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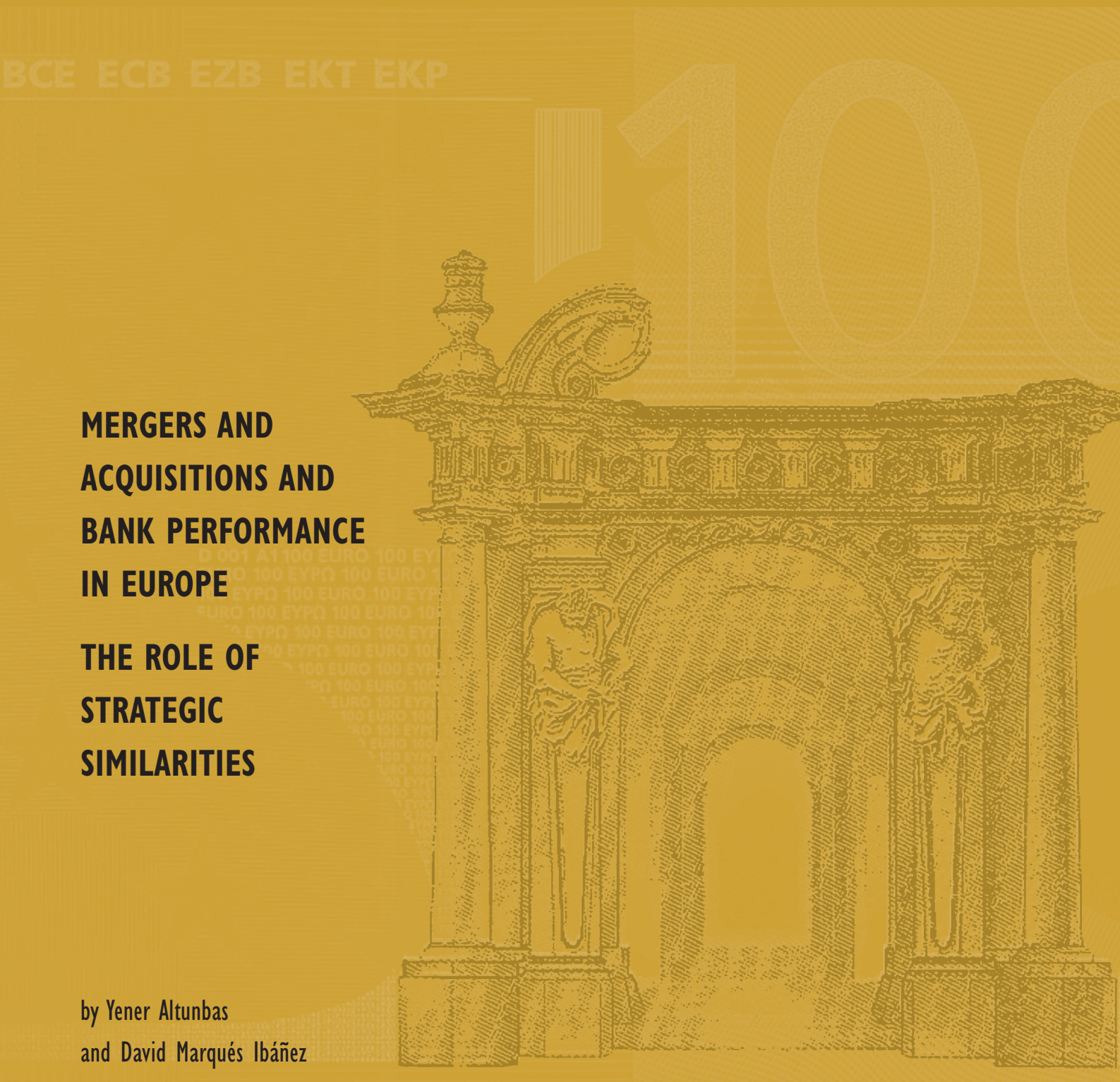

MERGERS AND ACQUISITIONS AND BANK PERFORMANCE IN EUROPE

THE ROLE OF STRATEGIC SIMILARITIES

by Yener Altunbas
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THE ROLE OF STRATEGIC SIMILARITIES [1]

by Yener Altunbas [2]
and David Marqués Ibáñez [3]

In 2004 all publications will carry a motif taken from the €100 banknote.

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CONTENTS

Abstract

An unprecedented process of financial consolidation has taken place in the European Union over the past decade. Building on earlier US evidence, we examine the impact of strategic similarities between bidders and targets on post-merger financial performance. We find that, on average, bank mergers in the European Union resulted in improved return on capital. By making the assumption that balance-sheet resource allocation is indicative of the strategic focus of banks, we also find significantly different results for domestic and cross-border mergers. For domestic deals, it could be quite costly to integrate dissimilar institutions in terms of their loan, earnings, cost, deposits and size strategies. For cross-border mergers and acquisitions (M&As), differences of merging partners in their loan and credit risk strategies are conducive to a higher performance whereas diversity in their capital, cost structure as well as technology and innovation investments strategies are counterproductive from a performance standpoint.

Keywords: *banks; M&As; strategic similarities*

JEL classification: G21; G34

Non-technical summary

During the 1990s a large process of financial consolidation has taken place in the European Union although cross-border mergers and acquisitions activity remains limited in the banking sector. Given the central role played by banks in the credit process and the economy in general, this process of financial consolidation has attracted substantial attention not only from managers and shareholders but also from borrowers and policy-makers. While in the United States there is extensive empirical evidence on the effects of financial consolidation, the empirical literature remains limited in Europe. This paper aims to shed some light on the consolidation process in the European Union banking sector.

In terms of methodology, most of the studies analyzing the effect of bank consolidation on performance tend to follow two main kinds of empirical methods. On the one hand there are a number of studies comparing pre- and post-merger performance. On the other hand, another strand of the empirical literature uses a event-study type methodology, in which changes in the prices of specific financial market assets around the time of the announcement of the merger are analyzed. In this respect, the handful of cross-country European studies conducted to date using an event-study methodology tend to find that banks merger and acquisitions accrue significant stock market valuation gains for both the target and bidder (see for instance Cybo-Ottone and Murgia, 2000).

