Long-term Performance of Acquirers Involved in Domestic Bank Ms&As in Europe

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Abstract

The consolidation process in the European banking system has been particularly strong in the last two decades. This paper investigates the long-term impact of M&As in the profitability and efficiency of banks. Using a sample of 118 within-border deals in Europe over the period 1996-2010, we highlight features of performance by the use of standard profitability and loan quality ratios. Our results show that in the post-merger period profitability slightly increases after the third year of operation even though initially M&A activity influences negatively our employed measures. Evidence from efficiency ratios is mixed. Some empirical evidence allows us to detect expansionary policies by banking institutions two to three years after the M&A onwards, but results have no definite trend. Over longer time horizons it is clear that banks' loan loss provisions against non-performing loans plummet in a finding related to information sharing in domestic deals. When testing the stock price behavior of merged institutions our empirical evidence does not allow us to infer that there exist opportunities to reap profits throughout the 2-year post-merger horizon.

Keywords: domestic M&As, acquirers, targets, long-term performance, profitability ratios, efficiency ratios, banks

1. Introduction

The last two decades have been marked by an unprecedented consolidation in the banking sector in Europe and the rest of the world. In the late 1990s, M&As in Europe increased on a par with the structural changes furnished by the establishment of the Monetary Union. The adoption of the common currency is unanimously believed to be the driving force behind M&A activity especially during that period. This consolidation process has decisively changed the structure of the banking sector in Europe even though there still exists heterogeneity in terms of concentration in the greater European region. On a global perspective this evolvement has been the result of the globalization of trading systems, technological advancements, rising pressure by markets for increased profits, shareholder activism and regulatory changes. It is widely believed that this process is far from over since globalization and technological change will continue, while the number of banking institutions per inhabitant in Europe still lags considerably relative to the corresponding figures in the US market (Altunbas and Marques, 2008). Furthermore, policymakers are concerned with the slow pace at which the consolidation process takes place in Europe, a situation that is not in accordance with the Single Market policy of the EU (Hagendorff et al., 2012). At the same time, since cross-border M&As entail considerable risks in terms of cultural, accounting and regulatory differences (Cybo-Ottone and Murgia, 2000) our presumption is that within-border consolidations will continue to set the pace in M&A activity. Consequently, there is ample space for further examination of domestic consolidations in the European banking industry.

When examining the fundamental objectives behind mergers and acquisitions (M&As), the recurring theme is the quest for economies of scale through labor cost reduction and centralization of key services (Houston et al., 2001). Cost efficiency, in turn, is associated with profit efficiency (Beccalli and Frantz, 2009). Other expected outcomes include diversification of portfolios and market share (Lozano-Vivas et al., 2011), economies of information (Panetta et al., 2009) and attracting new customers by expanding the product range (Amel et al., 2004). Several studies have

analyzed post-merger performance in the banking sector. On average, European evidence leans towards opportunities to increase efficiency as reported by accounting ratios (DeYoung et al., 2009). The European market, however, being the second largest market in M&A activity worldwide, has not been allotted its deserved share in relevant research over time.

A further objective of this paper is to test long-term stock price performance of acquirers after the M&A process. The literature shows that when examining the long-term stock price effect of M&As, acquirers significantly underperform over the three-year post-event period (Andre et al., 2004). Tuch and O'Sullivan (2007), in a review paper, corroborate the consensus of negative returns on the post-merger period.

In this context and with the aim to examine whether efficiency gains and stockholder value enhancement opportunities through M&As are still present in the European region, we embark on a research to capture the characteristics and the long-term performance effects of domestic banks M&As using an up-to-date dataset. The use of the particular dataset allows us to capture the financial deregulation effects on the banking system, the European currency introduction, as well as the 2008 financial crisis, all combined formulating a trio of major events that had tremendous impact on banking institutions.

More specifically, we test for post-acquisition differences in the operating performance of merged institutions, as derived by profitability and loan quality ratios. We also employ stock performance evaluation methodologies to assess potential gains for shareholders in the first 2 years after the deal completion. Our main findings suggest that in spite of the ongoing M&A activity, banking industry consolidation is not associated with notable changes in profitability. What is more, profit picking from bank stocks on the post-merger long-term period is not attainable. Our results emanate from a sample of domestic M&As and, therefore, our results should be compared with a sample of cross-border M&As before reaching to a final conclusion.

The rest of this paper is organized as follows. Section 2 provides an overview of the related studies. Section 3 outlines the methodological approach and briefly describes the sample and data. Finally, Section 4 elaborates on the empirical findings, and Section 5 concludes.

2. Motivation and Related Literature

The standard hypothesis made is that M&As improve performance and profitability amongst acquirers and targets over the long-term. It is a process that affects the involved entities in terms of scope, size, diversification and risk reduction (Cybo-Ottone and Murgia, 2000). Shareholders seek for value creation through enhancements in efficiency, cost reduction from economies of scale, increases in revenue and stock price appreciation. All the above constitute the core issues investigated by the related literature when attempting to highlight the performance characteristics of M&A activity.

A growing body of research examines performance using accounting measures. In terms of profitability the most popular measures are the return on assets (ROA) and the return on equity (ROE), jointly enlightening different perspectives of the same issue (Knapp et al., 2006; DeLong and DeYoung, 2007; Hagendorff and Keasey, 2009; Hagendorff et al., 2012 to name a few). The second most important strand of the literature investigates cost efficiency measures (see for example Pilloff, 1996, DeLong and DeYoung, 2007), while stock performance issues both for the short as well as the long-term represent the third dimension of the pertinent research (see for example Campa and Hernando, 2006; Beccali and Frantz, 2009, Beltratti and Paladino, 2013). A notable fourth batch of the literature, though under-researched in recent years, investigates the impact of M&As on cost X-efficiency (Berger, 1998; Rhoades, 1998 among others). Research on domestic consolidations by far outnumbers that for cross-border mergers.

