose at the announcement of the M&A, while shareholders of targets (sellers) receive all the gains. The target shareholders are alleged to gain due to improvements in resource allocation or market services.

The consolidation of two of the largest Canadian banks in 1998 and the subsequent Canadian government's disapproval of these mergers was the motive for Bessler and Murtagh (2002) to probe into the short-term share price behaviour of Canadian banks engaged in 26 cross-border and 17 domestic acquisitions of other financial services firms (i.e., insurance companies, wealth management companies, retail banks) between January 1998 and June 2001. Over the 11-day event window, bank share prices fell on average by -2.7%, with most of the fall occurring after the announcement (-2.6%).

Kiyamaz (2004) investigated the impact of M&As on US bidders and targets involved in cross-border mergers of financial institutions. The findings indicated that while US targets experience positive and significant share price appreciations during the three days (-1, +1) surrounding the M&A day (CAR of 3.41%), US bidders encounter insignificant wealth gains during the merger announcements (CAR of 0.38%). The results from regressions demonstrated that the macroeconomic variables, including foreign and US economic conditions, level of economic development of target country, exchange rate volatility along with the effectiveness of foreign government, relative size of participants, and control of target, largely explain the capital gains to bidders and targets.

The pertinent literature regarding cross-border merger activity in Europe seems to be largely consistent with the US experience in that the target financial institution's shareholders experience abnormal returns, whereas acquiring bank's shareholders undergo either positive but not significant or negative abnormal returns. Rad and Van Beek (1999) were the first who analyzed a sample of 58 cross-border bank M&As for a period spanning from 1989 to 1996 in Europe. Rad and Van Beek (1999) showed that the shareholders of the acquiring bank involved in a cross-border M&A experienced a non-significant abnormal return on (-0.32%) and around M&A deals (-0.41% on days -1 and 0). On the other hand, stockholders of targets reaped a statistically significant abnormal return of 3.77% on day 0. The authors did not find a significant difference in cross-border activity compared to domestic M&A transactions. These results rendered a mixed support for the international hypothesis tests according to which there is a difference between domestic and foreign acquisitions.

Cybo-Ottone and Murgia (2000) studied 54 European M&A deals between 1988 and 1997 and found an insignificant CAR of three days (0.99%) regarding the returns for the bidders' shareholders. The authors focused on cross-border deals suggesting that these did not capture positive expectations from the market. These results were remarkably different from those reported for US bank mergers. Cybo-Ottone and Murgia (2000) attributed their different results to the different structure and regulation of EU banking markets, which were shown to be more similar between themselves vis-à-vis the US banking market.

Beitel et al. (2004) explored 98 European M&A transactions that took place between 1985 and 2000 in 15 EU members plus Norway. Using regression techniques, they checked for different potential value drivers regarding their influence on the cumulative abnormal return (CAR). Their findings indicated that cross-border deals appear to increase the cumulative abnormal return of the target bank, while the bidders create values in domestic transactions. For the combined entity the geographic focus, however, is not an important value driver. Moreover, they found that less active bidders create more value than more active/experienced bidders. This result is at odds with US research and may indicate that managers of frequent European bidding banks may be motivated by other objectives than creating shareholder value.

Campa and Hernando (2006) looked at European M&As in various industries over the

period 1998 until 2002. They found that in the case of cross-border deals acquiring firms from the financial sector received negative cumulative abnormal returns of 0.39% on days -1, 0 and +1. Similar results were obtained in the case of target firms. In addition, target banks displayed substantial improvements in their return on equity and efficiency following their acquisition.

Lensink and Maslennikova (2008) analyzed value gains to acquirers based on a sample of 75 banks from 19 European countries for a period spanning 1996 to 2004. They documented positive and statistically significant abnormal returns for the aggregate acquisition sample (a CAR of three days equal to 0.39%).

Ekkayokkaya et al. (2009) used a sample of 963 bank M&As in Europe and tested whether changes had an impact on announcement period gains of the banks acquiring targets by examining the pre-euro, run-up to the euro and post-euro eras. The authors found that, on average, banks operating within the EU did not produce any significant value to stockholders' wealth by announcing takeovers. Announcement period (3 days) excess returns were equal to 0.029%, however, statistically insignificant. This is consistent with the pertinent literature on M&As which suggests bidders do not make substantial gains from takeovers (see, for example, Cybo-Ottone and Murgia, 2000; Campa and Hernando, 2004). Further empirical evidence indicated that bidders' gains have fallen with the development of economic and monetary union. It also revealed significant differences in the gains from acquisitions within and outside the Eurozone.

In sum, the extant literature reveals that bank M&As transactions are related with positive abnormal returns for targets and negative for bidders on the announcement date. Therefore, we can assert that targets are those that benefit from a M&A deal in the short-term by experiencing share price appreciations surrounding the announcement date. On the other hand, the shareholders of bidding banks express their concern about the outcome of M&A transactions.

### 3 Research Design

#### 3.1 Data

The sample of cross-border M&As was derived from Bloomberg by setting the following criteria:

- i) The announcement date of the merger or acquisition was set between 01/01/1998 and 31/12/2009.
- ii) Both acquirers and targets should be banks having the same 2-digit SIC code.
- iii) M&As had been completed and not pending or withdrawn.
- iv) The acquiring and the acquired bank were located in Western Europe.
- v) Both acquirers and targets were listed banks in a Western European share market.
- vi) Acquisitions resulted in a majority stockholding for the acquiring bank.
- vii) Multiple M&As within the same calendar year from the same bidder were excluded from the sample. The reason behind this decision is that the conveyed information content of the first M&A announcement is mitigated in the subsequent M&A announcements.

The above criteria rendered a final sample consisting of 40 cross-border M&A transactions. To calculate abnormal returns around M&As, daily closing prices 250 days before and 10 days after the announcement date of the merger were collected from Bloomberg for the banks' equities and for their corresponding market indices.

