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WHY DO BANKS MERGE?

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Abstract

The banking industry is consolidating at an accelerating pace, yet no conclusive results have emerged on the benefits of mergers and acquisitions. We analyze the Italian market, which is similar to other main European countries. By considering both acquisitions (i.e. the purchase of the majority of voting shares) and mergers we evidence the motives and results of each type of deal. Mergers are more likely between a more and a less services-oriented bank; they seek to improve income from services, but the resulting increase is offset by higher staff costs; return on equity improves because of changes in the capital structure. Acquisitions are more targeted towards banks with a poor credit management record; they aim to restructure the loan portfolio of the acquired bank; improved lending policies result in higher profits.

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1. Introduction

The financial industry is consolidating at an accelerating pace: the integration of financial markets has blurred distinctions between activities such as lending, investment banking, asset management and insurance. Firms have reacted to the sharper competition by cutting costs and expanding in size, often by merging with competitors or taking them over. Long isolated by protective regulations, banks are among the most active players. Technological innovations and a thorough-going deregulation have prompted a wave of mergers in the banking industry throughout the world, starting in the United States in the eighties and reaching Europe in the nineties.

At each announcement of a new deal, its benefits in terms of cost reduction and growth opportunities are emphasized by all parties. Curiously, however, the literature has failed to find convincing empirical evidence of these advantages and thus it questions the usefulness of M&As (for a review of the main results in the field, see Rhoades (1994) and Berger, Demsetz and Strahan (1999)).

In this paper we deepen the analysis of the efficiency motives for M&As in two directions. First, we distinguish between mergers (i.e. deals that involve the full integration of bidder and target banks) and acquisitions (transactions in which one bank purchases a controlling stake in another bank without joining the assets of the two) because they may well have different motivations and lead to different results. This separation might enable us to gather useful insights into each type of deal that could not emerge when the data are pooled.

Second, we compare the motivations for mergers and acquisitions as they appear in an *ex ante* analysis of the characteristics of the banks with their *ex post* consequences for their performance. Previous research focuses mainly on the *ex post* effects, controlling for some broad categories of the firms such as size and profitability. In this paper we identify the banks most likely to take part to a merger or acquisition and relate systematically their characteristics to the subsequent performance of the deal: a deeper understanding of the determinants of M&As allows us to recognize the variables that lead to changes in the main economic and financial indicators usually considered in

merger studies. Furthermore, we separate transitory from permanent effects when we test the hypothesis that mergers and acquisitions are followed by differential improvements in performance, as a result of cost reductions, revenue increases or changes in the financial structure.

Most of the studies on bank M&As refer to the U.S; few look outside the U.S. and almost none deals with European markets (exceptions are represented by Vennet (1996) and Cybo Ottone and Murgia (2000)). In this paper we analyze all the mergers and acquisitions among Italian banks over the period 1985-1996. This is the first comprehensive exploration of this market, which constitutes a significant share of European financial markets and provides a benchmark for a good number of countries (France, Germany and the continental European countries in general) that share the same characteristics, such as a bank-oriented financial system and rigid labor markets that might impede thorough restructuring. The Italian banking system is analogous to those in the main continental European countries in many dimensions, from the mix of large and small banks to a gradual shift from the traditional intermediation business to a more fees-based industry – on this last point, see also Allen and Santomero (2001), that document how banks in the main industrialized countries are "switching from their traditional business to fees-producing activities" (p. 271)). In terms of regulation, in the period analyzed in this study, the Italian banking industry operated within a universal banking framework, as did its main competitors. Furthermore, all European systems witnessed in the last decade a thorough deregulation, culminating with the Second European Directive of 1992. Some peculiar Italian regulations, such as limits on branching and on the growth of the loan portfolio, were lifted (*de facto* and later *de jure*) at the beginning of the period we consider.

The results of our *ex ante* analysis on the motivations for mergers are consistent with the hypothesis that mergers are driven by strategies aimed at selling more services: before the deal, the active (bidder) bank derives a high share of income from services; it might want to offer its products to the customers of the passive (target) bank, that is less dynamic in providing financial services.

Acquisitions, by contrast, can be traced back to strategies based on credit management: both banks involved in the deal have a high ratio of loans to total assets, but the passive (acquired) bank has also a high ratio of bad loans to total loans. The aim of the active (acquiring) banks might be to improve the quality of the portfolio of the passive (acquired) banks, by decreasing credit risk, e.g. by reducing bad loans and, in the long run, loans to small firms.

To analyze mergers, we consolidate the balance sheets of the banks involved throughout the whole period studied, so as to consider them as a single bank from the beginning. After a merger, we find no evidence of an improvement in profits: the post-merger increase in revenues from a larger market for services and from the growth of loans relative to total assets is offset by an increase in labor costs. However, we find that mergers are followed by an increase in return on equity, determined by a reduction in capital. After an acquisition, we detect a long-run increase in profitability for acquired banks, due to a permanent decrease in bad loans accompanied by a long-term reduction in lending, especially to small firms. Consistent with previous research (see Berger, Saunders, Scalise and Udell (1998)) both mergers and acquisitions are followed by a reduction of small business lending as a fraction of total loans.

The paper is organized as follows: in section 2 we review the empirical literature. In section 3 we describe the data and their sources; in sections 4 and 5 we analyze the determinants of M&A operations. In sections 6 and 7 we assess the consequences of the deals on banks' performance. Section 8 concludes.

2. Empirical Evidence on M&As

Research on bank M&As has been conducted following two strands. The first approach uses the event study methodology, comparing the market values of bidder and target banks before and after the announcement of the merger. In the second approach, balance-sheet-based indicators or stochastic frontier methodologies are used to compare the performance of the merging banks with that of a control group. For a discussion of the relative merits of the two methods, see Piloff and

Santomero (1998).

The event-test literature that deals with US data reaches the conclusion that bank mergers do not create value: around the announcement of the deal the overall gain from mergers is in general small (see for example Houston and Ryngaert (1994) and the review in Rhoades (1994)). For European banks, on the other hand, Cybo Ottone and Murgia (2000) find positive effects of bank merger announcements between domestic banks and between banks and insurance companies.

The operating performance and efficiency of the U.S. banks involved in M&As have been examined in many studies on different samples over different periods, but none offers a definitive explanation for the motivations and the benefits of concentrations. In general, larger, more efficient banks buy smaller, less efficient ones, probably in order to share their superior managerial skills. However, the conclusion reached in almost all cases is that there is no discernible effect on the banks' performance; in particular, there seems to be no decrease in non-interest expenses (Srinivasan (1992)) or total costs (see Berger and Humphrey (1992) and Rhoades (1993)) and no improvement in operating income (Linder and Crane (1993)).

There seems to be an improvement in profit efficiency (Akhavein, Berger and Humphrey (1997)); the improvement in performance seems due mainly to a portfolio shift from securities to loans, but there is no evidence of improvement in cost efficiency; furthermore, neither returns on assets nor returns on equity increase. These conclusions are analogous to those of the event studies: both financial markets and economists fail to pin down the advantages of M&As for banks.

Explanations for such lack of results hinge mainly on agency problems as the main motivation for M&As (for example, Piloff and Santomero (1998) refer to managerial hubris). Another line of research analyzes case studies to separate gains and costs of different parts of the merger process (Frei and Harker (1996) and Calomiris and Karceski (1996)). A theoretical explanation of mergers is offered in Milbourn, Boot and Thakor (1999): when banks are uncertain about what skills will be needed in the future, mergers allow them to diversify into activities, with high potential profits, that

require "deep pockets" and new skills. Saunders (1999) points out that banks that diversified into securities activities by acquiring existing operators rather than by direct entry did not have pro-competitive effects, thus suggesting that acquisitions, contrary to direct entry, don't yield efficiency gains significant enough to be at least partly returned to consumers.