We use the former approach by comparing actual pre- and post- merger performance in a comprehensive sample of European Union banks from 1992 to 2001. The use of this method allows us to cover a wider sample of European Union banks by including also banks which are not listed on the stock market. Building on earlier US work we also examine the impact of strategic similarities between bidders and targets on post-merger financial performance. The analogy with the US banking sector seems to be a useful one, as in this country an important process of banking consolidation and interstate expansion took place following a strong process of banking deregulation in the late 1980s and early 1990s. This can be compared to the on-going European process of financial integration, which accelerated with the single market for financial services in the early 1990s and, most recently, by the introduction of the euro. The consideration of the strategic dimension seems also to be relevant. Indeed, recent studies have provided an interesting contribution by sub-sampling the population of merging banks, according to product or market relatedness, to analyze whether certain shared characteristics among merging institutions could create or destroy shareholder value or performance. By and large, the main conclusion of these studies is that while mergers among banks showing substantial elements of

geographical or product relatedness create value, dissimilarities tend to destroy overall shareholder value

Unlike results from most of the US-based event studies literature, we found that there are improvements in performance in the European Union after the merger has taken place particularly in the case of cross-border M&As. By making the assumption that balance-sheet resource allocation is indicative of the strategic focus of banks, we also find that domestic and cross-border mergers are very different in terms of whether dissimilar or similar banks succeed in mergers.

On average, we found that consistency on the efficiency and deposits strategies of merging partners are performance enhancing both for domestic and cross-border M&As. For domestic mergers we also found support on the negative effects of dissimilarities in earnings, loan and deposit strategies on performance. Yet, differences in the capitalisation and investment in technology and financial innovation of merging institutions were found to enhance performance.

For cross-border M&As, diversity in their loan and credit risks strategies improved performance of the merging banks, while diversity in their capitalisation, technology and financial innovation strategies are negative from a performance perspective. This renders support to the often stated difficulties in integrating institutions with widely different strategic orientation. These findings fit well with the process of financial consolidation observed in recent years in Europe.

1. Introduction and motivation

Spearheaded by the creation of the single market for financial services and, more recently, by the introduction of the euro, an unprecedented process of financial consolidation has taken place in the European Union. During the late 1990s, the volume and number of mergers and acquisitions (M&As) increased in parallel with the introduction of Monetary Union (Chart 1). According to most bankers and academics, however, the process of banking integration seems far from completed and is expected to continue reshaping the European financial landscape in the years to come.[1] First, many of the forces underpinning this consolidation process – such as the effect of technological change and financial globalisation – will continue to exist. Second, the number of banks per 1,000 inhabitants in the European Union is almost double the number in the United States, suggesting that there is room for consolidation in the European Union. Third, there is still a considerable degree of heterogeneity across European Union countries in terms of the concentration of banks.

Chart 1 Mergers and acquisitions in the European Union banking sector
(EUR billions, 6 months moving averages)

Source: Thomson Financial Deals.

[1] See for instance McKinsey (2002) and Morgan Stanley (2003).

As in other industries, this process of consolidation in the banking industry has attracted substantial attention from managers and shareholders. In addition, the pivotal role played by the banking sector in the economy has also ensured additional interest from borrowers, depositors and policy-makers alike. One of the concerns for policy-makers is the possible impact of consolidation on the transmission mechanisms of monetary policy.

The impact of bank consolidation on the transmission of monetary policy is a multidimensional issue. According to most empirical studies, an increase in banking concentration tends to drive loan rates up in many local markets thereby probably hampering, to some extend, the pass-through from market to bank lending rates. On the other hand, in terms of quantities, early concerns about loan supply restrictions to small and medium enterprises arising from bank concentration seem to have been exaggerated.[2]

In terms of methodology, the handful of European studies analysing the effect of bank consolidation on performance tends to follow two main kinds of empirical methods: a comparison of pre- and post-merger performance, or an event-study type methodology based on prices of specific financial market assets. Surprisingly, while there is a myriad of empirical studies in the United States devoted to the issue of banking consolidation, there is a paucity of studies in the European Union (see Berger et al., 1999).

In this respect, the first set of studies evaluates the effects of bank mergers comparing pre- and post- merger performance by measuring performance using either accounting or productive efficiency indicators. An important starting point for this latter group is that the latest empirical studies measuring bank efficiency show that scale economies seem to exist in the banking sector in the United States and Europe. This finding tentatively suggests that improvements in efficiency could be expected from banking mergers (see Humphrey and Vale, 2003). Surprisingly, the majority of studies comparing pre- and post-merger performance finds that these potential efficiency gains derived from size rarely materialise (see Piloff, 1994, and Berger, Demsetz and Strahan, 1999). A possible rationale for this puzzle could be that some efficiency gains might take a long time to accrue (see Focarelli and Panetta, 2003). More specifically, while some efficiencies (such as those derived from risk diversification or the benefits of brand name) can be accrued in

[2] See Carletti, Hartmann and Spagnolo (2002) for a review of the literature linking banking consolidation and bank competition.

the short run, others such as the benefits derived from cost reductions or the majority of scope economies might take longer to materialise. This is probably due to the difficulties of integrating broadly dissimilar institutions (see Vander Vennet, 2002). All other things being equal, a combination of firms with different culture and strategic characteristics is expected to be followed by difficulties associated, among other things, with clashes between corporate cultures that could hinder performance.

A parallel strand of the literature uses event study methodology, and typically tries to ascertain whether the announcement of the bank merger creates shareholder value (normally in the form of cumulated abnormal stock market returns) for the target, the bidder and the combined entity shareholders.[3] The underlying hypothesis of these types of studies is that excess returns around announcement day could explain the creation of value associated to the merger. Following this procedure, most US studies tend to find that banks' mergers could create shareholder value only for the target institution shareholders, normally at the expense of the bidding institution (see, e.g. Houston and Ryngaert, 1994 and Berger, Demsetz and Strahan, 1999).[4] By contrast, the handful of cross-country European studies conducted to date, finds that banks mergers and acquisitions accrue significant stock market valuation gains for both the target and bidder (see Cybo-Ottone and Murgia, 2000).

Recent studies have provided an interesting contribution by sub-sampling the population of merging banks, according to product or market relatedness, to analyse whether certain shared characteristics among merging institutions could create or destroy shareholder value or performance. By and large, the main conclusion of these studies is that while mergers among banks showing substantial elements of geographical or product *relatedness* create value, dissimilarities tend to destroy overall shareholder value (see Amihud, De Long and Saunders, 2002, and Houston and Ryngaert, 1994).

A few studies looking at actual after-merger financial performance have also considered whether the existence of common bank characteristics among merging partners could be

[3] See Beitel and Schiereck (2001) for a review of the handful of European studies using this methodology.
[4] Although traditional US studies fail to find conclusive evidence that bank mergers create value, Houston, James and Ryngaert (2001) find evidence of some revaluation on certain subsets of banks.

conducive to improved performance.[5] However, very little effort has been directed towards understanding performance differences that occur *within* each type of merger and how the degree of relatedness among merging firms affects post-merger performance.