### 3.2 Methodology

We employ standard event study methodology (Brown and Warner 1985) to test for abnormal stock returns (AR) and cumulative abnormal stock returns (CAR) 21 days (-10, +10) surrounding the M&A announcement date (day 0). To gauge potential share price effects emanating from M&A deals, we use both the market model and the market-adjusted returns model both for bidding banks and targets. More formally, the market model is estimated as:

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

where  $R_{it}$  is the return for stock  $i$  at time  $t$ ;  $R_{mt}$  is the return on the market index and  $\varepsilon_{it}$  is the residual;  $\alpha_i$  and  $\beta_i$  are the ordinary least squares (OLS) estimates of the intercept and the slope of the market-model regression. For each stock  $i$ , we use the market model to calculate abnormal returns  $AR_{it}$  at time  $t$ , based on the parameters we have estimated for the period  $t=-250$  to  $-11$ :

$$AR_{it} = R_{it} - [\hat{\alpha}_i + \hat{\beta}_i R_{mt}] \quad (2)$$

We investigate event windows of 2-days, ( $t=-1$  to  $t=0$ ), 3-days ( $t=-1$  to  $t=+1$ ), 11-days ( $t=-5$  to  $t=+5$ ) and 21-days ( $t=-10$  to  $t=+10$ ), where  $t=0$  is the announcement date. Under the null hypothesis that the given event has no impact on the mean or variance of returns for bank stock, we use the standardized cumulative abnormal return (SCAR) (Bessler and Murtagh, 2002).

$$SCAR_{t(event)} = \frac{CAR_{t(event)}}{\sigma_{i(event)}} \quad (3)$$

where  $\sigma_i$  is the standard error from the estimated regression. In addition to the daily abnormal returns (ARs) we compute cumulate abnormal returns (CARs) for every bank in each one of the event windows. For a given bank and event, the CAR is the sum of the abnormal returns for each separate bank during that event window. Because we use a 250-day estimation window, the standard normal distribution provides a reasonable approximation to the distribution of the SCARs. For some events we also aggregate the CARs across the banks within an event period (Bessler and Murtagh, 2002).

As a robustness test, we also compute abnormal returns for bidders and targets using the market-adjusted returns model. This model assumes an alpha coefficient of zero and a slope (beta) equal to unity. More formally, the market-adjusted returns model is estimated as:

$$AR_{it} = R_{it} - R_{mt} \quad (4)$$

In general, the market-adjusted model and the market model are both widely accepted in the finance literature.

### 3.3 Descriptive Statistics

Table 1 presents the sample distribution of the 40 M&A deals during the period 1998-2009. 1999 and 2000 seem to be the most attractive years for M&As. In fact, 7 cross-border bank M&A deals took place in year 1999 and 9 deals in 2000. This deal concentration can be attributed to the prospects that banks would enjoy from the creation of Euro-zone as well as the bull market conditions of the aforementioned period. The lure of common currency (Euro), the monetary unification and the operation of the European Central Bank (ECB) as the ultimate bank supervisory body for all banks operating in the Eurozone seem to have sparked a domestic and cross-border merger wave in financial institutions in the EU. The rest of M&A transactions do not appear to be concentrated around certain years, but instead they are scattered across the examined period.

Table 1: Distribution of cross-border bank M&As per year

Year	Number of cross-border M&As	%
1998	2	5.0%
1999	7	17.5%
2000	9	22.5%
2001	1	2.5%
2002	2	5.0%
2003	4	10.0%
2004	3	7.5%
2005	3	7.5%
2006	4	10.0%
2007	2	5.0%
2008	2	5.0%
2009	1	2.5%
Total	40	100.0%

Table 2 contains information regarding the home country of bidders and targets. It appears that banks from Spain (8 deals) and Sweden (7 deals) are more likely to expand their operation abroad. On the other hand, Italy (7 deals) appears to be the most attractive hosting country for cross-border bank M&As followed by Germany, Greece and Norway (5 deals each). Countries that did not become members of Euro-zone, such as Sweden, Denmark and the UK, seem not to be the first choice of banks seeking cross-border expansion.

Looking at characteristics of acquirers and targets before the event, Morck et al (1988) argued that a potentially pre-event poor performance of targets vis-à-vis bidders, it is more likely that the acquisition is motivated by the desire to replace inefficient management than by the pursuit of synergy. Panel A of Table 3 presents descriptive statistics for acquiring banks one year before their involvement in M&As. The average net income was 3,199 million of Euros and the corresponding total assets were 534,772 million Euros. The mean ROA and ROE one year before M&As was 0.69% and 14.66%, respectively. Total loans as a percentage of total deposits exceeds 100% (185.25%)

implying excessive lending on the part of acquirers one year prior to M&As. The percentage of non-performing assets to total loans was quite low (2.44%), while non-performing assets to total assets was even lower (1.13%). Finally, the average profit margin was 20.88% suggesting that acquiring banks were profitable entities looking for an increased market share abroad.

Panel B contains some descriptive statistics for the group of target banks one year prior to the M&A deal. The average net income is 420.47 million Euros much less than the corresponding figure for the group of bidders. The same holds for total assets (108,993.8 million Euros), total equity (4,356.52 million Euros) and total liabilities (104,635.59 million Euros). Surprisingly, target banks display a little higher ROA (0.76%) compared to bidders (0.69%) in the last year before the M&A transaction. Finally, the mean ROE (11.77%) and profit margin (18.21%) of targets are *prima facie* higher than those of bidders.

Table 2: Distribution of cross-border M&amp;As by country origin

TARGET COUNTRY	ACQUIROR COUNTRY												
	Belium	Cyprus	Denmark	France	Germany	Iceland	Italy	Luxemburg	Netherlands	Spain	Sweden	UK	TOTAL
Austria					1		1						2
Denmark											3		3
France	2											1	3
Greece		2		2	1								5
Germany							4				1		5
Italy				2	1				2	2			7
Malta												1	1
Norway			1			1					3		5
Portugal										4			4
Spain				1				1				1	3
UK										2			2
TOTAL	2	2	1	5	3	1	5	1	2	8	7	3	40

Table 3: Descriptive statistics for bidders and targets one year before the M&amp;A