The pre- and post- merger bank performance literature investigates changes in performance before and after the completion of the M&A deal. Using accounting measures relevant studies can be categorized into static and dynamic ones. Datasets in the 80s focusing on the US market produce evidence of improvement in performance from M&As. Akhavein et al. (1997), when examining large US banks, find improvement in profit efficiency, but little change in cost efficiency in the post-M&A period. Improvement is also found in terms of increased revenues and risk diversification. Profit efficiency is the main outcome in Berger (1998) when investigating M&As between large and small banks from 1990 to 1995. In the European market place Vander Vennet (1996), using data from large mergers until the early 90s, conjectures that domestic mergers between equals tend to affect positively overall profitability, mainly driven by improvement in operational profitability. The same applies for a sample of European acquisitions, during 1993-2000, where increased profitability for acquirer banks is found, no matter the deal size (Diaz et al., 2004). Megamergers are revisited in Nnadi and Tanna (2013), where they find that domestic acquirers tend to be less

operationally efficient over the long-run, but tend to offer high dividend payout. They attribute this feature to the signaling effects of dividend. Altunbas and Marques (2008) find improvements in ROE for a sample of bank mergers over the period 1992-2001. Likewise, Campa and Hernando (2006) report significant improvements in profitability and efficiency of targets two years after the deal completion. However, Altunbas and Marques (2008) claim that even though bank mergers do lead to improved performance for domestic deals, the integration process of dissimilar institutions in terms of loans, earnings, deposit and size strategies is quite costly. Long-run stock returns are overwhelmingly negative in Tuch and O'Sullivan (2007), while accounting ratios on performance and efficiency provide mixed results. Losses, in the post-merger period, are particularly harsh for acquirers exhibiting superior pre-bid performance.

Country-specific studies in Europe include Resti (1998) that focuses on the Italian market and conclude that merged institutions become more efficient, while a study by Lang and Welzel (1999), carried out on a sample of German cooperative banks, finds no efficient gains for the entities involved in such deals. On the contrary, Cuesta and Orea (2002), using a Spanish dataset, find that non-merged are on average more efficient than merged ones. Resti and Siciliano (2001) re-examine the Italian bank mergers samples of the 1990s and find that acquired institutions experience a positive effect in their financial and operating performance in the three years following the completion of an acquisition.

More recent papers supplement the ongoing literature by investigating samples over the 2000s. Interestingly, Europe gradually becomes the epicenter of the relevant literature since DeYoung et al. (2009) report that when bringing together studies on realized M&A performance gains, European studies outnumber their US counterparts by 17 to 6. This could be attributed to the lure of the introduction of the common currency, the harmonization of the European banking system brought about from the Basel accords and the ongoing European bank restructuring. Becalli and Frantz (2009) use a sample of 714 deals involving acquirers and targets from the EU region over the period 1991-2005. They employ standard accounting ratios and find that M&As are associated with a slight deterioration in profit efficiency as measured by the return on equity. In contrast, they empirically prove that cost efficiency is achievable five years after the deal. They highlight a distinctive difference in the cost efficiency service offered by domestic relative to cross-border deals, whereby the former furnish more robust results. When evaluating banks involved in deals in comparison to their peers with no such activity, results with regards to cost efficiency are largely in favor of those involved in M&As.

Hagendorff and Keasey (2009) investigate M&As in Europe as compared to those taking place in the US during the period 1996 and 2004. Using accounting data, they find that European banks achieved reductions in the non-interest expenses in the three years following the deal. Furthermore, European bank mergers had a slightly positive impact on the post-merger performance of acquirers, whereas in the case of US based M&As no significant results are found.

The European banking industry is the topic of attention in Lozano-Vivas et al. (2011), in a study examining both within- and cross- border M&As. Their dataset spans the period 1998-2004 and their results support the view that the European banking industry consolidation process has not been in vain. Even though profitability ratios derived for domestic consolidations lag considerably compared with their cross-border counterparts, the main finding of improvements in efficiency for both types of M&As, still holds. They measure profitability using ROE and ROA. Lozano-Vivas et al. (2011) found that, on average, both types of mergers (domestic and cross-border) experience reduction in cost inefficiency. Additionally, the comparison between banks involved in mergers and those not involved in such activities show that the first group of banks are more cost efficient than those not involved in mergers. The ROA and ROE inefficiencies of banks also confirm this finding. On average, the ROA and ROE efficiencies for banks participating in cross-border mergers are greater than for banks involved in domestic mergers.

The paper by Hagendorff et al. (2012) evaluates the motives behind M&As through the analysis of the premiums paid for bank mergers. Their results show that bidding banks value high-profitable and high-growth banks, whereas they avoid high equity ratio and return volatility targets. Interestingly, it is noted that prudential regulatory regimes do not facilitate domestic M&As as compared to cross-border deals, underlying the need for full harmonization of the financial regulation across Europe.

Accounting data one year prior and two years after the M&A (years -1, +2) are used in Hagendorff and Nieto (2013) when studying the impact of the European banking consolidation process on the long-run financial healthiness of the entities involved in the deals. The capitalization, profitability and liquidity ratios employed show signs of mean reversion for acquirers.