We attempt to address this issue and analyse the factors that are expected to influence the success of M&As by considering whether the merger of firms with similar strategic orientation could lead to higher profitability. Our analysis follows the perspectives of evolutionary economic theories, particularly the strategic management and resource-based view of the firm under the assumption that financial data from individual banks reflects the strategic profile of merging institutions. This study aims to fill a gap, as the handful of empirical studies in this area is US-based. Specific empirical evidence from the European banking system is crucial since the US experience cannot be automatically applied to the European environment where one can observe, for example, a substantially different institutional reality.

2. Strategic fit and performance

A clear conclusion from the above discussion of the M&A empirical literature is the importance of product and geographical similarities for post-merger performance. To investigate this issue further, we borrow our model from the strategic management literature by focusing on the strategic features of financial firms engaged in M&A activity.

Strategists have long recognised that the *'strategic fit'* among merging partners is a critical element in determining the success or failure of a deal. Levine and Aaronovitch (1981) and Lubatkin (1983) were among the first to stress the importance of studying the strategic and organisational aspects of M&A activity. While the same view was echoed

[5] For recent evidence see Houston and Ryngaert (2001) for the United States and Beitel, Schiereck and Wahrenburg (2003) for European evidence. Comparing ex- and post-merger performance among European banks, Vander Vennet (1996) finds that domestic mergers of similar-sized partners are profitability-enhancing.

nearly 20 years later by Zollo (1997) for the financial sector, there have only been a handful of studies – all US-based – examining these aspects of M&A activity.

These studies analyse the impact of strategic similarities in bank mergers on bank performance, by associating the resource allocation patterns as indicators of the underlying strategies pursued by US banks engaged in horizontal mergers. It is broadly found that strategic similarities between target and bidders improve performance, providing general support to the view that mergers between strategically similar firms are likely to provide greater benefits than mergers involving organisations that pursue different strategies.

This paper aims to expand on available evidence by investigating how strategic similarities – calculated from banks' balance sheet data - among merging banks in the European Union have impacted bank performance from 1992 to 2001. The interest of this particular exercise is multidimensional: first, the issue of strategic similarity, emphasised indirectly by other strands of the literature is addressed directly in the European Union. Second, by analysing both domestic and cross-border merger data we assess not only the differences in corporate culture between targets and bidders, but also the impact of national culture dissimilarities in post-merger performance. Third, by using a wide sample we are likely to cover a larger part of the underlying process. Overall, by considering the dynamics of financial consolidation, we also enhance our understanding of the recent drastic changes that have affected the European Union financial structure in recent years.

3. Methodology and data sources

3.1 Methodology

Normally, each organisation sets its own goals and objectives together with its preferred strategy. Firms can therefore be differentiated on the basis of their fundamental choices expressed in terms of long and short-term strategies. Their success is, by and large, dependent on their choice of strategy. In this regard, business-level strategy has typically been measured in terms of the strategic posture or emphasis a firm has with respect to its competitors.

We build on the model suggested by Ramaswamy (1997) who analysed the impact of M&As in the US banking sector on performance according to the similarities between target and bidder. The analogy with the US banking sector seems to be a useful one, as in this country an important process of banking consolidation and interstate expansion took place following a strong process of banking deregulation in the late 1980s and early 1990s. This can be compared to the on-going European Union process of financial integration, which accelerated with the single market for financial services in the early 1990s and, most recently, by the introduction of the euro.

The model relates changes in performance before and after the merger to a set of strategic indicators and a set of control variables that are likely to influence performance. In this sense strategy researchers have used resource allocation patterns as indicators of the underlying strategies that organisations pursue (Dess and Davis, 1984 and Zajac and Shortell, 1989). For instance, firms undertaken a cost efficiency strategy tend to exhibit lower levels of operational expenditure to total assets than other firms. Likewise, corporations pursuing product innovation strategies statistically have higher levels of research and development expenditure (Ramaswamy, 1997 and Porter, 1980). In sum, the concept of strategic similarity used in this paper also assumes that the major aspects of an organisation's strategic direction can be seen in the resource allocation decisions that its management makes. Hence it is considered that if two firms show similar resource allocation patterns, measured from their balance-sheet data, across a variety of strategically relevant characteristics, they could be broadly considered strategically similar (Harrison et al., 1991).

We first identify the financial features of targets and bidders considering the main characteristics regularly used by practitioners for analysing the financial performance of banks.[6] Then, to measure the strategic similarity of firms involved in M&A activity, a simple indicator of the strategic similarity of firms given their financial characteristics is calculated for each strategic variable and individual merger:

$$SI_{ni} = \sqrt{(X_{Bni} - X_{Tni})^2}$$

[6] See Bollenbacher (1995) and McKinsey (2002).

(where SI_{ni} is the similarity index for the n_{th} variable for the i_{th} merger, and X_{Bni} and X_{Tni} are the scores of the target (Tn) and the bidder (Bn) for the n_{th} variable respectively).

As indicated, the underlying assumption is that if two firms exhibit very similar resource allocation patterns as measured across a variety of strategically relevant characteristics (such as risk profile, marketing expenditure or efficiency), they can be considered to be strategically similar. To capture the strategic orientation of the merged firms, financial information over the two years prior to the merger is taken into consideration. Stepwise regression analysis is used to test the impact of strategic dissimilarities on post-merger performance.

In terms of sampling – and since most practitioners consider the characteristics, motives and performance implications to be very different between domestic and cross-border mergers – we prefer to examine our domestic and cross-border merger data separately.[7]

3.2 Identification and measurement of the strategic variables

Broadly building on the approaches by Datta et al. (1991), Chaterjee et al. (1992) for other industries and Ramaswamy (1997) for the banking sector, we use a variety of financial indicators to define the strategic features of banks engaged in domestic and cross-border mergers in the European Union. These indicators include measures of financial performance: asset and liability composition; capital structure; liquidity; risk exposure; profitability; financial innovation and efficiency (see Table 1).

As dependent variable, we measure change of performance as the difference between the merged banks' two-year average return on equity (*ROE*) after the acquisition and the weighted average of the ROE of the merging banks two years before the acquisition.[8]

[7] Cross border mergers are defined as those where merging institutions belong to a different European Union country.

[8] We consider a two-year time window for three main reasons. First, it is difficult to single out the impact of one single merger from the others in the sample as a few of banks on the sample merged several times. Second, when considering a longer time span, the effect of other economic factors could distort the results. Thirdly, when considering a longer time span the sample size shrinks dramatically particularly for the case of cross border mergers. With these caveats in mind, in Appendix I, to check for consistency we also widened our performance window to four years and the results were broadly unchanged particularly for the case of domestic mergers.