Panel A: Descriptive statistics for bidders					
	Mean	Median	St. Deviation	Max	Min
Net income (in millions of Euros)	3,199.81	2,247.17	3,236.73	15,508	-173.70
Total assets (in millions of Euros)	534,772.25	443,943	457,803.81	1,859,382	12,163.07
Total equity (in millions of Euros)	23,486.32	20,785	17,703.46	74,491	469.10
Total liabilities (in millions of Euros)	511,285.55	414,520	441,917.09	1,784,891	11,509.41
ROA	0.69	0.66	0.46	2.02	-0.72
ROE	14.66	15.02	8.38	27.94	-23.01
Total Loans to Total Deposits	185.25	123.93	293.65	1929.66	38.83
Non-performing assets to Total Loans	2.44	1.84	1.69	6.31	0.19
Total Loans to Total Assets	50.75	50.96	14.81	81.71	16.46
Non-performing assets to Total Assets	1.13	0.87	0.81	3.47	0.13
Loan loss reserves to Non-performing assets	105.78	82.35	53.22	233.28	55.46

NPLs to Equity	29.48	29.55	24.34	72.67	0.00
NPLs to Total Assets	1.37	0.76	1.36	3.47	0.00
Total Debt to Total Capitalization	88.18	90.35	8.11	96.85	57.02
Total Debt to Equity	1195.98	1030.22	707.53	3376.99	146.33
Long-term Debt to Total Capitalization	31.10	23.19	18.95	68.91	1.37
Long-term Debt to Equity	420.48	331.48	386.35	1734.86	8.40
Profit Margin	20.88	20.37	11.95	54.76	-17.35

## Panel B: Descriptive statistics for targets

	Mean	Median	St. Deviation	Max	Min
Net income (in millions of Euros)	420.47	197.30	988.25	4901.00	-2,425.00
Total assets (in millions of Euros)	108,993.80	42,836.28	211,931.98	1,195,086.00	479.43
Total equity (in millions of Euros)	4,356.52	2,175.50	5,576.76	26,938.00	44.53
Total liabilities (in millions of Euros)	104,635.59	40,231.27	206,853.41	1168,148.00	434.90
ROA	0.76	0.51	1.05	6.53	-0.51
ROE	11.77	10.83	13.59	79.26	-22.27
Total Loans to Total Deposits	145.21	143.13	58.34	269.54	30.23
Non-performing assets to Total Loans	1.64	1.15	1.47	6.21	0.00
Total Loans to Total Assets	62.47	64.44	17.19	93.85	15.97
Non-performing assets to Total Assets	2.54	2.19	2.29	10.27	0.29
Loan loss reserves to Non-performing assets	155.59	111.89	112.92	481.86	41.34
NPLS to Equity	14.29	10.90	14.44	37.47	0.01
NPLS to Total Assets	0.53	0.33	0.57	1.46	0.00
Total Debt to Total Capitalization	81.61	88.87	17.44	96.49	1.13
Total Debt to Equity	792.73	795.87	575.27	2,746.05	1.14
Long-term Debt to Total Capitalization	32.67	35.24	24.79	90.38	0.00
Long-term Debt to Equity	387.68	280.01	433.27	1,741.71	0.00
Profit Margin	18.21	15.76	18.89	96.67	-26.36

Notes: ROA is return on assets, ROE is return on equity, NPLs are non-performing loans

## 4 Empirical Results

### 4.1 Short-term Reaction of Bidders

Table 4 shows the average abnormal returns (AARs) commencing 10 days before and ending 10 days after the M&A deal for the portfolio of banks that acquired or merged with a foreign bank. In line with the pertinent literature, we find negative market reaction on and around M&As deals for bidders. In specific, the average AR is -0.306% on day 0 as calculated by the market model and -0.374% as calculated by the market-adjusted model. In both models, the market reaction is non-significant. Looking at the cumulative average abnormal returns (CAARs) for two (-1, 0) and three days (-1, +1) we see that the market model induces insignificant negative reaction of -0.709% and -0.983%, respectively. Similar, no-significant, share price losses are observed from the market-adjusted model. In particular, the CAAR (-1, 0) is -0.800% and the CAAR (-1, +1) is -1.071%. The results show that the market decodes negatively the intention of European banks to acquire or merge with a foreign credit institution. Moreover, we do not observe significant market response to M&As deals in the pre-M&A period. This result implies that there are no information leakages for the upcoming M&A deals. In contrast, the negative signal send by announcing M&As persists even for the next five days after the actual announcement. Hence, the CAAR of (+1, +5) amounts to -0.342% as computed by the market model. Similar results are obtained from the market-adjusted model (-0.134%). Overall, we can argue that the negative share price reaction reveals the market perception for the outcome of the M&A deal. This is also in line with Doukas and Travlos (1988) who pointed out that the market reaction may be negative for an international expansion through M&As if investors consider that bidder is no longer able to gain sufficient domestic profits.

Table 4: Average abnormal returns (AAR) and cumulative average abnormal returns (CAAR) of acquirers

Day	Market Model returns			Market-adjusted returns		
	AAR %	t-statistic	CAAR%	AAR %	t-statistic	CAAR%
-10	0.150	0.23	0.150	0.204	1.07	0.204
-9	0.415	0.63	0.565	0.495	1.57	0.700
-8	-0.227	-0.34	0.339	-0.296	-1.15	0.404
-7	-0.004	-0.01	0.335	-0.066	-0.27	0.337
-6	0.054	0.08	0.388	-0.007	-0.02	0.331
-5	0.401	0.61	0.789	0.451	0.96	0.782
-4	0.304	0.46	1.093	0.377	0.67	1.159
-3	-0.083	-0.13	1.010	-0.168	-0.63	0.991
-2	0.066	0.10	1.076	0.088	0.35	1.078
-1	-0.403	-0.61	0.672	-0.426	-1.59	0.653
0	-0.306	-0.47	0.366	-0.374	-1.47	0.278
1	-0.274	-0.42	0.093	-0.271	-1.20	0.007
2	0.076	0.12	0.169	0.028	0.12	0.035
3	0.012	0.02	0.181	0.246	1.09	0.281
4	0.232	0.35	0.413	0.241	1.18	0.521
5	-0.389	-0.64	0.024	-0.377	-0.85	0.144
6	0.405	0.62	0.429	0.515	1.61	0.659
7	0.417	0.63	0.846	0.368	1.22	1.027
8	0.156	0.24	1.002	0.031	0.11	1.058
9	-0.372	-0.57	0.630	-0.381	-1.40	0.676
10	0.336	0.51	0.966	0.317	0.47	0.993
Period	CAAR %	t-statistic		Period	CAAR %	t-statistic
(-10 -1)	0.672	0.32		(-10 -1)	0.653	0.73
(-5 -1)	0.284	0.19		(-5 -1)	0.322	0.51
(-1 0)	-0.709	-0.76		(-1 0)	-0.800	-1.01
(-10 +10)	0.966	0.32		(-10 +10)	0.993	0.77
(-5 +5)	-0.364	-0.17		(-5 +5)	-0.187	-0.20
(-1 +1)	-0.983	-0.86		(-1 +1)	-1.071	-1.19
(+1 +5)	-0.342	-0.23		(+1 +5)	-0.134	-0.21
(+1 +10)	0.600	0.29		(+1 +10)	0.714	0.80