For a sample of 777 deals of EU acquirers and 312 global targets, during the period 1991-2006, Beccalli and Frantz (2013) investigate the determinants associated with becoming a target or acquirer. Banks with high history of growth,

greater cost X-efficiency and low capitalization are the ideal future acquirers. On the other hand, banks with low efficiency, relative illiquidity and under-capitalized portray the potential target institution. These factors collectively form the base of our empirical investigation in order to test whether pre-merger profitability and efficiency maintains in the long-run.

3. Data and Methodology

The sample of domestic M&As consists of 118 deals during the period 1996-2010, thus spanning a period of major events that took place in the European Union area plus Switzerland. Information on the markets, where these events took place, is analytically outlined in Table 1. In order to form our sample of domestic bank M&As we requested that the deals be complete and resulted in a majority stakeholding in the target banks. Following Hagendorff and Keasey (2009)[1] we did not include in our sample multiple deals initiated by the same acquirer within the same fiscal year. We downloaded profitability and efficiency ratios from Bloomberg and Bankscope for the fiscal years starting one year prior to the deal completion and for the following five years (years t-1 to t+5). Due to unavailability of data throughout the examination period in some cases we could not find data for the full seven-year period, but we consider this bias to be limited. Every year mean and medians are calculated according to our prescribed methodology ensuring that for every deal we have at best seven annual figures for each employed ratio. We denote as year 0 the year of completion of the deal and in this respect the time frames examined are the following six: [-1, 0], [-1, +1], [-1, +2], [-1, +3], [-1, +4], [-1, +5].

Over 45 percent of the included deals took place in 1999-2002, a period characterized by extensive consolidation in the credit institutions market. The rest of the M&As are relatively evenly spread throughout the remaining years with the exception of 2008 when during the financial crisis twelve deals fulfilled our afore-mentioned criteria. Hence, our dataset satisfactorily extends over the turbulent years of the common European currency introduction and the market consolidation that this triggered, the market boom of the earlier 2000s as well the 2008 financial crisis.

Table 1. Distribution of domestic bank M&As per year

Year	Number of	%
1996	1	0.85
1998	7	5.93
1999	10	8.47
2000	15	12.71
2001	16	13.56
2002	16	13.56
2003	9	7.63
2004	4	3.39
2005	9	7.63
2006	8	6.78
2007	8	6.78
2008	12	10.17
2009	1	0.85
2010	2	1.69
Total	118	100.0%

Table 2 examines the geographic origin of the sample. The majority of domestic M&As originates from the Southern European area with Italy (36), Greece (13) and Spain (11) jointly constituting over 50 percent of our sample. With the exception of Germany (26 deals) the rest of our sample is evenly spread amongst participating countries. Overall, sample diversification allows us to infer that the employed dataset is representative of the period and the geographic region under analysis. Some selection bias is inevitable given the data cleaning procedure employed.

Table 2. Distribution of domestic bank M&As per country

Country	No. of obs.	%
UK	4	3.4
Italy	36	30.5
France	8	6.8
Spain	11	9.3
Germany	26	22.1
Portugal	4	3.4
Sweden	2	1.7
Denmark	5	4.2
Greece	13	11.0
Switzerland	5	4.2
Cyprus	2	1.7
Norway	2	1.7
Total	118	100.0%

For the selection of the vector of accounting ratios employed throughout, we follow Vander Vennet (1996) and Beccali and Frantz (2009, 2013). In order to measure the long-term performance of M&A deals we use data one year prior to the deal and for the ensuing five years for acquirers. We compute mean and median values for each investigated ratio. By using equality testing we aim at capturing statistical significance of the derived means and medians and their differences. In order to assess significance level in the case of non-normality we employ the non-parametric Wilcoxon-Mann-Whitney test.

We utilize both profitability as well as efficiency ratios to capture the long-term effects of M&As on participating credit institutions. As representative profit measures we use the return on assets (ROA), the return on equity (ROE) and the profit margin. We assess the long-run efficiency by utilizing non-performing assets to loans (NPATL), total loans to total deposits (TLTD), total loans to total assets (TLTA) and loan loss reserves to non-performing assets (LLRNPA). As a constantly revisited long-run financial soundness indicator (Beccalli and Frantz, 2013) we also use capital adequacy ratios (CAD).

In order to gauge the long-term stock price reaction to domestic bank M&As we use two standard stock performance assessment methodologies. More specifically, we employ the market model, in order to calculate cumulative abnormal returns (CARs), and for reconciliation purposes we calculate performance through buy-and-hold abnormal returns (BHARs). Both are tested on alternative medium to long-term event windows subsequent to the deal announcement, namely, 6-month, 12-month, 18-month and 24-month.

So as to calculate abnormal returns AR$_{it}$ at time t, we use the market model:

$$R_{it} = a_i + \beta_i R_{mt} + \varepsilon_{it} \tag{1}$$

Abnormal returns, based on the parameters we have estimated for the period t=−250 to −11, are then calculated as follows:

$$AR_{it} = R_{it} - R_{mt} \tag{2}$$

The CAR is the sum of the abnormal returns for each separate bank during the event window. The statistical significance of CARs is tested using the Dodd and Warner (1983) procedure.