Among the explanatory variables, two control variables are included, as these variables are expected to be important determinants of bank performance following the results of previous US literature.[9] Namely, variables accounting for the relative difference in size between the target and bidder (*RSIZE*) and the ex ante bidder performance (*BID_ROE*) are included as control variables.

Table 1 Definition of the variables

Definition	*Symbol*	*Formula*
Performance change	*ΔROE*	Return on equity (post-merger) – weighted return on assets (pre-merger)
Liquidity	*LIQ*	Liquid asset/Total deposit
Cost-income ratio	*COST/INC*	Total cost/Total revenues
Capital-assets ratio	*CA/TA*	Capital/Total assets
Loans-total assets	*LOAN/TA*	Net loans/Total assets
Credit risk	*BADL/INT_INC*	Loan loss provision/Net interest revenues
Diversity earnings	*OOR/TA*	Other operational revenue/Total assets
Off-balance sheet	*OBS/TA*	Off-balance-sheet items/Total assets
Loans to deposits	*LOANS/DEP*	Customer loans/Customer deposits
Other expenses in services and technology	*TECH*	Other expenses/Total assets
Bidder performance	*PREROE_B*	Return on equity of the bidder (pre-merger)
Relative size	*RSIZE*	Total asset of target/Total asset of bidder
Time dummies	*T_DUM*	Yearly time dummies

Sources: Bankscope and Thomson Financial Deals.

The relationship between the relative size of target and bidder (*RSIZE*) – measured as the ratio of total assets of the target bank to total assets of bidder – and performance (*ΔROE*) is expected to depend on whether banks are involved in domestic or cross-border M&As. When domestic consolidation takes place, cost economies derived from factors such as cost-cutting measures of overlapping branches and shared technology are probably easier to attain. For cross-border deals, according to most practitioners, potential revenue enhancing and risk diversification aspects generally prevail over cost-efficiency-related potential improvements. This also because cost enhancements possibilities in cross border deals are often hampered by wider differences in terms of corporate culture and less overlap in terms of branches and other operational aspects.

[9] From a different perspective, Vander Vennet (2002) emphasizes the relationship between bank efficiency and size also in Europe.

The relationship between the variables measuring the relative size of target and bidder (*RSIZE)* and performance (*ΔROE*) is an ambiguous one (see Amaro de Matos, 2001). Tentatively, the smaller the size of the targets compared to the bidders (i.e. the lower is the *RSIZE* ratio), the easier the integration is to realise cost savings opportunities. For that reason, a negative relationship between the relative size (*RSIZE*) and performance (*ΔROE*) is expected, particularly in the case of domestic mergers in which cost improvement has traditionally been a major driving force for consolidation.

However, in the case of cross-border mergers, the goal of the bidders cannot be generally identified with rapidly achieved cost economies but with other benefits derived from synergies with firms abroad. As a consequence, for cross-border mergers, a positive relationship between *RSIZE* and *ΔROE* is anticipated: the larger the target compared to the bidders (in other words, the higher the RSIZE ratio) the better is expected to be a firm's performance.

The level of the bidder's pre-merger performance (*PREROE_B*), measured as its return on capital, is also likely to influence post-merger performance of the combined entity (*ΔROE*). If a bidder already possesses a high-level of profitability before the merging process, it is more likely that the profitability of the new institution will decrease in the short term due to the process itself. Alternatively, it is probable that bidders with a lower level of performance will manage to increase their profitability after merging both with a domestic or cross-border target. As a consequence, a negative relationship between bidders' *PREROE_B* and *ΔROE* is expected initially (see Vander Vennet, 2002).

To measure strategic similarities of firms involved in M&A activity, several indicators of the strategic relatedness of the merging firms are obtained across several dimensions calculated from individual banks' accounting data:

First, the **earnings diversification** strategy, which is a broad product strategy, referred to the emphasis on other sources of income apart from the traditional net interest revenues. These could be derived from potential new revenues, diversification and access to financial innovation possibilities from producing new products and services. Maximisation of non-interest revenue as a general strategy is measured by the ratio of other operational revenue to total assets (*OOR/TA*). The focus or exposure to off-balance-

sheet activities (*OBS*) is measured as the ratio of off-balance-sheet activity to total assets (*OBS/TA*). At the outset, dissimilarities in non-interest income sources of revenues (*OOR/TA)* and in off-balance-sheet activities exposure (*OBS/TA)* are both expected to enhance post-merger performance (*ΔROE)* as they could help spreading access to financial innovation and new sources of revenues (see Gande, Puri, Saunders and Walter, 1997). This positive relationship is expected to be particularly strong in the case of domestic mergers where homogeneity among merging entities tends to be higher and the difficulties associated with the integration of the new products are normally lower than in the case of cross-border mergers (see Harrison et al., 1991).

Second, the strategy followed regarding banks' **asset quality** profile, which referred to banks' credit risk stance, measured as the level of loan loss provisions divided by interest revenues. As it is not possible to get information on the actual amount of non-performing loans in several European Union countries[10] several aspects of banks' risk and revenue profile are considered. Banks' estimates of potential loan losses are included to measure the quality of assets via the ratio of loan loss provision to net interest revenues (*LLP/IR*). To consider the balance between loans and deposits, the ratio of total loans to total customer deposits (*L/D*), commonly referred to as a loan-back ratio, is also considered. This ratio provides a proxy for the use of relatively low-cost deposits in relation to the amount of loans. Also, banks' balance sheet loan composition is measured by the ratio of net loans to total assets ratio (*NL/TA*), which takes into account the prominence of traditional and normally un-hedged loan lending in terms of its weight on the overall portfolio. In general, it can be argued that worsening post-merger performance may be expected when banks with very different asset quality, and overall portfolio strategies merge. Since pursuing economies of scale and quickly integrating their cost base is an essential goal of a great deal of domestic mergers, conflicts arising from managerial disparities on critical decisions, such as asset quality or the overall portfolio strategy structure, may be an obstacle to creating such synergies: the greater the difference among strategies, the lower the performance after merging is initially expected to be. The opposite may happen in cross-border mergers as one of the goals of these operations may

[10] Non-performing loans have a more backward-looking perspective and data are missing in several countries. We use the ratio of loan-loans provisions to interest revenues as it is the most widely publicly available variable expressing asset quality in Europe.

be to improve revenues derived from including new portfolio strategies or reduce the risk profile of one of the merging partners (see Demsetz and Strahan, 1997).