Similar studies conducted outside the U.S. show broadly the same results. In Europe consolidation is mainly a national phenomenon; a possible explanation for the lack of cross-border deals in Europe is given by Boot (1999), who argues that there is a political dimension to the consolidation process, that protects national "flagships". Berger et al (1999) argue that cross-border deals introduce a new layer of complexity to M&As; but even for the deals concluded within national borders, improvements in performance are hardly detected; in general, they are to be expected only in mergers between banks of the same size (Vennet (1996)). In as study of 2000 European banks performed on the years 1993-1997, Schure and Wagenwoort (1999) show that, on average, costs could be reduced by 16 percent; however, studies conducted on the consolidation process within national industries fail to show gains from consolidation anywhere near the potential improvement. In Italy Resti (1997) finds efficiency gains only in mergers between small banks operating in the same markets, thus confirming that economies of scale are realistic only at a local level and for small sizes.

3. Mergers and Acquisitions in Italy: The Data

In this paper the characteristics of the banks involved in M&As and the effect on their performance are analyzed using balance-sheet data, for several reasons. First, given the paucity of listed banks, an event study could only be performed for very few large banks. Second, we want to analyze banks' performance over a long time horizon and to investigate the sources of the changes we detect after a merger, i.e. whether the shifts in banks' performance are due to changes in costs or revenues: this would not be possible if we considered only stock prices. Third, stock prices reflect expectations and changes in expectations, while we are interested in actual changes in operating

performance that follow M&As.

3.1. The Sources

We draw our data from three sources. The balance-sheet data come from the Banking Supervision Register at the Bank of Italy (*Segnalazioni di Vigilanza*). All data refer to the end of the year (except for total assets, that are an annual average of quarterly data). The figures on asset diversification are calculated using data from the Central Credit Register (*Centrale dei Rischi*), which records all credits above $30,000 from 1984 to 1995 and above $100,000 since 1996. The source of the data on the number of banks and on the mergers and acquisitions is the Census of Banks (*SIOTEC)*. Given our focus on retail commercial banks, we exclude bank associations' clearing houses, banks specialized in medium and long term lending, the branches of foreign banks and mutual banks.

In the econometric analysis we consider two cases: mergers and acquisitions. A merger occurs when a previously independent bank loses its charter and becomes part of an existing bank, with one headquarters and a unified branch network; studying this case is particularly important in order to understand the effect on banks' performance of changes in the organizational structure.[1] The gains of new ownership are captured by studying acquisitions, which take place when a bank purchases the majority of the voting rights of another bank without combining the assets of the two: after the acquisition the two banks are run separately, although they probably coordinate their strategies.

3.2. The Sample

In 1985, there were 359 commercial banks in Italy; at the end of 1996, 135 mergers and 66 acquisitions later, only 257 were left (including new entries and failures, which are fully accounted for in the summary statistics and the econometric analysis).

Banks belonging to the top quintile in terms of total assets are active (acquiring/bidder) in 60 per cent of all mergers and 90.9 per cent of all acquisitions (see Table I). Targets belong to the bottom quintile in 38.5 per cent of all mergers, while acquired banks are distributed more evenly. Whereas

in the United States the acquisition rate (i.e. the ratio of acquired to total number of banks per class size) is almost monotonically increasing in the size of the passive bank (Boyd and Graham (1998)), in Italy the opposite is true, in particular for mergers, fitting the conventional "big fish eating small fish" stereotype.

Summary statistics for our sample are reported in Table II, distinguishing the banks on the basis of their taking part in each type of deal. Over the 1985-96 period, the median bank of the sample that is not involved in any M&A has total assets of about 930 billion lire (approximately 600 million dollars) and a return on assets of 1.07 per cent (see Panel A); bad loans are 5.65 per cent of total loans and labor costs take 38 per cent of gross income. Lending is equal to 55.09 per cent of deposits and 64.53 per cent of total financial assets; almost two thirds of it goes to small firms; revenues from services provide 11.76 per cent of gross income.

For mergers, active banks have total assets of 4,310 billion lire (about 3 billion dollars - see Panel B) and a return on assets of 1.09 per cent, a bad loans ratio of 5.09 per cent and a labor costs-gross income ratio of 37.80 per cent; 53 per cent of total lending goes to small firms; income from services represents 15.79 per cent of gross income. Passive banks are small (400 billion lire in assets – see Panel C), with a return on assets of 0.55 per cent, many bad loans (8.18 per cent of total lending), high labor costs and a low proportion of income from services (respectively 41.55 and 9.68 per cent of gross income). Acquiring banks are similar to bidder banks, except that they are larger (16,860 billion lire), do more lending with respect to deposits (87.08 per cent) and have a negative net interbank balance (see Panel D). Acquired banks are also generally similar to target banks; the main difference lies in their higher labor costs (see Panel E).

Deals that involve banks in supervised restructuring or liquidation are excluded from our sample. However, given that mergers and acquisitions might be prompted by financial distress of the passive bank, we checked whether the banks involved in bankruptcy procedures are similar to the passive ones in our records. Actually, though, failed banks look quite different from all the banks involved

in M&As. They are significantly smaller; the year before filing at the request of the Bank of Italy for supervised restructuring or outright liquidation (the equivalents of Chapter 11 and Chapter 7), the median value of their total assets was approximately equal to 100 million dollars and return on assets was negative (-0.34 per cent on average) and bad loans represented 17 per cent of their portfolio.

4. The Determinants of M&As

4.1. The Econometric Set-Up

We define a discrete variable (*Event*) that can take 5 values: for acquisitions, *Event* is set to 1 or 2 if the bank is involved in a deal in the following year as acquiring or acquired party respectively; 3 or 4 for a bank that is the bidder or target, respectively, in a merger the following year; 0 if the bank is not involved in any of the above operations in the following year. We estimate a multinomial logit regression of the following form:

$$Prob(Ev = i \text{ for } i=0,1,2,3,4) = F(a_1 ROA + a_2 SIZE + a_3 BADLOAN + a_4 LABORCOST + a_5 INTPAID + a_6 LOANFIN + a_7 INTERBANK + a_8 SERVICES) \quad (1)$$

where the function F(.) is the logistic distribution.

Mergers and acquisitions are treated separately because banks might choose one or the other form according to different strategies. In some cases the objectives might require a full merger, which combines the banks' assets and operations, while in other cases it might not be necessary to bear the costs resulting from the integration of all operations; the buyer might simply want to acquire control of the seller and enjoy the gains resulting from its restructuring.

4.2. The Variables

If the deal is motivated by the desire to exploit inefficiencies by transferring superior managerial skills from the buyer to the seller, we expect profitability to be correlated positively with the probability of being active (bidder or acquiring bank) and negatively with that of being passive (target or acquired bank). More efficient banks are more likely to be active, while the less efficient ones are more likely to be passive: therefore we expect the coefficient of LABORCOST (the ratio of

labor costs to gross income, a standard indicator of efficiency) to be negative for active banks and positive for the passive ones. The riskiness of the loan portfolio can be proxied by the ratio of bad loans to total lending (BADLOAN).[2] A high ratio may reflect a deliberate high risk-high return strategy or simply mismanagement. We therefore expect passive banks to have a higher bad loan ratio, while we have no prior expectation on its value for active banks, given that, if well managed, a high-risk portfolio should also yield high returns.

The active bank might want to raise its fee income by increasing the range of services offered or by reaching more customers. We expect that banks with expertise in the field, with a high value of the variable SERVICES (the ratio of income from services[3] to total gross income), will take over banks that do not offer many services in order to market their own products to the latter's customers.