We calculate BHARs for the same post-merger investment horizons. They are calculated as the difference in the actual compounded returns of the stock and the corresponding compounded return of the market as follows:

$$BHAR_{it} = \prod_{t=0}^{T} [1 + R_{it}] - \prod_{t=0}^{T} [1 + R_{mt}] \tag{3}$$

R_{it} denotes the arithmetic return including dividends at time t for every security i and R_{mt} is the arithmetic return of the value-weighted index at time t.

We use the skewness-adjusted t-statistic as calculated by Pastor-Llorca and Martin-Ugedo (2004) to test the null hypothesis that the BHARs mean is zero as follows:

$$t_{Skewness-adjusted} = \sqrt{N}(S + \frac{1}{3}\hat{\gamma}S^2 + \frac{1}{6N}\hat{\gamma}) \tag{4}$$

N denotes the number of events in the sample, while S is calculated as follows:

$$S = \frac{ABHAR_t}{[\sigma(BHAR_t)]} \tag{5}$$

$\hat{\gamma}$ is the coefficient of skewness and is estimated as:

$$\sum_{i=1}^{N} = \frac{(BHAR_{i,t} - ABHAR_t)^3}{[N\sigma(BHAR_t)^3]} \tag{6}$$

where $ABHAR_t$ and $\sigma(BHAR_t)$ are the sample mean and cross-sectional standard deviation of buy-and-hold returns for the sample of N events, respectively.

4. Empirical Results

4.1 Long-term Price Impact of M&As on Acquirer Banks

Table 3 illustrates the long-term impact of domestic M&As on the stock price behavior of the acquirer bank. Our computations span evaluation periods of 6, 12, 18 and 24 months. We find that buy-and-hold returns (BHARs) are negative for all time horizons. However, BHARs are not statistically significant at any conventional level. The shorter the time horizon investigated the most notable the negative price impact of the M&A on the stock price. In this respect we observe a -3.294% return in the first 6 months after the M&A, while collectively for the first 24 months after the M&A returns are -1.540%. For the 12 months and the 18 months following the deal acquirer returns are -2.767% and -1.575%, respectively. Notably, similar findings are offered when calculating CARs for the same post-merger time horizons. The same pattern of collective losses is observed, larger in magnitude for the 6-month (-3.095%) and gradually becoming smaller over longer time horizons (-1.429% for the 24-month post merger window). It corroborates similar findings for the short-term impact on the acquirer's stock price around the M&A announcement date[2]. However, this finding, of negative returns over various long-term time horizons, is not the predominant result in the related literature. Indicatively, in a sample containing both domestic and cross-border (Resti and Siciliano, 2001) acquiring banks are reported to have excess returns of 17.3% in the 12 months following the M&A, whereas we find negative CARs of 2.572%. Nonetheless, Tuch and O'Sullivan (2007) in their review of the literature paper find evidence that verify our empirical findings. In fact they report that the vast majority of studies find that takeovers generate either insignificant or negative abnormal returns in the long run. However, they analytically outline a number of methodological issues associated with long-run event studies, stressing the fact that the interpretation of the results is not as straightforward as in the case of short-term event studies.

Table 3. Long-term stock price behavior following M&As

	BHAR (%)	adjusted t-statistic	CARs (%)	t-statistic
6 months mean	-3.294	-1.52	-3.095	-1.49
12 months mean	-2.767	-0.97	-2.572	-0.87
18 months mean	-1.575	-0.46	-1.572	-0.52
24 months mean	-1.540	-0.33	-1.429	-0.32

Notes: BHAR are buy-and-hold returns and CARs are cumulative abnormal returns as computed by the market model.

4.2 Profitability and Operating Performance in the Long-run

In attempting to deduce the long-term impact of the merger on the involved parties we gather profitability and operating performance data one year prior to the M&A and for the five years following the deal. Through this process, by means of key indicators, we highlight notable differences as reported by our data. Table 4 reports profitability ratios, that is, ROA, ROE and the profit margin, before, during and after the deal. For all utilized ratios we provide mean and median values for our dataset that spans seven years, as mentioned above (year -1 to year +5). The median acquirer bank ROA one year prior to the M&A deal is 0.653% and begins to diminish after the deal (0.556% in year 1 and 0.553% in year 2). A gradually strengthening tendency reversal is observed from year 3 onwards, while in year 5 it reaches peak levels at 0.755%. A similar pattern of falling ROA in year 0 and year 1 is observed in the median values, but in this case the upturn begins from year 2 reaching once again highest ROA value in the fifth year after the merger (0.689%). The differences in means are statistically different from zero at the 10% level as indicated from the relevant p-value. For the other examined time intervals results are not significant.

Mean profit margin values demonstrate a movement analogous to the median ROA values whereby the lowest profit margin is observed one year after the merger (14.454%) and from then on there is a rising trend up to the last year captured by our data (21.867% in year 5). Likewise, median values reach lowest levels in year 1 (14.818%) and highest ones in year 5 (21.282%) with a temporary decline in this upsurge in year 3 (15.039% relative to 15.573% in year 2). Differences in means (medians) are statistically significant for the 7-year period (year -1 to year +5) at the 1% level, while estimated mean (median) values for other smaller time intervals are not significant.

The third measure of profitability, ROE, follows identical to ROA patterns of behavior. Both mean and median ROE exhibit a u-shaped pattern. Mean lowest levels are reached in year 2 (10.730%) and highest in year 5 (13.679%). Equally, the event of the merger causes a falling median ROE in year 1 (10.658%), whereas in year 5 this situation is completely reversed, since we estimate a median ROE value of 12.756%. The differences in means (medians) show that the observed low profitability in the second and third post-acquisition year is statistically significant at the 5% level.