Notes: Average abnormal returns are calculated using the market model as follows:

$AR_{i,t} = R_{i,t} - (\hat{\alpha}_i + \hat{\beta}_i R_{m,t})$  where  $R_{i,t}$  is the return of firm  $i$  on day  $t$  and  $R_{m,t}$  is the market return on day  $t$ . Average abnormal returns are calculated using the market-adjusted model as follows:  $AR_{i,t} = R_{i,t} - R_{m,t}$ .

\*\*\*, \*\* and \* denote statistical significance at 1%, 5% and 10%, respectively.

According to the inefficient management hypothesis, M&As can create shareholder value if efficient banks acquire inefficient banks and succeed in conveying their efficiency (Rad and Van Beek, 1999). To test this hypothesis we use return on equity (ROE) as a proxy for efficiency. We conjecture that the higher the ROE, the higher the bank's efficiency. For that purpose, we form two portfolios of bidder banks based on high and low ROE. The first sub-sample (Table 5) contains the market reaction of 21-days surrounding M&As for the sample of bidders with a ROE above average (high ROE), while the second sub-sample consists of bidders with a low ROE (Table 6). The results from the sample of high ROE displays a significant negative share price reaction on days -1 (-0.696%) and 0 (-0.770%) from the market model. The market-adjusted model renders similar results on both these days (-0.750% and -0.738%). Over the 2 and 3-day periods, the market model (market-adjusted model) displays statistically significant negative cumulative abnormal returns of -1.467% (-1.488%) and -1.888% (-1.874%), respectively. These results are consistent with previous findings where the markets negatively priced cross-border bank M&As (Rad and Van Beek, 1999; Campa and Hernando, 2006; Lensink and Maslennikova, 2008; Asimakopoulos and Athanasoglou, 2009). Looking at the post-announcement period, we observe a positive price reversal. Hence, the CAARs of (+1, +5) and (+1, +10) are equal to 0.443% (0.606%) and 1.623% (1.735%), respectively, though non-significant. These results imply that the market gradually revises its expectations from the upcoming M&A deal. The existence of the reversal phenomenon is well explained by Brown et al. (1988) who developed a theory of investor behaviour under conditions of uncertain information which suggests that price changes following favourable or unfavourable news should be positive on average. In forming expectations, investors give too much weight to the past performance of firms and too little to the fact that performance tends to revert to the mean. The reversal phenomenon's positive price changes following bad news are consistent with this theory. Finally, the results from the market reaction in the pre-event period show an insignificant stock market which is in line with the efficient market hypothesis of Fama et al. (1968) that investors that are not privy to inside information cannot exploit excess returns.

Table 5: Average abnormal returns (AAR) and cumulative average abnormal returns (CAAR) of acquirers with high return on equity (ROE)

ROE>12.47	Market Model returns			Market-adjusted returns		
Day	AAR %	t-statistic	CAAR%	AAR %	t-statistic	CAAR%
-10	0.340	0.46	0.340	0.359	1.12	0.359
-9	0.452	0.62	0.792	0.560	1.62	0.918
-8	-0.440	-0.60	0.352	-0.528	-1.48	0.391
-7	0.285	0.39	0.637	0.240	0.73	0.631
-6	0.254	0.35	0.891	0.133	0.25	0.764
-5	0.519	0.71	1.410	0.423	0.95	1.186
-4	0.215	0.29	1.625	0.270	0.85	1.456
-3	0.269	0.37	1.894	0.065	0.24	1.521
-2	-0.169	-0.23	1.726	-0.151	-0.44	1.371
-1	-0.696	-0.95	1.029	-0.750	-1.60	0.621
0	-0.770	-1.05	0.259	-0.738	-1.14	-0.118
1	-0.421	-0.57	-0.162	-0.386	-1.06	-0.503
2	0.136	0.18	-0.026	0.198	0.72	-0.305
3	-0.109	-0.15	-0.136	-0.064	-0.18	-0.369
4	0.584	0.80	0.449	0.551	1.19	0.181
5	0.253	0.34	0.702	0.307	1.53	0.488
6	0.310	0.42	1.012	0.456	1.55	0.944
7	0.607	0.83	1.619	0.596	1.77	1.540
8	0.441	0.60	2.060	0.345	0.82	1.885
9	0.022	0.03	2.082	0.020	0.07	1.905
10	-0.200	-0.27	1.882	-0.288	-0.80	1.618
Period	CAAR %	t-statistic	Period	CAAR %	t-statistic	
(-10 -1)	1.029	0.44	(-10 -1)	0.621	0.56	
(-5 -1)	0.138	0.08	(-5 -1)	-0.143	-0.18	
(-1 0)	-1.467**	-2.00	(-1 0)	-1.488***	-2.98	
(-10 +10)	1.882	0.56	(-10 +10)	1.618	1.00	
(-5 +5)	-0.189	-0.08	(-5 +5)	-0.276	-0.24	
(-1 +1)	-1.888***	-2.57	(-1 +1)	-1.874***	-3.07	
(+1 +5)	0.443	0.27	(+1 +5)	0.606	0.77	
(+1 +10)	1.623	0.70	(+1 +10)	1.735	1.56	

Notes: Average abnormal returns are calculated using the market model as follows:

$AR_{i,t} = R_{i,t} - (\hat{\alpha}_i + \hat{\beta}_i R_{m,t})$  where  $R_{i,t}$  is the return of firm i on day t and  $R_{m,t}$  is the market return on day t. Average abnormal returns are calculated using the market-adjusted model as follows:  $AR_{i,t} = R_{i,t} - R_{m,t}$ .