We include the net interbank balance divided by total assets (INTERBANK). Banks with a negative or a small positive balance are likely to be more sensitive to the risk of liquidity shocks, which would force them to turn to a relatively expensive source of funding such as the interbank market. We consequently expect them to be more likely to buy banks with a positive balance in order to diversify this risk (a negative coefficient of INTERBANK for active banks). Alternatively, the active bank may reduce its cost of funds (interest on deposits and CDs) by acquiring a passive bank with a low funding cost (INTPAID). If mergers or acquisitions are motivated by the transfer of managerial skills in handling credit risk, then both the active and the passive bank could have a high value of LOANFIN (lending as a proportion of total financial assets): the former because it has a comparative advantage in managing credit risk, the latter because its loans are the reason it is being targeted. Moreover, we expect high-LOANFIN banks to be on the passive side of a deal, also because this is a proxy for a large number of debtors, who are potential customers for other financial services.

The last variable is SIZE (total assets), since large banks are more likely to be active, and small

ones to be passive, if only because their restructuring is more manageable.

5. The Results

The results of regression (1) are reported in Table III (Panel A). In addition to them, we report in Panel B the results of a regression in which we do not distinguish between mergers and acquisitions, but only between active and passive banks. By comparing the results of the two regressions, we notice that by lumping together both types of transactions (mergers and acquisitions) some information is lost: the importance of some variables that are significant for active (passive) banks can be traced back alternatively to mergers or acquisitions, while other variables that do not appear to be significant for the generality of active (passive) banks become relevant alternatively for mergers or acquisitions.

The coefficients (with standard errors in parentheses) are to be interpreted as affecting the odds ratio with respect to the baseline case (no mergers or acquisitions in the following year), not the marginal probability. We check that the multinomial logit framework is to be preferred to the standard binomial logit regressions by running a test for the Independence of Irrelevant Alternatives.[4] In each of the four cases we are unable to reject the null hypothesis that the three remaining alternatives that are available to a bank are irrelevant (see the last row of Table 3): the multinomial logit seems correctly specified and provides consistent and efficient estimates of the coefficients.

5.1. Mergers

Active Banks. In mergers (see Panel A of Table III), the active banks are larger, have a higher proportion of income generated by services (SERVICES) and a smaller net interbank balance (INTERBANK). The positive and significant coefficient of SERVICES for bidders supports the hypothesis of a broadening of the customer base as a primary motivation: the targets could provide an outlet for the products of the new owner. The negative coefficient of INTERBANK for active banks supports a motivation tied to a reduction of the risk of liquidity shocks. The cost reduction can be achieved directly with the merger by matching assets and liabilities of both banks at once.

The negative coefficient of INTERBANK might also suggests a different interpretation: banks with a small interbank position may be more dynamic, with better lending opportunities and thus more likely to take part in a merger.

Passive Banks. Targets are less profitable, with higher labor costs: they appear to be good candidates for restructuring. They generate less income from services than the average (notice that this finding is not apparent from the regression with only active and passive banks; see Panel B)**.** This squares with the fact that bidders have higher-than-average income from services. It looks as if at least part of the motivation for mergers is reaching the customers of the passive bank to market the services of the active one.

The positive coefficient of LOANFIN (borderline significant), that is a proxy for the number of customers, implies that the passive bank has a large customer base.

5.2. Acquisitions

Active Banks. For acquisitions, profitability (ROA) positively affects the probability of being a buyer. This could be due to the fact that acquisitions are made by healthy banks that want to "export" their managerial skills. Acquiring banks are larger and have a higher ratio of loans to financial assets, suggesting that their strong point is in lending.[5] Acquiring banks also generate a higher share of income from services. Finally, they have a lower net interbank balance.

Passive Banks. Profitability (ROA) negatively affects the probability of being acquired. This result differs from that of Hadlock, Houston and Ryngaert (1998), who find that ROA is not a significant predictor of acquisition likelihood for US banks[6].

The positive coefficient of LOANFIN is consistent with the hypothesis that acquisitions could be motivated by the prospect of improving the loan portfolio quality under the new ownership: the acquired bank also has more lending than average but of poorer quality - witness the positive and significant coefficient on BADLOAN. In this case, the objective of the buyer would be to increase the value of the stake acquired without incurring the costs related to a merger, a task that can be

very expensive in particular when the passive bank is large. Finally, the acquired bank has a lower cost of funding. This could be related to the low net interbank balance of the acquirer: a likely motivation for the acquisition is thus to lower funding costs, either through cheap deposits or through central cash and liquidity management.

5.3. Comparing Mergers with Acquisitions

In summary, acquisitions appear to be aimed at increasing the value of the passive bank by improving the quality of its loan portfolio, while mergers apparently reflect a strategy of increasing the reach of the active bank's services.

To check this interpretation, we compare directly mergers with acquisitions. In the last two columns of Panel A in Table 3 we report the results of a chi-square test that the coefficients of each variable are equal, respectively, for the bidder and acquiring bank and for the target and acquired bank. For the active banks, the results of the test show that the acquiring banks have a higher loans-to-financial assets ratio than the bidders. For the passive banks, the targets of a merger have a lower proportion of income from services and a lower loans-to-financial assets ratio than the acquired banks.

These findings are broadly consistent with the interpretation that mergers are related to an expansion of services, while acquisitions hinge upon credit management. However, they need to be qualified; in fact, both bidders and acquiring banks show a higher-than-average ability to sell services and the proportion of bad loans for the acquired banks is not large enough to differ significantly from that of the target banks. It is therefore necessary to corroborate our interpretation with a careful analysis of the performance of the banks after each type of deal; this is the focus of our *ex post* analysis.

5.4. Robustness of the Estimates

In unreported regressions we tried different specifications to test for other motivations for mergers and acquisitions. In particular we examined the impact of the share of lending to small

firms as a proxy for diversification of lending by size of debtors: the coefficient is never significant, suggesting that this dimension of diversification is not likely to be a motivation for a merger or acquisition. We also checked the importance of deposits (scaled by total financial assets): the coefficient is never significant. We also included measures of cost and profit efficiency (computed following Berger and Mester (1997)), including among the regressors of the logit analysis the percentile rank of each bank. However, the coefficients of these variables were only marginally significant, and did not affect the other coefficients, so we decided to retain a simpler specification that excludes explicit efficiency measures, given that we already have some broad measures of efficiency (such as labor costs over gross income) while still controlling for asset composition.

Finally, we check that our results are almost identical to those obtained by running four binomial logit regressions (one for each value of *Event* different from 0), both with and without bank-specific individual effects.