Our empirical findings are consistent with the related literature (Campa and Hernando, 2006) according to which domestic M&As are associated with a temporary pressure in average profitability. This phenomenon extends to the first two years following the transaction and profitability ratios gradually regain pre-merger levels from third year onwards. The majority of these studies concluded, in line with our derived findings, that after year 3, banks achieve increased profitability that surpasses the pre-merger levels. These effects could be attributed to high costs encountered in the assimilation process. On the contrary, gradually, absorption costs give their place to economies of scale, which are transformed into increased profitability.

Table 4. Profitability ratios before and after the realization of domestic bank M&As

Return on Assets (ROA) %	Years						
	-1	0	1	2	3	4	5
Mean	0.653	0.658	0.556	0.553	0.577	0.652	0.755
Median	0.616	0.596	0.473	0.496	0.514	0.558	0.689
No. of observations	97	100	99	94	86	77	67
	Periods						
	(-1, 0)	(0, 1)	(-1, +1)	(-1, +2)	(-1, +3)	(-1, +4)	(-1, +5)
Differences in means	0.005	-0.10	-0.10	-0.10	-0.076	-0.001	0.102
p-value	0.938	0.118	0.133	0.091*	0.235	0.989	0.140
Differences in	-0.020	-0.122	-0.142	-0.120	-0.102	-0.058	0.073
Wilcoxon p-value	0.974	0.138	0.154	0.156	0.364	0.817	0.095
Return on Equity (ROE) %	Years						
	-1	0	1	2	3	4	5
Mean	12.677	11.854	11.361	10.730	10.759	12.706	13.679
Median	12.032	11.632	10.658	10.689	10.786	11.518	12.756
No. of observations	97	99	99	96	82	75	68

	Periods						
	(-1, 0)	(0, 1)	(-1, +1)	(-1, +2)	(-1, +3)	(-1, +4)	(-1, +5)
Differences in means	-0.823	-0.49	-1.32	-1.95	-1.918	0.028	1.002
p-value	0.335	0.588	0.148	0.021**	0.020**	0.976	0.299
Differences in [medians]	-0.400	-0.974	-1.374	-1.343	-1.246	-0.514	0.724
Wilcoxon p-value	0.210	0.447	0.051	0.018**	0.045**	0.929	0.370

Profit Margin (PM) %	Years						
	-1	0	1	2	3	4	5
Mean	16.894	16.951	14.454	15.460	16.135	19.017	21.867
Median	15.807	16.172	14.818	15.573	15.039	19.306	21.282
No. of observations	100	103	102	95	87	78	69

	Periods						
	(-1, 0)	(0, 1)	(-1, +1)	(-1, +2)	(-1, +3)	(-1, +4)	(-1, +5)
Differences in means	0.056	-2.496	-2.440	-1.434	-0.760	2.123	4.973
p-value	0.967	0.090	0.097	0.316	0.653	0.224	0.003***
Differences in [medians]	0.365	-1.354	-0.989	-0.234	-0.768	3.499	5.475
Wilcoxon p-value	0.989	0.137	0.141	0.270	0.519	0.138	0.003***

Notes: Differences in means are tested with t-statistic, while differences in medians are tested Wilcoxon-Mann-Whitney test. ***, ** and * denote statistical significance at the 1%, 5% and 10% level, respectively.

Table 5 outlines our derived efficiency ratios. More specifically, we shed light on the loan quality ratios of the acquiring banks. The ratios that we examine are the non-performing assets to total loans (NPATL), total loans to total deposits (TLTD), total loans to total assets (TLTA), loan loss reserves to non-performing assets (LLRNPA) and the capital adequacy (CAD).

The ratio that measures overdue loans (i.e. NPATL) as a percentage of the total loans portfolio is equal to 2.419% in the year prior to the M&A. Thereafter, it increases and becomes 2.723% in year 2. Our data show a steady decrease in years 3, 4 and 5. In year 5 non-performing loans are already below the pre-merger levels (2.269%). This result is an indication of an increasing improvement in the bank's loans portfolio 3 years after the M&A, which is apparently the required time for the portfolio's re-organization. However, the estimated absence of statistical significance weakens our derived findings.

The TLTD average ratio does not display any particular pattern. The rise in the ratio's levels by 3.508% between the years -1 to +5 is not statistically significant. The same applies for median values which rise by 12.478% during the aforementioned period. However, in the case of median values we observe a steadily increasing pattern. Therefore, we have some clues of an expansionary policy followed by banks in the post-merger period. This result could also signify declining total deposits.

When examining the percentage of total loans to total assets (TLTA) we observe fluctuations in mean (median) values. Nonetheless, both measures show that at the end of the examination period (i.e. year +5) total loans constitute a larger proportion of total assets relative to the pre-merger period (median values of 56.542% in year -1 and 59.848% in year +5). The pattern of behavior of the TLTA ratio is in parallel to the TLTD ratio when focusing on mean values. This illustrates that other bank total assets components (e.g. securities) do not alter the observed volatility of these loan quality ratios.

By utilizing the LLRNPA ratio we attempt to determine the level of loan loss provisions made by banks both before and after an M&A. Indisputably, mean (median) values show that in the post-merger period loan loss reserves decrease in contrast with Deysher (2008) advocating the need for banks to increase reserves after a merger in the fear of loans of questionable quality being in arrears. Mean LLRNPA values plummet from a 140.419% before the M&A to a mere 108.892% five years after the merger. This noteworthy difference in means is statistically significant at the 10% level. Our intriguing finding could be indicative of more focused bank M&As, signaling reduced fears for the

quality of the portfolio of loans of the target bank. Furthermore, since our dataset comprises of domestic M&As it could be argued that information sharing is stronger relative to information asymmetries existing in cross-border M&As (Panetta et al., 2009). But above all this finding could be characteristic of a lax credit policy as also evident by TLTD median values in the post-merger period.