Third, a **cost controlling strategy** which shows the emphasis to minimise cost by relating expenditure to returns and it is measured by the total cost-to-total income ratio (*CIR*). As a result of economies of scale and scope deriving from the combination of similar skills, a firm competing on the basis of low-cost and operating efficiency is expected to benefit from merging with another organisation characterised by a set of similar competencies (see Bollenbacher, 1995). Firms characterised by different cost controlling strategies, however, may show a drop in performance if they decide to merge (see Prahalad and Bettis, 1986, and Altunbas et al., 1997). As a consequence, the cost to income ratio (*CIR)* is expected to be negatively correlated with overall performance (*ROE*). On the other hand, this kind of relationship may not be significant in the long term if a cost-efficient bidder manages to implement their low cost strategy to the broader merged firm. This might also be the case for cross-border M&A where cost controlling may not be the main strategic advantage sought by the firms involved (see DeYoung, Genay and Udell, 1999).

Fourth, the **capital adequacy levels,** which show banks' strategy regarding their capital structure, measured as the ratio of equity to total assets (*CA/TA*). Practitioners, analysts and regulators have given this strategy increased importance. From a prudential regulatory perspective, bank capital has become a focal point of bank regulation as the general trend is to introduce competition in banking and to check risk-taking with capital requirements and appropriate supervision (see Vives, 2000). The effect of changes on the capital levels on performance hinges on the recent theory of the banking firm, which is based on the '*specialness*' of banks in a setting in which there are asymmetries of information. In this setting, according to the 'signalling hypothesis', commercial banks specialise in lending information to problematic borrowers (Berger et al., 1995). Since bank managers usually have a stake in the capital of the bank, *'it will prove less costly for a 'good' bank to signal better quality through increased capital than for a 'bad' bank.*[11] Therefore, banks can signal favourable information by merging with banks with larger capital ratio indicating a positive correlation between capital and earnings, and suggesting a positive relationship between capital structure dissimilarities and performance (see

[11] Berger, 1995, p. 436.

Acharya, 1988). Alternatively, Ross (1977) argues that lower, rather than higher, capital ratios signal positive information since signalling good quality through high leverage would be less onerous for a 'good' bank than for a 'bad' bank.[12]

Fifth, the **liquidity risk** strategy referred to banks' strategy towards managing liquidity risk measured by the ratio of liquid assets to customer and short-term funding (*LIQ*). As maintaining a generous liquidity ratio is expensive, different strategies according to which the merging banks can acquire better liquidity management would imply a better performance. However, the effect of liquidity is expected to have declined in recent years as liquidity management via the asset side of the balance sheet has decreased its importance in favour of active liability liquidity management.

Finally, banks' strategy in terms of **technology and innovation** is measured as other costs (i.e. total costs excluding interest, staff and other overheads payments) as a proportion of total assets are included to account for investment in technology and innovation (*TECH*). Dissimilarities in investments in technology among bidders and targets are expected to produce better performance as each of the merging partners may benefit from returns to scale and scope derived from the investments made by their merging counterpart. In the case of cross-border mergers, however, and due to the risk of incompatibility among technologies across borders, differences in this strategy may lead to a drop in performance (see Harrison, Hall and Nargundkar, 1993).

3.3 Data source

Our data include registered merger and acquisitions taking place in the European Union banking sector between 1992 and 2001. There were 262 completed deals, of which 207 were domestic and 55 cross-border mergers. To be included in the sample, both the target and the bidder banks have to be independent entities belonging to any EU Member State at the time of the merger, and the bidder should not have been involved in any other merger in the three years prior to the merger in question. Individual deal-by-deal data on M&A activity on financial firms are obtained using the SDC Platinum database from

[12] Another argument relating changes in the capital structure and performance relates to agency problems between shareholder and managers. Part of the corporate finance literature suggests that increasing financial leverage could reduce this type of agency problems. The reason is that leverage may increase pressure on bank managers to become more efficient due to short-term pressures derived from the needs of servicing the debt (see Jensen, 1986). In addition, leverage is also reducing the scope for managers to keep the firm going after the point at which shareholders would gain from liquidation (see Berger et al., 1995).

Thomson Financial. The accompanying individual accounting data for each of the merged companies come from the Bank Scope database from Bureau Van Dyck.

4. Results

At first blush, the statistics indicate that, in terms of size, measured by total assets, bidders are on average around seven times larger than targets. Bidders are also more cost efficient than targets, particularly for domestic mergers. On the other hand, targets have larger loan and non-interest income to total assets ratios. Targets also have substantially less capital leverage than bidders (see Table 2).

Comparing domestic and cross-country M&As, domestic targets tend to have a better credit risk profile than bidders, whereas in cross-border M&As the level of loan loss provisions is broadly similar for targets and bidders. In many respects the financial features of bidders and targets engaged in domestic consolidation are similar to those of cross-border deals. The main differences relate to the size and quality of the assets, suggesting that cross-border mergers are mainly expected from the larger institutions which – and probably linked to higher asymmetries of information problems – have taken over institutions with better credit quality and capital ratios. Many of these features may, of course, be a function of size. For instance, smaller banks tend to have a larger proportion of loans and less capital leverage than larger banks regardless of whether they merge or not. With this caveat in mind, the data are indicative of the broad financial features of banks engaged in domestic M&As in Europe.

Table 2 Cross-border and domestic mergers: descriptive statistics of size and other financial features of target and bidder banks