6. Performance After an M&A Operation

To evaluate the consequences of an M&A operation on banks' performance, we examine the main balance sheet indicators of costs, revenues and profitability. For mergers, we compute a *pro forma* balance sheet by consolidating the balance sheets of the banks involved throughout the period 1984-96, so as to consider them as a single bank from the beginning. We then construct dummy variables that take the value of 1 either in the year of the merger (MERGE0), in the following 3 years (MERGE13) or in all years after the third (MERGEGT3), to pick up the effect of the merger on the newly consolidated institution. For banks involved in acquisitions we created the equivalent dummy variables for both the acquiring (active) bank (ACQA0, ACQA13 and ACQAGT3) and the acquired (passive) bank (ACQP0, ACQP13, and ACQPGT3). The dummy variables that take a value of 1 at t = 0 (i.e. MERGE0, ACQA0 and ACQP0) should measure one-off charges at the moment of the transaction and accounting harmonization; the dummy variables that take a value of 1 for t = 1, 2, 3 (i.e. MERGE13, ACQA13 and ACQP13) measure the

adjustments made during the transition, such as restructuring. Finally, the variables that take a value of 1 for t > 3 (i.e. MERGEGT3, ACQAGT3 and ACQPGT3) show the long-term effects of mergers and acquisitions. We estimate the following regression for each of the balance-sheet ratios reported in Tables 4 and 5 as a dependent variable:

$$\begin{aligned} y_{it} = {} & \alpha + \beta_1 MERGE0 + \beta_2 MERGE13 + \beta_3 MERGEGT3 \\ & + \beta_4 ACQA0 + \beta_5 ACQA13 + \beta_6 ACQAGT3 \\ & + \beta_7 ACQP0 + \beta_8 ACQP13 + \beta_9 ACQPGT3 \\ & + \gamma_1 SIZE + \gamma_2 SIZESQ + u_i + \varepsilon_{it} \end{aligned} \qquad (2)$$

Following Berger (1998), in equation (2) the dependent variable is the percentile rank of each bank in the distribution of the balance sheet ratios of the entire industry; this way, we take into account how the distribution of the variables changed over time and compare banks involved in M&As to the appropriate peer group.[7]

We use fixed-effect regressions in order to control for all individual bank characteristics, such as for example whether its activity is mainly wholesale or retail. Moreover, our specification allows us to separate the short-term and long-term effects, which could be mutually offsetting, thus prompting the unwarranted conclusion that there are no effects to be found. In equation (2) we use SIZE (total assets) and SIZESQ (the square of SIZE) as control variables, since banks of different size have different cost and revenue structures[8]; u_i is an individual dummy; ε_{it} is a zero-mean random error. The results are corrected for general heteroskedasticity.

7. The Results

The effect on profitability is measured by the return on assets before taxes (gross ROA) and the return on equity before taxes (gross ROE), the standard measures used by most studies of performance following M&As (see for example Rhoades (1994));[9] changes in size are captured by the growth rate of total assets. We measure improvements in efficiency by labor costs and operating costs over gross income (see Srinivasan (1992) and Rhoades (1993) on how M&As in the U.S. banking industry affect costs). The ratio of revenues from services to gross income is related to

strategies aiming at broadening the range of products offered to the customer base and diversifying the sources of income: this strategy is consistent with the theoretical explanation for M&As in Milbourn, Boot and Thakor (1999). Bad loans and loan losses (as a ratio to total lending) are measures of credit risk, and the net interbank balance over total assets is related to liquidity risk. Both risks are related to the ratio of lending to total financial assets. Finally, small business lending is relevant both for the riskiness of the loan portfolio and as an indicator of banks' lending strategies (on the related issue of how M&As affect small business lending, see for example Berger, Saunder, Scalise and Udell (1998)). All the variables that describe the composition of assets aim at reconciling changes in profitability with modifications of the financial structure (see for example Akhavein, Berger and Humphrey (1997) for the US).

In the sections that follow, we discuss the signs of the coefficients that are significant at the 10 per cent level or less. Tables IV and V give the coefficients, the R-square of each regression and an F-test of the hypothesis that the sum of all coefficients of the post merger or acquisition dummies is equal to zero. We do not report the coefficients of the control variables SIZE and SIZESQ (total assets and total assets squared);[10] they are always highly significant.

7.1. Mergers

Profitability, Size and Productivity

The return on assets (ROA) before taxes decreases in the year of the merger and in the following 3 years (see Table IV), due to one-off costs of the transaction and to the increase in operating costs (see below). In the long run there is no change in profitability, as the additional costs are compensated by an increase in income from services.

The return on equity (ROE) doesn't change for the first 4 years: the decrease in profits is compensated by a decrease in equity.[11] Notice that if the post-merger bank can perform the same operations as the two banks before the deal but with less equity, this means that excess cash has been returned to shareholders.[12] ROE increases in the long run by more than 6 percentiles, as non-

interest income offsets the increase in operating costs.

The growth rate of total assets decreases in the year of the merger, probably because of the disruptions associated with the transaction; it also decreases in the long run: merging banks appear to grow less than comparable institutions.

After a merger, labor costs and operating costs rise against gross income from the very first year and stay permanently higher. This could be due to the fact that banks usually upgrade the salaries of the employees of the passive bank if they are lower than the active bank's[13] but rarely downgrade them if they are higher; therefore labor cost per employee can only increase. At the same time labor regulations in Italy make it extremely difficult to reduce the workforce; in fact, in an unreported regression on the levels of employment we verify that the number of employees relative to total assets becomes permanently higher than average. This regulation-induced rigidity means that mergers motivated by cost-cutting are not likely.

Diversification of Revenues and of Funding

The increase in the share of fee income that starts from the year of the deal (see Table V) supports the hypothesis that mergers are motivated by the aim of broadening the customer base for the services of the active bank. The effect becomes larger after a few years (a permanent rise of 3.3 percentiles, after an increase of 2.6 percentiles for the three years after the deal), probably because it takes time to train the personnel of the target bank, advertise for its customers, and so on. The higher share of service revenues decreases total riskiness because of its greater stability; this may contribute to explaining why a reduction in capital seems acceptable for a bank.

The net interbank balance displays a temporary decrease (in the three years following the deal) that could be due to the general change in the composition of assets and liabilities that follows the merger. We find a long-run increase in the ratio of lending to total financial assets (6.2 percentiles after the third year), starting the year after the deal. There are no significant changes in bad loans and loan losses. However, the long-run decrease of loans to small firms (2.7 percentiles) confirms

that there is a significant change in lending strategies and is consistent with the literature on small business lending (Berger, Saunders, Scalise and Udell (1998) and Sapienza (1999)), which finds that large banks (possibly resulting from M&As) tend to lend to large firms.

The active bank started with an average lending-to-total financial assets ratio and, as a result of the deal, ends in the long run as a bank with more lending and a lower share of small business loans: the intermediation profile has changed significantly.

7.2. Acquisitions

Profitability, Size and Productivity

Acquired banks experience a drop in ROA in the year of the transaction (7.3 percentiles; see Table IV), probably as a result of an increase in loan losses (see below), in connection with a general reassessment of the loan portfolio. In the long run there is an increase in profitability for the acquired bank (21.1 percentiles for ROA). A similar pattern is detected for the return on equity, that increases by 13 percentiles in the long run, after a decrease of 10.6 percentiles in the year of the deal.

There is no effect of the acquisition on the size of the acquired bank. For acquired banks, labor costs rise as a share of gross income in the year of the deal. The acquisition has no permanent effect on the cost structures of the acquired banks: this is consistent with the hypothesis that the goal was the restructuring of the passive bank's loan portfolio.

Diversification of Revenues and of Funding

For the acquired banks, the F-test on the sum of the coefficients of bad loans does not allow us to reject the null hypothesis (total effect equal to zero; see Table V), but this hides a time pattern that is significant for two out of three sub-periods and that is consistent with the motivations for acquisitions suggested by our ex ante analysis. The bad loans ratio increases by 8 percentiles in year t = 0; subsequently, the quality of the loan portfolio increases permanently because of the improvement in credit risk management brought by the active bank (a long-run decrease of the bad

loans ratio of more than 11 percentiles). In fact, the acquiring bank gains the power to name the Chief Financial Officer, who sets lending standards and coordinates lending policies with the other banks of the group. The improvement is perceptible only after the third year because in the interim it is more than offset by an increase in bad loans presumably caused by the introduction of the acquirer's stricter standards for the classification of loans. The temporary surge in bad loans and loan losses followed by a permanent decrease in bad loans after the third year squares with the patterns observed in profitability for the acquired bank.