The last efficiency ratio is the capital adequacy ratio (CAD) measured by the sum of Tier 1 and Tier 2 capital over risk-weighted assets. Mean values remain steadily above 6 percent with lowest levels (6.2%) found at the two ends of our examination period (year -1 and year +5). For the remaining five years, CAD ratios range between 6.4-6.5%. Therefore, we can argue that merged banks' capital ratios only temporarily benefit from the merger process. This argument holds when examining median values, which, however, show grater fluctuation ranging between 5.7 and 6.3%.

Table 5. Efficiency ratios before and after the realization of domestic bank M&As

Non-performing Assets to Loans (NPATL) %	Years						
	-1	0	1	2	3	4	5
Mean	2.419	2.600	2.625	2.723	2.513	2.173	2.269
Median	1.949	2.186	2.202	2.094	2.072	1.744	1.822
No. of observations	69	73	66	61	52	45	48
	Periods						
	(-1, 0)	(0, 1)	(-1, +1)	(-1, +2)	(-1, +3)	(-1, +4)	(-1, +5)
Differences in means	0.181	0.025	0.206	0.304	0.094	-0.246	-0.150
p-value	0.535	0.934	0.473	0.343	0.766	0.411	0.615
Differences in medians	0.237	0.017	0.253	0.145	0.123	-0.205	-0.127
Wilcoxon p-value	0.623	0.858	0.500	0.523	0.886	0.511	0.814
Total Loans to Total Deposits (TLTD) %	Years						
	-1	0	1	2	3	4	5
Mean	146.312	161.379	147.367	149.280	150.536	142.102	149.820
Median	132.841	135.010	138.788	136.966	136.966	141.466	145.318
No. of observations	91	94	91	85	77	63	59
	Periods						
	(-1, 0)	(0, 1)	(-1, +1)	(-1, +2)	(-1, +3)	(-1, +4)	(-1, +5)
Differences in means	15.067	-14.012	1.055	2.968	4.224	-4.210	3.508
p-value	0.324	0.336	0.929	0.797	0.728	0.731	0.788
Differences in medians	2.170	3.777	5.947	4.125	4.125	8.625	12.478
Wilcoxon p-value	0.620	0.903	0.752	0.386	0.357	0.432	0.245
Total Loans to Total Assets (TLTA) %	Years						
	-1	0	1	2	3	4	5
Mean	55.329	56.760	56.873	56.853	56.124	54.341	56.409
Median	56.542	58.151	59.034	58.708	56.703	56.685	59.848
No. of observations	91	96	96	89	77	66	59
	Periods						
	(-1, 0)	(0, 1)	(-1, +1)	(-1, +2)	(-1, +3)	(-1, +4)	(-1, +5)
Differences in means	1.430	0.114	1.544	1.523	0.794	-0.988	1.080
p-value	0.512	0.960	0.493	0.521	0.740	0.707	0.697
Differences in medians	1.609	0.883	2.492	2.166	0.161	0.142	3.306

Wilcoxon p-value	0.431	0.883	0.341	0.341	0.457	0.931	0.317

| **Loan Loss Reserves to Non-performing Assets (LLRNPA) %** | Years | | | | | | |
	-1	0	1	2	3	4	5
Mean	140.419	143.254	149.272	143.528	131.777	113.128	108.892
Median	109.827	119.019	116.079	96.986	97.414	93.397	90.479
No. of observations	64	69	64	59	51	43	45
	Periods						
	(-1, 0)	(0, 1)	(-1, +1)	(-1, +2)	(-1, +3)	(-1, +4)	(-1, +5)
Differences in means	2.835	6.018	8.853	3.110	-8.642	-27.291	-31.527
p-value	0.875	0.758	0.648	0.870	0.651	0.118	0.067*
Differences in medians	9.192	-2.940	6.252	-12.841	-12.413	-16.430	-19.347
Wilcoxon p-value	0.982	0.916	0.960	0.779	0.543	0.463	0.261

| **Capital Adequacy (CAD)** | Years | | | | | | |
	-1	0	1	2	3	4	5
Mean	0.062	0.065	0.064	0.065	0.064	0.065	0.062
Median	0.055	0.057	0.056	0.058	0.060	0.063	0.056
No. of observations	100	103	102	94	86	76	68
	Periods						
	(-1, 0)	(0, 1)	(-1, +1)	(-1, +2)	(-1, +3)	(-1, +4)	(-1, +5)
Differences in means	0.002	-0.001	0.001	0.002	0.002	0.002	0.000
p-value	0.618	0.822	0.774	0.620	0.655	0.635	0.979
Differences in medians	0.002	-0.001	0.001	0.003	0.005	0.008	0.001
Wilcoxon p-value	0.408	0.806	0.553	0.290	0.297	0.274	0.587

Notes: Differences in means are tested with t-statistic, while differences in medians are tested Wilcoxon-Mann-Whitney test. ***, ** and * denote statistical significance at the 1%, 5% and 10% level, respectively.