\*\*\*, \*\* and \* denote statistical significance at 1%, 5% and 10%, respectively.

Table 6 reports the AARs and CAARs during the 21-day event window for the sub-sample of acquirers having a low mean ROE one year before M&A deals. Over the 3-day event window (-1, +1), acquiring bank share prices fell on average by  $-0.413\%$  ( $-0.587\%$ ) based on the market model (market-adjusted model). For the event windows (+1, +5) and (+1, +10) the negative abnormal returns are statistically non-significant as calculated by both models. Comparing the results from Tables 5 and 6 we can assert that the market reaction to cross-border bank M&As induce stronger negative reaction on the 3-days event period (-1, 0, +1) in the cases of bidders with high ROE vis-a-vis bidders with low ROE. Therefore, we can assert that investors initial response to the announcement of international expansion of highly profitable financial investors is perceived with caution by the market. Moreover, bidders with high ROE experience a positive price reversal following M&As, while bidders with low ROE undergo further share price erosions in the post-M&A period. The explanation behind this discernible market reaction between the two groups of bidders has to do with the investors' expectations from the M&As deals. Moreover, the above result is consistent with the inefficient management hypothesis according to which banks with high ROE display high bank efficiency and are expected to transfer it to the acquired banks in the future.

Table 6: Average abnormal returns (AAR) and cumulative average abnormal returns (CAAR) of acquirers with low return on equity (ROE)

ROE<12.47	Market Model returns			Market-adjusted returns		
Day	AAR %	t-statistic	CAAR%	AAR %	t-statistic	CAAR%
-10	-0.005	0.00	-0.005	0.078	0.34	0.078
-9	0.385	0.37	0.380	0.443	1.21	0.520
-8	-0.052	-0.05	0.328	-0.106	-0.29	0.414
-7	-0.241	-0.23	0.087	-0.317	-0.91	0.097
-6	-0.118	-0.11	-0.031	-0.126	-0.35	-0.029
-5	0.099	0.29	0.068	0.104	0.34	0.075
-4	0.176	0.36	0.245	0.101	0.25	0.176
-3	-0.385	-0.37	-0.140	-0.367	-0.85	-0.191
-2	-0.067	0.25	-0.207	-0.034	-0.09	-0.225
-1	-0.364	-0.76	-0.571	-0.342	-0.78	-0.567
0	0.092	0.09	-0.479	-0.077	-0.20	-0.644
1	-0.141	-0.13	-0.620	-0.168	-0.59	-0.812
2	-0.125	-0.02	-0.745	-0.119	-0.32	-0.930
3	-0.306	-1.10	-1.052	-0.386	-1.30	-1.316
4	-0.240	-1.04	-1.292	-0.276	-1.06	-1.593
5	0.498	0.48	-0.794	0.479*	1.74	-1.114
6	0.482	0.46	-0.312	0.563**	2.07	-0.551
7	0.161	0.25	-0.150	0.181	0.38	-0.370
8	-0.277	-0.67	-0.427	-0.226	-0.63	-0.596
9	-0.695	-0.66	-1.122	-0.710	-1.65	-1.306
10	0.495	0.76	-0.626	0.463	1.40	-0.843
Period	CAAR %	t-statistic		Period	CAAR %	t-statistic
(-10 -1)	-0.571	-0.17		(-10 -1)	-0.567	-0.55
(-5 -1)	-0.540	-0.23		(-5 -1)	-0.538	-0.74
(-1 0)	-0.272	-0.18		(-1 0)	-0.419	-0.91
(-10 +10)	-0.626	-0.13		(-10 +10)	-0.843	-0.57
(-5 +5)	-0.763	-0.22		(-5 +5)	-1.085	-1.01
(-1 +1)	-0.413	-0.23		(-1 +1)	-0.587	-1.05
(+1 +5)	-0.316	-0.13		(+1 +5)	-0.470	-0.65
(+1 +10)	-0.148	-0.04		(+1 +10)	-0.199	-0.19

*Notes:* Average abnormal returns are calculated using the market model as follows:  $AR_{i,t} = R_{i,t} - (\hat{\alpha}_i + \hat{\beta}_i R_{m,t})$  where  $R_{i,t}$  is the return of firm  $i$  on day  $t$  and  $R_{m,t}$  is the market return on day  $t$ . Average abnormal returns are calculated using the market-adjusted model as follows:  $AR_{i,t} = R_{i,t} - R_{m,t}$ .

\*\*\*, \*\* and \* denote statistical significance at 1%, 5% and 10%, respectively.

## 4.2 Short-term Reaction of Targets

In line with previous studies (see, for example, Siems, 1996; Kiyamaz, 2004; Ismail and Davidson, 2005; Campa and Hernando, 2006; Asimakopoulos and Athanasoglou, 2009), we identify significantly positive market response to cross-border bank M&A announcements for the group of targets. In particular, acquired banks exhibit strong positive abnormal returns on day 0 of 3.401%, (3.681%) as calculated by the market model (market-adjusted model) statistically significant at the 1% level. However, the positive return pattern for targets commences at least three days before the actual announcement. Over the 3-day event window, the CAAR is statistically significant and positive (approximately 4%) irrespective of the return model employed. Another interesting feature of the market reaction is its efficiency to absorb corporate information such as M&As deals. Apart from days -1 and -2 where we can identify statistically significant abnormal returns as computed by the market model, we cannot detect any other significant excess return surrounding the announcement of M&A transaction lending support for the efficient market hypothesis (i.e. neither information leakages nor sluggish market reaction around M&A announcement days).

Collectively, the above results confirm prior studies and theories (i.e. inefficient management, synergy, market power, tax, information and diversification hypotheses) which argue that the main rationale for M&As and for creating diversified financial institutions is the belief that only large and well-diversified credit institutions can compete effectively in the international bank and capital market environment (Bessler and Murtagh, 2002). Moreover, the results from targets confirm the predominant view that the shareholders of targets benefit from M&As by seeing the market value of their shareholding being increased.