Target	Cross-border			Domestic		
Variables[1]	**Mean**	**Median**	**Standard deviation**	**Mean**	**Median**	**Standard deviation**
Total assets[2]	58,667	24,629	65,373	18,202	2,554	40,211
Liquid-assets-to-deposits ratio	30.7	28.2	18.2	30.3	27.7	23.4
Cost-to-income ratio	68.7	69.8	17.0	71.5	72.0	19.1
Capital-to-total-assets ratio	6.9	5.0	8.6	6.9	5.7	6.3
Loans total assets	48.7	49.1	19.3	51.8	49.7	26.3
Loan provisions to int. ratio	24.1	16.9	24.9	27.9	18.7	39.3
Other operating inc. to total assets	1.2	1.1	0.7	1.3	1.1	1.2
Off-balance sheet to total assets	24.9	15.8	29.0	18.9	12.6	24.4
Customer loans to deposits ratio	70.1	65.0	45.7	71.8	60.4	46.0
Other expenses to total assets	0.9	0.9	0.4	1.3	1.2	0.9
Bidder pre-merger	**Cross-border**			**Domestic**		
Variables[1]	**Mean**	**Median**	**Standard deviation**	**Mean**	**Median**	**Standard deviation**
Total assets[2]	208,597	166,548	183,144	61,437	19,296	93,762
Liquid-assets-to-deposits ratio	29.9	25.7	18.0	28.2	26.0	17.2
Cost-to-income ratio	66.9	69.1	13.4	68.1	69.5	12.9
Capital-to-total-assets ratio	4.5	3.8	2.1	5.7	5.1	3.3
Loans total assets	45.9	47.9	13.3	49.0	49.6	15.3
Loan provisions to int. ratio	24.4	19.0	23.2	19.5	17.1	12.0
Other operating inc. to total assets	1.1	1.1	0.6	1.1	1.0	0.9
Off-balance sheet to total assets	28.7	19.0	49.9	28.3	16.6	136.0
Customer loans to deposits ratio	68.9	64.9	35.4	67.5	62.7	48.2
Other expenses to total assets	0.8	0.8	0.4	1.1	1.0	0.7
Bidder post-merger	**Cross-border**			**Domestic**		
Variables[1]	**Mean**	**Median**	**Standard deviation**	**Mean**	**Median**	**Standard deviation**
Total assets[2]	267,694	201,665	233,659	81,609	25,054	129,460
Liquid-assets-to-deposits ratio	24.9	23.3	15.1	29.3	29.6	14.7
Cost-to-income ratio	67.1	68.5	14.1	68.1	68.4	16.2
Capital-to-total-assets ratio	4.5	3.9	2.1	5.9	5.5	3.2
Loans total assets	45.6	44.5	14.1	50.9	51.8	15.0
Loan provisions to int. ratio	23.0	14.0	36.8	16.6	15.6	11.6
Other operating inc. to total assets	1.4	1.5	0.7	1.2	1.2	0.8
Off-balance sheet to total assets	27.0	23.5	23.8	20.6	15.5	18.9
Customer loans to deposits ratio	63.9	61.1	22.8	71.5	68.2	38.7
Other expenses to total assets	0.8	0.8	0.4	1.0	0.9	0.6

[1] Refer to Table 1 for definition of the variables. [2] Total assets in US dollar (millions). Since for some of the ratios the standard deviations could be substantial, Appendix II also considers whether the differences between bidders and targets are statistically significant.

The overall picture then, is that of large and generally more efficient banks taking over relatively less risky smaller institutions with more diversified sources of income. In many respects, the financial features of bidders and targets engaged in domestic consolidation are similar to those of cross-border deals. The main differences relate to size and post-merger performance, as is shown in more detail in Table 3.

Regarding the impact of banks' mergers on performance, there is an increase in post-merger performance (ΔROE) following cross-border mergers of around 2.5% on their return on capital. The improvement in performance is also confirmed by the median increase in returns of around 1.5%. Banks entering into domestic mergers experience, on average, an improvement in performance of 1.2%. Due to the scarcity of European studies, this finding is interesting in itself. Also because most of the empirical literature finds no abnormal stock market returns or improved post merger efficiencies. The finding however, is broadly consistent with results by Houston, James and Ryngaert (2001) for the US and Focarelli and Panetta (2003) for Italy. In terms of size, the relative size of targets compared to bidders tends to be smaller in domestic than in cross-border deals. The median figures for the relative size indicator (*RSIZE*) show that targets are around 21% of the size of the bidder for cross-border mergers and 19% of the assets size for domestic mergers.

Concerning the differences between domestic and cross-border deals on the indices of relatedness across several strategic variables, targets and bidders are quite different in terms of their credit risk, off-balance sheet and liquidity strategic positions. They also differ in their capital structure, albeit to a lesser extent.

Appendix III considers the correlations among the different variables. As expected, we find some correlation between those ratios that share the same balance sheet item on their numerator or denominator (such as *LOAN/TA* and *OOR/TA*). This suggests the possibility of some multicollinearity between some of the variables. Although the problem does not appear to be large enough to distort the implication of the regression results, we employ however stepwise maximum likelihood estimation to single out the model and take into account that some of the variables might show multicollinearity.[13] Possible idiosyncratic

[13] The regression applied also weights the impact on the parameters on the size of the bidder institution. Ridge regression to account for the possible distortion on the coefficients derived from possible linear dependencies among variables shows broadly similar results.

heterogeneity effects are taken into account by the use of time dummies. The role of these dummies is particularly important to filter out the idiosyncratic effect time specific macroeconomic and regulatory factors.[14]

Table 3 Descriptive statistics of the main determinants of performance

Variables	Cross-border			Domestic		
Dependent Variable	**Mean**	**Median**	**Standard deviation**	**Mean**	**Median**	**Standard deviation**
Performance change	2.44	1.68	5.44	1.22	1.05	5.37
Control Variables						
Relative size	0.79	0.21	1.62	0.75	0.19	2.16
Bidder performance	9.41	8.94	5.88	8.11	8.02	6.20
Strategic relatedness						
Liquidity	21.01	18.74	17.60	12.94	8.82	13.28
Efficiency	15.70	10.82	14.03	16.49	11.83	15.89
Capitalisation	4.00	1.95	8.48	3.47	1.75	6.13
Loan ratio	18.06	14.08	15.31	18.16	10.88	24.03
Credit risk	22.50	13.94	27.78	18.22	7.05	36.11
Diversity earnings	0.72	0.52	0.60	0.81	0.48	1.15
Off-balance sheet act.	27.47	12.96	50.83	22.10	7.10	128.96
Deposits activity	37.10	25.05	42.01	35.59	17.19	56.21
Other expenses	0.56	0.32	0.38	0.63	0.43	0.80

Note: The strategic variables report the values of the similarity index for each variable.

Broadly speaking, the results support the hypothesis that, on average, strategically closer institutions tend to improve performance to a greater extent than dissimilar institutions, although results differ markedly for domestic and cross-border mergers and across some of the strategic variables.

Table 4 illustrates the responsiveness of banks' post-merger performance to a set of main control variables (Model 1) and an additional set of variables measuring strategic similarities. Model 1 illustrates the results of the impact of the control variables on post-merger performance whereas Model 2 includes the strategic variables as well. The results are run separately for cross-border and domestic mergers to take into account the distinct differences among both types of mergers.

[14] Since mergers and acquisitions normally come on waves (see Shleifer and Vishny, 2003) the use of time dummies are also helpful to filter out the effect on changes on performance of years of particularly high merger and acquisition activity which in our case could be linked to the late 1990s developments in stock market prices.