5. Concluding Remarks

The study explores the long-term effects of domestic bank M&As in a sample of European countries during the period 1996-2010. In the midst of this turbulent period the common European currency was introduced, while major economic crises and regulatory changes are represented by the sample analyzed. Therefore, using this up-to-date dataset we attempt to highlight interesting performance characteristics arising from M&A deals. The derived findings may offer to bank managers and analysts in-depth knowledge of the mechanisms that underpin the profitability and efficiency of newly transformed banking institutions.

In assessing the impact of M&As on the long-term stock price behavior, we find negative performance throughout all post-merger time horizons analyzed, using both buy-and-hold returns (BHARs) and cumulative abnormal returns (CARs). In line with the common finding of negative returns in the post-merger period for acquirer banks (Andre et al., 2004), losses in excess of three percent are reported for 6-month time periods following the deal. Over longer time horizons (12, 18 and 24 months) acquirer banks still experience losses, though smaller in magnitude, in line with the literature, which ends up with similar findings over the long-term post-merger horizons (Tuch and O'Sullivan, 2007). Nonetheless, this is an alarming finding for fund managers seeking long-term portfolio benefits.

We further investigate acquirer banks long-term characteristics by estimating mean and median values of accounting ratios that explain profitability and efficiency of the merged institutions. Exploiting data spanning the period one year prior to the M&A and five years after its eventuation, we find evidence that allow us to deduce that there are economically significant economies of scale that can be achieved through an M&A. This affirmation is supported by all profitability ratios analyzed (i.e. ROA, ROE and profit margin). The derived ratios show that temporarily

profitability is squeezed after the deal but rebounds significantly from the third year after the merger onwards reaching peak levels in year 5. We conjecture that this phenomenon is primarily driven by initially high assimilation costs that soon give place to a situation where shareholders can gradually reap the benefits of the synergies achieved through the merger.

Empirical evidence from the efficiency measures employed do not fully support the view that merged banking institutions display lax credit policies in the years following the M&A. Some evidence of expansionary policies are found, as indicated by slightly higher median values in total loans to total assets (TLTA) and total loans to total deposits (TLTD). However, the lack of statistical significance for the derived results does not allow us to make direct inferences. Interestingly, we find a statistically significant reduction in the loan loss provisions made against non-performing loans (LLRNPA), in the seven-year period spanning our dataset, which could be indicative of less severe concerns on the quality of the loans' portfolio in the long-term. This characteristic of within-border bank M&As could also be attributed to smaller information asymmetries or expansionary credit policies. Lastly, in a policy implication arising from our empirical findings, it appears that the tightening regulatory framework deters merged institutions from relaxing their capital adequacy ratios (CAD), which remain steadily above the six percent threshold.

Given the strongly negative evidence on the long-term stock performance, future literature utilizing similar up-to-date datasets should measure whether the 2008 crisis itself has significantly affected the derived results.

References

Akhavein, J. D., Berger, A.N., & Humphrey, D. B. (1997). The effects of megamergers on efficiency and prices: Evidence from a bank profit function. *Review of Industrial Organization, 12*, 95–134. http://dx.doi.org/10.1023/A:1007760924829

Altunbas, Y., & Marques, D. (2008). Mergers and acquisitions and bank performance in Europe: The role of strategic similarities. *Journal of Economics and Business, 60*, 204-222. http://dx.doi.org/10.1016/j.jeconbus.2007.02.003

Amel, D., Barnes, C., Panetta, F., & Salleo, C. (2004). Consolidation and efficiency in the financial sector: a review of the international evidence. *Journal of Banking and Finance, 28*, 2493–2519. http://dx.doi.org/10.1016/j.jbankfin.2003.10.013

André, P., Kooli, M., & L'Her, J. F. (2004). The long-run performance of mergers and acquisitions: Evidence from the Canadian stock market. *Financial Management, 33*(4), 27-43.

Beccalli, E., & Frantz, P. (2009). M&A Operations and performance in banking. *Journal of Financial Services Research, 36*, 203-226. http://dx.doi.org/10.1007/s10693-008-0051-6

Beccalli, E., & Frantz, P. (2013). The determinants of mergers and acquisitions in banking. *Journal of Financial Services Research, 43*(3), 265-291. http://dx.doi.org/10.1007/s10693-012-0138-y

Beltratti, A., & Paladino, G. (2013). Is M&A different during a crisis? Evidence from the European banking sector. *Journal of Banking and Finance, 37*, 5394-5405. http://dx.doi.org/ 10.1016/j.jbankfin.2013.02.004

Berger, A. (1998). The efficiency effects of bank mergers and acquisitions: A preliminary look at the 1990s data. In Amihud, Y, & Miller, G. (Eds.), *Bank mergers and acquisitions* (pp. 79-111). Kluwer, Boston,

Campa, J. M., & Hernando, I. (2006). M&As performance in the European financial industry. *Journal of Banking and Finance, 30*, 3367-3392. http://dx.doi.org/10.1016/j.jbankfin.2006.06.006

Cuesta, R.A., & Orea, L. (2002). Mergers and technical efficiency in Spanish savings banks: a stochastic distance function approach. *Journal of Banking and Finance*, 26, 2231-2247. http://dx.doi.org/10.1016/S0378-4266(01)00184-4

Cybo-Ottone, A., & Murgia, M. (2000). Mergers and shareholder wealth in European banking. *Journal of Banking and Finance, 24*, 831-859. http://dx.doi.org/ 10.1016/S0378-4266(99)00109-0

DeLong, G., & DeYoung, R. (2007). Learning by observing: information spillovers in the execution and valuation of commercial bank M&As. *Journal of Finance, 62*, 181–216. http://dx.doi.org/10.1111/j.1540-6261.2007.01205.x

DeYoung, R., Evanoff, D., & Molyneux, P. (2009). Mergers and Acquisitions of financial institutions: A review of the post-2000 literature. *Journal of Financial Services Research, 36*, 87-110. http://dx.doi.org/10.1007/s10693-009-0066-7.