For the acquired bank the re-assessment of the loan portfolio and the more conservative lending strategy of the new owner result in a long-run decrease in the ratio of lending to total financial assets that starts the year of the deal. Similarly, there is a long-run decrease in small business lending (more than 11 percentiles), which could be motivated by risk concerns as well as by the traditional argument that large banks lend to large firms. Acquisitions are not strictly speaking equal to mergers, but lending policies are nonetheless coordinated at the bank holding level.

Fee income does not change significantly in the long run. This is probably due to organizational rigidities that make it difficult to coordinate product lines between separately chartered banks, or maybe it simply was not part of the acquisition strategy.

7.3. Robustness of the Estimates

To check whether our estimates are robust, we tried some alternative specifications, each aimed at specific problems that the specification we adopted might not be able to take into account.

In an alternative specification, a fixed effect panel regression with individual and time effects with the same independent variables as in eq. (2) and the dependent variables expressed in levels as opposed to percentiles,[14] we find mostly the same results (see the working paper version of this study). The main difference relative to the results reported in this paper lies in the pattern of profitability for mergers, that has a slightly different timing;[15] but in the long run the two specifications give the same results.

We have also dealt with the issue of potential mean reversion of the performance of passive banks. In theory, acquired banks, that are underperforming before the acquisition, could achieve better results not because of the effects of the deal but because of a general tendency of banks' performance to revert towards the mean. To control for this potential effect we construct a dummy variable (UNDERP1) that in each year t equals 1 if the bank was in the bottom decile in the ROA distribution in t-1 or t-2 and 0 otherwise, and a second dummy variable (UNDERP2) that takes the value of 1 if the bank was in the bottom decile in the ROA distribution in t-3 or t-4 and 0 otherwise: if there is mean reversion, the coefficient of UNDERP1 or UNDERP2 should be positive and the coefficients of the post-consolidation dummies should lose their significance. The coefficients of UNDERP1 and UNDERP2 are significant in some cases but do not affect the sign and significance of the dummies that should pick up the effects of M&As.[16]

Another issue we consider is that a possible explanation for the fact that for mergers we find few results is because the target bank is often small relative to the bidder. To take this into account, we split the sample of mergers between deals in which the assets of the target bank represent less than 5 per cent of those of the bidder ("small target"; nearly 40 per cent of the cases), and the others ("large target"). For the "large target" sub-sample, the coefficients of the merger dummies remain significant, although they often lose significance for the sub-sample with the "small" target banks. This finding suggests that the "dilution" of the coefficients of the merger dummies for the whole sample due to the inclusion of the "small relative size" group does not alter the economic significance of our results.

8. Conclusions

By examining separately mergers and acquisitions, we find results that are consistent with the hypothesis that expanding revenues from financial services is a strategic objective for mergers, whereas improving the quality of the loan portfolio of the passive bank is central for acquisitions.

Selling more services seems to require a merger, i.e. a takeover of the target bank followed by a

full integration of its marketing network with that of the bidder. Without a complete integration, the branch managers of the passive bank could lack the enthusiasm needed to market the new owners' products. When the objective of improving the passive bank's loan portfolio is crucial, the purchase of a controlling stake seems sufficient to transfer superior lending competence from the active to the passive bank, thus avoiding the high costs that usually accompany full integration.

For mergers, the increase in non-interest income, offset by higher labor costs in the first few years, an increase in the lending activity and a more efficient use of capital produce an increase in the return on equity. The total effect on risk is hard to assess: less equity is remunerated by the same amount of profits; profits in turn are more stable because of the increase in fee income, but they must cover more loans (increase in exposure) that are on average less risky (less small business lending): the increase in profitability ratios can't be attributed straightforwardly to changes in the capital and the risk-reward structure.

For acquisitions, the increase in profitability for the acquired banks is linked to the improvement in the quality of their loan portfolio; other functions and the general operating structure are not affected by the transfer of control. In particular, the cost of labor, which was above average before the deal, does not decrease.

Strategies based on economies of scale or cutting costs (in particular labor costs) are difficult to implement Europe in general given the rigidity of labor laws and the importance of local stakeholders. Our findings on mergers are compatible with the empirical evidence on the U.S., at least as regards changes in the financial structure of banks and the absence of cost cutting. Our results suggest that mergers and acquisitions should be examined separately, as they are driven by different factors.

References

Akhavein, Jalal D., Berger, Allen N., and David B. Humphrey, 1997, The Effects of Megamergers on Efficiency and Prices: Evidence from a Bank Profit Function, *Review of Industrial Organization* 12, 95-139.

Allen, Franklin and Anthony M. Santomero, 2001, What Do Financial Intermediaries Do?, *Journal of Banking and Finance* 25, 271-294.

Berger, Allen N., 1998, The Efficiency Effects on Bank Mergers and Acquisition: A Preliminary Look at the 1990s data; in Y. Amihud and G. Miller, eds.: *Bank Mergers and Acquisitions* (Kluwer Academic Publishers, Boston).

Berger, Allen N., Demsetz, Rebecca S., and Phillip E. Strahan, 1999, The Consolidation of the Financial Services Industry: Causes, Consequences, and Implications for the Future, *Journal of Banking and Finance* 23, 135-190.

Berger, Allen N., DeYoung Robert, Genay Hesna and Gregory F. Udell, 1999, Globalization of Financial Institutions: Evidence from Cross-Border Banking Performance, Federal Reserve Bank of Chicago *Working Paper* 99-25.

Berger, Allen N., and David B. Humphrey, 1992, Megamergers in Banking and the Use of Cost Efficiency as an Antitrust Defense, *Antitrust Bulletin* 37, 541-600.

Berger, Allen N., and Loretta Mester, 1997, Inside the Black Box: What Explains the Differences in the Efficiencies of Financial Institutions?, *Federal Reserve Board, Working Paper* 97-1.

Berger, Allen N., Saunders, Anthony, Scalise, Joseph M., and Gregory F. Udell, 1998, The Effects of Bank Mergers and Acquisitions on Small Business Lending, *Journal of Financial Economics* 50, 187-229.

Boot, Arnoud W. A., 1999, European Lessons on Consolidation in Banking, *Journal of Banking and Finance* 23, 609-613.

Boyd, John H., and Stanley L. Graham, 1998, Consolidation in U.S. Banking: Implications for

Efficiency and Risk, in Y. Amihud and G. Miller, eds.: *Bank Mergers and Acquisitions* (Kluwer Academic Publishers, Boston).

Calomiris, Charles W., and John Karceski, 1996, The Bank Merger Wave of the 1990s: Nine Case Studies, University of Illinois, mimeo.

Cybo-Ottone, Alberto, and Maurizio Murgia, 2000, Mergers and Shareholder Wealth in European Banking, *Journal of Banking and Finance* 24, 831-859.

Focarelli, Dario, Panetta Fabio and Carmelo Salleo, 1999, Why Do Banks Merge? Some Empirical Evidence from Italy, in *Global Financial Crises – Implications for Banking and Regulation*, Proceedings of the 35th Annual Conference on Bank Structure and Regulation, Federal Reserve Bank of Chicago.

Frei, Frances, and Patrick Harker, 1996, Measuring the Efficiency of Service Delivery Processes: With Application to Retail Banking, *Working Paper* 96-31, *Wharton Financial Institutions Center*, University of Pennsylvania.

Hadlock, Charles J., Houston Joel F., and Michael D. Ryngaert, 1998, The Role of Managerial Incentives in Bank Acquisitions, paper presented at the conference *The Consolidation of the Financial Services Industry*, Federal Reserve Bank of New York, April.

Hausman, Jerry, and Daniel McFadden, 1984, Specification Tests for the Multinomial Logit Model, *Econometrica* vol. 52 No. 5, 1219-1240.