Table 7: Average abnormal returns (AAR) and cumulative average abnormal returns (CAAR) of targets

Day	Market Model returns			Market-adjusted returns		
	AAR %	t-statistic	CAAR%	AAR %	t-statistic	CAAR%
-10	-0.480	-1.29	-0.480	-0.427	-1.50	-0.427
-9	0.443	1.19	-0.037	0.293	0.86	-0.134
-8	0.066	0.18	0.028	-0.059	-0.21	-0.192
-7	-0.140	-0.37	-0.111	-0.141	-0.53	-0.334
-6	-0.148	-0.40	-0.259	-0.131	-0.40	-0.465
-5	0.077	0.21	-0.182	0.266	1.01	-0.198
-4	-0.042	-0.11	-0.223	-0.063	-0.19	-0.261
-3	0.076	0.20	-0.148	0.152	0.55	-0.109
-2	0.745**	2.00	0.597	0.892***	2.64	0.783
-1	0.748**	2.01	1.345	0.570	1.29	1.353
0	3.401***	9.14	4.746	3.681***	3.48	5.034
1	-0.113	-0.30	4.633	-0.246	-0.79	4.788
2	0.097	0.26	4.730	0.026	0.10	4.814
3	0.028	0.08	4.758	-0.008	-0.03	4.806
4	0.106	0.29	4.864	0.117	0.39	4.923
5	-0.198	-0.53	4.667	0.039	0.20	4.962
6	0.013	0.03	4.680	0.011	0.04	4.974
7	0.136	0.37	4.816	0.250	1.23	5.223
8	0.135	0.36	4.951	0.043	0.22	5.266
9	0.036	0.10	4.987	0.123	0.48	5.389
10	0.160	0.43	5.147	-0.221	-0.84	5.168
Period	CAAR %	t-statistic	Period	CAAR %	t-statistic	
(-10 -1)	1.345	1.14	(-10 -1)	1.353	0.61	
(-5 -1)	1.604*	1.93	(-5 -1)	1.818**	2.37	
(-1 0)	4.149***	7.88	(-1 0)	4.251***	4.27	
(-10 +10)	5.147***	3.02	(-10 +10)	5.168***	2.60	
(-5 +5)	4.925***	3.99	(-5 +5)	5.427**	2.33	
(-1 +1)	4.035***	6.26	(-1 +1)	4.005***	3.29	
(+1 +5)	-0.079	-0.10	(+1 +5)	-0.072	-0.05	
(+1 +10)	0.401	0.34	(+1 +10)	0.133	0.06	

Notes: Average abnormal returns are calculated using the market model as follows:

$AR_{i,t} = R_{i,t} - (\hat{\alpha}_i + \hat{\beta}_i R_{m,t})$  where  $R_{i,t}$  is the return of firm i on day t and  $R_{m,t}$  is the market return on day t. Average abnormal returns are calculated using the market-adjusted model as follows:  $AR_{i,t} = R_{i,t} - R_{m,t}$ .

\*\*\*, \*\* and \* denote statistical significance at 1%, 5% and 10%, respectively.

We attempt to gain additional insight into the share market reaction by analyzing target banks based on their mean ROE one year prior to an M&A deal. In fact, the share market reaction gets even more pronounced when we consider the group of targets with high ROE (Table 8). Looking at the actual event day (day 0), the AAR exceeds 4% as computed by both models. Moreover, over the 3-day event period (-1, +1), the CAAR is approximately 4% and statistically significant at the 1% level. The above favourable market reaction of target banks are in line with the argumentation of the inefficient management hypothesis (Mandelker, 1974), that efficient banks as proxied by the high ROE are better candidates of receiving further efficiency by acquiring banks. In other words, the expectations from the market are higher when a financially sound institution is merged with another efficient bank.

Table 8: Average abnormal returns (AAR) and cumulative average abnormal returns (CAAR) of targets with high return on equity (ROE)

ROE>4.63	Market Model returns			Market-adjusted returns		
Day	AAR %	t-statistic	CAAR%	AAR %	t-statistic	CAAR%
-10	-0.592	-0.86	-0.592	-0.576	-1.39	-0.576
-9	0.887	1.28	0.294	0.854	1.18	0.279
-8	-0.054	-0.08	0.240	-0.194	-0.46	0.084
-7	-0.352	-0.51	-0.112	-0.108	-0.22	-0.023
-6	-0.130	-0.19	-0.242	-0.034	-0.11	-0.058
-5	0.450	0.65	0.209	0.661	1.57	0.603
-4	0.498	0.72	0.707	0.565*	1.75	1.168
-3	0.021	0.03	0.728	-0.023	-0.05	1.145
-2	0.703	1.02	1.431	1.006	1.65	2.151
-1	0.286	0.41	1.716	0.073	0.12	2.224
0	4.265***	6.17	5.981	4.143**	2.37	6.367
1	-0.319	-0.46	5.663	-0.272	-0.78	6.094
2	0.806	1.17	6.468	0.578	1.41	6.672
3	0.335	0.49	6.803	0.259	0.73	6.931
4	0.794	1.15	7.598	0.671	1.06	7.602
5	-0.266	-0.38	7.332	-0.058	-0.17	7.544
6	-0.141	-0.20	7.191	-0.113	-0.18	7.431
7	0.114	0.17	7.306	0.197	0.53	7.628
8	0.189	0.27	7.495	0.149	0.57	7.777
9	0.555	0.80	8.050	0.736**	2.02	8.513
10	0.596	0.86	8.645	0.238	0.43	8.751
Period	CAAR %	t-statistic	Period	CAAR %	t-statistic	
(-10 -1)	1.716	0.79	(-10 -1)	2.224	0.86	
(-5 -1)	1.958	1.27	(-5 -1)	2.281	1.25	
(-1 0)	4.551***	4.66	(-1 0)	4.215***	3.66	
(-10 +10)	8.645***	2.73	(-10 +10)	8.751**	2.34	
(-5 +5)	7.574***	3.31	(-5 +5)	7.601***	2.81	
(-1 +1)	4.232***	3.54	(-1 +1)	3.943***	2.79	
(+1 +5)	1.351	0.87	(+1 +5)	1.177	0.65	
(+1 +10)	2.664	1.22	(+1 +10)	2.385	0.93	

Notes: Average abnormal returns are calculated using the market model as follows:

$AR_{i,t} = R_{i,t} - (\hat{\alpha}_i + \hat{\beta}_i R_{m,t})$  where  $R_{i,t}$  is the return of firm i on day t and  $R_{m,t}$  is the market return on day t. Average abnormal returns are calculated using the market-adjusted model as follows:  $AR_{i,t} = R_{i,t} - R_{m,t}$ .