Deysher, J. (2008). *Money in the bank: How to find opportunities in a fallen sector*. Retrieved from http://www.aaii.com/journal/article/money-in-the-bank-how-to-find-opportunities-in-a-fallen-sector.mobile

Diaz, B., Olalla, M., & Azofra, S. (2004). Bank acquisitions and performance: Evidence from a panel of European credit entities. *Journal of Economics and Business, 56*, 377-404. http://dx.doi.org/10.1016/j.jeconbus.2004.02.001

Dodd, P., & Warner, J. (1983). On corporate governance: A study of proxy contests. *Journal of Financial Economics, 11*, 401-438. http://dx.doi.org/10.1016/0304-405X(83)90018-1

Drymbetas, E., & Kyriazopoulos, G. (2013). Do domestic bank M&As still create value? Recent evidence from Europe. Working paper.

Hagendorff, J., & Keasey, K. (2009). Post-merger strategy and performance: Evidence from the US and European banking industry. *Accounting and Finance, 49*, 725-751. http://dx.doi.org/10.1111/j.1467-629X.2009.00306.x

Hagendorff, J., Hernando, I., Nieto, M. J., & Wall, L. D. (2012). What do premiums paid for bank M&As reflect? The case of the European Union. *Journal of Banking and Finance, 36*, 749-759. http://dx.doi.org/10.1016/j.jbankfin.2011.03.009.

Hagendorff, J., & Nieto, M. (2013). The safety and soundness effects of M&A in the EU: Does prudential regulation have any impact? *European Financial Management*, forthcoming. http://dx.doi.org/10.1111/j.1468-036X.2013.12022.x

Houston, J. F., James, C.M., & Ryngaert, M.D. (2001). Where do merger gains come from? Bank mergers from the perspective of insiders and outsiders. *Journal of Financial Economics, 60*, 285-331. http://dx.doi.org/10.1016/S0304-405X(01)00046-0

Knapp, M., Gart, A., & Chaudhry, M. (2006). The impact of mean reversion of bank profitability on post-merger performance in the banking industry. *Journal of Banking and Finance, 30*, 3503–3517. http://dx.doi.org/10.1016/j.jbankfin.2006.01.005

Lang, G., & Welzel, P. (1999). Mergers among German cooperative banks: A panel-based stochastic frontier analysis. *Small Business Economics*, 13, 273-286. http://dx.doi.org/10.1023/A:1008130918565

Lozano-Vivas A., Kumbhakar, S., Fethi, M., & Shaban, M. (2011). Consolidation in the European banking industry: How effective is it? *Journal of Productivity Analysis, 36*, 247-261. http://dx.doi.org/10.1007/s11123-011-0212-8

Nnadi, M., & Tanna, S. (2013). Analysis of cross-border and domestic mega-M&As of European commercial banks. *Managerial Finance, 39*, 848-862.

Panetta, F., Schivardi, F., & Shum, M. (2009). Do mergers improve information? Evidence from the loan market. *Journal of Money Credit and Banking, 41*, 673–709. http://dx.doi.org/10.1111/j.1538-4616.2009.00227.x

Pastor-Llorca, M. J., & Martin-Ugedo, J. F. (2004). Long-run performance of Spanish seasoned equity issues with rights. *International Review of Financial Analysis, 13*, 191-215. http://dx.doi.org/10.1016/j.irfa.2004.02.005

Pilloff, S. J. (1996). Performance changes and stockholder wealth creation associated with mergers of publicly traded banking institutions. *Journal of Money, Credit and Banking, 28*, 294–310.

Resti, A. (1998). Regulation can foster mergers: Can mergers foster efficiency? The Italian case. *Journal of Economics and Business, 50*, 157-169. http://dx.doi.org/10.1016/S0148-6195(97)00075-1

Resti, A., & Siciliano, G. (2001) Do bank acquisitions increase shareholders' wealth? A comparison between market-based and accounting-based performance indicators for some Italian banks. Working paper, University of Bergamo.

Rhoades, S. A. (1998). The efficiency effects of bank mergers: An overview of case studies of nine mergers. *Journal of Banking and Finance, 22*, 273-291. http://dx.doi.org/10.1016/S0378-4266(97)00053-8

Tuch, C., & O'Sullivan, N. (2007). The impact of acquisitions on firm performance: A review of the evidence. *International Journal of Management Reviews, 9*, 141–170. http://dx.doi.org/10.1111/j.1468-2370.2007.00206.x

Vander Vennet, R. (1996). The effect of mergers and acquisitions on the efficiency and profitability of EC credit institutions. *Journal of Banking and Finance, 20*, 1531–1558. http://dx.doi.org/10.1016/S0378-4266(96)00014-3

Notes

Note 1. Hagendorff et al. (2008) claim though that exclusion of critical serial acquirers could deprive datasets of a large and very relevant share of bank M&As. Therefore, the decision on such restrictions lies upon the dataset itself and the degree of multiple acquirers.

Note 2. Drymbetas and Kyriazopoulos (2013) find similarly negative returns for various short-term event windows for as similar sample of pan-European domestic bank M&As.