Houston, Joel F., and Michael D. Ryngaert, 1994, The Overall Gains from Large Bank Mergers, *Journal of Banking and Finance* 18, 1155-76.

Linder, Jane C., and Dwight B. Crane, 1993, Bank Mergers: Integration and Profitability, *Journal of Financial Services Research* 7, January, 35-55.

Milbourn, Todd T., Arnaud W. A. Boot and Anjan V. Thakor, 1999, Megamergers and Expanded Scope: Theories of Banks Size and Activity Diversity, *Journal of Banking and Finance* 23, 195-214.

Pagano, Marco, Panetta, Fabio, and Luigi Zingales, 1998, Why do Firms Go Public?, *Journal of Finance* 53-1, 27-64.

Piloff, Steven J., and Anthony M. Santomero, 1998, The Value Effect of Bank Mergers and Acquisitions, in Y. Amihud and G. Miller, eds.: *Bank Mergers and Acquisitions* (Kluwer Academic Publishers, Boston).

Resti, Andrea, 1997, Fusioni tra banche e efficienza: i risultati di un'analisi empirica, mimeo Università di Bergamo.

Rhoades, Stephen A., 1993, Efficiency Effects of Horizontal Bank Mergers, *Journal of Banking and Finance* 17, April, 411-422.

Rhoades, Stephen A., 1994, A Summary of Merger Performance Studies in Banking, 1980-93, and an Assessment of the "Operating Performance" and "Event Study" Methodologies, *Federal Reserve Board, Staff Study* 167.

Roll, Richard, 1986, The Hubris Hypothesis of Corporate Takeovers, *Journal of Business* 59 (29 Part 1), April, 197-216.

Sapienza, Paola, 1999, The Effects of Banking Mergers on Loan Contracts, Working Paper, Northwestern University, Kellogg School of Management.

Saunders, Anthony, 1999, Consolidation and Universal Banking, *Journal of Banking and Finance* 23, 693-695.

Schure, Paul and Rien Wagenwoort, Who Are Europe's Efficient Bankers?, Cahiers Bei - Eib Papers, Vol. 4 n.1 pp. 105-126.

Srnivasan, Aruna, 1992, Are There Cost Savings from Bank Mergers?, *Economic Review*, Federal Reserve Bank of Atlanta 77, March-April, 17-28.

Vennet, Vander Rudi, 1996, The Effect of M&As on the Efficiency and Profitability of EC Credit Institutions, *Journal of Banking and Finance* 20, 1531-1558.

Footnotes

[1] In the 18 mergers that result in the creation of a new bank (in legal terms a consolidation: see Henn and Alexander (1983)), we consider the larger bank as the bidder and the smaller as the target.

[2] A loan is classified as a bad loan when the bank starts a legal procedure to repossess it.

[3] This item includes the net revenues from asset management services and merchant banking activities.

[4] See Hausman and McFadden (1984).

[5] The negative coefficient of BADLOAN squares with this hypothesis, although it is not significant.

[6] Their main finding is that management ownership is a powerful explanatory variable for the likelihood of being acquired; the issue is irrelevant in Italy because of the almost total absence of shareholdings by managers.

[7] Moreover, this procedure gives less weight to extreme values than a traditional regression approach because it constrains all values between 1 and 100.

[8] See Generale and Gobbi (1999).

[9] We do not consider returns after taxes because the complexities of the tax code only introduce noise without really changing our results.

[10] We have also used the logarithm of total assets and the results remain the same.

[11] Equity decreases with respect to what it would have been without the merger. The ex-post book value of equity is calculated net of previous cross-shareholdings and of the fraction of equity paid for in cash. This reduces the value by comparison with the sum of the book values of combined equity prior to the transaction resulting from the *pro forma* balance sheets.

[12] For banks involved in a merger, in 25 cases there is a reduction in the absolute value of equity. In any year the average (median) growth rate of equity is smaller by 11,3 percentage points (2,4 percentage points) than the growth rate of equity recorded for banks not involved in any deal. In a regression with equity over total assets as the dependent variable, the coefficients of MERGE0, MERGE13 and MERGEGT3 are negative and significant.

[13] For mergers, in 80 per cent of the cases labor cost per employee is higher for the bidder; its median value is 8.5 per cent higher for the bidder than for the target.

[14] This specification has the attractive feature that the estimates of the coefficients measure the size of the impact of M&As on each dependent variable in our regressions. However, if the number of banks is not large enough, it may be less robust to the presence of outliers relative to the specification used in equation (2).

[15] The reduction in profits, that causes a negative ROA, is significant only in the year of the transaction; therefore for the following 3 years there are no effects on ROA and ROE increases.

[16] We also constructed a dummy that equals 1 if a bank was in the bottom decile in the distribution of ROA in years t-3 and t-4. The inclusion of this regressor did not influence our results. The regressions were also repeated by defining as underperformers banks belonging to the bottom quartile of the industry distribution of ROA. The results of all regressions are available from the authors.

Table I

Distribution by Size of Mergers and Acquisitions Among Italian Banks

All deals were concluded between 1985 and 1996. Each bank is assigned to a quintile of the distribution of total assets the year before the deal it is involved in. In the 18 cases of mergers that result in the creation of a new bank (in legal terms a consolidation: see Henn and Alexander 1983), we consider the larger bank as the bidder and the smaller as the target. The first quintile includes the largest banks. In 8 cases a bank whose control had been transferred was later merged and is therefore counted twice.

Active (Bidder or Acquiring) Banks				Passive (Target or Acquired) Banks			
Quintile	Number of Deals	Percentage of Total Deals, in Terms of:		Quintile	Number of Deals	Percentage of Total Deals, in Terms of:	
		Number	Total Assets			Number	Total Assets
Mergers							
1° quintile	81	60.0	98.6	1° quintile	16	11.9	70.1
2° quintile	28	20.7	1.2	2° quintile	9	6.7	3.7
3° quintile	16	11.9	0.1	3° quintile	20	14.8	7.9
4° quintile	9	6.7	0.0	4° quintile	38	28.1	12.3
5° quintile	1	0.7	0.0	5° quintile	52	38.5	6.0
Acquisitions of the Majority of Voting Rights							
1° quintile	60	90.9	99.9	1° quintile	10	15.2	49.5
2° quintile	5	7.6	0.1	2° quintile	13	19.7	22.8
3° quintile				3° quintile	18	27.3	19.3
4° quintile	1	1.5	0.0	4° quintile	16	24.2	7.8
5° quintile				5° quintile	9	13.6	0.7

Table II

Summary Statistics

The summary statistics of Panel A refer to the banks that were not involved in any operation. Panel B refers to the banks that were active in a merger (bidders), Panel C to the banks that were passive in a merger (targets), Panel D to the banks that acquired the majority of the voting shares of another bank, Panel E to the banks that sold the majority of their voting shares. In the 18 cases of mergers that result in the creation of a new bank (in legal terms a consolidation: see Henn and Alexander 1983), we consider the larger bank as the bidder and the smaller as the target. ROA is defined as income before tax divided by total assets. Total assets are expressed in trillion lire. Bad loans are a percentage of total loans. Labor costs are expressed as a percentage of gross income. The cost of borrowed funds is calculated as the ratio of interest payments to borrowed funds. Services is the value of received fees and commissions as a percentage of gross income. Loans are expressed as a percentage of total financial assets (loans + securities). The net interbank balance is the net creditor (+) or debtor (-) position in the interbank market, in percentage of total assets. Loans to small firms - firms with bank debt below 5 billion lire (approximately 3 million dollars) - are a percentage of total loans.