\*\*\*, \*\* and \* denote statistical significance at 1%, 5% and 10%, respectively.

The market reaction for targets with low ROE is much weaker on day 0 compared to targets with high ROE. In particular, the AAR on day 0 is 0.868% computed by the market model and 0.872% computed by the market-adjusted model. In both models, the market reaction on day 0 is non-significant. Looking at the 3-day event window (-1, 0 and +1), we find a positive (2.482% from the market model and 2.194% from the market-adjusted), nonetheless, insignificant CAAR. Moreover, the post-announcement share price behaviour becomes negative in the case of targets with low ROE vis-a-vis targets with high ROE. In fact, the CAAR of (+1, +5) and that of (+1, +10) are -4.068% and -5.067% based on the market model, respectively for targets displaying low profitability one year before the cross-border bank M&A. The corresponding CAARs for targets with high profitability are 1.351% and 2.664%. Therefore, we can assert that cross-border bank M&As add more value to targets that enjoy high profitability than those

that are more financially distressed. In other words, the market rewards those target banks that are profitable entities seeking to be merged than those banks that are financially constrained and are forced to be merged.

Collectively, the empirical results are in line with the majority of studies reporting value creation for the targets' shareholders (see Cybo-Ottone and Murgia, 2000; Beitel et al. 2004; Ismail and Davidson, 2005, Goddard et al., 2012). According to these studies, target bank excess returns reflect the market's perception that M&As will result in synergistic gains and at the same time enhanced operating and management improvement are the main driving forces of the value creation for targets' stockholders.

Table 9: Average abnormal returns (AAR) and cumulative average abnormal returns (CAAR) of targets with low return on equity (ROE)

ROE<4.63	Market Model returns			Market-adjusted returns		
Day	AAR %	t-statistic	CAAR%	AAR %	t-statistic	CAAR%
-10	-1.975*	-1.78	-1.975	-1.418	-1.15	-1.418
-9	1.140	1.03	-0.834	0.176	0.27	-1.241
-8	1.479	1.33	0.645	1.242	1.16	0.000
-7	0.052	0.05	0.697	0.052	0.06	0.052
-6	-1.650	-1.49	-0.953	-1.554	-0.85	-1.502
-5	-1.095	-0.99	-2.048	-1.075	-1.13	-2.577
-4	-1.558	-1.41	-3.605	-1.594	-1.14	-4.172
-3	0.604	0.55	-3.001	0.570	1.09	-3.601
-2	2.282**	2.06	-0.720	2.164*	1.79	-1.437
-1	2.764**	2.49	2.044	2.452	1.04	1.015
0	0.868	0.78	2.912	0.872	0.72	1.887
1	-1.150	-1.04	1.762	-1.130	-1.48	0.757
2	-2.324**	-2.10	-0.562	-1.895***	-3.66	-1.138
3	-0.913	-0.82	-1.475	-0.967	-0.96	-2.105
4	-0.692	-0.62	-2.167	-0.320	-0.52	-2.425
5	1.011	0.91	-1.156	1.018	1.48	-1.407
6	0.315	0.28	-0.841	0.034	0.05	-1.373
7	-0.557	-0.50	-1.398	-0.277	-0.42	-1.650
8	0.962	0.87	-0.436	0.914	1.39	-0.736
9	-1.445	-1.30	-1.881	-1.413	-1.59	-2.149
10	-0.274	-0.25	-2.155	-0.578	-0.86	-2.728
Period	CAAR %	t-statistic	Period	CAAR %	t-statistic	
(-10 -1)	2.044	0.58	(-10 -1)	1.015	0.28	
(-5 -1)	2.997	1.21	(-5 -1)	2.517	0.98	
(-1 0)	3.632**	2.32	(-1 0)	3.324***	2.05	
(-10 +10)	-2.155	-0.42	(-10 +10)	-2.728	-0.52	
(-5 +5)	-0.203	-0.06	(-5 +5)	0.095	0.03	
(-1 +1)	2.482	1.29	(-1 +1)	2.194	1.11	
(+1 +5)	-4.068	-1.64	(+1 +5)	-3.294	-1.29	
(+1 +10)	-5.067	-1.45	(+1 +10)	-4.614	-1.28	

Notes: Average abnormal returns are calculated using the market model as follows:

$AR_{i,t} = R_{i,t} - (\hat{\alpha}_i + \hat{\beta}_i R_{m,t})$  where  $R_{i,t}$  is the return of firm i on day t and  $R_{m,t}$  is the market return on day t. Average abnormal returns are calculated using the market-adjusted model as follows:  $AR_{i,t} = R_{i,t} - R_{m,t}$ .

\*\*\*, \*\* and \* denote statistical significance at 1%, 5% and 10%, respectively.

### 4.3 Regression Analysis

Following Campa and Hernando (2006) and Beitel et al. (2004) among others, we attempt to analyze the factors that explain value creation stemming from M&As in the European banking industry. As already reported, the group of targets enjoys positive and statistically significant abnormal returns. To detect the determinants of this abnormal behaviour we conduct a multivariate regression analysis. We use the AAR for day 0 as a dependent variable in regression analysis. Control variables include the systematic risk (beta) as calculated by the market model in the estimation period (-250, -11), non-performing assets to total loans, profit margin, total debt to total capitalization and total loans to total deposits. The regression analysis uses OLS employing White's heteroscedasticity-consistent standard errors.