Table 4 Results of hierarchical regression analysis of change in performance on strategic and other control variables

	Domestic		Cross-border	
Variables	**Model 1**	**Model 2**	**Model 1**	**Model 2**
Relative size	-0.443*	-0.335*	0.325*	0.327*
	(0.0516)	(0.0495)	(0.0607)	(0.0587)
Bidder performance level	-0.538*	-0.540*	-0.468*	-0.494*
	(0.0153)	(0.0148)	(0.0358)	(0.0358)
Efficiency		-0.057*		-0.044*
		(0.0057)		(0.0149)
Capitalisation		0.070*		-0.202*
		(0.0148)		(0.0218)
Loan ratio		-0.026*		0.095*
		(0.0052)		(0.0145)
Credit risk		-0.001		0.013§
		(0.0025)		(0.0078)
Diversity earnings		-0.589*		0.318
		(0.0843)		(0.3531)
Other expenses		0.827*		-4.150*
		(0.1513)		(0.5808)
Off-balance sheet act.		0.003*		-0.007§
		(0.0006)		(0.0037)
Liquidity		0.001		-0.033*
		(0.0069)		(0.0102)
Deposits activity		-0.003§		-0.009+
		(0.0017)		(0.0041)
Intercept	5.133*	6.474*	7.152*	9.573*
	(0.2603)	(0.2827)	(0.4776)	(0.5327)
R2 – Adj	0.425	0.488	0.404	0.537
F-value	217.080	123.120	62.740	47.230

Note: *,+,§ indicate significance at the 1%, 5% and 10% levels, respectively. Model 1 includes the control variables only. Model 2 is the complete model, which includes both the control and strategy variables. The standard errors of the coefficients are in parenthesis.

As expected, the results from the control variables indicate that size differences play a major role influencing performance but its impact differs markedly between domestic and cross-border mergers. For domestic mergers the larger the size of the target bank compared to the bidder, the lower the post-merger performance reflecting the difficulties in assimilating a larger institution. By contrast, for cross-border mergers, the larger the relative size of the target compared to the bidder, the better on average the post-merger performance. This is probably because in cross-border mergers and acquisitions, the goal of the bidders cannot be generally identified with rapidly achieved cost economies but with other benefits deriving from other synergies.

The results for pre-merger bidder return on capital (*PREROE_B*) suggest that a relatively high bidder's performance tend to affect negatively the bank's performance after the merger. These results are for banks involved in domestic and cross-border M&A and in line with the "floor/ceiling effect" on the empirical literature. In other words it can be

assumed that banks performing well prior to a merger might not be able to improve their performance as much as the low performers simply because their base rate of performance was initially higher.[15]

Interestingly, when other factors are taking into account, differences in efficiency levels measured as the cost to income ratio are counterproductive from a performance perspective. This could be due to the difficulties integrating banks with very different cost structure, particularly in the short-term. As indicated, firms characterised by different cost controlling strategies, could show a drop in performance if they decide to merge (see Altunbas et al., 1997). This finding could probably be related to studies showing that there are generally very little improvements in cost efficiencies after mergers (see See Rhoades, 1993 and DeYoung,1997).

Concerning the differences in capital structure, in the case of domestic mergers, capital level differences are performance enhancing. For cross-border M&As, however, dissimilarities in the capital structures tend to be conducive to lower performance. Since capital is often used by banks to signal favourable asset quality; it seems to be more difficult for cross-border mergers (where asymmetries of information between merging partners are larger than for domestic mergers) to integrate institutions with different capital structures.

Turning to the results for broad similarities referred to diversity of earnings, credit risk and the loan-to-assets ratio. For domestic deals, it could be quite costly to integrate heterogeneous institutions in terms of their earnings and loan strategies. In other words, for domestic operations, the more different the bidder's type of business compared to the target, the worse the post-merger performance. The cost-cutting focus of the bulk of domestic operations coupled with the usual conflicts arising from managerial disparities on critical decisions could account for this effect.

By contrast, in cross-border M&As, the larger the differences in credit risk and loan-to-assets position, the better the average improvement on performance. This supports the idea that improved revenues derived from scope economies and broad complementarities among merging institutions are one of the major drivers of cross-border M&As. More

[15] The results for the time dummy variables aiming to account for idiosyncratic heterogeneity are also significant suggesting the usefulness of including these variables in the regression.

specifically, this could indicate banks' concerns with becoming large players. This seems to suggest that in cross-border mergers scale seems to matter most, partly because size is a major requirement for participating significantly in investment banking operations (see Cabral, Dierick and Vesala, 2002).

The results from the technology and innovation strategy suggest that the differentiation in terms of financial innovation investments among bidders and targets impacts post-merger performance. As shown by the positive sign of the regression coefficient, post-merger performance of domestic M&As increases when bidders and targets differ substantially on their financial innovation and technology investment strategies. In other words, the more dissimilar banks strategies are, the better on average their post-merger performance as merging partners accrue benefits derived from the investments in financial innovation and technology made by their counterpart. However, dissimilarities in this strategy may create problems in cross-border M&As due to the risk of incompatibility among technologies strategies which on average materialise in a drop in performance.

Finally, in terms of the deposit and liquidity strategies of merging partners, increased relatedness contributes to enhanced performance both for the domestic and cross-border mergers, with the effects being stronger for cross-country mergers, which are normally more difficult to integrate.

5. Conclusions

The aim of this paper was to shed light on the process of financial consolidation in the European Union by assessing whether strategic and organisational fit between financial institutions involved in mergers and acquisitions plays an important role in improving after merger financial performance. We utilised a relatively simple and parsimonious approach following the strategic management and resource-based view of the firm by accepting that financial decisions are, to some reasonable extent, a reflection of the main underlying strategies of firms. We ran the empirical analysis by using an extensive sample of individual bank M&As which, in turn, was linked to individual bank accounting information. Results from the descriptive analysis showed that the overall statistical picture is that of large, generally more efficient banks merging with relatively smaller and better-capitalised institutions with more diversified sources of income.

Unlike results from most of the US-based event studies literature, we found that there are improvements in performance after the merger has taken place particularly in the case of cross-border M&As. In terms of the impact of strategic relatedness on performance, the overall results showed that broad similarities among merging partners were conducive to an improved performance, although there are important differences between domestic and cross-border M&As and across strategic dimensions.

On average, we found that consistency on the efficiency and deposits strategies of merging partners are performance enhancing both for domestic and cross-border M&As. For domestic mergers we also found support on the deleterious effects on performance of dissimilarities in earnings, loan and deposit strategies, whereas differences in their capitalisation and investment in technology and financial innovation were found to improve performance. By contrast, for cross-border M&As, differences in their loan and credit risks strategies are performance enhancing, whereas the lack of coherence in their capitalisation, technology and financial innovation strategies are counterproductive from a performance perspective. This gives support to the often stated difficulties in integrating institutions with widely different strategic orientation. These findings fit well with the process of financial consolidation observed in recent years in the European Union.