Variables	Obs.	Median	Mean	Std. dev.	Min.	Max.
Panel A: Banks not Taking Part in any Deal						
ROA	3291	1.07	1.11	0.93	-8.33	14.73
Total Assets	3295	0.93	4.59	198.42	0.02	195.45
Bad Loans	3282	5.65	7.05	30.83	0.00	47.68
Labor Costs	3295	38.00	37.37	145.59	0.00	100.00
Cost of Borrowed Funds	3295	6.65	7.05	3.83	0.00	59.19
Services	3295	11.76	11.66	74.42	0.00	151.43
Loans	3287	64.53	64.06	176.62	15.30	100.00
Net Interbank Balance	3295	5.95	6.77	66.79	-29.04	29.94
Loans/Deposits	3291	55.09	59.10	490.28	13.42	235.85
Loans to Small Firms	3295	63.15	64.29	359.46	5.05	100.00
Panel B: Bidder (Active) Banks in Mergers						
ROA	119	1.09	1.09	0.34	-0.78	2.79
Total Assets	119	4.31	14.22	674.52	0.05	177.02
Bad Loans	119	5.09	5.95	12.99	0.00	26.36
Labor Costs	119	37.80	38.15	76.73	0.00	61.11
Cost of Borrowed Funds	119	6.35	6.75	1.79	4.58	11.35
Services	119	15.79	16.35	70.83	0.00	74.32
Loans	119	67.03	65.40	165.57	22.79	90.67
Net Interbank Balance	119	1.53	1.93	28.81	-15.57	14.01
Loans/Deposits	119	64.59	68.03	398.34	30.04	151.81
Loans to Small Firms	119	53.00	56.04	259.40	19.23	97.14
Panel C: Target (Passive) Banks in Mergers						
ROA	108	0.55	0.37	3.61	-7.72	8.33
Total Assets	109	0.40	2.40	39.73	0.03	43.66
Bad Loans	109	8.18	10.28	67.43	0.00	41.23
Labor Costs	109	41.55	42.52	277.02	0.00	100.00
Cost of Borrowed Funds	109	6.45	6.72	2.21	4.16	12.12
Services	109	9.68	9.34	53.15	0.00	28.57
Loans	109	68.10	67.95	206.80	27.34	97.70
Net Interbank Balance	109	7.61	7.84	62.84	-12.84	29.11
Loans/Deposits	109	56.24	56.43	259.70	22.95	98.23
Loans to Small Firms	109	67.43	67.04	388.58	15.05	100.00

Table II (continued)

Variables	Obs.	Median	Mean	Std. dev.	Min	Max
Panel D: Acquiring (Active) Banks						
ROA	42	1.11	1.06	0.33	0.05	2.35
Total Assets	42	16.86	33.67	1474.56	0.55	127.16
Bad Loans	42	4.73	5.14	6.96	1.93	12.34
Labor Costs	42	35.33	38.28	57.16	21.05	53.34
Cost of Borrowed Funds	42	6.05	6.35	1.09	4.82	9.24
Services	42	18.10	19.58	99.38	2.90	69.28
Loans	42	72.57	71.41	75.01	50.66	88.47
Net Interbank Balance	42	-0.28	0.08	13.07	-6.05	10.05
Loans/Deposits	42	87.08	86.96	677.45	42.33	192.12
Loans to Small Firms	42	46.71	48.10	139.18	29.47	85.38
Panel E: Acquired (Passive) Banks						
ROA	59	0.34	-0.09	5.18	-11.03	3.85
Total Assets	59	1.27	3.00	32.34	0.03	31.87
Bad Loans	59	8.46	11.42	57.25	0.00	30.58
Labor Costs	59	43.61	44.75	186.02	0.00	86.67
Cost of Borrowed Funds	59	6.30	6.19	3.48	0.00	15.79
Services	59	14.29	13.65	44.07	0.00	27.09
Loans	58	68.88	70.22	145.17	37.40	100.00
Net Interbank Balance	59	4.63	5.46	37.44	-5.65	22.31
Loans/Deposits	58	63.70	64.81	223.67	40.51	113.14
Loans to Small Firms	59	60.51	61.58	232.86	31.37	100.00

Table III

Determinants of Mergers and Acquisitions in the Italian Banking Sector

The effect of the variables listed below on the probability that a bank takes part to an M&A is estimated by a multinomial logit model (see equation 1). In Panel A mergers are separated from acquisitions: the dependent variable is 0 if the bank does not take part to a deal, 1 if the bank acquires another bank, 2 if it is acquired, 3 if it is active in a merger (bidder) and 4 if it is passive in a merger (target). In Panel B the probability is estimated without distinguishing mergers from acquisitions: the dependent variable is 0 if the bank does not take part to a deal, 1 if the bank takes part to a merger as a bidder or acquires the majority of the voting shares of another bank and 2 if the bank takes part to a merger as a target or sells the majority of its voting shares to another bank. ROA is defined as income before tax divided by total assets. SIZE is the bank's total assets. Bad loans are a percentage of total loans. Labor costs are expressed as a percentage of gross income. The cost of borrowed funds is calculated as the ratio of interest payments to borrowed funds. Services is the value of received fees and commissions as a percentage of gross income. Loans are expressed as a percentage of total financial assets (loans + securities). The net interbank balance is the net creditor (+) or debtor (-) position in the interbank market, in percentage of total assets. The regression also includes a constant and calendar year dummies (not reported). Standard errors are reported in parentheses. The last two columns (difference test) report a χ^2 test that coefficients of each variable are equal for the bidder and acquiring banks and for the target and acquired banks, respectively. The row LR-test is the value of a test for the hypothesis that the calendar year dummies are all jointly equal to zero. The row IIA-test reports the value of test on the Independence from Irrelevant Alternatives property (Hausman and Mc Fadden, 1984). The symbol *** indicates a significance level of 1 per cent or less; ** between 1 and 5 per cent; * between 5 and 10 per cent.

Variable	Panel A: Separating Mergers from Acquisitions						Panel B: No Distinction Between Mergers and Acquisitions	
	Mergers		Acquisitions		Difference test			
	Bidder (Active)	Target (Passive)	Acquiring (Active)	Acquired (Passive)	Bidder vs. Acquiring	Target vs. Acquired	Active	Passive
ROA	0.153	-0.342 ***	0.563 **	-0.262 **	2.70 *	0.46	0.230 **	-0.318 ***
	(0.132)	*(0.090)*	*(0.221)*	*(0.116)*			*(0.113)*	*(0.081)*
Size	0.017 ***	-0.021	0.024 ***	-0.053 **	1.08	1.15	0.020 ***	-0.031 **
	(0.004)	*(0.016)*	*(0.005)*	*(0.026)*			*(0.003)*	*(0.014)*
Bad Loans	-0.015	0.022	-0.102	0.052 **	1.61	1.04	-0.030	0.032 **
	(0.027)	*(0.016)*	*(0.064)*	*(0.026)*			*(0.026)*	*(0.015)*
Labor Costs	-0.013	0.020 **	-0.024	0.027 *	0.17	0.18	-0.015	0.020 ***
	(0.011)	*(0.008)*	*(0.024)*	*(0.014)*			*(0.010)*	*(0.007)*
Cost of borrowed	-0.014	-0.002	-0.087	-0.339 **	0.16	4.58 **	-0.021	-0.094
Funds	*(0.054)*	*(0.081)*	*(0.174)*	*(0.140)*			*(0.050)*	*(0.083)*
Services	0.030 ***	-0.046 ***	0.031 **	0.012	0.01	6.76 ***	0.029 ***	-0.020
	(0.008)	*(0.017)*	*(0.013)*	*(0.015)*			*0.007*	*0.014*
Loans	0.005	0.014	0.041 **	0.040 ***	3.52 *	2.90 *	0.012	0.021 ***
	(0.009)	*(0.009)*	*(0.017)*	*(0.014)*			*(0.008)*	*(0.007)*
Net Interbank	-0.070 ***	0.014	-0.124 ***	-0.019	2.65 *	1.71	-0.078 ***	0.009
Balance	*(0.014)*	*(0.015)*	*(0.031)*	*(0.022)*			*(0.013)*	*(0.013)*
Number of obs.	3,597						3,597	
R-square	0.179						0.157	
LR-test	12.02	19.60 *	245.32 ***	314.28 ***			24.58 **	42.23 ***
IIA-test	-5.65	3.19	-7.20	5.04			-8.28	0.16