To consider the effect of each control variable on the dependent variable, we run four separate regression analysis. In model 1 we regress abnormal returns against the systematic risk and non-performing assets to total assets. We observe that beta exerts negative, though non-significant, effect on abnormal returns. That means the higher the systematic risk in the pre-event period (-250, -11) the lower the response of targets to M&A announcements. Similar negative influence is observed for the second independent variable. In specific, non-performing assets as percentage to total loans are negatively associated with abnormal returns. This relationship is statistically significant at the 10% level. This result suggests that when target banks encounter high percentages of non-performing loans the impact of M&A announcement is mitigated. Model 2 reiterates Model 1 by adding one more control variable (i.e. profit margin). The results still display the negative association between abnormal returns and beta and that between abnormal returns and non-performing assets as percentage to total loans. However, profit margin has a positive and statistically significant coefficient implying that the higher the profitability of targets one year before M&As, the stronger the market reaction to cross-border M&As deals. To put it differently, the market receives favourably the M&A event for targets that are lucrative and sound banks seeking to exploit economic synergies through the merger with a foreign financial institution. Model 3 adds a fourth independent variable in regression analysis (i.e. total debt to total capitalization) which displays a negative and statistically significant coefficient. We interpret this negative relationship as follows. Targets encountering high debt levels proportionally to their market capitalization are perceived as banks getting worse. The inevitable solution for these banks is merging with a larger and more profitable financial institution to meet possibly capital requirements.

Finally, Model 4 presents a multivariate regression including five independent variables. This model contains all control variables that are assumed to measure targets' balance sheet quality (i.e., non-performing assets to total loans, profit margin, total loans to total deposits) along with the systematic risk one year before the M&A takes place. Beta still has a negative and non-significant coefficient. Non-performing assets to total loans has a negative and significant impact on abnormal returns as in previous models. Profit margin has a statistically significant and positive coefficient, while total debt to total capitalization has a significant negative coefficient. The fifth independent variable, that is, total loans to total deposits exerts a positive and statistically significant impact on M&A abnormal returns. As total loans increase in proportion to deposits means that a bank expands its credit policy looking forward to receiving net interest income in the future. This is expected to have a positive effect on a bank's future profitability, albeit the potential risks incurred by non-performing loans.

Table 10: Regression results

	Model 1	Model 2	Model 3	Model 4
Intercept	0.079 (2.13)**	0.027 (0.84)	0.424 (1.96)*	0.857 (3.66)***
Beta	-0.029 (-1.00)	-0.017 (-0.64)	-0.010 (-0.37)	-0.016 (-0.63)
Non-performing assets to total loans	-0.009 (-1.75)*	-0.004 (-0.91)	-0.006 (-1.47)	-0.008 (-2.04)**
Profit margin		0.002 (2.13)**	0.002 (1.68)*	0.001 (2.47)**
Total debt to total capitalization			-0.004 (-1.70)*	-0.011 (-3.27)***
Total loans to total deposits				0.001 (2.04)**
Adjusted-R <sup>2</sup>	0.079	0.123	0.145	0.299
F-statistic	2.73***	1.89*	1.80*	2.62***
No of obs.	40	40	40	40

*Notes:* The regression analysis uses OLS employing White's heteroscedasticity-consistent standard errors. T-statistics are in parentheses. \*, \*\* and \*\*\* denote statistical significance at the 10%, 5% and 1% level, respectively

## 5 Conclusion

This study examines a sample of completed cross-border bank M&As in Western Europe that occurred between 1998 and 2009. We opted for investigating this period since a number of events occurred in the banking sector resulting in an international consolidation trend in financial institutions. First, it was the deregulation of financial institutions in the US and in the EU during the 1990s (Bessler and Murtagh, 2002). Second, it was the introduction of the Basel Accord with the implementation of CAD-II, which in 1998 replaced CAD-I in an attempt to address earlier criticism by introducing more efficient treatment of the off-balance sheet items. Third, it was the introduction of the Euro as the common currency for 17 member states. This was one of the key economic events in the history of global financial markets and had a significant effect on the harmonisation and integration of the European financial markets (Adjaoute and Danthine, 2003). Under this economic environment banks encounter challenges to exploit scale and scope economies and to generate the asset size necessary for them to become major international financial institutions (Bessler and Murtagh, 2002).

The main objective of the current study was the investigation of the short-term reaction of both bidders and targets to the announcement of cross-border bank M&As, using a 21-day event window. The second goal of the study was the identification of the determinants of the value creation emanating from M&As. Employing the classical event study methodology, we find that targets experience significant positive abnormal returns surrounding M&As deals, while bidders undergo non-significant share price erosions. In particular, targets enjoy a cumulative abnormal return that exceeds 4% in the three days

surrounding the actual announcement date. This share price appreciation is stronger when target firms experience high profitability one year prior to M&As. On the other hand, targets with low profitability benefit less from the M&A deals than their counterparts with high profitability. We attribute this differential market reaction to the expectations that target shareholders have from banks that are economically healthy and look for an M&A to exploit synergies compared to banks that are financially constrained and are forced to be merged.

Bidders seem to be the losers of the M&A transactions. On average, bidders undergo share price reductions of less than 1% on day 0 and the two days around cross-border M&A announcements (-1 +1). The share price reduction is more evident in the cases that bidders experience high profitability one year before the M&A deal. The market considers bidders undertaking excessive risk when wishing to expand abroad. On the other hand, the market assumes that the international expansion for bidders with low profitability is the alternative route to improve efficiency and increase profits thus placing low risk to these deals.

Regression analysis reveals that profit margin and the proportion of total loans to total deposits play a significant and positive role in explaining M&A announcement returns. Contrarily, the percentage of non-performing assets to total loans and the total debt to total capitalization exert a statistically negative effect on abnormal returns. Finally, the systematic risk, as measured by beta coefficient, is negatively correlated with abnormal returns, however, this relationship lacks statistical significance.

The current study presents several caveats that could be considered as future research ideas. For example, the comparison of value effects of cross-border bank M&As between US and EU. Moreover, the long-term share price behaviour and operating performance of bidders subsequent to M&A deals. Finally, another interesting aspect of the topic would be the exploration of the technical efficiency of the firms involved in M&A deals.

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