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Appendix I

Results of hierarchical regression analysis of change in performance on strategic and other control variables

	Domestic		Cross-border	
Variables	**Model 1**	**Model 2**	**Model 1**	**Model 2**
Relative size	-0.985*	-0.591*	0.193	-0.112
	(0.137)	(0.1293)	(0.1209)	(0.1312)
Bidder performance level	-1.198*	-1.216*	-0.264*	-0.147+
	(0.0274)	(0.0252)	(0.0534)	(0.069)
Efficiency		-0.076*		0.002
		(0.009)		(0.10)
Capitalisation		0.059*		-0.820*
		(0.0216)		(0.145)
Loan ratio		-0.067*		-0.033*
		(0.010)		(0.007)
Credit risk		0.017		-0.0260+
		(0.0068)		(0.0122)
Diversity earnings		-0.636*		3.072
		(0.155)		(0.600)
Other expenses		2.396*		-6.231*
		(0.301)		(1.401)
Off-balance sheet act.		0.005*		0.036*
		(0.0008)		(0.007)
Liquidity		-0.067*		-0.027*
		(0.0143)		(0.0100)
Deposits activity		-0.004§		-0.0205*
		(0.0014)		(0.0024)
Intercept	-20.523*	-13.541*	49.579*	10.169*
	(1.621)	(2.053)	(3.739)	(0.400)
R2 – Adj	0.745	0.791	0.845	0.537
F-value	451.44	254.55	256.36	47.230

Note: *,+,§ indicate significance at the 1%, 5% and 10% levels, respectively. Model 1 includes the control variables only. Model 2 is the complete model, which includes both the control and strategy variables. The standard errors of the coefficients are in parenthesis.

Appendix II

Domestic mergers: descriptive statistics and statistical differences of financial features of target and bidder banks

Target	Bidders		Targets	
Variables[1]	**Mean**	**Std. Dev.**	**Mean**	**Std. Dev n**
Total assets[2]	61436*	93761	1820*	40210
Liquid-assets-to-deposits ratio	28.1	17.2	30.2	23.3
Cost-to-income ratio	68.0*	12.8	71.5*	19.1
Capital-to-total-assets ratio	5.6*	3.2	6.9*	6.3
Loans total assets	49.0	15.3	51.8	26.2
Loan provisions to int. ratio	19.4*	12.0	27.9*	39.3
Other operating inc. to total assets	1.1	0.8	1.3	1.1
Off-balance sheet to total assets	28.2	135.9	18.9	24.4
Customer loans to deposits ratio	67.4	48.2	71.7	45.9
Return on equity	7.8*	9.0	0.4*	27.2
Return on assets	0.5*	0.4	0.2*	1.2
Other expenses to total assets	2.8*	1.4	3.5*	1.9

Cross-border mergers: descriptive statistics and statistical differences of financial features of target and bidder banks

Target	Bidders		Targets	
Variables[1]	**Mean**	**Std. Dev.**	**Mean**	**Std. Dev n**
Total assets[2]	208597.4*	183144.1	58666.87*	65372.9
Liquid-assets-to-deposits ratio	29.9	18.0	30.6	18.2
Cost-to-income ratio	66.8	1.8	68.7	2.2
Capital-to-total-assets ratio	4.5	2.1	6.9	8.6
Loans total assets	45.9	13.3	48.7	19.3
Loan provisions to int. ratio	24.3	23.1	24.1	25.0
Other operating inc. to total assets	1.1	0.1	1.2	0.1
Off-balance sheet to total assets	28.7	49.8	24.9	29.0
Customer loans to deposits ratio	68.8	35.4	70.1	45.7
Return on equity	9.0	9.1	6.7	16.4
Return on assets	0.3	1.1	0.5	1.1
Other expenses to total assets	2.1*	0.1	2.6*	0.2

[1] Refer to Table 1 for definition of the variables. [2] Total assets in US dollar (millions).

* Indicates that bidders and targets means of each variable are statistically different at 5% (Paired t test).

Appendix III

Correlation matrix of the variables

Cross-border	*ΔROE*	*RSIZE*	*BID_ ROE*	*LIQ*	*COST /INC*	*CA /TA*	*LOAN /TA*	*BADL /INT_I*	*OOR /TA*	*OBS /TA*	*LOAN /DEP*	TECH
ΔROE	1											
RSIZE	0.43*	1										
BID_ROE	-0.51*	-0.51*	1									
LIQ	-0.19	0.00	0.08	1								
COST/INC	-0.25*	0.12	0.06	0.21	1							
CA/TA	-0.32*	0.00	0.17	0.17	0.49*	1						
LOAN/TA	-0.13	-0.01	0.19	0.28*	0.31*	0.39*	1					
BADL/INT_INC	0.17	0.47*	-0.33*	0.11	0.42*	0.08	0.17	1				
OOR/TA	0.13	0.37*	-0.30*	0.12	0.13	0.06	0.21	0.25*	1			
OBS/TA	0.19	0.02	0.16	0.01	-0.05	-0.08	-0.01	0.11	0.11	1		
LOANS/DEP	-0.14	-0.08	0.08	0.04	0.22	0.28*	0.53*	-0.09	0.15	-0.08	1	
TECH	0.7	0.26*	-0.22	-0.11	0.14	-0.02	0.31*	0.16	0.54	-0.12	0.08	1
Domestic	ΔROE	RSIZE	BID_ ROE	LIQ	COST /INC	CA /TA	LOAN /TA	BADL /INT_I	OOR /TA	OBS /TA	LOAN /DEP	TECH
ΔROE	1											
RSIZE	-010	1										
BID_ROE	-0.61*	0.04	1									
LIQ	-0.09	0.04	0.10	1								
COST/INC	-0.17*	0.07	-0.01	0.01	1							
CA/TA	0.11	0.11	-0.05	0.16*	0.09	1						
LOAN/TA	-0.13*	0.12	-0.01	0.21*	0.32*	0.03	1					
BADL/INT_INC	-0.08	0.05	0.02	0.00	0.12*	0.05	0.19*	1				
OOR/TA	-0.19	0.06	0.13*	0.13*	0.05	0.22*	0.15*	0.12*	1			
OBS/TA	0.03	-0.03	0.10	-0.02	0.02	0.00	-0.01	-0.01	-0.01	1		
LOANS/DEP	-0.09	0.08	-0.5	0.9	0.16*	0.08	0.42*	0.17*	0.1*	-0.03	1	
TECH	-0.05	-0.09	0.02	0.09	0.46*	0.17*	0.57*	0.09	0.34*	0.01	0.06	1

Note: * indicates significance at 10% level or less.

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