Table IV

Effects of Mergers and Acquisitions on Bank Profitability, Size and Productivity

For each of the variables we estimate equation 2. The dependent variables take on values from 1 to 100 that reflect the percentiles of their distribution. Gross ROA is profits before taxes over total assets. Gross ROE is profits before taxes over equity. The growth rate of size is the yearly increase of total asset expressed in percentage points. Operating costs are expressed as a fraction of gross income. Labor costs are expressed as a fraction of gross income. Heteroskedasticity robust standard errors are reported in parentheses. The symbol *** indicates a significance level of 1 per cent or less; ** between 1 and 5 per cent; * between 5 and 10 per cent. The last column reports the F-test of the hypothesis that the sum of the coefficients of the post merger dummies for each type of deal is equal to zero.

Dependent Variables	Type of Deal	Year 0	Years 1-3	Years > 3	F-test
Gross ROA (before taxes)	Mergers	-5.7 ***	-4.8 ***	-0.9	13.7 ***
No. obs.: 2815		*(1.6)*	*(1.4)*	*(1.9)*	
R-square: 0.584	Acquiring Banks	2.8	1.1	0.3	0.7
		(2.3)	*(2.0)*	*(3.2)*	
	Acquired Banks	-7.3 **	2.1	21.1 ***	5.0 **
		(3.5)	*(2.8)*	*(5.3)*	
Gross ROE (before taxes)	Mergers	-1.8	-0.2	6.7 ***	1.7
No. obs.: 2813		*(1.8)*	*(1.6)*	*(2.1)*	
R-square: 0.466	Acquiring Banks	3.9	-2.8	-1.3	0.0
		(2.7)	*(2.7)*	*(5.1)*	
	Acquired Banks	-10.6 ***	-1.3	13.0 *	0.0
		(3.7)	*(3.6)*	*(7.1)*	
Size (growth rate)	Mergers	-9.5 ***	0.3	-5.8 **	8.2 ***
No. obs.: 2606		*(2.8)*	*(2.3)*	*(2.9)*	
R-square: 0.131	Acquiring Banks	5.1	-5.6	1.4	0.0
		(4.1)	*(3.9)*	*(6.8)*	
	Acquired Banks	4.9	-2.2	-5.8	0.1
		(4.6)	*(3.7)*	*(7.6)*	
Operating Costs	Mergers	5.1 ***	3.8 ***	3.4 **	19.6 ***
No. obs.: 2832		*(1.4)*	*(1.3)*	*(1.6)*	
R-square: 0.632	Acquiring banks	-4.1 *	-1.5	-0.1	1.2
		(2.2)	*(2.3)*	*(3.8)*	
	Acquired banks	1.8	-0.8	-4.0	0.3
		(3.3)	*(2.2)*	*(3.4)*	
Labor Costs	Mergers	4.7 ***	3.4 ***	4.3 ***	24.5 ***
No. obs.; 2832		*(1.4)*	*(1.1)*	*(1.4)*	
R-square: 0.689	Acquiring Banks	-4.3 *	-0.4	0.2	0.9
		(2.3)	*(2.1)*	*(3.1)*	
	Acquired Banks	6.0 *	-1.3	-3.5	0.0
		(3.3)	*(2.1)*	*(4.9)*	

Table V

Effects of Mergers and Acquisitions on Bank Revenues and Diversification

For each of the variables we estimate equation 2. The dependent variables take on values from 1 to 100 that reflect the percentiles of their distribution. Fees from services are expressed as a fraction of gross income. Loans are expressed as a fraction of total financial assets (loans + securities). Loans to small firms are the fraction of total loans extended to firms with total bank debt < 5 trillion lire (3 million US dollars). Bad loans are expressed as a fraction of total loans. Loan losses are expressed as a fraction of total loans. The net interbank balance is the net creditor (+) or debtor (-) position in the interbank market, in percentage of total assets. Heteroskedasticity robust standard errors are reported in parentheses. The symbol *** indicates a significance level of 1 per cent or less; ** between 1 and 5 per cent; * between 5 and 10 per cent. The last column reports the F-test of the hypothesis that the sum of the coefficients of the post merger dummies for each type of deal is equal to zero.

Dependent Variables	Type of Deal	Year 0	Years 1-3	Years > 3	F-test
Fees from Services	Mergers	4.1 ***	2.6 **	3.3 **	14.3 ***
No. obs.: 2827		*(1.2)*	*(1.1)*	*(1.7)*	
R-square: 0.751	Acquiring Banks	2.5	1.2	2.4	2.2
		(2.0)	*(1.7)*	*(2.4)*	
	Acquired Banks	1.4	3.5	5.7	3.4 *
		(2.8)	*(2.4)*	*(3.9)*	
Loans	Mergers	-0.3	3.3 **	6.2 ***	8.2 ***
No. obs.; 2825		*(1.8)*	*(1.4)*	*(1.8)*	
R-square: 0.624	Acquiring Banks	-0.7	-1.6	-3.9	1.0
		(2.4)	*(2.4)*	*(4.1)*	
	Acquired Banks	-6.9 **	-11.2 ***	-13.0 **	18.5 ***
		(3.1)	*(3.1)*	*(5.0)*	
Loans to Small Firms	Mergers	0.1	-1.7 **	-2.7 **	5.6 **
No. obs.: 2831		*(0.9)*	*(0.8)*	*(1.1)*	
R-square: 0.864	Acquiring Banks	-3.5 **	0.7	2.3	0.0
		(1.6)	*(1.2)*	*(1.7)*	
	Acquired Banks	-1.9	-2.2	-11.5 ***	11.5 ***
		(2.0)	*(1.6)*	*(3.5)*	
Bad Loans	Mergers	0.0	-0.7	-0.4	0.1
No. obs.: 2804		*(1.5)*	*(1.3)*	*(1.8)*	
R-square: 0.596	Acquiring Banks	0.5	4.1 *	1.5	1.3
		(2.1)	*(2.1)*	*(3.5)*	
	Acquired Banks	8.0 ***	3.9	-11.6 **	0.0
		(2.9)	*(2.9)*	*(5.5)*	
Loan Losses	Mergers	0.7	1.5	-1.5	0.0
No. obs.: 2745		*(2.0)*	*(1.8)*	*(2.2)*	
R-square: 0.295	Acquiring Banks	-5.5 **	6.9 **	8.8 *	2.1
		(2.6)	*(2.7)*	*(4.9)*	
	Acquired Banks	14.5 ***	3.8	-9.7	0.7
		(4.3)	*(3.4)*	*(8.1)*	
Net Interbank Balance	Mergers	-1.2	-2.5 **	0.3	1.3
No. obs.: 2832		*(1.5)*	*(1.3)*	*(1.8)*	
R-square: 0.680	Acquiring Banks	-2.1	-4.2 **	-8.0 ***	11.0 ***
		(2.3)	*(2.0)*	*(2.4)*	
	Acquired Banks	7.3 ***	-2.5	-4.2	0.0
		(2.5)	*(2.3)*	*(5.3)*	